



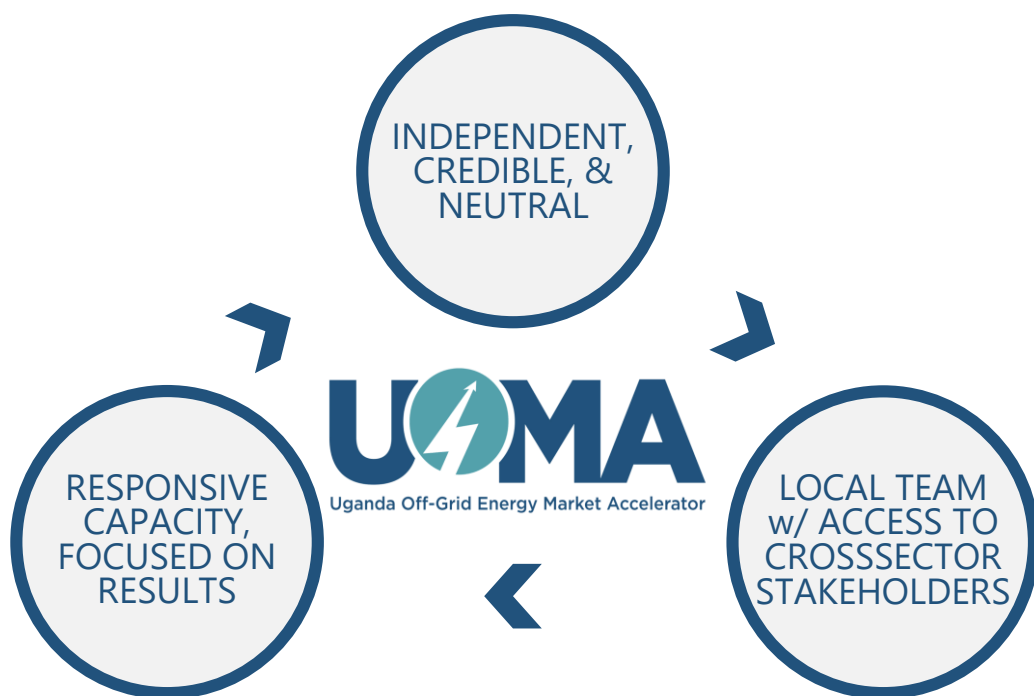
Uganda Off-Grid Energy Market Accelerator

# Market Map of off-grid energy in Uganda

Mini-grid section

2019 edition

# 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

In partnership with:

SCALING  
OFF-GRID  
ENERGY:  
A GRAND CHALLENGE  
FOR DEVELOPMENT



Shell Foundation | 



# UOMA is run by technical team supported by a cross cutting advisory board representing govt, private sector and dev partners

## Core technical team

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**Dr. Frank Sebbowa**  
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Project Leader, OCA  
Off-Grid Energy Specialist

## Advisory Board

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# For 2019, UOMA is focusing on 5 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 a conducive 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

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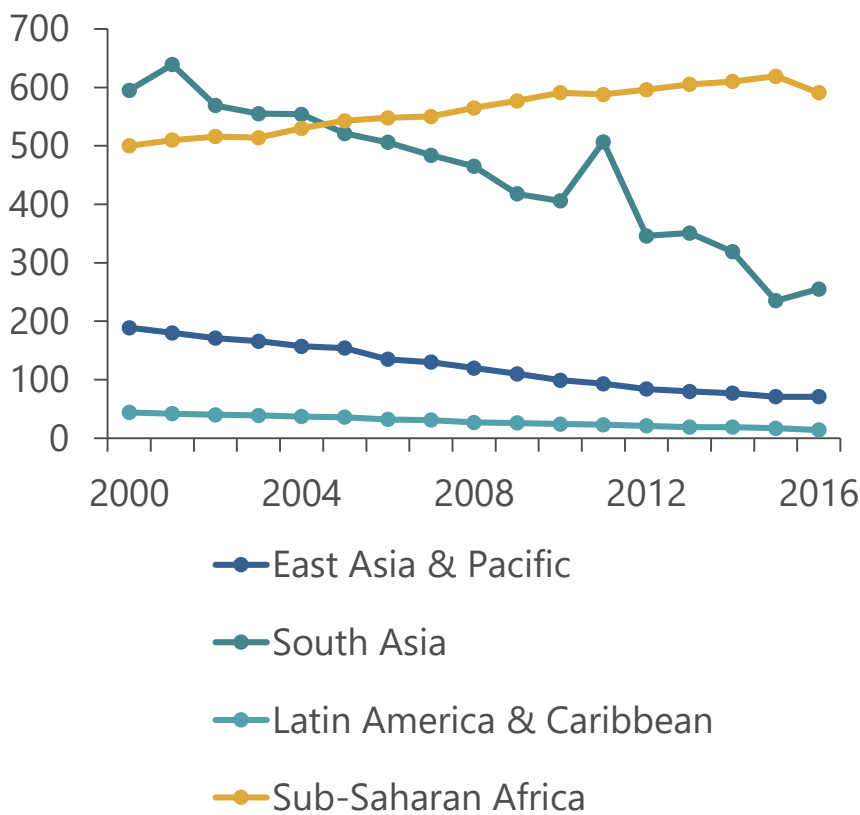
This is a section of the Market Map containing only the insights on mini-grids in Uganda  
please check [uoma.ug](http://uoma.ug) for full version

# Context

# Despite recent progress, gap to universal energy access continues to widen; electrification rates in UG lower than SSA average

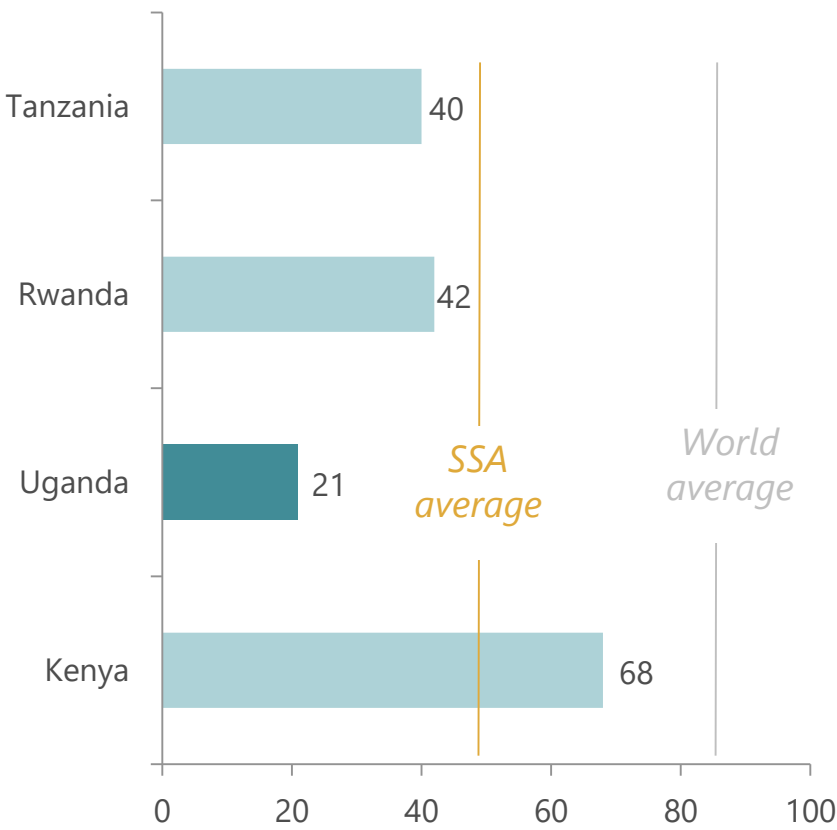
## SSA not keeping up with pop growth for access

Trends in population with no access, 2000-2016<sup>1</sup>  
Millions

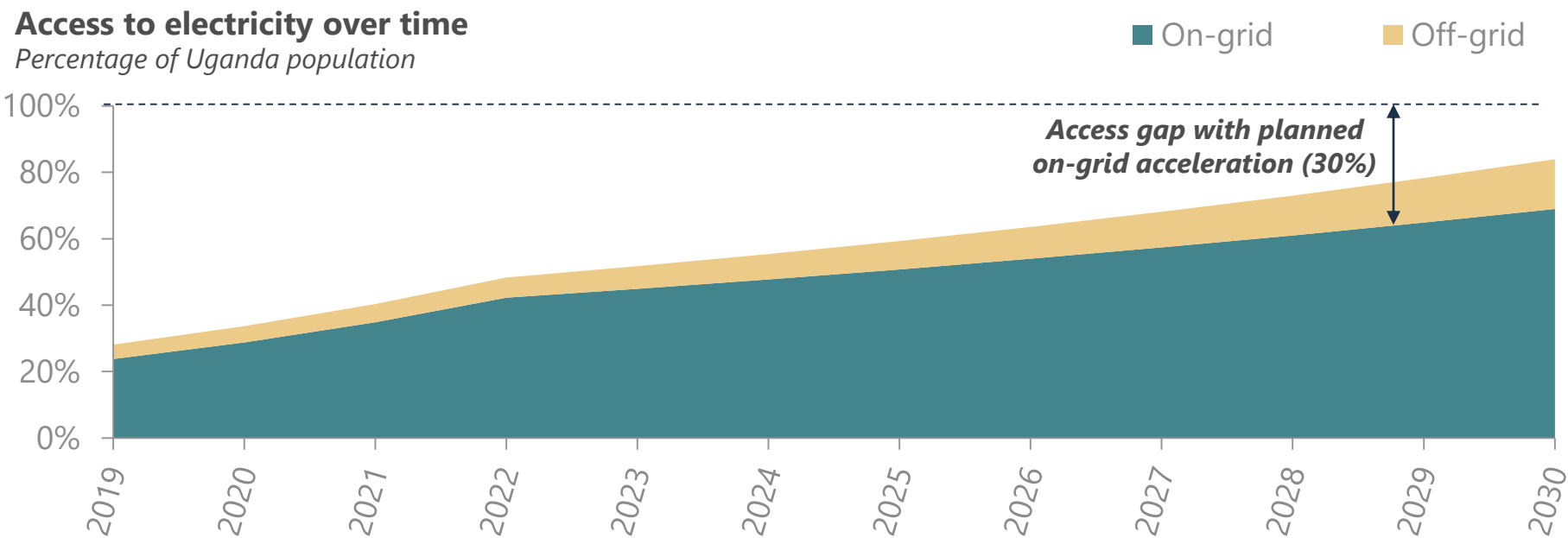


## UG electrification rates lower than SSA average

% pop electricity access, 2016<sup>2</sup>



# ~30% of population in forecast to remain unserved by grid at 2030; off-grid essential to achieve 100% access



**Despite projected growth of off- and on-grid connections, 30% of UG population forecast to lack electricity access at current trajectory; off-grid solutions critical to reach unserved populations**

- Uganda population expected to grow at ~3% per year, expanding from ~8M households in 2018 to over 11M by 2030
- Given planned additional connections under the Free Connections policy and growing uptake of off-grid, millions of connections forecast to come online, however ~3M households (~16M people) will remain unserved in 2030 (~30%)

**Off-grid solutions will have to play a critical role utilizing technologies such as solar home systems and mini-grids**



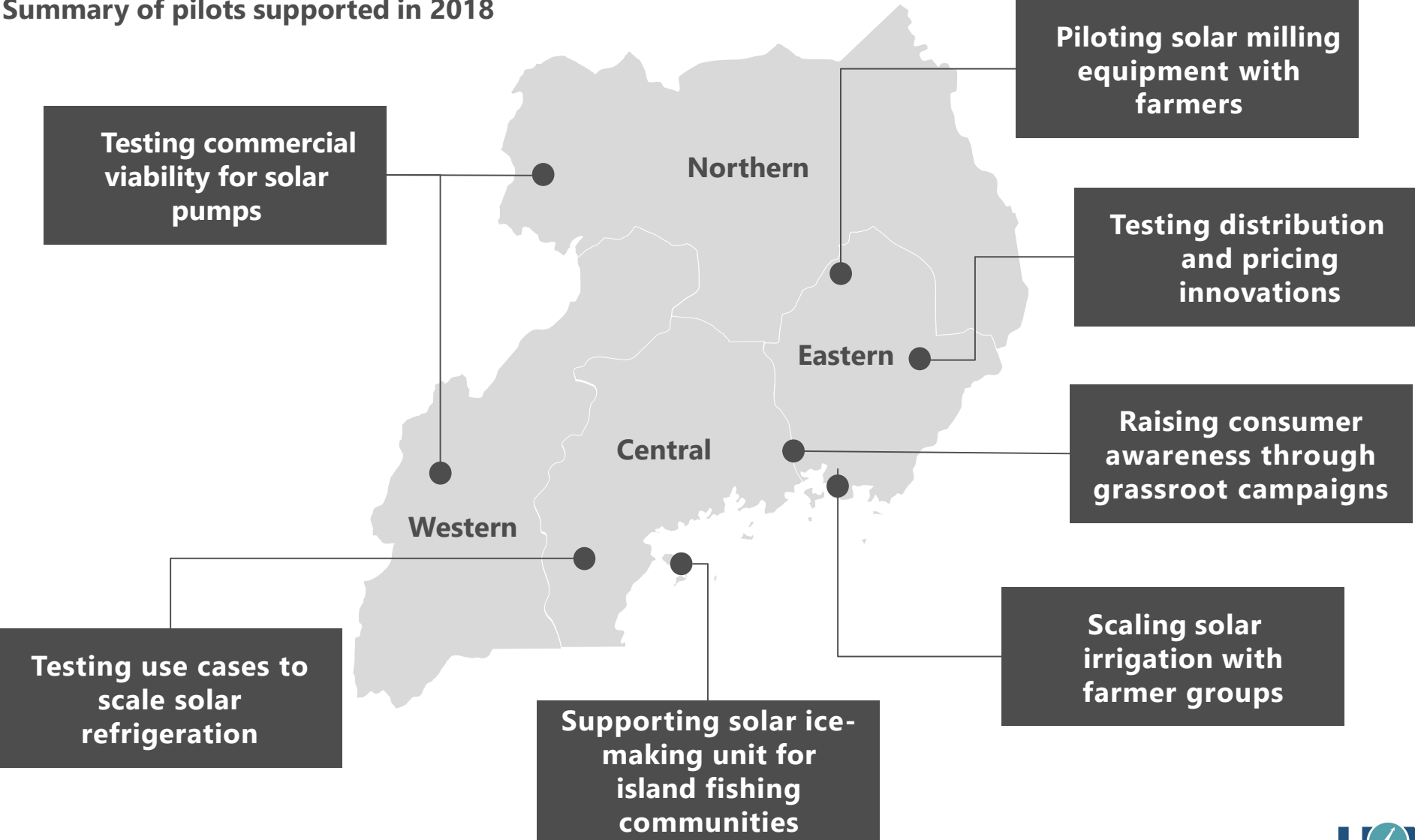
# Through consultations we were able to map relationships & off-grid market initiatives

Interviews & research were tailored to understand objectives & how they interact with each other

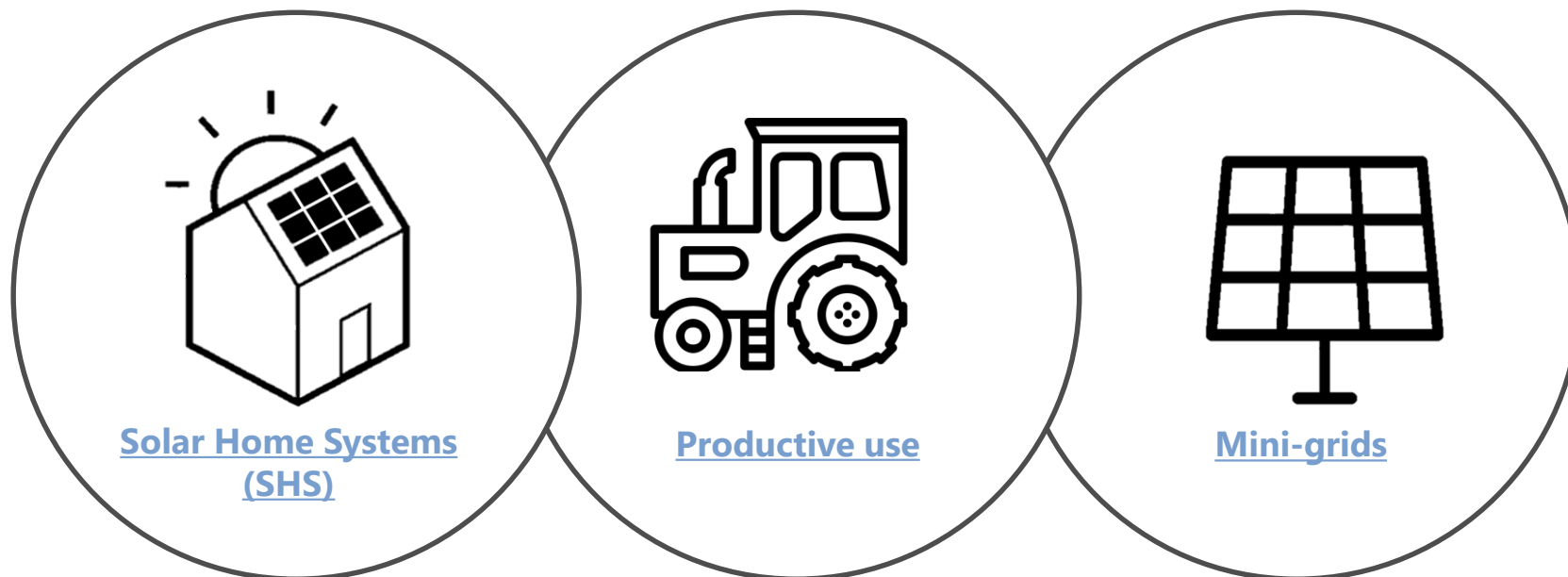
Private sector	Government	Development orgs	Other stakeholders
<ul style="list-style-type: none"><li>Understand available products, current market share, growth plans, challenges to scale and strategic differences</li></ul>	<ul style="list-style-type: none"><li>Understand different sub-industry focus areas, major initiatives underway, plans / strategies, and sensitivities</li></ul>	<ul style="list-style-type: none"><li>Review current interventions, broader mandates, preferred models and existing collaborations</li></ul>	<ul style="list-style-type: none"><li>Build holistic view of facilitating market actors &amp; their role in capital provisioning, industry research, &amp; coordination</li></ul>

# Insights also include learnings from pilots run by UOMA in 2018 supporting operators to test various business models

Summary of pilots supported in 2018



Market map seeks to provide a holistic and objective description of the off-grid industry in Uganda and is comprised of 3 sections:



Each section contains an overview and insights section:

- **Overview:** Provides a holistic view of the specific technology presenting actors & activities
- **Insights:** Presents data-driven industry analysis to provide dimension & context to the state of off-grid development and further outlines the primary barriers to growth of today's market, highlighting opportunities for stakeholder support

Additionally, the Appendix contains a summary of stakeholders active in the Ugandan market

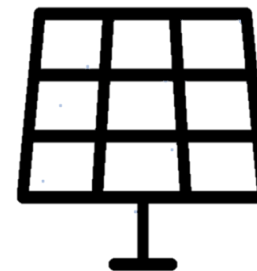
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**Solar Home Systems  
(SHS)**



**Productive use**

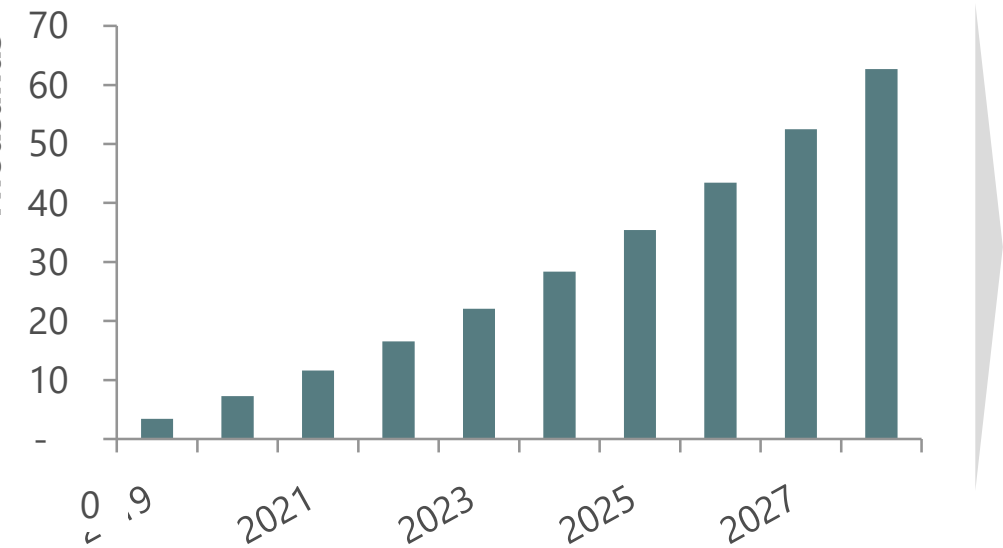


**Mini-grids**

# Mini-grids forecasted to play a central role in electrification of UG

## Forecast of cumulative mini-grid connections across 10 service territories in Uganda

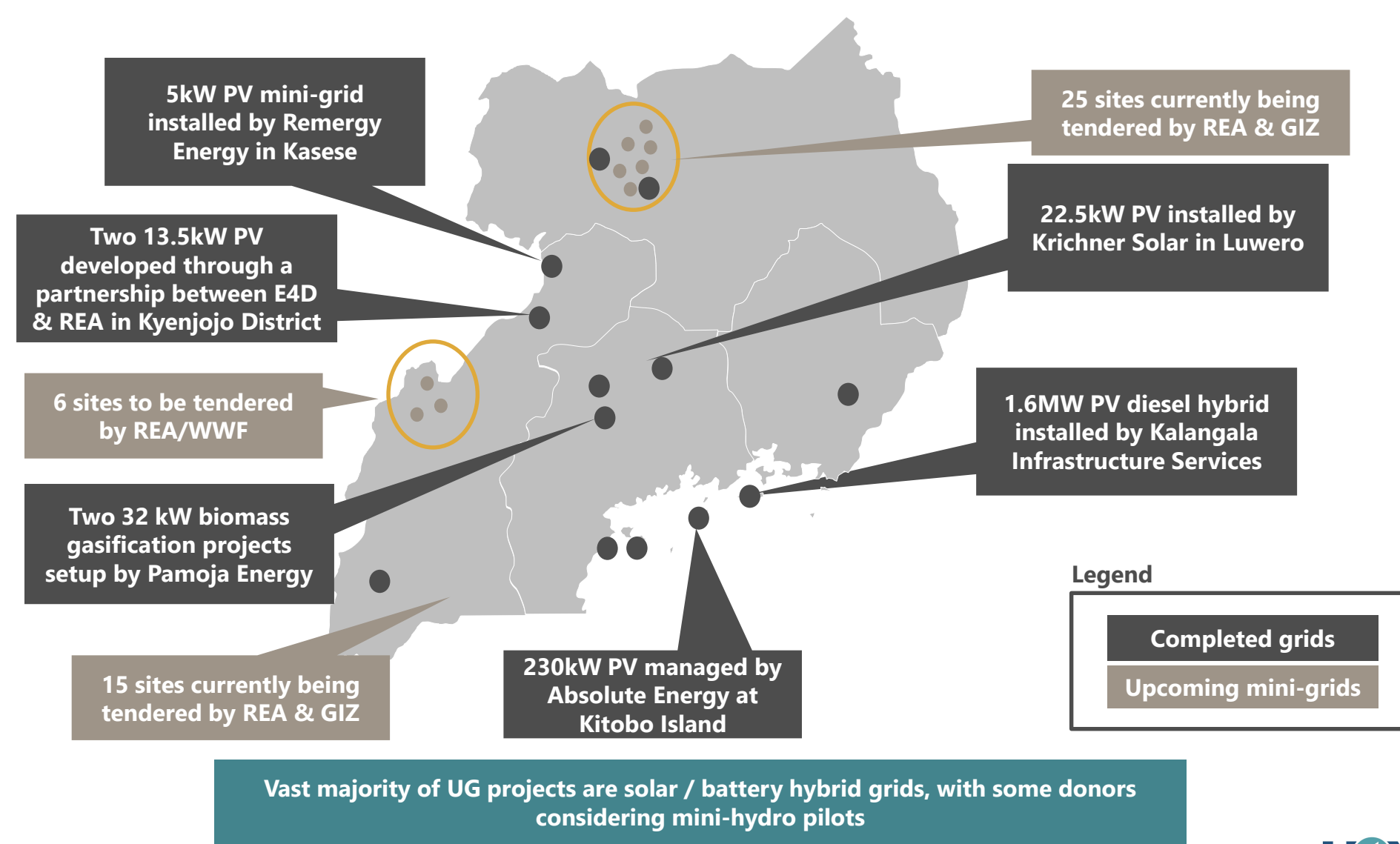
'000 Households



- Master Planning exercise for REA identified mini-grid sites after grid expansion analysis was completed
- Sites were identified where:
  - 50 or more households clustered (smaller number where they may serve trading centre)
  - Clusters corresponding to grid expansion but –ve NPV or cost per consumer >\$2000
- The analysis also assumed consumption per customer is inversely proportional to the penetration level

- REA's Master Plan forecasts that in the next 10 years, there will be opportunity to electrify up to 62,000 households across 10 service territories of Uganda through mini-grids
- Majority of sites noted in North, West, South Western, and Central service territories
- The business case highlighted in the Master Plan for electrification implies mini-grids will continue to play a crucial role in the electrification of Uganda to achieve universal access

# To date, only 14 mini-grid projects installed in UG, however several sites are currently up for tender



# A number of mini-grids have been constructed due to support from the private sector, Ugandan government & other financiers (1/4)

Mini-grid	Capacity and technology	Developers/Partners
<b>Tiribogo gasification</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 32kW Biomass gasification</li> <li>• <b>Current connections:</b> 170</li> </ul>	<p><b>Developer:</b> Pamoja Energy Limited</p> <p><b>Partners:</b> REA, Royal Institute of Technology Stockholm, &amp; Renewable Energy Business Incubator</p>
<b>Magara gasification</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 32kW Biomass gasification</li> <li>• <b>Current connections:</b> 72</li> </ul>	<p><b>Developer:</b> Pamoja Energy Limited</p> <p><b>Partners:</b> REA, Royal Institute of Technology Stockholm, &amp; Renewable Energy Business Incubator</p>
<b>Bukuzindu solar-diesel plant</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> Hybrid gen. station 600 kW (Solar) &amp; 1.6MW (Diesel)</li> <li>• <b>Current connections:</b> 40 villages (~2500 hhs)</li> </ul>	<p><b>Developer:</b> Kalangala Infrastructure Services</p> <p><b>Partners:</b> InfraCo, Nedbank, USAID, DFID, UDC, and Emerging Africa Infrastructure Fund.</p>
<b>Kayanja Solar microgrid</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 5kW Solar PV</li> <li>• <b>Current connections:</b> ~70hhs</li> </ul>	<p><b>Developer :</b> Remergy Energy A/S</p> <p><b>Partners:</b> WWF, Access 2 Innovation &amp; Joint Energy and Environment Project</p>

# A number of mini-grids have been constructed due to support from the private sector, Ugandan government & other financiers (2/4)

Mini-grid	Capacity and technology	Developers/Partners
Kiboga solar mini-grid	<ul style="list-style-type: none"> <li><b>Tech:</b> 1kW Solar PV</li> <li><b>Current connections:</b> 11</li> </ul>	<p><b>Developer:</b> Centre for Research in Energy and Energy Conservation</p> <p><b>Partners:</b> National Council for Science and Technology</p>
Bwindi community microgrid	<ul style="list-style-type: none"> <li><b>Tech:</b> 64kW Hydro</li> <li><b>Current connections:</b> 42</li> </ul>	<p><b>Developer:</b> Bwindi Community Hospital</p> <p><b>Partners:</b> GIZ EnDev</p>
Kisiizi Hydropower	<ul style="list-style-type: none"> <li><b>Tech:</b> 300kW &amp; 60 kW hydroelectric &amp; diesel generator of 80kva</li> <li><b>Current connections:</b> 710</li> </ul>	<p><b>Developer:</b> Kisiizi Power Ltd</p> <p><b>Partners:</b> Kisiizi Hospital, Church of Uganda</p>
Kyamagaruru solar plant	<ul style="list-style-type: none"> <li><b>Tech:</b> 13kW Solar PV</li> <li><b>Current connections:</b> 68</li> </ul>	<p><b>Developer :</b> Energy for Development</p> <p><b>Partners:</b> REA, University of Southampton</p>



# A number of mini-grids have been constructed due to support from the private sector, Ugandan government & other financiers (3/4)

Mini-grid	Capacity and technology	Developers/Partners
<b>Kanyegaramire solar plant</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 13kW Solar PV station</li> <li>• <b>Current connections:</b> 74</li> </ul>	<p><b>Developer :</b> Energy for Development  <b>Partners:</b> REA, University of Southampton</p>
<b>Eco-Garden micro-hydropower plant</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 5kW Hydro</li> <li>• <b>Current connections:</b> 16</li> </ul>	<p><b>Developer:</b> Eco-Garden Ltd  <b>Partners:</b> Renewable Energy Business Incubator (REBI)</p>
<b>RMS Pico Hydropower</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 5kW Hydro</li> <li>• <b>Current connections:</b> 3</li> </ul>	<p><b>Developer:</b> Rwenzori Mountaineering  <b>Partners:</b> Private Sector Foundation Uganda (PSFU), Centre for Research in Energy and Energy Conservation (CREEC)</p>
<b>Kitobo Solar Plant</b>	<ul style="list-style-type: none"> <li>• <b>Tech:</b> 230kW Solar PV</li> <li>• <b>Current connections:</b> 541</li> </ul>	<p><b>Developer:</b> Absolute Energy Africa Limited  <b>Partners:</b> REA, EEP Africa, Shell Foundation, FinAfrica</p>

# A number of mini-grids have been constructed due to support from the private sector, Ugandan government & other financiers (4/4)

Mini-grid	Capacity and technology	Developers/Partners
Kabalega hydropower plant	<ul style="list-style-type: none"><li>Tech: 9000kW Hydro</li><li>Current connections: 203</li></ul>	<p>Developer : Hydromax</p> <p>Partners: REA</p>
Kichner solar minigrid	<ul style="list-style-type: none"><li>Tech: 22kW Solar PV</li><li>Current connections: 60</li></ul>	<p>Developer: Kichner solar</p> <p>Partners: REA, GIZ</p>

# There a number of up-coming mini-grids that are set to increase energy generation and access (1/2)

Developer/Tender	Capacity and technology	Partners
<b>Bakulu Power</b>	<ul style="list-style-type: none"> <li>• (53) solar mini-grids total of 600kW in Buvuma district</li> <li>• Potential to reach ~8000 people</li> </ul>	REA Energy for Impact
<b>Absolute Energy</b>	<ul style="list-style-type: none"> <li>• Estimated capacity of 100kW Solar PV</li> <li>• Located in Kalangala District with potential impact of 5400 people</li> </ul>	REA
<b>Pamoja Energy Africa Ltd</b>	<ul style="list-style-type: none"> <li>• Biomass plant</li> <li>• Capacity of 50kW in Kamwenge District</li> </ul>	REA
<b>TBD</b>	<ul style="list-style-type: none"> <li>• Capacity of 30kW to 80kW</li> <li>• 15 villages in Rakai &amp; Isingiro &amp; 25 villages in Lamwo District</li> </ul>	REA GIZ, Pro Mini-grids project

# There a number of up-coming mini-grids that are set to increase energy generation and access (2/2)

Developer/Tender	Capacity and technology	Partners
AfDB and REA	<ul style="list-style-type: none"><li>(10) decentralized mini-grids on Lake Victoria</li></ul>	REA
ORIO Infrastructure Fund	<ul style="list-style-type: none"><li>(10) mini hydro projects</li><li>Capacity of 50 to 500 kW</li></ul>	Emerging Africa Infrastructure Fund, FMO (Dutch development Bank) UECCC
Mandulis Energy	<ul style="list-style-type: none"><li>20MW biomass project in Gulu, Northern Uganda</li></ul>	KfW, AfDB and Power Africa
Tiger Power	<ul style="list-style-type: none"><li>(3) Solar PV arrays in Kyenjojo Uganda</li><li>Expected to serve 1000 households</li></ul>	REA The Belgium government

# Setting up mini-grids in Uganda has several steps involving government licensing and community outreach

Site ID / assessment	Grid setup	Generation	Sales & distribution	Metering & payment	After sales
<p><b>Govt &amp; private sector identify mini-grid sites</b></p> <p><b>Government</b></p> <ul style="list-style-type: none"> <li>Identify potential sites &amp; run them via public tender</li> </ul> <p><b>Private sector</b></p> <ul style="list-style-type: none"> <li>Identify &amp; develop sites within regulatory framework of licensing</li> </ul>	<p><b>Different permits &amp; licenses processed from:</b></p> <ul style="list-style-type: none"> <li>Electricity Regulatory Authority</li> <li>National Environment Management Authority</li> <li>District and local community leaders</li> </ul>	<p><b>Mini-grids generate electricity from:</b></p> <ul style="list-style-type: none"> <li>Solar panels</li> <li>Diesel generators</li> <li>Biogas</li> <li>Hydro power generators</li> <li>Hybrids of various generating technologies</li> </ul>	<p><b>Developers partner with REA for last mile distribution</b></p> <ul style="list-style-type: none"> <li>With exception of few, most mini-grid developers partner with REA to provide distribution subsidy</li> </ul>	<p><b>Operators use IT systems to effectively manage smart metering</b></p> <ul style="list-style-type: none"> <li>Systems receive &amp; effectively track customer payments</li> </ul>	<p><b>Operators offer maintenance &amp; technical assistance to customers</b></p> <ul style="list-style-type: none"> <li>Operators have technical staff that respond to customer queries</li> <li>Also provide maintenance as needed</li> </ul>

## Site ID: Mini-grid sites are identified by government and private sector operators; approved through tender or non-solicited bids

### Government identified sites

- Sites are identified during master planning process or service territory concessions allotted by government
- Tenders are awarded through a competitive selection process for sites or concessions
- Setup process is considerably shorter as upfront surveys & feasibility studies have already been conducted by government
- **Regulated tariffs in parity with central grid costs hence government subsidizes project to ensure viability**

### Private sector identified sites

- Sites are identified by private developers or community
- Private operator has site surveyed, initial feasibility studies conducted, and confirmation received from REA before setting up or developing the mini-grid
- **Tariffs should cover all costs of the mini-grid plus a margin; sites are likely applied in areas with higher willingness to pay**

### Mini-grids in Uganda are mainly identified by public sector but managed by private developers:

- Government-led projects result in several benefits for mini-grid developments:
  - Clear planning in different territories to ensure economies of scale & reduced operational expenses
  - De-risked projects with added predictability on when grid is likely to be extended
  - More affordable utility for end-users through subsidies on distribution & connection

# Grid setup: Need to process licenses & permits to operate, and leverage local partnerships for procurement

## Several steps involved in receiving clearance

- 1 Identify proposed project in line with rural electrification master plan; project must be less than 2MW & located more than 1km from the grid to qualify for an exemption
- 2 Develop project feasibility study including detailed social economic assessment and environmental project brief
- 3 Obtain clearance of project brief from NEMA
- 4 Submit developed documents to ERA for consideration
- 5 ERA then processes and confirms the application. This involves advertising, holding a public hearing and detailed assessment of tariff proposal

## Mini-grid setup begins after ERA clearance

### After necessary regulatory requirements are met, developers begin setting up the mini-grid

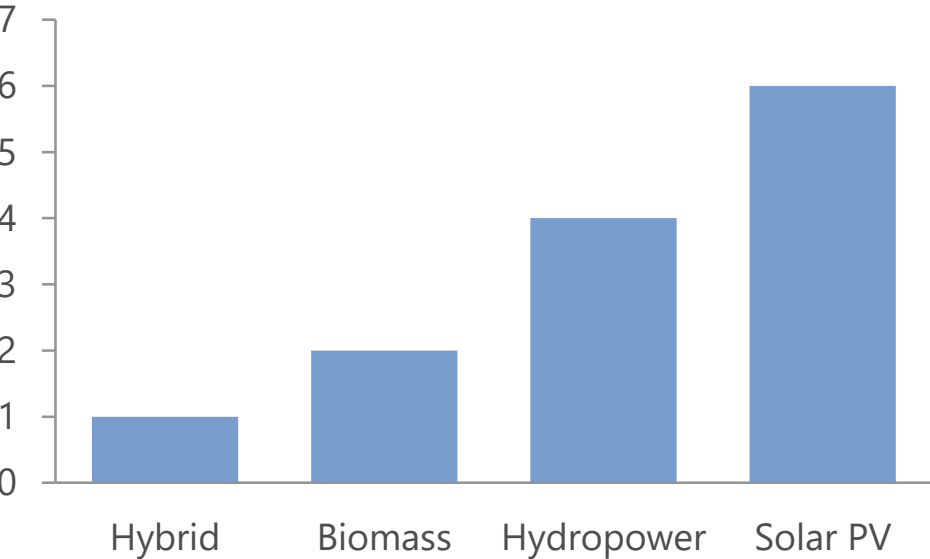
- Mini-grid developers start constructing necessary infrastructure required to run the grid
  - Components are assembled at mini-grid sites; majority of developers usually import these components
  - Local partnerships are instrumental in procuring components, processing them through customs and finding a construction company to develop the infrastructure
- 
- For generation projects less than 2MW, the developer must apply to ERA for an exemption from the requirement to obtain a license
  - For those sited on land held in trust by the government, the developer is required to obtain a license or concession from the Land Commission

# Generation: Solar & hydro dominate generation technologies of mini-grids in Uganda; trend is encouraged by reduced costs

## Solar & hydro powered mini-grids prevalent

Generation mix for minigrids in UG

Mini-grids

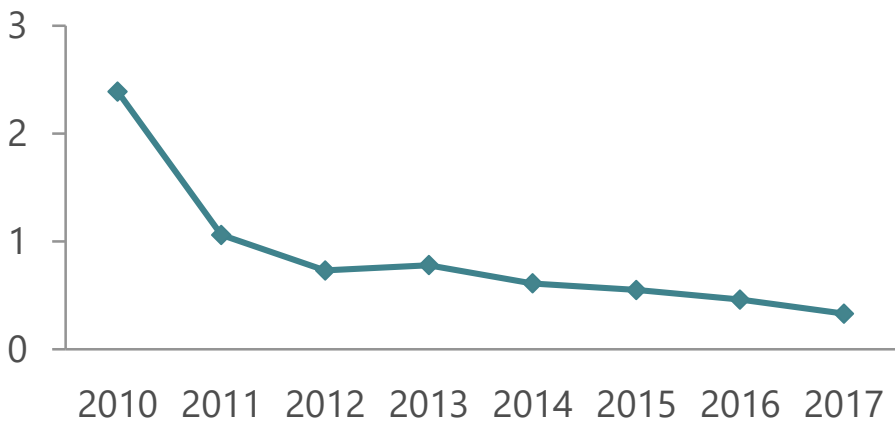


- Solar PV & hydropower are most common generation technologies used to setup mini-grids; recently biomass tech has also been used
- Several hybrid generation technologies also exist for example, solar diesel, hydropower diesel, etc.

## Reducing costs encourage use of solar assets

Cost of C-Si solar modules across the world<sup>1</sup>

\$/W



- Uganda has solar irradiation levels of up to 2000kWh per m<sup>2</sup> which makes solar power relatively easy to generate
- Introduction of new & more efficient technologies has led to reducing costs and contributed to the dominance of solar generating technologies
- However, the challenge to have a good storage system for energy collected during the day still prevails

Source: UOMA interviews & research supplemented by GIZ documentation on mini-grids in Uganda

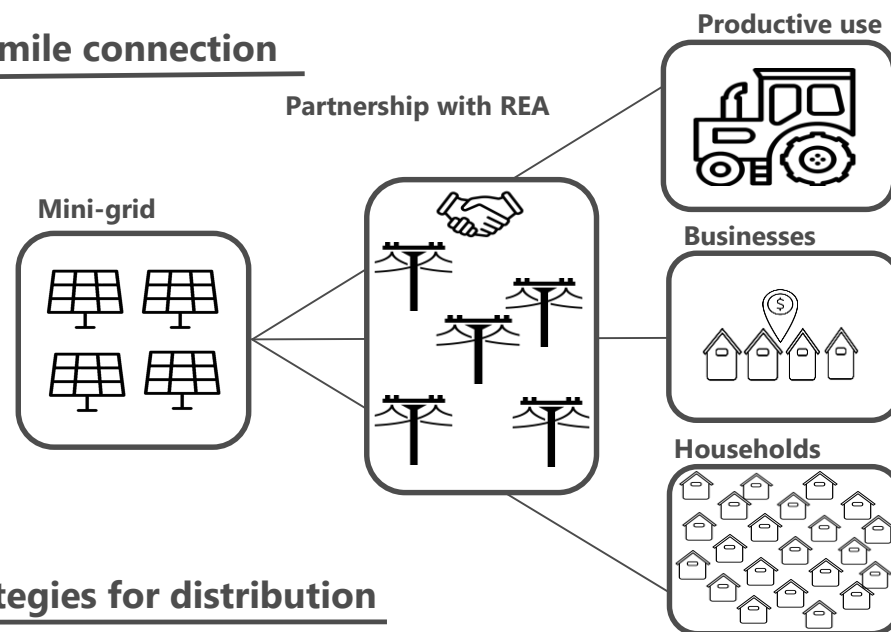
1. Lighting Global & Dalberg: Off-Grid Solar Market Trends Report 2018



# *Distribution:* Last mile distribution for mini-grids is usually done in partnership with government authorities or local community

## Number received subsidy from REA for last mile connection

Many successful mini-grids have partnered with government agencies like REA for last mile distribution

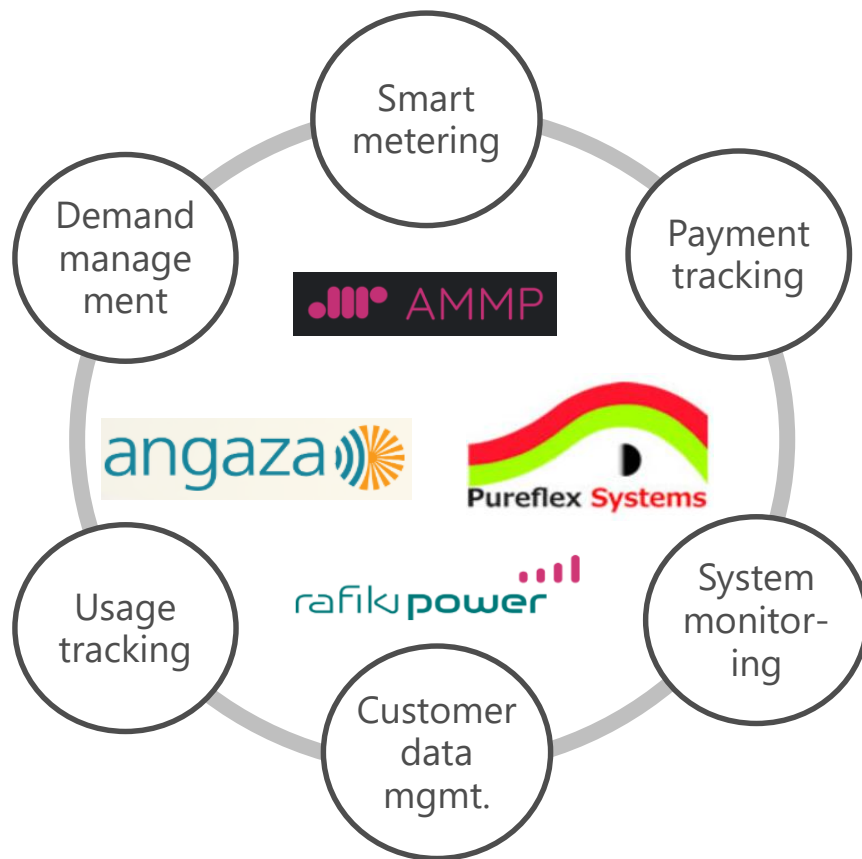


## However, potential to leverage other strategies for distribution

Distribution to low-density areas can take up to **30-40%** of total project costs; mini-grid developers reduce these costs by:

- Setting productive use zones (usually commercial centers where all businesses can access electricity) E.g. Pamoja Energy Ltd.'s agroprocessing hub in Kamwenge
- Setting up business hubs with all appliances (carpentry, milling and the like) and charging service fees
- Setting up battery charging stations for consumers who live too far from the grid (near common market place/commercial center) E.g. Kisiizi Hospital Power Ltd.'s battery charging outlets

# Metering & collections: Mini-grid operators use integrated IT systems for more efficient management



**Both international and regional software providers offer systems that developers in Uganda can use to track different functions of the mini-grid**

**Integrated IT systems can cost 13% or more of total CAPEX for the project and are used to track and monitor customer usage**

- Used to consolidate consumer data, track payments and usage for better billing (especially for PAYG systems)

**Most use smart meters to monitor and track power consumption of customers**

- Smart meters are used to monitor customer usage and track data on power consumption
  - Some mini-grids provide scratch cards for customers to buy and load on their meters
  - Others use prepaid mobile systems where customers pay and receive units of electricity purchased
- Smart meters are used in collaboration with mobile money services to process and collect payments without having to pay directly at the mini-grid operator's office

*After-sales:* **Customer support varies across different types of operators; key challenge is long distances between customers**

Type of mini-grid operator	Response to customer queries	Efficiency of after sales service delivery
Private operator	Often have dedicated team to respond to customer queries	Often have technical team dedicated to providing efficient after-sales services
Community operator	Often have team members handling a variety of tasks including responding to customer queries	Often lack technical skill required to deliver efficient after-sales service

- Long distances between customers are a key challenge across all operators; mini-grid customers are often far apart, making it difficult to efficiently provide good after sales services to all of them
- Mini-grid operators often lack technical skill required to deliver good quality services to customers

# Partnerships: To implement mini-grids, working with government institutions, funding bodies, and local communities is vital

## Financial partners



- Financial partners provide financing across the different stages which include; feasibility studies, infrastructural development, operations, and distribution
- Nearly all projects start off with a grant, subsidy or other type of infrastructure financing to reduce capital costs

## Local community partners



- SACCOs provide loans to customers that enable them afford the initial setup
- Operators partner with local community leaders to manage operations of the mini-grid & accelerate buy in from local community members and businesses

## Gov't agencies



- Uganda Rural Electrification Agency supports with infrastructure dev't and last mile consumer connection
- Government electricity agency subsidizes price of mini-grid to customers, making it more affordable to make a connection

## Technology partners



- Technology partners support with operating the grid; they provide a platform used to collect payments, monitor different components of the grid and consolidate data collected

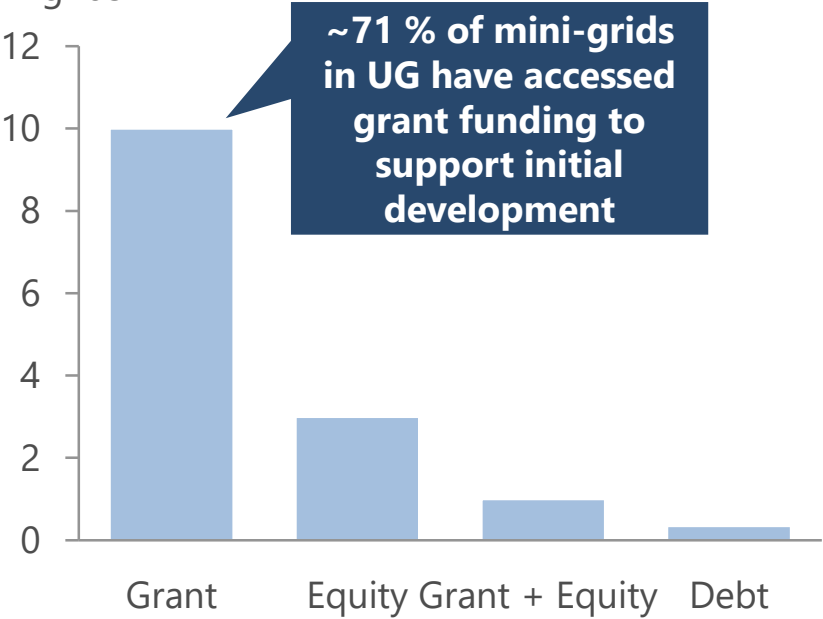
# Despite availability of capex financing, developers lack funds to scale operations & serve hard to reach customers

## Mini-grid developers have accessed concessionary finance for setup and development

- Majority of the developers have accessed grant financing; developers also use their equity to finance initial stages of development
- Debt finance providers still skeptical to provide investment due to unproven business models

### Financing mix for minigrids in UG

Mini-grids

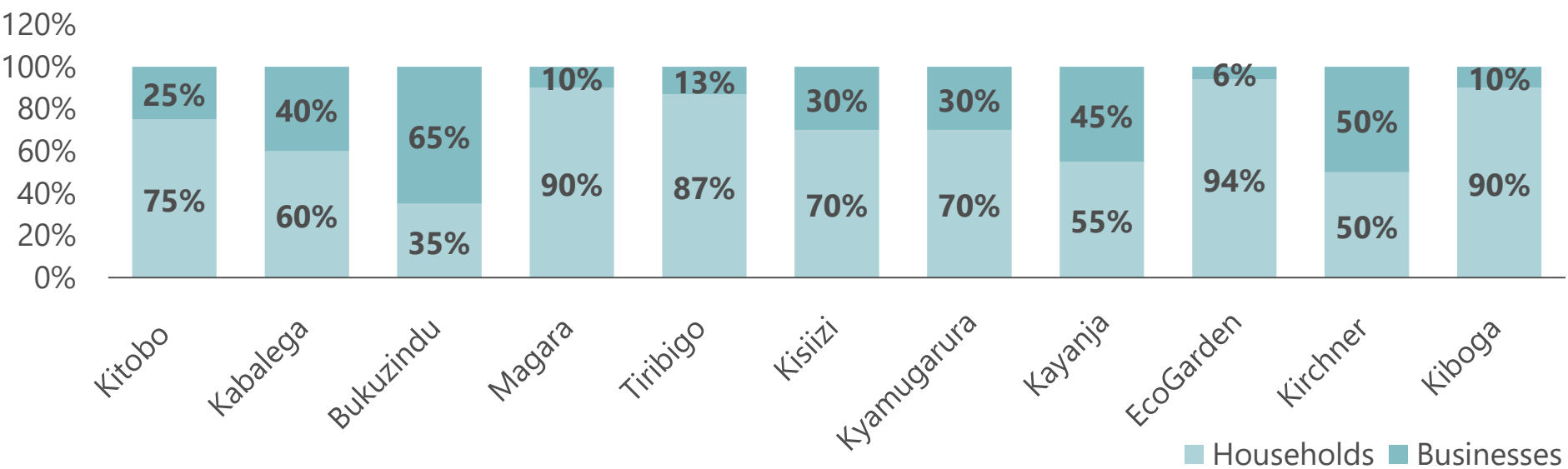


### Financing structures should promote sustainability

- Subsidy allocation scenarios should ensure that grants don't exceed the level of investment required for viability of grid extension projects within the foreseeable future
- Grant allocations should also consider number of customers to be electrified, electricity demand and ability & willingness to pay
- Financing should also be allocated to activities that increase energy demand and community awareness

Unserved populations: Households contribute largest proportion of connections; mini-grids utilize <30% of installed capacity

Percentage of connections by mini-grid



Household customers make up the largest percentage of mini-grid connections

- Households account for largest proportion of connections to mini-grids and mostly use electricity for lighting and phone charging; due to small loads utilized, mini-grids use less than 30% of installed generation capacity
- Mini-grids utilizing more than 50% of installed capacity usually serve institutional buyers like hospitals and other commercial customers

To maximize capacity, developers need to incorporate productive use in feasibility and implementation phases

# Developers face additional challenges in setting tariffs, managing operational costs, forex risk & obtaining skilled personnel

- Difficulty in setting retail tariffs

  - Mini-grid developers still face a challenge in setting the right tariff that enables the developer to recover costs of setup and be financially sustainable while remaining affordable to the customers.
- High operation and maintenance costs

  - Mini-grid developers incur high costs in operating (hiring a competent team, monitoring the grid) and maintaining the grid that are often recovered over a long time
- Inadequate skill & expertise

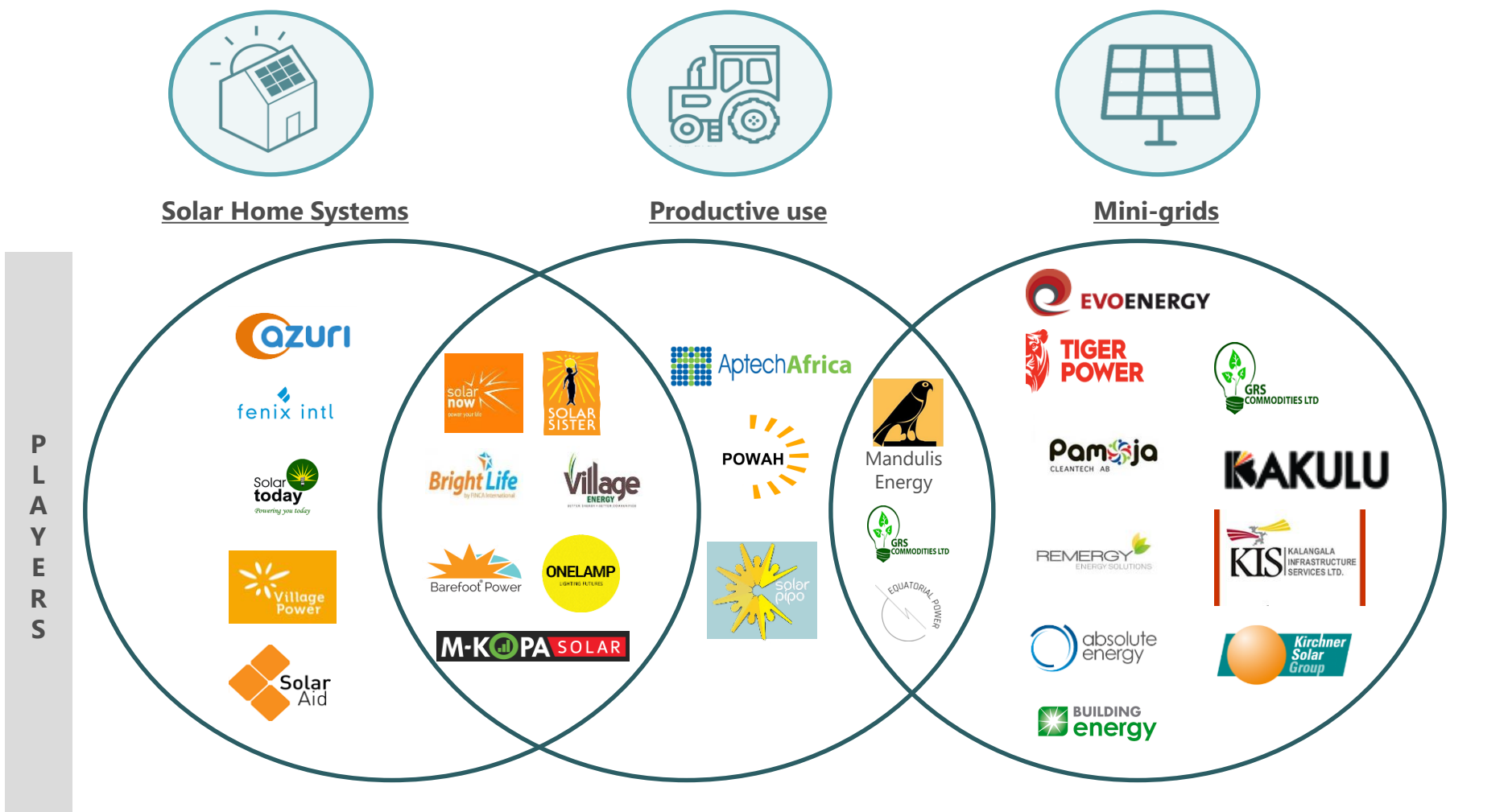
  - From developers, operators, community engagement leaders, local engineers & project management staff, there is limited available skill & experience for development, operation & maintenance of the grid

**UOMA is looking to support more research and pilot work with mini-grids this year. Do reach out if interested in partnering**

## Industry stakeholders



# There are a number of private sector players in both the SHS & productive use technologies in the off-grid energy space




The private sector plays a vital role towards achieving universal electricity access through off-grid in Uganda

# Associations: Represent private sector interests, advocate policy issues to government

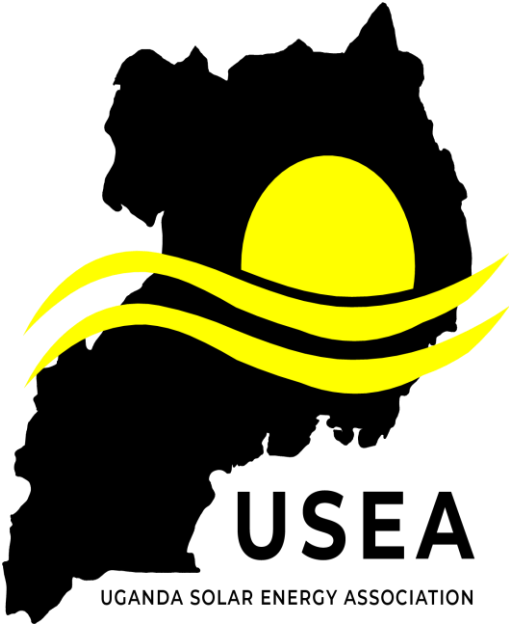
Uganda National Renewable Energy and Energy Efficiency Alliance is an umbrella body whose aim is to avail a platform that consolidates Uganda energy sector leadership

	Mandate & description	Membership & capacity
<b>USEA</b> <i>Uganda Solar Energy Association</i>	<ul style="list-style-type: none"> <li>Seeks countrywide mobilization of solar providers, coordinating stakeholders, playing an advocacy role and capacity building</li> </ul>	<ul style="list-style-type: none"> <li>&gt;100 members consisting of engineers running local businesses and solar product distributors; receives targeted support from dev partners like RECP, DFID, UNCDF &amp; PSFU</li> </ul>
<b>BEETA</b> <i>Bio-mass Energy Efficient Technologies Association</i>	<ul style="list-style-type: none"> <li>Promotes biomass energy efficient technologies through networking, sharing information, and developing knowledge among member organizations / individuals</li> </ul>	<ul style="list-style-type: none"> <li>50 member companies involved in production of biomass efficient technologies, such as briquettes &amp; stoves, &amp; institutions involved in research and development of biomass energy</li> </ul>
<b>HPAU</b> <i>Hydropower Association of Uganda</i>	<ul style="list-style-type: none"> <li>Champions hydropower development in the hydropower sub-sector through advocacy, capacity devt &amp; resource mobilization</li> </ul>	<ul style="list-style-type: none"> <li>Membership open to private sector companies, organizations &amp; associations, consumers, &amp; policy makers; receives support from GIZ, CREEC, &amp; WWF</li> </ul>
<b>EEAU</b> <i>Energy Efficiency Association of Uganda</i>	<ul style="list-style-type: none"> <li>Aims to foster provision for quality energy efficiency services, enhancing research, innovation &amp; knowledge transfer</li> </ul>	<ul style="list-style-type: none"> <li>Large capacity of technical members working to get association accreditation to certify Energy Efficiency Professionals in the country</li> </ul>
<b>UNBA</b> <i>Uganda National Bio-gas Alliance</i>	<ul style="list-style-type: none"> <li>Seeks to unite and support stakeholders as well as existing regional associations in the biogas sector</li> </ul>	<ul style="list-style-type: none"> <li>National umbrella organization of the UG biogas sector; four associations organized according to regions, supported by partnership with GIZ</li> </ul>

# Associations: Represent private sector interests, advocate policy issues to government

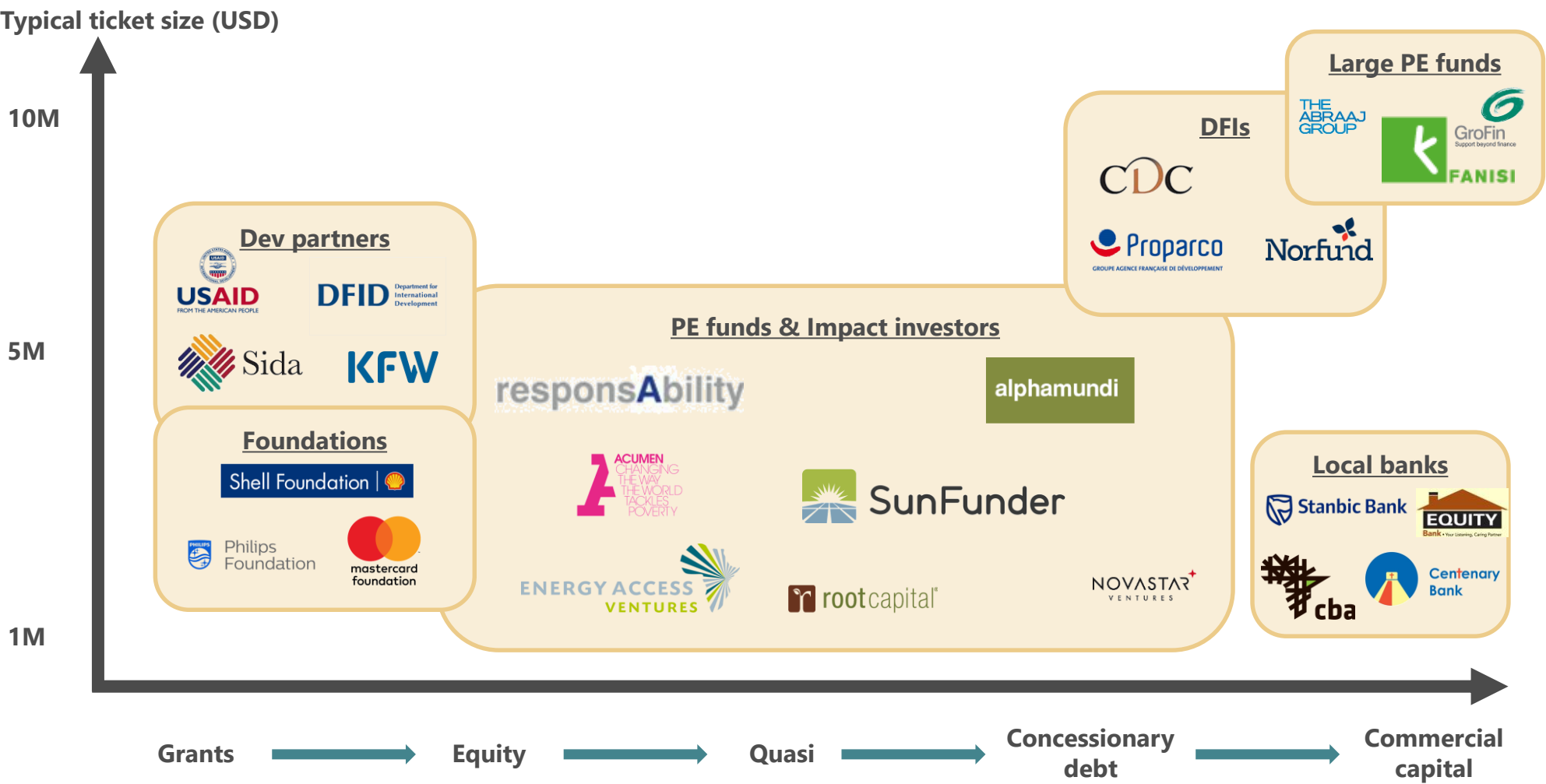
Organization	Work in Uganda
	<ul style="list-style-type: none"> <li>UNREEEA is an NGO for profit incorporated 2014 as result of the private sector players in the various renewable energy and energy efficiency sub-sectors signing a memorandum of understanding to come under one umbrella body. The primary role of the Uganda National Renewable Energy and Energy Efficiency Alliance (UNREEEA) is to avail a platform for consolidating the renewable energy and energy efficiency private sector wing as well as improving its business environment</li> <li>The association members of UNREEEA include: Biomass Energy Efficient Technologies Association, Uganda National Bio-gas Alliance, Hydro-Power Association of Uganda, Uganda Solar Energy Association, Energy Efficiency Association of Uganda, Wind Power Association of Uganda</li> <li>The alliance aims to among other objectives:             <ul style="list-style-type: none"> <li>Identify and disseminate best practices related to market development for renewable energy and energy technologies in Uganda.</li> <li>Establish permanent working relationships with government institutions, civil societies as well as other sector stake-holders in the energy sector.</li> <li>Initiate and upgrade a strong private sector led approach in the development of the renewable energy sub-sector in Uganda</li> </ul> </li> </ul>

# Associations: Represent private sector interests, advocate policy issues to government

Organization	Work in Uganda
	<ul style="list-style-type: none"><li>• Uganda Solar Energy Association was formed by companies operating in the solar sector with support from the Private Sector Foundation Uganda and had 120 members by end of January 2019.</li><li>• The aim of USEA is to facilitate business growth and promote self regulation and aimed at spurring off-grid solar industry-led advocacy and coordination to support universal energy access</li></ul> <p><b>To further its' objective, USEA has partnered with the following organizations:</b></p> <ul style="list-style-type: none"><li>• <b>USAID's Power Africa Uganda Electricity Supply Accelerator</b> – supporting USEA in solar market development, public awareness and promotion, creating linkages through the supply chain, business development and capacity and monitoring and evaluation</li><li>• <b>UNCDF/DFID</b> – market sales data collection in collaboration in with GOGLA &amp; Dalberg data insights to run a data collection pilot for the sector, business development services, media and PR campaign to increase visibility and reach and tax advisory services in conjunction with URA &amp; government to develop a tax handbook</li><li>• <b>PSFU/WORLD BANK</b> - Through the World Bank Energy for Rural Electrification project (implemented by PSFU), USEA has obtained support in setting up the secretariat infrastructure, hiring staff and providing HR &amp; Finance Expertise as well as TA in business strategy and financing models to adopt for an association</li></ul>

# Financial institutions & donors provide capital to the off-grid sector to enable scale

Many investor types exist with several active players; some examples below



# A number of organizations have funds in place with an energy focus in Uganda

Organization	Focus Areas	Instruments Used	Capital committed in EA	Companies invested in
Bamboo Capital Partners	Clean energy through innovative disruption Off-grid technology	Equity Debt	\$52M	BboX Greenlight Planet
OikoCredit	Off-grid solar Off-grid projects focusing on SDG7 Clean cooking	Debt Equity	\$90M	Bbox PEG Africa SolarNow
Crossboundary Energy	Aggregate finance for medium scale renewable self-generation projects	Equity	\$33M	Garden city Kigali Genocide Memorial
Symbiotics	Unspecified	Debt	~\$45M	M-KOPA Zola-Electric
Cordiant Capital	Unspecified	Debt	\$564	Off-grid Electric (now Zola-electric)
CDC Group	Renewable energy	Debt	~\$27.5M	Off-grid Electric d.Light M-KOPA
Nordic Funds	Unspecified	Equity Debt	~\$15M	M-KOPA

Many recent debt deals in the region

Investor	Company	Amount	Date
SunFunder, responsibility, Oikocredit	SolarNow	US\$9m	2019
EIB	d.Light	US\$29m	2018
ElectriFI, TRINE	Azuri	US\$20m	2018
Bamboo Capital Partners	BBOXX	US\$50m	2018
responsAbility	Mobisol	US\$12m	2017
Stanbic Bank, CDC, FMO, Norfund, Triodos, responsAbility, Symbiotics	M-KOPA	US\$80m	2017
Banque Populaire du Rwanda (Atlas Mara)	BBOXX	US\$2m	2017
SunFunder	SolarNow	US\$2m	2016
Oikocredit	BBOXX	US\$5.3m	2016
Packard Foundation, Ceniarth, the Calvert Foundation	Off-Grid Electric	US\$45m	2016
OPIC	SunFunder	US\$15m	2016
CBA	M-KOPA	US\$4m	2016
responsAbility	Off-Grid Electric	US\$18m	2016
SunFunder	d.light	US\$2.5m	2016
OPIC, Rockefeller Foundation, MCE Social Capital	SunFunder	US\$21m	2016
Developing World Markets	d.Light	US\$7.5m	2016
Oikocredit, responsAbility	PEG Africa	US\$1.5m	2016
OPIC	Nova-Lumos	US\$50m	2016
Developing World Markets	Off-Grid Electric	US\$7.5m	2016
DEG	Mobisol	Undisclosed	2015
LGTVP-led	M-KOPA	US\$6m	2015
Oikocredit	BBOXX	US\$0.5m	2015
IFC	Off-Grid Electric	US\$4.5m	2015
Cordiant Capital	Off-Grid Electric	US\$2.5m	2015
Centenary Rural Development Bank	SolarNow	Undisclosed	2015
Acumen	SolarNow	US\$1.4m	2014

>\$600M debt financing in East Africa over the last few years demonstrate increasing bankability of off-grid sector, particularly SHS

# A number of facilities have been set up in the region to promote the off-grid energy sector (1/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Acumen Fund	Support, scale and learn from innovative energy companies over 3 yrs	Hand-held solar power, cook stoves, off-grid, home systems, bio-gasification systems	Equity Debt Mezzanine Grants	\$64M	East & West Africa
Mobile for Development Utilities Innovation Fund	Test & scale the use of mobile to increase access to energy, water and sanitation	Seed grants and market validation grants	Grant	\$2.6M	SSA
SunFunder	Specialist debt financing partner for solar <i>companies</i> active in off-grid residential, commercial & industrial	Off-grid, productive use and C&I solar	Debt	\$50M	East and West Africa
Global LEAP awards	Highly energy-efficient, durable, off- and weak-grid appropriate	Productive use	Grant	£100k	SSA



# A number of facilities have been set up in the region to promote the off-grid energy sector (2/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
SIMA Fund for Off-grid Solar	Provide commercial capital and advisory to energy businesses with financial, social, and env. impact.	High risk, earlier stage businesses	Debt	\$75M	SSA
Solar Frontier Capital	Provide local currency lending for pay-as-you-go off-grid solar companies across sub-Saharan Africa.	PAYG companies	Debt	\$100M	Africa
Off-grid Energy Access Fund	Catalyze local financial markets' support for innovative energy access strategies	The household energy access sector including distributors, manufacturers & credit providers	Debt	\$500M	SSA
TRINE	Invest in solar energy in growing markets	Solar Energy	Crowdfunding	Dependent on co. & funds raised	SSA

# A number of facilities have been set up in the region to promote the off-grid energy sector (3/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Pioneer Energy Investment Initiative	Support, scale, and learn from innovative energy companies over the next three years.	Energy generation (SHS, Solar & hybrid mini-grids) & Energy usage (Innovations for energy use)	Common & Preferred Equity, Convertible Debt	\$20M	East & West Africa
Energy Entrepreneur Fund	Dev. of state of the art tech., products & processes in energy efficiency, power generation, heat and electricity storage	SME's Incubation support	Mezzanine Debt	\$50M	SSA
ResponAbility Energy Access Fund	Provide working capital to manufacturers & distributors of modern energy products	Solar, biomass, geothermal & wind distributed generation (captive generation & mini-grids)	Equity & Quasi-equity	\$30M	Kenya, Ug, Tz & Rwanda
African Renewable Energy Fund	Increase renewable energy generation in Africa.	Small hydro, wind, geothermal, solar, stranded gas and biomass projects)	Equity	\$10-\$30M/co	SSA excluding SA

# A number of facilities have been set up in the region to promote the off-grid energy sector (4/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Efficiency for Access Coalition	Supports and accelerates innovation in off-grid and weak grid appliance technologies and markets.	Productive Use	Grant	\$1M	SSA
Facility for Energy Inclusion Off-Grid Energy Access Fund	Development of state of the art tech., electricity storage	SME's Incubation support	Mezzanine Debt	\$50M	SSA
EU-Africa Infrastructure Trust Fund	Mobilizes additional finance for infrastructure projects in sub-Saharan Africa	Geothermal, hydropower, solar & wind power, transmission lines, sustainable cooking fuels	Grants blended with long-term financing	~\$920M	SSA
Emerging Africa Infrastructure Fund	Encourages and mobilizes private investment in infrastructure in SSA to promote economic dev.	Energy, Transport Water & Sanitation ICT, Agribusiness & Mining	Senior, subordinated or mezzanine debt	~\$1.2M	SSA

# A number of facilities have been set up in the region to promote the off-grid energy sector (5/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Development Innovation Ventures	Provide flexible, tiered grant funding to test and scale evidence-driven innovation to any development challenge	Sector agnostic	Grant	Not available up to \$5m/co	Global
Sustainable Energy Fund for Africa	Supporting private-sector led economic growth through the efficient utilization of untapped clean energy resources.	Clean energy	Grant and equity	\$95M	SSA
USAID-Derisking PAYGO	Mobilizing additional finance for SHS co.s that wish to expand sales of PAYGO SHS in refugee settlements	PAYG SHS	Grant	Not available \$145k-175k/co.	Uganda
AlphaMundi Foundation – Powering Ag	Catalyzing financing for businesses providing clean energy solutions that inc. ag. productivity and/or value in developing countries.	Irrigation co.s operating at the nexus of clean energy & agriculture	Grant, Debt, Equity or mezzanine financing	Not stated \$100k-\$2m/co	SSA






# A number of facilities have been set up in the region to promote the off-grid energy sector (6/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
BEAM	Cloud-based platform, aiming to provide developmental infrastructure for off-grid energy services across SSA	Off-grid energy	Equity	\$5M	Africa
Solar Electric Light Fund	Design & implement solar energy solutions to assist people living in poverty	Solar	Grant	Not available	Uganda
Energy Access Venture Fund	SMEs active in electricity generation and distribution, and electricity related services in SSA	SHS, Micro-grid infrastructure & hybrid technologies	Equity Quasi-equity	\$55M	EA and Southern Africa
The EnAccess Foundation	Address innovation challenges that renewable energy co.s face through lack of financing	Irrigation co.s operating at the nexus of clean energy & agriculture	Grant, Debt, Equity or mezzanine financing	\$0.5M	EA and Southern Africa






# A number of facilities have been set up in the region to promote the off-grid energy sector (7/7)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Biodiversity Investment Fund	Providing attractive loan financing for businesses that can demonstrate impact or contribution towards biodiversity in Uganda	Off-grid energy	Equity	\$50M	Africa
EnDev Uganda	Giving support in energy policy, improved biomass technologies, rural electrification & energy efficiency.	Pico PV & SHS Grid densification	No info	€12.25M	Uganda
EEP Africa	Providing early stage & catalytic financing to innovative clean energy projects, technologies	Solar PV	Grant	Not available €200k – 500k/co.	EA and Southern Africa
Frontier Energy II Fund	Developing, constructing and operating renewable energy generation projects	Renewable energy	Equity or mezzanine debt	\$60M	SSA

# The European Union is supporting a number of programs to influence the private sector and advance off-grid access (1/2)




European Union (EU)	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<b>Scaling-up rural electrification using innovative solar photovoltaic (PV) distribution models<sup>1</sup></b>  <b>Ongoing</b>	 SHS   Mini-grids	<ul style="list-style-type: none"> <li>Scale up the use of solar PV systems at schools, health centers, and business levels in the districts of Kasese, Arua, Masindi and 17 other districts in Albertine &amp; build local capacity to install &amp; maintain solar PV systems</li> </ul>	<ul style="list-style-type: none"> <li>Provide business training &amp; specific solar PV energy training to CBOs</li> <li>Provide 51 social institutions with solar PV systems</li> <li>Set up solar mini-grids in 6 trading centers in Kasese and Rubiziri districts</li> </ul>	<ul style="list-style-type: none"> <li>1341 SHS sold</li> <li>Solar systems (1000W each) installed in 31 schools and 20 health centers in 6 districts</li> <li>Contractor selected for installation &amp; mgmt of 6 mini grids</li> <li>Capacity of CBO's to install &amp; manage solar photovoltaic tech. strengthened</li> </ul>	<b>Implementers:</b> WWF in partnership with Kasese District Local Government and Enterprise Uganda Foundation  <b>Funders:</b> ACP-EU
<b>Access to energy services in rural and peri-urban areas in Northern Uganda (Teko Wa Project)<sup>2</sup></b>  <b>Ongoing</b>	 SHS   Cook stoves   Bio fuels	<ul style="list-style-type: none"> <li>Sustainable management of bio – energy resources, increasing use by households and social institutions of solar PV energy and energy efficient cook stoves</li> </ul>	<ul style="list-style-type: none"> <li>Provide a no. of social institutions with energy efficient cooking stoves and solar systems</li> <li>Disseminate, in co-op with private co.'s, SHS &amp; cooking stoves to households</li> <li>Inc. awareness &amp; build capacities of local communities in sustainable mgmt. of bio- energy resources</li> </ul>	<ul style="list-style-type: none"> <li>2924 ha of woodlots &amp; orchards established within by the project &amp; a no. of tree seedling biz. set up</li> <li>35,366 households &amp; 24 institutions accessed energy efficient stoves</li> <li>25,750 households &amp; 24 institutions accessed with SHS for lighting</li> </ul>	<b>Implementers:</b> Church of Sweden in Partnership with Lutheran World Federation Uganda  <b>Funders:</b> EU

## The European Union is supporting a number of programs to influence the private sector and advance off-grid access (2/2)

European Union (EU)	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<b>Providing access to modern energy for northern Uganda (PAMENU)<sup>1</sup></b>  <b>Completed</b>	 SHS  On-grid  Cook stoves	<ul style="list-style-type: none"> <li>Project focused on increasing the use of solar PV, improving household cookstoves and mini-hydro power for small grids</li> </ul>	<ul style="list-style-type: none"> <li>Disseminate solar PV and improved stoves</li> <li>Build capacity for intermediaries &amp; training of local stove builders</li> <li>Create awareness campaigns</li> <li>Coordinate installation of MHP and mini-grids</li> </ul>	<ul style="list-style-type: none"> <li>Distribution of clean cookstoves to hhs</li> <li>Street lighting project in Yumbe Town Council</li> <li>Construction of the pico-hydro power sites</li> <li>Provision of health centers with solar PV &amp; drug storage</li> </ul>	<b>Implementers:</b> GIZ  <b>Funders:</b> ACP-EU
<b>Scaling up access to modern electricity services on a regional scale in rural Sub-Saharan Africa by means of a fee for service business model<sup>2</sup></b>  <b>Ongoing</b>	 SHS  Mini-grids	<ul style="list-style-type: none"> <li>Working to scale up access, in the predominantly rural, poor communities of the targeted countries in Cameroon, Mali, Uganda &amp; Guinea-Bissau</li> </ul>	<ul style="list-style-type: none"> <li>Provide a number of households and SMEs with access to energy services via SHS and solar mini-grids</li> <li>Facilitate bi-annual workshops for areas in the four countries concerned</li> </ul>	<ul style="list-style-type: none"> <li>The project has 3460 new SHS customers in Mali and Uganda (42% of the target). Target achieved in Mali and 60% customers recruited in Uganda.</li> <li>4,496 SHSs have been installed in Mali, Guinea-Bissau and Uganda.</li> </ul>	<b>Implementers:</b> Foundation Rural Energy Services <b>Funders:</b> ACP-EU



# World Bank has partnered with the government to implement the 15 year ERT initiative to improve lives of rural households

World Bank	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Energy for Rural Transformation Phase III (ERT-3)<sup>1</sup></div> <div>Ongoing</div>	<div>  SHS         </div> <div>  On-grid         </div> <div>  Mini-grids         </div>	<ul style="list-style-type: none"> <li>• Increase access to electricity in rural Uganda, with focus on three components:             <ul style="list-style-type: none"> <li>— On grid access</li> <li>— Off-grid access</li> <li>— Institutional strengthening through impact monitoring</li> </ul> </li> </ul>	<div>Off-grid component:</div> <ul style="list-style-type: none"> <li>• Installation of solar PV systems for public institutions in rural areas</li> <li>• Business development support</li> <li>• Provision of credit facilities</li> <li>• Quality standards enforcement support</li> </ul>	<ul style="list-style-type: none"> <li>• USD 8.5 million fund to be disbursed to local banks to provide working capital financing to SHS PAYG operators</li> </ul>	<div>Implementers:</div> <div>REA, MOWE, MOH, MOESD, UECCC, PSFU, MEMD</div> <div>Funders:</div> <div>World Bank/GEF</div>




# Add’ly, World Bank runs independent programs to advance access & create a conducive environment for private sector growth

World Bank	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Lighting Africa Campaign<sup>1</sup></div> <div>Ongoing</div>	 <div>SHS</div>	<ul style="list-style-type: none"> <li>• Enable access to off-grid lighting and energy products for 250 million people across sub-Saharan Africa by 2030</li> </ul>	<div>Catalyze the market through:</div> <ul style="list-style-type: none"> <li>• Market intelligence</li> <li>• Quality assurance</li> <li>• Access to finance</li> <li>• Consumer education</li> <li>• Business development support</li> <li>• Policy &amp; regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Market assessment study to determine demand for solar products, market bottlenecks, &amp; assess options for supporting the growth</li> <li>• Consumer awareness campaigns</li> <li>• Supporting UNBS in adopting and enforcing internationally recognized standards</li> <li>• 2M people impacted, ~920k quality veified products sold &amp; ~185k GHG gas emissions avoided</li> </ul>	<div><b>Implementers:</b></div> <div>Broad global alliance – imps. varying by country</div> <div><b>Funders:</b></div> <div>World Bank / IFC</div>



Source: UOMA interviews & consultations, supplemented by

1. <https://www.lightingafrica.org/country/uganda/>




# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (1/4)

USAID / Power Africa	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>The Power Africa Uganda Electricity Supply Accelerator</div> <div>Ongoing</div>	<div>  SHS         </div> <div>  Mini-grids         </div> <div>  On-grid         </div>	<ul style="list-style-type: none"> <li>Facilitate the increase of clean energy electricity generation and electricity access among rural and urban communities in Uganda by working with clean energy generation and access project developers to reach financial close and project commissioning,</li> <li>And enhance the enabling environment for clean energy investment</li> </ul>	<ul style="list-style-type: none"> <li>Supports generation and access projects through grants, transaction advisory support, short term technical assistance and linkages with other Power Africa partner tools</li> </ul>	<ul style="list-style-type: none"> <li>Organized the 2nd Project East Africa summit in collaboration with the Office of the Prime Minister</li> <li>Supporting REA in the promotion of the ECP* by supporting publishing/airing of public information messages</li> <li>Supported USEA and UNCDF effort to create solar awareness hotline</li> <li>Supported Mandulis Energy in technical proposal to AfDB</li> </ul>	<div>Implementers:</div> Energy and Security Group <div>Subcontractors:</div> NRECA International, Nexant, African Solar Designs and Konserve Advisory Services <div>Funders:</div> Power Africa, GE Africa


# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (2/4)

USAID / Power Africa	Target Industry	Target action	Approach	Results to date	Affiliated organizations
Quality Assurance Framework for Mini-Grids <sup>1</sup>  Ongoing	 Mini-grids	<ul style="list-style-type: none"> <li>Address some of the root challenges of providing safe, quality, and financially viable mini-grid power systems to remote customers</li> </ul>	<ul style="list-style-type: none"> <li>Provide a flexible alternative to rigid top-down standards by defining:               <ul style="list-style-type: none"> <li>Levels of service framework</li> <li>Accountability and performance reporting framework</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Provided a formalized, common standard for classifying energy consumers</li> <li>Facilitated aggregation of mini-grid projects &amp; unlock private investment from data generated</li> <li>Supporting implementation of consumer protections, thus a better consumer service</li> </ul>	<b>Implementers:</b> NREL, DOE  <b>Funders:</b> Power Africa, Global LEAP
Last Mile Distribution Results-Based Finance  Beginning	 SHS	<ul style="list-style-type: none"> <li>Incentivize solar home system companies to more rapidly expand into commercially viable last-mile markets</li> </ul>	<ul style="list-style-type: none"> <li>Exploring results-based incentives</li> <li>Approach to be defined in the coming months</li> </ul>	<ul style="list-style-type: none"> <li>Work will soon begin after approach is finally defined</li> </ul>	<b>Implementers:</b> EnDev  <b>Funders:</b> USAID

# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (3/4)

USAID / Power Africa	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Electricity Expansion and Improvement program</div> <div>Ongoing</div>	<div>  <div>SHS</div> </div> <div>  <div>Mini-grids</div> </div> <div>  <div>On-grid</div> </div>	<ul style="list-style-type: none"> <li>Rapidly increase electricity access in its rural areas</li> </ul>	<ul style="list-style-type: none"> <li>Develop 12 new master plans for all the rural service territories in Uganda</li> <li>Support REA to the develop a connections policy</li> <li>Support REA to develop an Off-grid Policy</li> </ul>	<ul style="list-style-type: none"> <li>The first three masterplans completed&amp; identified over 100 mini-grid sites in only three service territories</li> <li>&gt; 120,000 new connections identified within the existing distribution footprint</li> <li>Electricity Connections Policy developed could add 1,400,000 new connections by 2022</li> <li>Connections policy &amp; implementation plan developed</li> <li>Options Paper draft presented to REA and stakeholders</li> </ul>	<div>Implementers:</div> <div>NRECA, REA</div> <div>Funders:</div> <div>Power Africa</div>






# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (4/4)

USAID / Power Africa	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Uganda Electricity Regulatory Partnership<sup>1</sup></div> <div>Ongoing</div>	<div> Mini-grids</div>	<ul style="list-style-type: none"> <li>Support the development of a regulatory and policy framework for electricity access with focus on the role of mini-grids to address the electricity needs of rural customers</li> </ul>	<ul style="list-style-type: none"> <li>Develop a practical guide to the regulatory treatment of mini-grids to outline the practical issues and potential decision-making tracks for regulators</li> <li>Implement a technical workshop on mini-grid technical, performance and interconnection guidelines to assist ERA in developing tailored technical and performance guidelines for mini-grid providers of electricity in rural service territories</li> </ul>	<div><b>Held technical workshop to:</b></div> <ul style="list-style-type: none"> <li>Examine international best practices on mini-grid technical requirements (e.g. interoperability, compatibility)</li> <li>Develop an outline on mini-grid technical requirements, interconnection to the national grid and business models for interconnection, power quality, and service quality</li> <li>Developed an outline for mini-grid regulation</li> </ul>	<div><b>Implementers:</b></div> <div>NARUC, ERA</div> <div><b>Funders:</b></div> <div>USAID / Power Africa</div>

Source: UOMA interviews & consultations, supplemented by

1. <https://www.naruc.org/international/where-we-work/africa-middle-east/uganda>

# DFID initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation



DFID	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<b>Energy Africa Campaign<sup>1</sup></b>  <b>Ongoing</b>	 SHS   Mini-grids	<ul style="list-style-type: none"> <li>Accelerate expansion of household solar market to help bring universal electricity access in Africa forward from 2080 on current trends to 2030</li> </ul>	<ul style="list-style-type: none"> <li>Campaign to improve policy and support conditions to accelerate market-based SHS delivery</li> <li>Core tool is Energy Africa Country Compacts matched with a coordinated multi-donor support offer</li> </ul>	<ul style="list-style-type: none"> <li>Coordinated &amp; signed Energy Africa Compact with Ug government and other stakeholders making commitment to address several challenges facing the SHS market</li> <li>Market assessment to be conducted in all countries in then campaign</li> </ul>	<b>Implementers:</b> MEMD, DFID, REA, SE4ALL, USEA, USAID / Power Africa, UNCDF, et al.  <b>Funders:</b> DFID
<b>Transforming Energy Access (TEA)<sup>2</sup></b>  <b>Ongoing</b>	 SHS   Cook stoves   Bio fuels	<ul style="list-style-type: none"> <li>Address critical evidence gaps, test innovative technology applications, business models, financing, &amp; skills development to accelerate the provision of affordable, clean energy based services to poor households &amp; enterprises</li> </ul>	<ul style="list-style-type: none"> <li>Partnership with Shell Foundation to support private sector innovations</li> <li>Support Innovate UK's Energy Catalyst to stimulate technology innovation</li> <li>Build other strategic innovation partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Shell Foundation created Uganda Off-Grid Energy Market Accelerator to advance off-grid access</li> <li>Testing P2P Solar crowding platform</li> <li>Scoping potential partnership with Gates Foundation on Mission Innovation</li> </ul>	<b>Implementers:</b> Shell Foundation, Innovate UK  <b>Funders:</b> DFID

Sources: UOMA interviews & consultations, supplemented by

1. <https://www.gov.uk/government/news/energy-africa-campaign>; <https://www.contractsfinder.service.gov.uk/Notice/1a44f944-fe22-4e77-b300-2da4fbb6068e>

2. <http://energyaccess.org/news/recent-news/applied-research-program-transforming-energy-access/>

# DFID initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation

DFID	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<b>Africa Clean Energy Program (ACE)</b> <b>Ongoing</b>	 SHS	<ul style="list-style-type: none"> <li>Catalyze a market based approach for private sector delivery of solar home system (SHS) products and services which will lead to improved energy access to people in SSA who are currently without modern energy</li> </ul>	<ul style="list-style-type: none"> <li>Provide TA to improve the enabling environment for mkt based approach for private sector delivery of SHS</li> <li>Finance businesses wanting to enter new and emerging SHS markets in SSA</li> </ul>	<ul style="list-style-type: none"> <li>REACT-HS awarded US\$ 7.4 million to 10 household solar co.s with 8 disbursements beginning</li> <li>Compact actions aimed at improving policies &amp; regulations that facilitate a market approach to solar energy implemented in 7 countries</li> </ul>	<b>Implementers:</b> AECF, TBC, IFC, DAI <b>Funders:</b> DFID
<b>Renewable Energy and Adaptation to Climate Technologies (REACT) Window, Africa Enterprise Challenge Fund</b> <b>Ongoing</b>	 SHS	<ul style="list-style-type: none"> <li>Incentivising private sector delivery of low cost clean energy and climate adaptation technologies to help rural beneficiaries adjust to climate change and escape poverty using grant funding to catalyse greater investments into these sectors</li> </ul>	<ul style="list-style-type: none"> <li>Facilitates a market driven approach to increased energy access through off-grid renewable energy, as well as increasing resilience &amp; adapting to climate change in rural areas</li> </ul>	<ul style="list-style-type: none"> <li>Helping to demonstrate the viability of many of the companies that have accessed commercial investment (e.g. M-KOPA, Mobisol and Off-Grid:Electric)</li> </ul>	<b>Implementers:</b> AECF <b>Funders:</b> DFID




# Embassy of the Netherlands runs programs to support the private sector & advance energy access

Netherlands	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div> <div>Milking the Sun &amp; Harvesting the Sun<sup>1</sup></div> <div>Ongoing</div> </div>	<div>  <div>SHS</div> </div> <div>  <div>Solar agric. app</div> </div>	<ul style="list-style-type: none"> <li>Provide dairy and crop farmers and their households with high quality, affordable and sustainable solar lighting systems and solar powered agricultural appliances</li> </ul>	<ul style="list-style-type: none"> <li>Subsidy to provide farmers with access to 37,000 solar products with reliable after sales service</li> </ul>	<ul style="list-style-type: none"> <li>Over 10,000 systems in collaboration with lead partner Solar Now</li> </ul>	<div> <div>Implementers:</div> <div>Solar Now, Barefoot Power, Uganda Crane Creameries Cooperative Union &amp; other value chain managers</div> </div> <div> <div>Funders:</div> <div>Government of Netherlands</div> </div>

# UNCDF’s global CleanStart program has partnered with other dev partners to provide financing to local businesses & advance access

UNCDF	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>UNCDF CleanStart<sup>1</sup></div> <div>Ongoing</div>	<div>  <div>SHS</div> </div> <div>  <div>Mini-grids</div> </div> <div>  <div>Cook stoves</div> </div> <div>  <div>Bio fuels</div> </div>	<ul style="list-style-type: none"> <li>Supports low-income hhs transition to renewable energy</li> <li>Co-invests in early stage business ideas of private companies that can bring affordable clean energy to under-served markets</li> <li>Emphasis on the inclusion of women and youth in value chain</li> </ul>	<ul style="list-style-type: none"> <li>Risk capital (performance-based grant) to bring early stage business ideas to market</li> <li>Advisory services to address implementation bottlenecks, facilitate linkages to partnership &amp; funding opportunities</li> <li>Knowledge and learning in the form of research initiatives, M&amp;E, &amp; networking events</li> <li>Nationwide campaigns to improve consumer awareness &amp; protection</li> <li>Partnerships with government, dev partners, &amp; other stakeholders to leverage resources &amp; strengthen sustainability &amp; impact</li> </ul>	<ul style="list-style-type: none"> <li>Providing finance and business advisory services to 6 businesses under the Renewable Energy Challenge Fund-Clean cooking window</li> <li>Providing finance and business advisory services to 8 businesses under the Renewable Energy Challenge Fund-Solar Window</li> <li>With the Schatz Energy Research Center (SERC) Humboldt State University <a href="#">released study on Energy Access and Off-Grid Solar</a></li> </ul>	<div>Implementers:</div> <div>UNCDF</div> <div>Funders:</div> <ul style="list-style-type: none"> <li>RECF Uganda: Embassy of Sweden in Uganda (RECF), UNCDF, DFID Uganda</li> <li>CleanStart Global: Austrian Development Agency, Liechtenstein, Norad, Sida, UNCDF</li> </ul>




# BMZ has provided support to both the government and private sector to further advance access & support clean energy (1/2)

BMZ	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Promotion of Renewable Energy &amp; Energy Efficiency program (PREEEP)<sup>1</sup></div> <div>Ongoing</div>	<div>  <div>SHS</div> </div>	<ul style="list-style-type: none"> <li>Promote sustainable use of energy for social economic empowerment, increased access to renewable energy, and efficient utilization of existing energy resources</li> </ul> <div> <b>Focuses on three areas:</b> <ul style="list-style-type: none"> <li>Supporting clean energy strategies</li> <li>Mitigating climate change</li> <li>Promoting access to energy</li> </ul> </div>	<ul style="list-style-type: none"> <li>Support the Ministry of Energy in areas of energy policy, improvement of market structures and energy efficiency.</li> <li>Support activities in implementation of energy programs at district level, monitoring and evaluation and mainstreaming of cross cutting issues such as gender and HIV / AIDS</li> <li>Work through EnDev to achieve advance access</li> </ul>	<div> <b>Policy support:</b> <ul style="list-style-type: none"> <li>Energy programs structured in West Nile &amp; Lango</li> <li>Quality management system for the planning, steering and evaluation processes of MEMD</li> <li>Fully operational GIS lab</li> </ul> </div> <div> <b>Market development:</b> <ul style="list-style-type: none"> <li>Capacity building through associations</li> <li>Awareness campaigns</li> </ul> </div> <div> <b>Licensing:</b> <ul style="list-style-type: none"> <li>Standardized licensing procedures for small-scale off-grid energy projects with REA &amp; ERA</li> </ul> </div>	<div> <b>Implementers:</b> <p>MEMD, REA, ERA</p> </div> <div> <b>Funders:</b> <p>BMZ ,KfW, EU</p> </div>

# BMZ has provided support to both the government and private sector to further advance access & support clean energy (2/2)

BMZ	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Promotion of Mini-grids for Rural Electrification (Pro Mini-Grids)<sup>1</sup></div> <div>Ongoing</div>	<div> Mini-grids</div>	<ul style="list-style-type: none"> <li>Promote decentralized electrification strategies such as mini-grids to support employment and economic development</li> <li>Develop mechanisms to support private sector capacity for installation and operation of off-grid systems</li> </ul>	<div>Four components:</div> <ol style="list-style-type: none"> <li>Develop off-grid strategy for the National Electrification Policy &amp; develop methodology to identify mini-grid project locations</li> <li>Develop mechanisms for license concessions, efficient tenders</li> <li>Implement and award tenders to private mini-grid concessionaires in villages</li> <li>Promote productive use in villages to raise household incomes &amp; improve the economic feasibility of service providers' business model &amp; tariff revenue structure</li> </ol>	<ul style="list-style-type: none"> <li>Created task force with REA &amp; the Ministry to develop directive and support development of mini-grid tender mechanism</li> <li>Ongoing support to REA to promote development of site identification expertise</li> </ul>	<div>Implementers:</div> <div>GIZ, MEMD, REA, ERA</div> <div>Funders:</div> <div>EU</div>




# UNDP has partnered with the government to provide sustainable energy solutions to boarding schools in off-grid areas in Uganda

UNDP	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>NAMA-Green Schools project<sup>1</sup></div> <div>Ongoing</div>	<div>  <div>SHS</div> </div> <div>  <div>Cook stoves</div> </div> <div>  <div>Bio fuels</div> </div>	<ul style="list-style-type: none"> <li>Provide sustainable energy solutions to boarding schools in the mainly off-grid rural areas with solar energy, efficient cook stoves, and biogas technologies</li> </ul>	<ul style="list-style-type: none"> <li>Creating an appropriate financing vehicle (Revolving Loan Fund) for the planned large-scale roll out of green technologies in the schools &amp; designing new business models for schools to pay back installation costs</li> <li>Complementing the technologies with capacity-building &amp; awareness trainings for companies and a Life Skills Programme for youth and local communities</li> </ul>	<ul style="list-style-type: none"> <li>Project has been pre-selected to receive funding by Germany and the UK of up to € 60 million to support the development phase</li> </ul>	<div>Implementers:</div> <div>UNDP, MEMD</div> <div>Funders:</div> <div>UK, Germany</div>





# AFD has partnered with local banks to finance renewable energy investments in order to reduce the carbon footprint in East Africa

AFD	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Sustainable Use of Natural Resources and Energy Finance East Africa (SUNREF)<sup>1</sup></div> <div>Ongoing</div>	<div>  <div>SHS</div> </div>	<ul style="list-style-type: none"> <li>Developing the share of renewable energy in the energy mix in East Africa</li> </ul>	<ul style="list-style-type: none"> <li>Providing technical assistance to companies &amp; banks to assist them in identifying opportunities for green investments</li> </ul>	<ul style="list-style-type: none"> <li>A cumulated commitment of &gt; €120 million to finance green investments in East Africa (Uganda, Kenya and Tanzania)</li> </ul>	<div>Implementers:</div> <div>AFD, Diamond Trust Bank</div>
	<div>  <div>Bio fuels</div> </div>	<ul style="list-style-type: none"> <li>Improving energy efficiency for companies</li> <li>Encouraging local banks to increase lending activities towards low-carbon projects</li> </ul>	<ul style="list-style-type: none"> <li>Installation &amp; monitoring of projects</li> <li>Supporting partner banks in their risk assessment approach, communication strategy &amp; marketing in green finance</li> </ul>		<div>Funders:</div> <div>AFD, EU-Africa Infrastructure Trust Fund</div>

# UNIDO supports the EAC’s initiative aimed at refining energy policy, capacity development and knowledge management in East Africa





UNIDO	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>East African Centre for Renewable Energy and Energy Efficiency (EACREEE)<sup>1</sup></div> <div>Ongoing</div>	<div> SHS</div>	<ul style="list-style-type: none"> <li>• Create increased access of modern, affordable &amp; reliable energy services</li> </ul>	<ul style="list-style-type: none"> <li>• Develop &amp; implement a coherent regional RE&amp;EE policy framework for the EAC &amp; facilitate its implementation on national levels</li> </ul>	<ul style="list-style-type: none"> <li>• Holding of various workshops that have culminated in the formulation of an Action Plan which outlines strategies &amp; measures for the successful implementation of the first phase of the centre</li> </ul>	<div>Implementers:</div> <div>EACREEE</div> <div>Funders:</div> <div>UNIDO, ADA</div>
	<div> Bio fuels</div>	<ul style="list-style-type: none"> <li>• Increased energy security in East Africa</li> </ul>	<ul style="list-style-type: none"> <li>• Develop &amp; execute regional programs and projects in cooperation with GEF, other partners and mobilize funding</li> </ul>		
	<div> Mini-grids</div>	<ul style="list-style-type: none"> <li>• Mitigation of negative effects e.g. local pollution &amp; greenhouse gas emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Provide co-funding for demand-driven programs and projects executed by the private and public sector or civil society in the region, etc.</li> </ul>		

# The Shell Foundation has launched a number of initiatives to catalyze sustainable and scalable solutions(1/2)


Shell Foundation	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Market Development</div> <div>Ongoing</div>	<div>  <div>SHS</div> </div>	<ul style="list-style-type: none"> <li>Leverage foundations, govt, private sector, DFIs and other financiers to amplify impact and accelerate market growth</li> </ul>	<ul style="list-style-type: none"> <li>Market institutions used to tackle barriers and facilitate effective deployment of blended capital to accelerate marker growth</li> </ul>	<ul style="list-style-type: none"> <li>Help build demand through communications and market advisory</li> <li>Providing learning and analysis for key themes such as last mile distribution, rural utilities &amp; gender impact</li> <li>Funding for industry associations such as GOGLA, GACCC</li> <li>Supporting local accelerators to act as neutral market influencers such as EPD in RW and UOMA in UG</li> <li>Supporting innovation for market infrastructure such as impact valuation</li> </ul>	<div>Implementers:</div> <div>Various</div> <div>Funders:</div> <div>Shell Foundation</div>
	<div>  <div>Mini-grids</div> </div>				
	<div>  <div>Cook stoves</div> </div>				
	<div>  <div>Produce</div> </div>				



# The Shell Foundation has launched a number of initiatives to catalyze sustainable and scalable solutions(2/2)





Shell Foundation	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Building an ecosystem to accelerate access to energy</div> <div>Ongoing</div>	<div>  <div>SHS</div> </div>	<ul style="list-style-type: none"> <li>Support entrepreneurs in the off-grid sector by working with partners to provide investment, business skills and market linkages in order to scale their businesses and deepen impact on BoP</li> </ul>	<ul style="list-style-type: none"> <li>Provide grants, innovative financing products &amp; technology</li> <li>Support development of business skills training &amp; market linkages</li> <li>Provide support for development of disruptive solutions to increase the availability of energy</li> </ul>	<ul style="list-style-type: none"> <li>Financing and technical assistance provided to:</li> <li>Energy Product manufacturers and service providers that providers aimed at rural households, productive use, communities and urban populations for example energy efficiency &amp; storage, PAYG solar, waster to energy fuels etc</li> <li>Market Enablers such as supply chain intermediaries, financing facilities and catalytic institutions and bodies</li> </ul>	<div>Implementers:</div> <div>Various</div> <div>Funders:</div> <div>Shell Foundation</div>
	<div>  <div>Mini-grids</div> </div>				
	<div>  <div>Cook stoves</div> </div>				
	<div>  <div>Produce</div> </div>				

# Philips Lighting Foundation supports youth-focused, female-focused as well as SME training activities in Uganda

Philips Lighting Foundation	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<p>Village Academy</p> <p>Ongoing</p>	 SHS	<ul style="list-style-type: none"> <li>48 young men &amp; women trained to be PV solar electricians by 2018</li> <li>60 out-of-school Ugandan &amp; urban refugee youth trained to be by 2018</li> <li>20 of small/ medium size business owners trained in productive use of energy by 2019</li> <li>At least 60% of graduates placed in employment and/or have increased income by 3Q2018</li> <li>At least 50% of trainees targeted being female graduates</li> </ul>	<ul style="list-style-type: none"> <li>In-village trainings for youth on technical skills, sales &amp; soft skills necessary to enter the solar industry</li> <li>Tailor made courses for energy companies on capacity building and soft skills</li> <li>Facilitating access to start-up financing, high quality solar products &amp; mentorship on scaling for SMEs</li> </ul>	<ul style="list-style-type: none"> <li>Held <i>MCE Sales Agent</i> Training on September 2017 where 20 youth were trained as solar sales agents and equipped with stock in partnership with MCE Uganda and d.light</li> <li>Conducted <i>Soroti Solar PV</i> Training on May 2016 where 10 young men and women were trained and certified, 8 of whom found work in the solar industry in Soroti</li> </ul>	<p><b>Implementers:</b> Village Academy</p> <p><b>Funders:</b> Philips Lighting Foundation</p>

Source: UOMA interviews & consultations, supplemented by <https://www.villageenergy.com/village-academy/>


# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (1/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<p><b>Energizing Development (EnDev)<sup>1</sup></b></p> <p><b>Ongoing</b> until 6/2019 with new phase from 7/2019 – 12/2022</p>	<div>  <div>SHS</div> </div> <div>  <div>Cook stoves</div> </div> <div>  <div>On-grid</div> </div> <div>  <div>Solar lantern</div> </div>	<ul style="list-style-type: none"> <li>Achieve sustainable access to modern energy services for 19M people by 2019</li> <li>Target for upcoming phase to be elaborated &amp; new global targets to be defined</li> </ul> <p><b>EnDev Uganda:</b></p> <ul style="list-style-type: none"> <li>Increasing household access to improved cooking by 680,200 people</li> <li>Increasing access to energy for lighting/appliances for 157,800 people by mid-2019</li> <li>Provide modern energy services for 1,100 social institutions &amp; 1,600 SMEs</li> </ul>	<ul style="list-style-type: none"> <li>Business development support for local stove companies (cookstoves &amp; solar) in production and sales &amp; distribution</li> <li>Rural partner synergy &amp; private sector development approaches for cook stoves &amp; solar market development</li> <li>Implement innovative financing &amp; distribution schemes</li> <li>Grid densification projects targeting no-pole connections</li> </ul>	<ul style="list-style-type: none"> <li>Increased access of BoP to improved cook stoves by 680,000 people</li> <li>&gt; 500 rural stove artisans trained and able to sell higher number of stoves and to increase their income</li> <li>Increased household access to energy for lighting/electric appliances for 125,000 people to date</li> <li>Supported solar co.'s to increase distribution outreach with quality solar products</li> </ul>	<p><b>Implementers:</b> GIZ EnDev Uganda</p> <p><b>Funders:</b> Netherlands, Germany, Norway, UK, Switzerland and Sweden</p>


Source: UOMA interviews & consultations, supplemented by

1. <https://www.giz.de/en/worldwide/24209.html> ; <http://endev.info/content/Uganda>



# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (2/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<p>GET.invest<sup>1</sup></p> <p>Ongoing</p>	<div>  <div>SHS</div> </div> <div>  <div>Mini-grids</div> </div> <div>  <div>On-grid</div> </div>	<p><b>Catalyze development of markets to:</b></p> <ul style="list-style-type: none"> <li>Promote access to energy, supporting sustainable economic growth</li> <li>Develop value chains, providing employment opportunities</li> <li>Enhance energy security and mitigate the impacts of volatile fossil fuel prices</li> <li>Mitigate climate change by substituting clear energy sources for fossil fuels</li> </ul>	<ul style="list-style-type: none"> <li>Project and Business Development support helps projects achieve readiness for &amp; access to financing</li> <li>Information and matchmaking for developers and financiers on regulatory framework and opportunities</li> <li>Creating an enabling environment to assist regulators implement processes for private investments</li> </ul>	<ul style="list-style-type: none"> <li>Project Development Support <ul style="list-style-type: none"> <li>330+ applications by project developers</li> <li>50+ project and business developers received advisory support</li> <li>17 projects successfully assisted in accessing investment</li> </ul> </li> <li>34 national &amp; international events with more than 4,400 participants</li> </ul>	<p><b>Implementers:</b></p> <p>GIZ</p> <p><b>Funders:</b></p> <p>Germany, European Union, the Netherlands, Austria</p>




# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (3/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Support Uganda Solar Energy Association</div> <div>Ongoing</div>	<div>  SHS </div> <div>  Mini-grids </div> <div>  On-grid </div>	<ul style="list-style-type: none"> <li>Promote industry-led market development for off-grid</li> <li>Supporting USEA to have proper governance and management structure,</li> <li>Empower USEA to deliver services to its member services such as provision of BDS services, sales data collection to ascertain number of solar system sold and big data customer research</li> </ul>	<ul style="list-style-type: none"> <li>Developed annual work plan and strategy plan.</li> <li>Recruited and trained three full time secretariat staff.</li> <li>Developed toolkit on building strong associations</li> </ul>	<ul style="list-style-type: none"> <li>Developed handbook for solar taxation</li> <li>Implemented awareness campaigns in Eastern and West Nile</li> <li>Launched 161 IVR Solar channel on Airtel to increase awareness for solar</li> <li>Trained 40 technicians on installation and troubleshooting solar systems</li> <li>Business diagnostic for BDS support</li> <li>USEA sales data collection on-going (public report will be available end of June 2019)</li> </ul>	<div>Implementers:</div> <div>UNCDF</div> <div>Funders:</div> <div>Energy Africa, DFID</div>

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (4/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Scaling Off-Grid Energy (SOGE): Grand Challenge for Development<sup>1</sup></div> <div>Ongoing</div>	<div>  SHS         </div> <div>  Mini-grids         </div>	<ul style="list-style-type: none"> <li>Accelerate the growth of a dynamic, commercial off-grid energy market to provide clean, modern, and affordable energy access to the millions of households and businesses beyond the grid in sub-Saharan Africa</li> </ul>	<ul style="list-style-type: none"> <li>Platform for leading donors and investors to incentivize technological innovation, fund early stage companies, and support critical elements of the off-grid ecosystem</li> </ul>	<ul style="list-style-type: none"> <li>50+ companies &amp; market enablers supported across 18 countries in sub-Saharan Africa</li> <li>3.75 million expected connections</li> <li>\$435 million in private investment catalysed</li> </ul>	<div>Implementers:</div> <div>USAID</div> <div>Funders:</div> <div>USAID / Power Africa, DFID / Energy Africa, Shell Foundation</div>


# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (5/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<div>Energy and Environment Partnership/ Southern and East Africa<sup>1</sup></div> <div>Ongoing</div>	<div>  SHS </div> <div>  Mini-grids </div> <div>  Cook stoves </div>	<ul style="list-style-type: none"> <li>Contribute to reduction poverty by promoting inclusive and job-creating green economies, and by improving energy security in the Southern and East Africa regions while mitigating global climate change</li> </ul>	<ul style="list-style-type: none"> <li>Funding projects in all fields of renewable energy and energy efficiency, bridging the gap between a good idea and a bankable project</li> <li>Projects are selected through two funding windows from early stage to market ready projects, including last mile feasibility studies, pilots, demonstrations, commercial scale-ups, replication and rejuvenating projects</li> </ul>	<ul style="list-style-type: none"> <li>Providing sustainable energy and agro hubs in Kamwenge district</li> <li>Providing clean energy for the Ugandan dairy industry, biogas for milk cooling</li> <li>Providing sustainable energy services for Kitobo island</li> </ul>	<div>Implementers:</div> <div>KPMG Finland</div> <div>Funders:</div> <div>Ministry of Foreign Affairs of Finland, DFID and The Austrian Development Agency</div>

Source: UOMA interviews & consultations, supplemented by

1. <http://eepafrica.org/projects/uganda/>





# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (6/6)

Multi-lateral	Target Industry	Target action	Approach	Results to date	Affiliated organizations
<p><b>New Deal on Energy for Africa<sup>1</sup></b></p> <p><b>Ongoing</b></p>	<div>  <div>SHS</div> </div> <div>  <div>Mini-grids</div> </div> <div>  <div>On-grid</div> </div>	<p>Achieve universal access to energy in Africa by 2025 by:</p> <ul style="list-style-type: none"> <li>Increasing on-grid generation to add 160 GW of new capacity by 2025</li> <li>Increasing on-grid transmission &amp; grid connections that will create 130 million new connections by 2025</li> <li>Increasing off-grid generation to add 75 million connections by 2025</li> <li>Increasing access to clean cooking energy for ~130 M households</li> </ul>	<ul style="list-style-type: none"> <li>Mobilizing domestic and international capital for innovative financing in Africa's Energy sector</li> <li>Supporting African countries in strengthening energy policy, regulation and sector governance</li> </ul>	<p>Approval of 29 energy sector operations worth USD 1.7 billion to deliver:</p> <ul style="list-style-type: none"> <li>546 MW of additional installed capacity of which 526 MW are from renewable energy sources</li> <li>21,264 km of distribution lines</li> <li>641 km of transmission lines and associated substations</li> <li>7,800 public lighting units</li> <li>688,950 new households/businesses receiving electricity access</li> </ul>	<p><b>Implementers:</b></p> <p>AfDB</p> <p><b>Funders:</b></p> <p>AfDB, Africa Energy Leaders Group, Sustainable Energy Fund for Africa, SE4ALL, UK's Energy Africa Campaign and Power Africa</p>

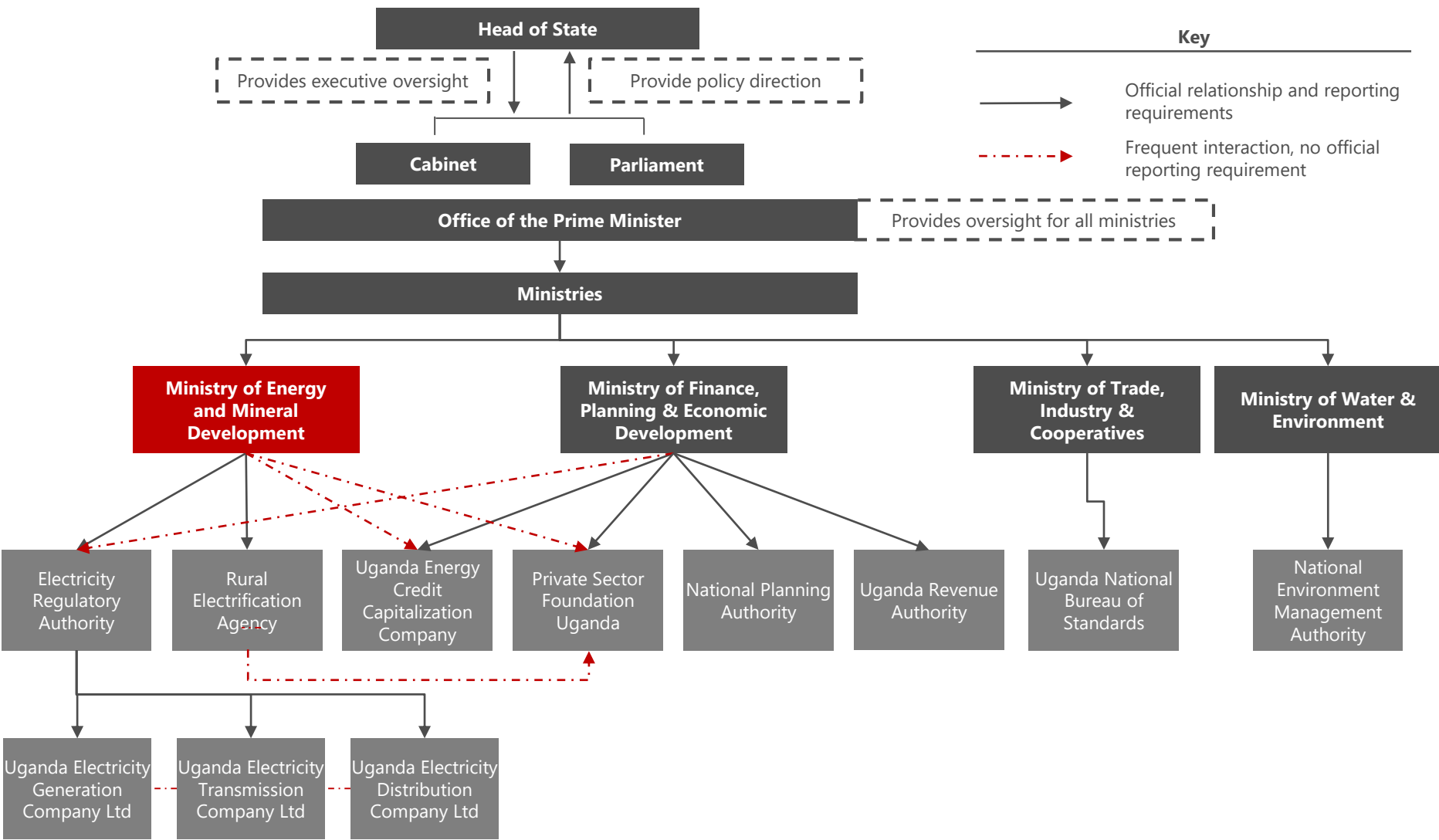
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# Ministry & several agencies dedicated to advancing access to energy

Government body	Mandate in industry
 <p><b>Ministry of Energy and Minerals Development (MEMD)</b></p>	<ul style="list-style-type: none"> <li>Has the overarching mandate to promote development of sustainable-use of energy and mineral resources.</li> <li>Renewable energy department serves under this Ministry and runs a number of the programs for access both on and off the grid</li> </ul>
 <p><b>Rural Electrification Agency (REA)</b></p>	<ul style="list-style-type: none"> <li>Promotes equitable rural electrification access with special regard to marginalized communities.</li> <li>Provides oversight lead on how government sponsored projects are designed and sequenced to provide appropriate energy services based on their value to advance access &amp; economic development</li> </ul>
 <p><b>Electricity Regulatory Authority (ERA)</b></p>	<ul style="list-style-type: none"> <li>Regulates the electricity supply industry and issues licenses for generation, transmission, distribution or sales of electricity, as well as ownership or operation of transmission systems</li> <li>Establishes tariff structures and investigates tariff charges, approves rates, terms, and conditions of electricity services provided by generation, transmission and distribution companies</li> </ul>
 <p><b>Uganda Energy Credit Capitalization Company (UECCC)</b></p>	<ul style="list-style-type: none"> <li>Facilitates investments in renewable energy sector by providing innovative financing products and technical assistance to firms in the sector.</li> <li>Channels investment to projects as the administrator of Uganda Energy Capitalization Trust, the framework for pooling resources from gov't and development partners</li> </ul>




# Several additional government institutions are interlinked with oversight on issues affecting off-grid






# There are a number of research institutions and consultants active in UG working to support the market (1/4)

Organization	Work in Uganda
	<ul style="list-style-type: none"> <li>• Created to enhance private sector competitiveness by providing capacity through policy advocacy and enhanced business development services</li> <li>• Also play a key role in implementing some government and donor projects</li> <li>• Currently implementing technical capacity aspects of the Energy for Rural Transformation phase III such as empowering USEA</li> </ul>
	<ul style="list-style-type: none"> <li>• Focuses on the thematic areas of rural electrification, energy for productive use, household energy and energy entrepreneurship</li> <li>• Has two departments: testing services for product development &amp; independent testing of cookstoves &amp; solar, and project engineering for project implementation and consultancy</li> </ul>
	<ul style="list-style-type: none"> <li>• Implemented by the Department of Electrical and Computer Engineering at Makerere University in close cooperation with The Royal Norwegian Society for Development (Norges Vel). The incubator was initially funded by Nordic Climate Facility (NCF) and now funded by NORAD</li> <li>• Main focus is on entrepreneurship, improved co-operation with SMEs and technology transfer from countries outside Uganda which are all innovative project activities which makes the project idea a unique and sustainable option for development</li> </ul>





# There are a number of research institutions and consultants active in UG working to support the market (2/4)

Organization	Work in Uganda
<div>  <div> Global Green Growth Institute </div> </div>	<ul style="list-style-type: none"> <li>Signed five-year working relationship with GoU to foster green economic growth implementing a planning framework with three outcomes: <ul style="list-style-type: none"> <li>Mobilize financing for implementation of green growth strategy</li> <li>Support improved planning of secondary cities to catalyze green growth &amp; urbanization</li> <li>Support govt efforts to expand electricity investing in renewable energy</li> </ul> </li> </ul>
<div>  <div> NRECA International </div> </div>	<ul style="list-style-type: none"> <li>Partnered with REA to define the country's electrification strategy through the Uganda Accelerated Rural Electrification Program. Funded by the World Bank, developed a master electrification plan for one new electric service territory in Uganda</li> <li>Today, the team is on a path to lay the groundwork to produce master plans for all 13 of the country's electric service territories funded by the USAID/Power Africa</li> </ul>
<div>  </div>	<ul style="list-style-type: none"> <li>Supports businesses serving off-grid communities with a range of services form business development services, access to finance and project development for innovative models</li> <li>Supporting the implementation of a number of initiatives such as the Off-grid Refrigeration Challenge and Transforming Energy Access programs</li> </ul>

# There are a number of research institutions and consultants active in UG working to support the market (3/4)

Organization	Work in Uganda
	<ul style="list-style-type: none"><li>Engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables</li><li>Supporting the government of Uganda to develop and implement an integrated electrification strategy to drive energy access and economic growth</li></ul>
	<ul style="list-style-type: none"><li>Research and policy effort that aims to address the challenges around increasing access to modern energy solutions to underserved populations around the world</li><li>Supporting the development of new, disruptive tools, such as the means to evaluate electricity access through machine learning techniques applied to aerial imagery data</li></ul>
	<ul style="list-style-type: none"><li>Support businesses, investors, development partners &amp; governments globally to to identify appropriate, impactful ways to support off-grid energy access</li><li>Supporting NRECA as they help the REA develop an off-grid electrification strategy for Uganda. This will involves actively engaging private sector service providers and developers to coordinate renewable energy mini-grids and stand-alone energy solutions as part of a larger national electrification planning paradigm</li></ul>


# There are a number of research institutions and consultants active in UG working to support the market (4/4)

Organization	Work in Uganda
	<ul style="list-style-type: none"> <li>The E4D Network is run by the Sustainable Energy Research Group (SERG) at the University of Southampton.</li> <li>It's aim is to enable a step-change in collaborative research and project development addressing the energy needs of rural communities in developing countries</li> <li>In Uganda, it has installed (2) mini-grids with a capacity of 13.5 kW</li> </ul>
	<ul style="list-style-type: none"> <li>The Alliance for Rural Electrification (ARE) is an international business association that promotes a sustainable renewable energy industry for the 21<sup>st</sup> century, activating markets for affordable energy services, and creating local jobs and inclusive economies.</li> <li>They accept members from Uganda who enjoy the benefits of advice and advocacy, knowledge and intelligence, business promotion &amp; marketing &amp; business creation and support</li> </ul>
 <div>MAKERERE UNIVERSITY</div> 	<ul style="list-style-type: none"> <li>Research sustainable e-waste management and next generation battery technology, with the purpose to promote critical industry advocacy and build a body of evidence to inform responsible corporate waste management programs and policies around end-of-life disposal, recycling, and repair of solar home systems.</li> </ul>

# Global and regional networks and associations are also enabling private sector players to leverage support services (1/2)

Organization	Work in Uganda
	<ul style="list-style-type: none"><li>GOGLA represents over 100 global members as a neutral, independent, not-for-profit industry association. Its mission is to help its members build sustainable markets, delivering quality, affordable products and services to as many households, businesses and communities as possible across the developing world</li><li>Their key focus areas on access to finance working on standardizing reporting metrics for PAYG, creating a conducive enabling environment by working in advocacy around key issues like tax and on socio-economic research &amp; insights for the market more broadly</li><li>Will be running pilot in partnership with GiZ on market database for data collection in PAYG in Uganda in 2018</li></ul>
	<ul style="list-style-type: none"><li>Sendea "solar entrepreneur network for decentralized energy access" is a capacity development platform for solar entrepreneurs to build their solar company and let it grow</li><li>Their key focus is providing support to a cohort of early stage local companies with finance, technical assistance and long-term coaching and mentorship to nurture these companies and help them grow</li><li>In Uganda, will be carrying out business skills training, supporting productive use elements like solar irrigation and SME use and looking at the case for PV back up systems in institutions like schools and health centers</li></ul>

# Global and regional networks and associations are also enabling private sector players to leverage support services (2/2)

Organization	Work in Uganda
	<ul style="list-style-type: none"><li>• Collaborating with industry, policy-makers, government authorities, donors, and other stakeholders to advocate for optimal policies and efficient capital deployment that will benefit the mini-grid sector and the people it serves</li><li>• Serving as the voice of the mini-grid development industry in Africa to promote the growth and sustainable development of the mini-grid sector and act as a unified focal point for stakeholders to engage the sector</li><li>• Provide a platform that enables transparency in industry performance through comprehensive market data and analytics in order to establish, evaluate and promote key financial, business and policy solutions to overcoming the major barriers to growth for the sector</li></ul>





Uganda Off-Grid Energy Market Accelerator

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**Do contact us if you have any feedback or interest in  
partnering:**

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<https://uoma.ug/>