



Uganda Off-Grid Energy Market Accelerator

Off-grid energy in Uganda

Market Map

2021 edition

Market Map 2021: Foreword by the Ministry of Energy and Mineral Development

The last year has been a challenge for the citizens of Uganda. The COVID-19 pandemic has restricted movement, limited economic activity, and adversely affected many. Coming out of the COVID-19 pandemic, it is more important than ever to ensure that the citizens of Uganda have access to clean, affordable, and modern electricity. Intermittent lockdowns which kept people at home highlighted the importance of having access to energy.

The Government of Uganda is more committed than ever to support increased energy access across the country. We recognize that mini-grids will play a vital role for the sector, and we implemented the isolated mini-grid system regulation to ensure an effective framework for the private sector that provides surety for development. We also adopted IEC technical standards for solar home systems to eliminate counterfeits and level the playing field. The government also recognizes the potential of productive use of energy to boost livelihoods and support a more resilient recovery from the impacts of COVID-19. To support the private sector's efforts, the Government is developing a productive use of energy strategy that will outline current gaps and also identify ways that government can support the industry.

We recognize that the important work of this sector cannot be done by Government alone. We must work with a coordinated group of private sector, with financiers, with development partners, and with ecosystem players and industry associations. The work by industry stakeholders such as the Uganda Off-Grid Energy Market Accelerator (UOMA) is vital to ensure that the sector can keep up its momentum. UOMA's annual Market Map publication provides a fresh perspective on the current state of the off-grid energy sector in Uganda.

Sincerely,



A handwritten signature in black ink, appearing to read 'Irene Batebe'.

Eng. Irene Pauline Batebe
Permanent Secretary
Ministry of Energy and Mineral
Development

Table of contents

Context

- Introduction to UOMA
- UOMA's impact
- Introduction to the Market Map

Industry update

- Solar Home Systems
- Mini-grids
- Productive Use
- Enabling environment
- Funding

Industry insights

- Health care
- Integrated electrification approaches
- Demand side subsidies
- E-mobility

3

3

6

8

8

9

10

11

12

13

14

15

17

19

21

Industry stakeholders

23

Private sector operators

25

NGOs

46

Financiers

48

Government

60

Development partners

62

Associations

108

Other stakeholders

110

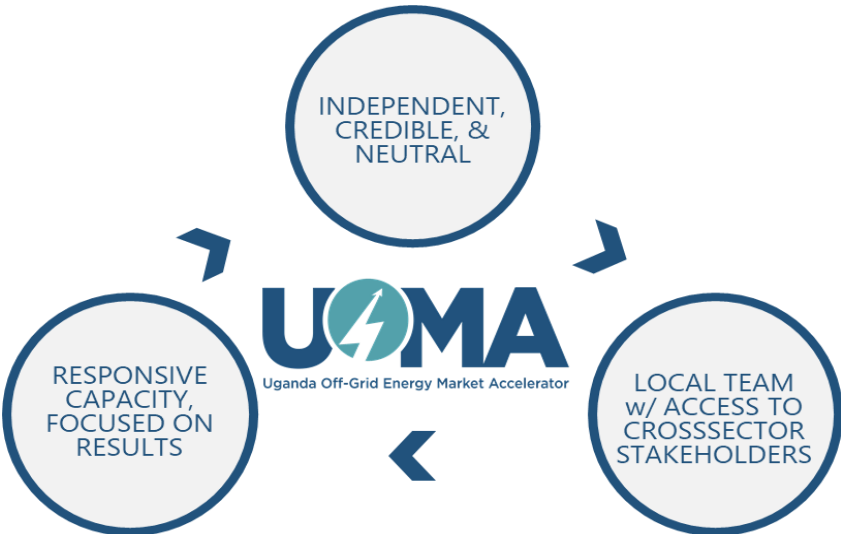
**Click on blue links to jump
to section of interest**

The Uganda Off-Grid Energy Market Accelerator (UOMA) is a dedicated and neutral intermediary, focused on scaling off-grid energy access through 5 core initiatives

UOMA started in 2017 and is focused on supporting sustainable & universal access of affordable clean energy for Ugandans

The Uganda Off-Grid Energy Market Accelerator (UOMA), implemented by Open Capital in partnership with the **Shell Foundation, FCDO, USAID, and Power Africa**, completed a 5th successful year, growing from an early catalyst for innovation to being a trusted partner and central advisor for off-grid energy access in Uganda.


Through this pioneering concept, we are coordinating industry actors, providing technical input, expertise and substantial support for private and public sector strategies to drive towards SDG 7 and universal access of affordable and clean energy for Ugandans.





UOMA serves a distinct function by 1) being independent & neutral, 2) having a local team with responsive capacity focused on results, and 3) providing access to cross-sector stakeholders. This ensures that UOMA complements and accelerates other Ugandan off-grid energy initiatives.


Since 2017, our activities have been focused on 5 core initiatives

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

 **Reaching unserved populations** by reducing barriers to better target low income households in Uganda, improving access for some of the hardest to reach communities

 **Expanding productive use technology** through supporting the industry to test and validate technologies that can achieve economic benefits for off-grid Ugandans while growing energy demand

 **Strengthening the enabling environment** by supporting the public sector to create effective policies and a conducive environment to increase off-grid energy uptake in Uganda

 **Facilitating communication & coordination** in the off-grid energy sector in Uganda, resulting in better resource allocation and accelerated progress in achieving universal access

UOMA is run by a technical team supported by a cross cutting senior advisory board representing government, private sector, and development partners

Core Technical Team

The technical team is composed of a variety of professionals with regional and national experience including off-grid energy finance, distribution, business models, bank finance, economics, public relations, marketing and others. The team has experience working with regional consulting firms, statutory bodies in Uganda and government agencies. This provides a wide range of skills that can be relied on to effectively implement UOMA's initiatives.














Locally implemented by Open Capital Advisors (OCA), who bring deep sector expertise and local Ugandan execution capability

Advisory Board

Through our comprehensive industry insights, our local team based in Kampala, and the Advisory Board, which comprises of senior sector stakeholders, we have quickly built relationships and achieved close working relationships with government, private sector and development partners, enabling us to connect stakeholders and present a diversity of perspectives. Senior representatives from key cross-sector stakeholders make up the Advisory Board, across government, development partners, and the private sector:



Over the last 5 years, UOMA has published more than 15 research pieces, supported capital raises of more than USD 30 M, and facilitated over 125K new connections

Direct interventions	Research & insights	Independent coordination
 <p>15+ Innovative pilots enabled to reach unserved areas and scale prod. use tech</p>	 <p>15+ New, influential research pieces & insights</p>	 <p>5 Annual versions of market map, now an industry-standard, landmark “go-to” document relied upon by sector</p>
 <p>125,000+ New connections from pilots for UG’s hardest to reach</p>	 <p>10,000+ Downloads of market map across Uganda and globally</p>	 <p>400+ Annual individual interactions - with investors, development partners, several others - outside of core activities</p>
 <p>5+ New key gov’t papers informed and influenced</p>	 <p>87% Feel UOMA helps to improve market transparency</p>	 <p>Local expert team works closely with sector actors to collaborate on and facilitate several targeted workshops and matchmakings</p>
 <p>30M+ Capital deployed following deal-focused TA to local financiers and operators</p>	 <p>60% Believe UOMA positively facilitates sector deals</p>	

More of UOMA’s research can be found here: uoma.ug

In 2021, UOMA published 4 research papers, and had 8 direct interventions with operators and lenders leading to USD 2M+ in fundraising

8

direct interventions
including innovative pilots,
and TA

4

research whitepapers &
insights

86%

net promoter score

79%

feel UOMA helps to
improve market
transparency

79%

believe UOMA positively
facilitates sector deals

Thought leadership & sector coordination

- Performed an **in-depth review of the draft national PUE program strategy** at the request of the Renewable Energy Department of the Ministry of Energy
- Conducted a **detailed review of the European Union's energy distribution sector reform paper** outlining market interventions to enable more effective use and regulation of distributed energy resources (DERs)
- Led **sector coordination to explore immediate and medium-term impact of COVID-19 on Uganda OGS sector**, supporting UNREEEA and USEA
- Participated in several inter-sector and intra-sector coordination efforts, particularly with public sector

Market research & insights

- Published a **whitepaper on the impact of COVID-19 on access to finance** for local off-grid companies
- Published a paper on PUE learnings from extensive pilot work
- Published **white paper on the demand side barriers on access to finance** for off-grid solar businesses in Uganda

Technical assistance

- Extended **technical assistance to the off-grid energy team for a regional bank** to deepen their understanding of the renewable energy sector and build a pipeline of loans
- Supported **local PUE operators with their growth strategies**, for example to outline a market growth strategy for rural healthcare electrification
- Successfully supported **investment readiness and \$2m+ fundraises** for 3 locally-owned mini-grid developers and productive use of energy companies

This Market Map, comprised of 3 sections, seeks to provide a holistic and objective description of the off-grid energy industry in Uganda

Objective of the Market Map

As part of our goal to promote more cohesion and coordination in the market, UOMA releases a Market Map annually to provide a holistic & objective description of the off-grid industry in Uganda to better inform innovation, interventions, and resource allocation.

This edition highlights trends within the sector, details the impact of sector interventions, and recommends opportunities for further support to the market, focusing on 3 key segments: Solar Home Systems (SHS), Mini-grids (MG), and Productive Use (PUE).

Methodology

Data collection & analysis: This report is a culmination of data obtained from dozens of consultations with key private & public sector stakeholders and data obtained from pilots & research with operators, gov't & financiers

Validation & publication: Prior to publication, this report was also peer reviewed by >20 stakeholders to validate findings and verify data presented

The Market Map provides a comprehensive overview of the off-grid market in Uganda with 3 sections:



Gives an overview on the key trends in the off-grid landscape for each segment and highlights primary barriers to scale. It also provides an update on key changes within the enabling environment and the funding landscape.



Presents data-driven analysis to provide context & trends of off-grid development; outlines key barriers to growth, opportunities for innovation & stakeholder support



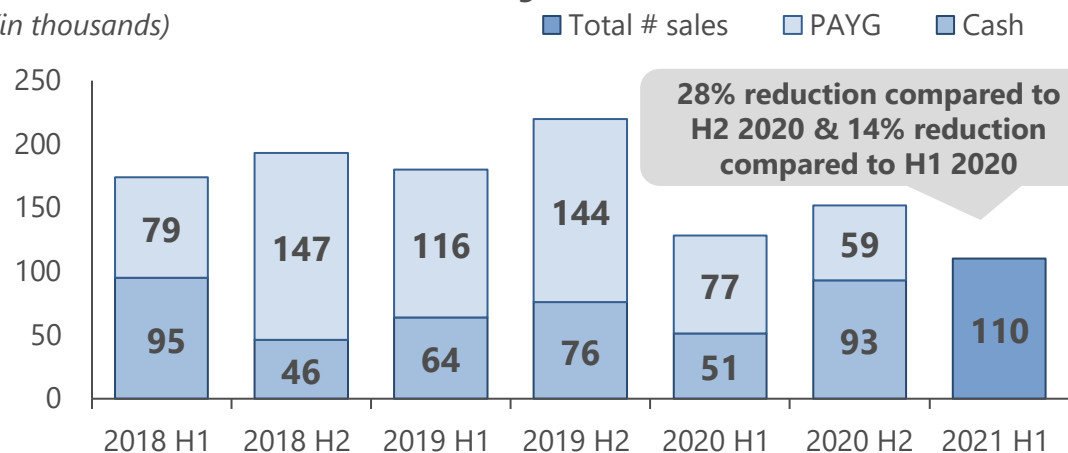
Presents information detailing stakeholders & activities currently active across in the Ugandan market, covering the private sector players, NGOs, financial institutions, government and development partners

Industry update

Solar Home Systems: Sales volumes declined as companies pivoted business models to remain afloat; low access to finance continued to hinder growth

SHS unit sales of GOGLA affiliates in Uganda 2018-2021¹

(in thousands)



Sales drastically fell due to impacts of the COVID-19 pandemic on the Ugandan economy and stringent government lockdowns

- Sales improved after easing of restrictions in the first lockdown in H2 2020, but a second wave of restrictions in H1 2021 hampered sector recovery and depressed sales

Technical assistance providers offered subsidized support to fast-track recovery

- GET.Invest supported both existing and new clients to restructure³
- Finding XY supported OGS SMEs with investment readiness²
- UOMA provided bespoke investor readiness and strategy support

Companies utilized digital tools, prioritized cash sales and pivoted business models to remain resilient^{1,2}

- Prioritized cash sales over credit sales to shore up cash flows; cash sales increased by 83% in H2 2020 compared to H1 2020 while PAYGO sales decreased by 24% in the same period
- Pivoted business models both laterally and vertically to diversify risk and free up cashflows; PAYGO operators e.g.,
 - Companies like Anuel Energy and some PAYG companies are shifting emphasis to PUE models, and expect to see more sales in these product lines over the next 2 years
 - While some operators started selling modular systems, assembling products locally to address import challenges like price spikes and shipping container scarcity
- Leveraged digital channels like social media to keep customer acquisition costs low; companies transitioned employees to call centers and focused on existing customers during the lockdowns

However, limited access to finance still restricts market growth²

- Local financiers are hesitant to invest in operators given uncertainty of business operations
- Investors are more inclined to support large operators with proven business models and traction, limiting the pool of companies that can receive funding

Mini-grids: A few mini-grids have been commissioned and several are under construction, though delayed; the sector outlook is promising but barriers persist

Type of mini-grid	Known number of mini-grids in Uganda ^{1,2}	
	Existing*	Upcoming
Bio-gas	3	0
Hydro-power	6	10
Solar powered	9	51
Solar-diesel	1	0
Total	19	61

A few mini-grid projects have been commissioned recently

- UNHCR commissioned a 10.8 kW solar PV mini-grid in the Nakivale refugee settlement in Western Uganda²
- Winch Energy commissioned a 128 kWp solar PV mini-grid in partnership with Total Energy to power 500 homes in Bunjako Central Uganda²
- Equatorial Power deployed a 40kWp mini-grid in partnership with UMEME in Kiwumu, Central Uganda to power 600 households and businesses³

Despite COVID-19-related delays and regulatory challenges, several mini-grid sites are under construction²

- WWF is constructing 6 mini-grids in Western Uganda with a total capacity of 170 kW to power 900 households and 205 businesses
- Winch Energy has completed solar PV mini-grids on 6 out of 25 sites in Northern Uganda under GIZ's Pro Mini-grids project

Medium-long-term pipeline of upcoming projects is promising²

- Winch Energy plans to start constructing 15 sites in Southern Uganda in 2022. The sites were initially awarded to WeLight under GIZ's Pro Mini-grids project
- An additional 100+ mini-grids are expected to be tendered in 2022
- The draft National Electrification Strategy identifies over 2,700 sites that can be viably powered by mini-grids

Limited access to capital, an uncertain regulatory environment, and the tariff ceiling hinder sector growth²

- Inadequate access to capital, especially debt, as financiers are skeptical about the financial viability of mini-grids
- Evolving policy on tariffs and changing regulatory environments like the reabsorption of REA into MEMD expected to cause further delays in site approvals and licensing
- \$0.30/kWh tariff ceiling is not cost-reflective for most operators, and is therefore difficult to implement without the right subsidies

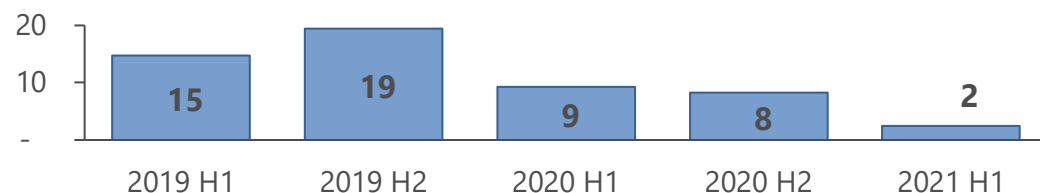
Notes: *Only includes mini-grids confirmed to be operational

Sources: 1. SEFA & AfDB, Mini-Grid Market Opportunity Assessment: Uganda, 2018 [\[Link\]](#) 2. UNHCR, Uganda Factsheet, 2021 [\[Link\]](#) 2. UOMA consultations 3. Power for All, Twaake Pilot Factsheet, 2021 [\[Link\]](#) 2. UOMA consultations

Productive use: Sales were impacted by COVID-19 but market innovations and support from government and ecosystem players have supported operations

Combined solar appliance sales in Uganda 2019-21¹

(Thousands)



Solar appliance sales have drastically fallen since the height of the COVID-19 pandemic, but sales are still dominated by bundled appliances

- Sales still dominated by TVs, solar water, pumps and refrigerators¹
- Solar appliances are usually bundled with PAYGO solar system sales¹
- Poor sales performance attributed to inability of households to pay, given impact from the COVID-19 pandemic^{1,2}

Businesses have taken steps to maintain sales despite challenges

- Offered longer payment durations to help customers weather the impact of COVID-19²
- Reduced the required deposit amounts on appliances to increase affordability for low-income households²
- Despite increasing interest from SHS operators, however, sales traction is still limited

There is increasing sector interest from development partners, investors and government in the PUE

- **USAID produced a PUE catalogue** focused on Uganda's agriculture industry profiling the solutions on the market. This includes new products launched in 2020 like the Omnivoltaic fishing lights with PAYGO integration distributed by Tulima solar and InspiraFarms' cold storage modular pack houses³
- **GIZ is providing trainings and access to finance** for small and medium enterprises, smallholder farmers, and households. It aims to make the mini-grid business model sustainable and ensure that electricity is used to drive economic development⁴
- **EEP Africa supported OneLamp's solar in dairy pilot** that aims to distribute affordable cold milk coolers in Western Uganda with funding of up to EUR 350K⁵
- **Government, in partnership with FAO, plans to install 40 small-scale solar-powered irrigation systems** in Kalungu⁶

Despite increasing sector interest, barriers to growth still exist²

- Low affordability due to low household income levels further exacerbated by the COVID-19 pandemic
- Lack of access to finance by PUE providers hinders ability to offer credit to consumers
- Limited awareness of consumers regarding the full offer of PUE appliances on the market limits uptake by the public

Enabling environment: REA has been absorbed into the Ministry of Energy while COVID-19 delayed some of the key draft regulations and strategies

Government restructuring

REA has been merged into the Ministry of Energy while UEGCL, UETCL and UEDCL are being merged into one company

- REA has temporarily become the Renewable Energy Program (REP), within the Ministry of Energy until Oct 2022 when it will be fully transformed into a Department^{1,2}
- Uganda Electricity Generation Company Limited (UEGCL), Uganda Electricity Transmission Company Limited (UETCL) and Uganda Energy Distribution Company Limited (UEDCL) are being merged into one company – The Uganda National Electricity Company (UNEC); Merger process is expected to take up to two years and is being spearheaded by the Ministry of Public Service²

Impact

- While the Ministry of Energy has done a commendable job in engaging various stakeholders to make REA's transition seamless, there is further opportunity to clarify how REA's former responsibilities will be shared within the Ministry²
- In the short term, this has led to delays in finalizing policies like the energy policy draft, and made processes like shipping authorizations for mini-grid developers longer by up to 7 days
- Expected long-term effects are yet to be determined as more information emerges on the role distribution within the ministry

Regulation and policy

Isolated mini-grid regulations were passed into law while several other draft policies and strategies were impacted by COVID-19³

- Isolated mini-grid regulations: Regulation governing the isolated mini-grid sector was passed into law
- Draft national electrification strategy: Government's universal energy strategy was delayed by COVID-19; still to be finalized
- Draft national energy policy: Policy whose key objective is to ensure sustainable development and utilization of energy resources, services, and products also remains incomplete

Other, expected to strengthen the regulatory environment in the C&I solar sector and productive use, are being drafted²

- Net metering code: Regulation governing bi-lateral sale of power between isolated grid operators and national utilities is currently being drafted and is expected to be public in ~18 months
- PUE strategy: Strategy to improve the productive use of energy of targeted communities for solar applications; strategy is in the drafting process²

The Electricity connections policy was also suspended

- Electricity connections policy: Provided subsidies for single phase connections; policy was suspended due to exhaustion of World Bank funding for the program; Government has committed to provide funding to resume the policy⁴

Funding: Businesses raised USD >52M but funding predominantly reached larger OGS providers; dev't partners and investors committed an add'l USD 50M+ this year






OGS providers and improved cookstoves (ICS) companies have raised more than USD 52 M over the past year but capital raises remain dominated by large multi-national OGS providers with a few local players raising capital. A few notable deals include:

- Winch Energy raised USD 2M in debt from SunFunder, and with NEEOT Offgrid Africa invested 12M in Uganda and Sierra Leone^{1,2}
- OneLamp raised a grant of EUR 350K from EEP Africa to support the expansion of milk chilling solutions in Western Uganda³
- Yellow Solar raised USD 4M debt to expand, with operations in Uganda and Malawi⁴
- Mwezi raised seed funding of USD 500K to support expansion to Uganda, Ethiopia, and Rwanda⁵
- Mandulis Energy raised grant funding of EUR 100K at the COP26 under the Dutch Fund for Climate and Development⁶
- ENGIE Energy Access Uganda received USD 175K concessional funding from Signify Foundation to support end-user subsidies¹
- FIN-E raised pre-seed funding of USD 300K^{1,7}

Local banks are restructuring loans to support businesses despite COVID disruptions; more needs to be done to facilitate access¹

- Banks have continued to restructure existing loans and reduced interest rates to increase access
- However, stringent financing requirements still limit access to most off-grid businesses

Development partner programs and investors have committed more than USD 50M in the last year

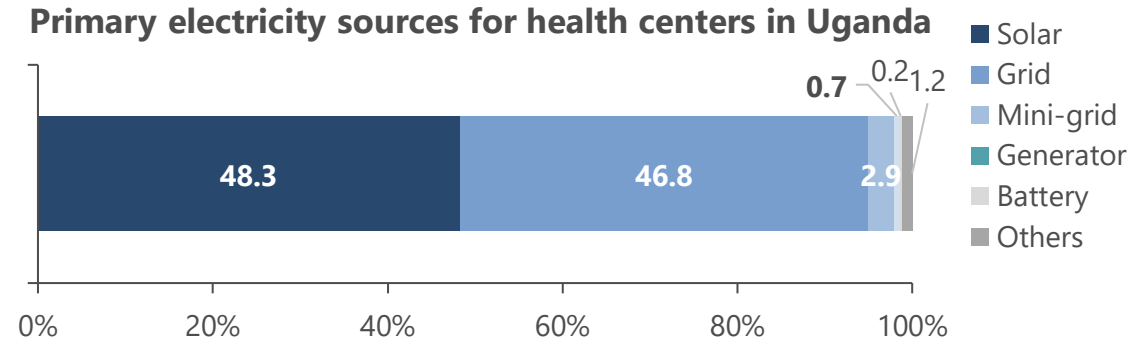
	<p>BGFA launched an ~USD 24.5M results-based financing (RBF) facility managed NEFCO. The Uganda facility (BGFA3) is funded by DANIDA and SIDA and will likely make initial disbursements in 2022⁸</p>
	<p>Nithio's clean energy fund raised ~USD 23M from DFC, FSD Africa and EDFI-ElectriFI. Nithio is currently pursuing opportunities in Kenya, Uganda, and Nigeria⁹</p>
	<p>EU'S UGEFA discounted loan facility to support businesses with USD 10K to USD 100K. Businesses will pay back only two thirds of the loans, with UGEFA grant contribution covering the remaining one third¹</p>
	<p>GiZ-EnDev ~USD 1.12M COVID-19 Economic Relief Fund, implemented by the Private Sector Foundation Uganda (PSFU), to extend grants to COVID-affected solar and cookstove companies¹⁰</p>
	<p>UNCDF's working capital facility to support OGS providers recover from impact of the pandemic. The facility has supported operators such as All in Trade with concession debt financing of USD 200K^{1,11}</p>

Note: More details on the capital raises and investors active in the space included in the industry stakeholders section

Sources: 1. UOMA consultations 2. Winch website [\[Link\]](#) 3. EEP Africa website [\[Link\]](#) 4. Sunfunder website [\[Link\]](#) 5. Afrikan Heros, Kenyan Solar Energy Firm Mwezi Raises \$500k From Newly Launched Build Fund, 2021 [\[Link\]](#) 6. Mandulis wins at COP26 [\[Link\]](#) 7. FIN-E raises USD 300K [\[Link\]](#) 8. BGFA, Call for proposals launched, 2021 [\[Link\]](#) 9. Nithio raises USD 23m to scale lending ops, 2021 [\[Link\]](#) 10. PSFU website [\[Link\]](#) 11. GOGLA, Global Off-Grid Solar Market Report Semi-Annual Sales and Impact Data H2 2020 [\[Link\]](#), 12. UGEFA, Second Call for Applications - EXTENDED TO 31 MAY, 2021, [\[Link\]](#)

Industry insights

Healthcare: Off-grid solar has heavily contributed to healthcare center electrification in Uganda, and will continue to be a primary driver in the short- and medium-term



Solar energy has the potential to resolve the limited health center electrification in Uganda

- Solar energy powers almost 50% of all electrified health centers in the country
- The technology can provide facilities with a higher quality power source, in particular those with no or very poor access to grid electricity; grid issues currently face issues, including:

6 hours daily grid power outages for health centers
2x daily unscheduled power interruptions

Health clinic electrification has been critical in supporting COVID-19 response, given the need to power diagnostic equipment, ventilators, and cold chain²

Business model sustainability has proven to be a key barrier to increased traction in this space




- There is little private sector involvement given challenges such as limited revenue model innovation given regulatory restrictions on business models; dev. partners and NGOs have led most projects²
- Several players are still experimenting with various service models with the aim to improve sustainability³
- Many health centers don't have maintenance budgets in place, resulting in inoperative solar PV systems within 3-5 years; further, potential grid arrival threatens to make solar systems redundant²

Despite challenges, the private sector in Uganda is engaged and committed to further developing the sector alongside donors

- Uganda has significant experience in solar powered health care electrification with traction largely driven by donor programs
- The World Bank under ERT III electrified 522 health centers, and Signify Foundation under the Lighting Health Stations project electrified 43 health centers^{1,6}
- In tender processes, Ugandan companies consistently feature prominently, demonstrating private sector experience
- There are now more portable and energy-efficient medical devices specifically designed for resource-constrained settings, from organizations such as d.light and Wecare Solar⁷

Sources : 1 MOH, National Health Centre Master List, 2018 [Link] 2.UOMA consultations 3. UN Foundation, Lasting impact – Sustainable off-grid solar delivery models to power health and education,2019 [Link] 4 UOMA consultations with rural health centers in Uganda 5. World Bank, Increasing Human Capital by Electrifying Health Centers and Schools through Off-Grid Solar Solutions,2020 [Link] 6. Signify Foundation website [Link] 7. Efficiency for Access, Medical Equipment and Clinic Electrification, 2021 [Link]

Healthcare: Although previous health center electrification efforts have been donor-led, several service models are being implemented to increase sustainability

	Description	Opportunities ^{1,2}	Risks ^{1,2}
 <p>PAYGO model</p>	<p>Facility pays deposit for the system upfront, then makes regular payments until the cost of the system is covered</p> <p>Example projects: Anuel Energy electrified St. Karooli Lwanga hospital using a PAYGO model¹</p>	<ul style="list-style-type: none"> The PAYGO model can be implemented with PFP health centers that are often commercially viable and generate an income through charging patients' fees 	<ul style="list-style-type: none"> Unpredictability of infrastructure: System outages present risks for health centers that need reliable energy
 <p>Hybrid model</p>	<p>Donor pays for part of solar PV system costs while the health center pays for the remaining cost over a fixed period</p> <p>Example projects: Innovation Africa electrified Mugiti health center with part of the cost covered by Adrienne Everett Foundation²</p>	<ul style="list-style-type: none"> The hybrid model can benefit PNFP health centers that are often supported by NGOs and religious affiliated organizations. PNFP charge subsidized amounts & may not be able to fully pay for a PV system 	<ul style="list-style-type: none"> Reduced sustainability: Reliance on donor funding impacts the long-term sustainability of electrification projects
 <p>Power Purchase Agreement</p>	<p>Health center agrees to buy power from an operator at pre-agreed terms. The asset is owned by the solar provider</p> <p>Example projects: Equatorial Power is connecting 5 gov't health centers to a mini-grid in Namayingo under a PPA³</p>	<ul style="list-style-type: none"> The model can be implemented in the electrification of government health centers in areas with no connection to the grid. Government health centers are free 	<ul style="list-style-type: none"> Requires strong regulatory environment: Stable regulatory environment and payment guarantees are necessary for bankability and successful implementation

- The net-metering code presents an opportunity to leverage health centers as anchor clients and could increase electrification of health centers
- Removing restrictions on government health centers selling excess power to neighboring communities can further catalyze private sector involvement and make projects bankable⁴

Sources: 1. UOMA consultations 2. Innovation Africa website [\[Link\]](#) 3. USAID/Power Africa Strengthens Maternal and Child Health Services in Sub-Saharan Africa with \$363,607 in Solar Energy Grants [\[Link\]](#) 4 UN Foundation, Health facility Energy needs assessment, 2015 [\[Link\]](#)

Integrated electrification approaches: Stakeholders are piloting and designing new forms of collaboration between both utility providers and off-grid companies

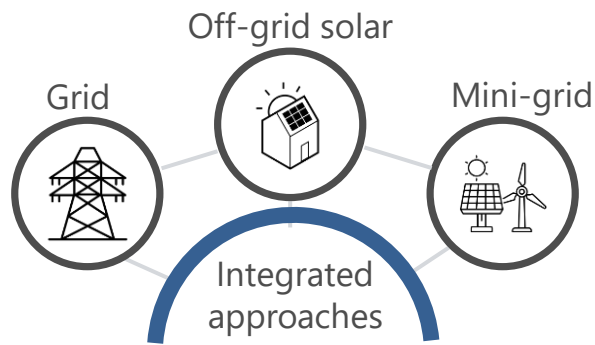
Despite significant strides made towards universal electricity access, a large population could remain unelectrified by 2030

18M people still lack access to electricity (59%)¹

47% 47% of population will receive grid access by 2030²

Integrating all electrification approaches is needed to close the gap

- Grid expansion has proven slow and costly, while business model innovation in off-grid solar and mini-grid have created viable, alternative electrification options
- Least-cost electrification planning should consider grid, mini-grid and off-grid solar technologies, in addition to other market actors like consumer finance providers³



Several initiatives are currently underway to test integrated models

- A coalition of energy sector players led by UMEME, coordinated by Power for All, and funded by the Rockefeller Foundation launched the first integrated energy pilot in Uganda⁶
- The European Union published a report on energy distribution in Uganda with recommendations for Uganda to chart a path to universal energy access through a distributed approach³
- A net metering code that provides a legal framework for bi-lateral sale of electricity between grid operators and mini-grid developers is in the draft phase⁴

Integrated electrification planning requires that sector stakeholders conduct extensive planning and coordination⁵

- 1 Establish a coordinating body empowered with high-level political buy-in and adequate long-term resources for implementation
- 2 Solicit expert advice to develop, plan, and build planning capacity needed for implementation
- 3 Work with experts and stakeholders to obtain relevant data for use in integrated modeling and to identify other planning tools
- 4 Develop supportive policy measures in consultation with community, civil society, and private sector stakeholders
- 5 Take steps to mobilize finance and build the electrification ecosystem for both developers and consumers

Sources: IEA et al., Tracking SDG 7: The Energy Progress Report – Country Report, 2019 [Link] 2 SE4All and Catalyst Off Grid Advisors, Taking the Pulse 2019 [Link] 3 EU, Stock taking in energy sector in Uganda: Electricity distribution, 2021 4 UOMA consultations 5 SE4ALL, Integrated Electrification Pathways for Universal Access to Electricity: A Primer, 2019 [Link] 6 Utilities 2.0 Twaake Pilot, 2021 [Link]






Case study: The Twaake pilot under Utilities 2.0 has demonstrated early findings that integrated business models can effectively grow energy consumption

Case description^{1,2}



Utilities 2.0 is a consortium of energy providers supported by Rockefeller Foundation and coordinated by Power for All that aims to test and scale innovative integrated approaches to universal energy access. The consortium is made up of UMEME, the grid distribution utility, Equatorial Power, a mini-grid developer, and EnerGrow, an appliance finance company.






Site	Organization	Role
Nyenje Mukono		Set up a grid-connected site
		Selling and financing productive use assets to both businesses and households
Kiwumu Mukono		Built the distribution network
		Deployed & operating 40kWp mini-grid pilot to power 600 households and businesses
		Provides productive use assets to both businesses and households

Traction and impact

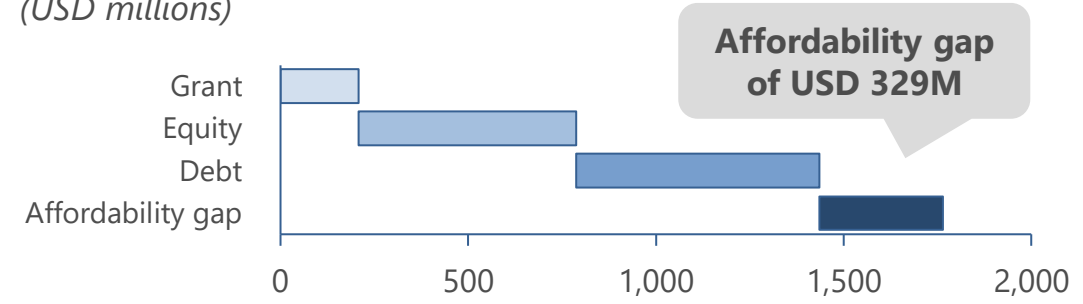
- 26% of businesses in the Nyenje site have received income generating assets through asset financing for productive use (PUE); electricity consumption and business have increased by over 50% and 70%, respectively since asset deployment
- 50% of the businesses in the Kiwumu site are expected to receive asset financing, potentially leading to more jobs and higher business revenues

Sector considerations









-  **Subsidy programs** that reduce the initial cost of development for mini-grid developers are still necessary to support commercial viability and scale
-  Private sector players can increase value for consumers by providing **bundled services** e.g., incl. streetlights and water purification
-  A **regulatory environment that fosters innovation** is needed to scale solutions, for example increasing mandates of electricity utilities to sell low voltage appliances or allowing utilities to acquire distributed generation assets

Demand-side subsidies: Development partners and private sector are testing ways to improve affordability through end user subsidies, but more piloting is required

Volume of financing needed to close energy access gap (off-grid solar) in Uganda by 2030¹
(USD millions)



Design principles^{2,5}

-  DSS should be developed through extensive discussions with relevant stakeholders and be clearly communicated
-  DSS should be efficiently targeted based on available data to ensure that there is no overlap between with commercial users
-  The level of subsidy should reflect the affordability gap to minimize price distortions
-  Verification systems should be robust to minimize leakages and maximize outcomes
-  Programs should allocate resources to build the capacity of all stakeholders, incl. beneficiaries, gov't, and the private sector
-  Processes should be efficient to maximize value for money for governments, donors, and consumers
-  Processes should be transparent to promote accountability and encourage widespread participation
-  DSS should be designed with the long-term sustainability of both the program and of commercial markets in mind

Demand-side subsidies (DSS) can be an essential tool to achieve universal access²

- Unlike other subsidies, DSS close the affordability gap by directly reducing the price paid by end users for OGS products
- DSS can be provided directly to reduce the price for end users who cannot afford a product, allowing companies to continue selling to those who can pay full price

A few demand side subsidy programs have been implemented in the OGS sector over the past year

- The USAID-funded GIZ EnDev last-mile RBF pilot temporarily lowered the cost of off-grid products for participating companies³
- The Engie Energy Access Subsidy program in partnership with Signify Foundation tested the impact of price reduction on access and payment performance^{4,5}

Sources: 1 SE4All and Catalyst Off Grid Advisors, Taking the Pulse 2019 [Link] 2 ACE, Demand-Side Subsidies in Off -Grid Solar: A tool for achieving universal energy access and sustainable markets,2020[Link] 3 PSFU, Last mile RBF for SJS companies [Link] 4 Signify Foundation Partnerships [Link] 5 UOMA consultations

Case study: Engie Energy Access implemented a demand-side subsidy program in partnership with Signify Foundation that has increased affordability by 20%

Case description¹



➤ Engie Energy Access, a provider of PAYGO home systems, offered a 20% end-user subsidy to consumers of their Fenix Power 2 systems, translating to USD 20 per sale



➤ The subsidy program was implemented throughout Uganda and was supported with concessional funding from Signify Foundation (up to USD 175K)

Program structure¹

- The program was run as a nation-wide controlled experiment; the subsidy was applied to 10,000 new customer purchases in 2 treatment groups, with each treatment running for around 2 weeks until the 5,000-customer per group target was met¹
- The results were compared to sales under commercial pricing plans in place at the time of the experiment
- In order to isolate the impact of the price change alone, there was no prior notification internally to Engie teams or to customers, and no change in marketing and sales approaches
- Surveys were conducted with a representative sample of the treatment and control groups for further demographic insights
- Results from the program were tracked at 6 months, 12 months and 18 months (12.5%, 25% and 50% of longest loan terms)

Results¹

- Results show subsidies significantly improved affordability (repayment) and reduced instances of default
- Lower income customers have the most improvement in outcomes
- Lowering the installment has more impact than reducing loan terms
- Engie has been able to reach customers with a lower income level
- having a median income of approximately USD 4

Sector considerations¹

OGS providers, development partners, and governments have a role to play in reducing the price to end-users in order to achieve energy access; price reductions are key to making SHS affordable to the ~5M Ugandans who cannot afford to pay USD 0.16 per day, the lowest daily pricing of an entry level solar kit

Projections show that a 20% reduction on the lowest daily pricing can increase reach to ~1M people, while a 50% reduction can increase reach to ~4M people

Price reduction	% reduction	Population reached
USD 0.13 / day	20%	
USD 0.07 / day	50%	

= 1M

E-mobility: E-mobility is a growing trend, with solar power expected to make a large contribution through charge station infrastructure

E-mobility has the potential to alleviate air pollution challenges and empower users financially

- Road vehicles, including buses, cars, 2-wheelers and 3-wheelers account for almost 18% of transport CO2 emissions globally¹
- Kampala’s air quality index (162µg/m3) is 6 times worse than the WHO Air Quality Guidelines, and worse than more industrialized cities such as Beijing (48µg/m3)²
- Electric mobility (e-mobility) encompasses transport modes that are battery-powered, eliminating the need for internal combustion engines (ICE), that release toxic particulate matter and CO₂
- A decline in tailpipe emissions through e-mobility lowers the volume of toxic gases released into the atmosphere and locally¹
- E-mobility customers report savings since the total cost of operation for electric vehicles is often cheaper than ICE vehicles³ e.g. a motorcycle driver reports saving over USD 300 in 3 weeks

Solar energy has emerged as a convenient and reliable clean energy option to support charge station expansion⁴

- Solar offers the lowest carbon footprint of available sources
- Solar powered charging stations are easy to install and unhindered by power outages, making them ideal for e-mobility service expansion

Although the sector is nascent, more private sector companies are setting up, and more actors are collaborating to support growth

- Uganda is a pioneer in e-mobility, having built the first solar electric bus in Africa through gov’t owned vehicle manufacturer Kiira EV⁵
- There is increasing private sector involvement with players such as Bodawerk, Zembo and Asobo setting up operations



- There are upcoming business models that offer pricing suitable for low-income individuals e.g battery swapping and PAYGO models^{1,4}
- GIZ partnered with Zembo to construct 3 charging stations outside Kampala and Winch Energy is constructing a charging station in Lamwo in partnership with Bodawerk^{4,6}

The sector still faces awareness, infrastructure, and data challenges⁴

- Limited reliable market data to support credit scoring, and scaling of operations in Uganda
- Limited infrastructure planning by cities, particularly given low prioritization for e-mobility
- Limited awareness on the benefits of e-vehicles compared to ICE vehicles hinders wide scale adoption and uptake

Source: 1. Efficiency for Access Coalition, Solar Appliance Brief, 2021 [\[Link\]](#) 2. KCCA, Kampala’s Air Quality Six times worse than Global Standards, 2018 [\[Link\]](#) 3. EEP Africa, Electric Bodas Bodas, 2021 [\[Link\]](#) 4. UOMA consultations 5. Reuters, Uganda Auto firm aims to start producing buses, 2021 [\[Link\]](#) 6. Green People’s Energy, Boda boda taxis: First charging stations outside Kampala for solar-powered electric motorbikes are coming, 2021 [\[Link\]](#)

Case study: Zembo is an e-mobility start-up revolutionizing the boda boda market in Uganda through their lease-to-own electric bikes

Case description¹



Zembo (Zero Emission Motorcycle Boda) is a start-up founded in 2018 specializing in innovative and sustainable mobility solutions for Africa. Zembo’s electric motorcycle and charging station network have been on the motorcycle taxi "boda boda" market in Uganda since 2019

Overview

- Zembo is creating a new market for e-mobility in Kampala by selling electric motorcycles on a lease-to-own model and building a network of charging stations¹
- Zembo is leveraging the battery-as-a-service model that decouples investment and usage, enabling more people to make the transition to e-mobility¹
- The Storm motorcycle, Zembo’s flagship motorcycle, is low-cost to operate and provides 60 km on a single charge at an operating cost of ~UGX 70 per km compared to ~ UGX 90 for ICE motorcycles²
- Parts are sourced from China but motorcycles assembled in Kampala^{1,2}
- The motorcycles are lowering CO2 particle emissions (1.1 tonnes per 100 km compared to 2.6 tonnes from ICE motorcycles)²

Traction¹

- Zembo has sold over 200 motorcycles in Uganda and set up 20 charging stations in Kampala and Mukono, and has over 450 batteries in circulation
- The company received grant financing from a number of key partners such as E4I, PFAN, and EEP Africa
- It received investment through equity from funders such as Toyota, DOB Equity and InfraCo
- They plan to sell over 3,000 motorcycles in the next 3 years

Sector considerations²

-  PAYGO integration that allows for staggered payments over time is important to make e-mobility affordable for low-income households
-  Leveraging partnerships with energy companies such as mini-grid operators can support expansion to regions without grid reach
-  Partnerships with existing mobility companies such as vehicle financing companies can be leveraged for growth
-  Relationships with development partners and government will be important to support sector meet growth and get necessary buy-in for infrastructure development

Industry stakeholders

Summary: Stakeholder landscape consists of 7 categories: private sector, NGOs, financiers, development partners, government, associations & other stakeholders

Development partners consist of international independent agencies backed by gov't to fund and support initiatives in both public & private sectors

Financiers consist of DFIs, PE funds, and investors that develop financing facilities to meet capital needs of energy players

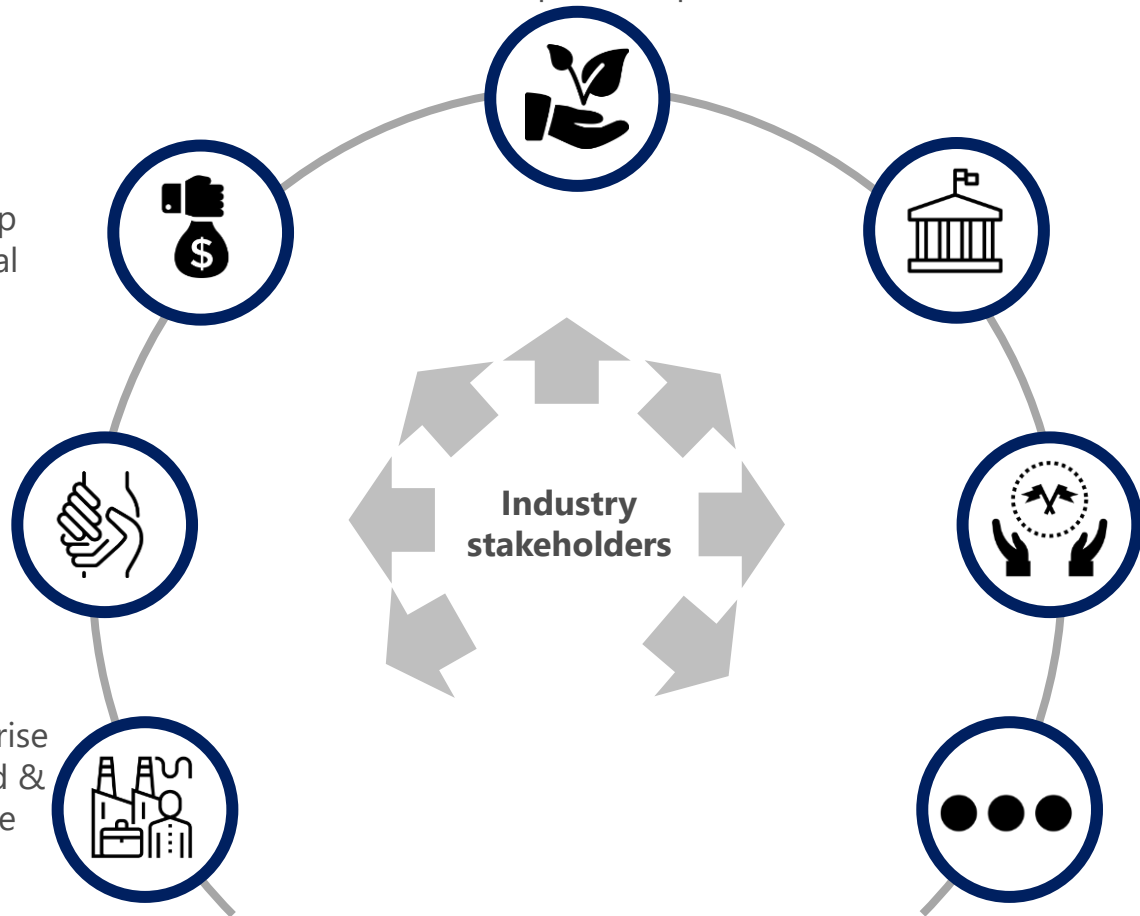
Government consists of bodies that have the mandate for regulation distribution & generation of energy

NGOs consist of international and local NGOs that are supporting electrification of schools and health centers






Associations are organizations that represent private sector players like operators & advocate for favorable policies and conditions to accelerate energy

Private sector operators comprise of Solar Home System, Mini-grid & Productive Use providers in the market






Other stakeholders consist of global & regional organizations that support private sector with data, market linkages, etc.







Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (1/15)

Business	Summary	Product offering	Milestones and updates
	Engie is distributor, installer, consumer financier and after sales service provider of solar home and lighting and mini-grids systems	Residential products such lanterns & PAYGO SHS, commercial products including large integrated systems and mini-grids	Merged Fenix Int'l, Mobisol, and Power Corner into one organization: Engie Energy Access
	SolarNow is a manufacture, distributor, installer, consumer financier and after sales service provider of solar products like SHS, panels, lights, etc., since 2011	Residential & commercial products, served small businesses and institutions like hospitals & schools	Large focus on PUE appliances such as pumps
	Kambasco Technologies is a distributor and consumer financiers of solar powered products and systems such as home lighting systems and water pumps since 2015	Residential and commercial products	Focused on coordinating and accelerating efforts to expand access to energy to rural and off grid health facilities
	BrightLife Uganda is a social enterprise that distributes, installs, finances and offers after sale services on solar lanterns, solar home lighting systems since 2015	Residential product; mainly serves BoP consumers	Adapted operation due impact of COVID-19 restrictions
	M-KOPA is a manufacturer, distributor, installer, consumer financier and after sales service provider of solar products like SHS and fridges, since 2012	Residential and commercial products, serves small businesses	Developed and is currently selling a solar-powered PAYGO fridge for BoP consumers






Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (2/15)

Business	Summary	Product offering	Milestones and updates
 SOLANTIS	Solantis solar is a manufacturer, distributor, installer, and consumer financier of solar products like SHS and lanterns, since 2016	Residential products including solar home systems, lanterns and accessories such as radios & TVs	Filled for bankruptcy in 2020 & acquired by Village Power
 D&S DAVIS & SHIRTLIFF	Davis & Shirliff is distributor, installer and after sales services provider of water solutions and solar products since 1996; the company offers solar products such as batteries, SHS and refrigerators	Residential, commercial and institutional products	Undertook the solarization of existing boreholes in Bidi bidi refugee camp in Northern Uganda
 Greenlight Planet	GLP is a social business that designs, distributes and finances solar powered products such as lamps and solar home systems since 2009. GLP also offers consumer after sales services to its customers	Residential and commercial products	Raised USD 90M in financing to support expansion of PAYGO business and expansion into new countries
 Solar today	Solar Today is a distributor and installer of solar products like SHS and water heaters, since 2010	Residential and institutional products, serves hospitals	Partnered with Innovex-a Uganda-based startup enabling PAYGP and remote monitoring for OGS companies
 Atritex Complete Water Solutions	Atritex is a water solutions company that distributes, installs and provides after sales services for water equipment and solar such products as water pumps and water heaters since 2014	Residential, commercial & institutional products; partners with the gov't to develop large-scale irrigation projects	Contracted by FAO to install solar sprinkler irrigation systems in Nebbi and Zombo districts in Northern Uganda




Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (3/15)

Business	Summary	Product offering	Milestones and updates
	Anuel Energy is a distributor and installer of plug and play solar home systems since 2015. The company also offers consumer financing and after sales services to their customers	Includes products domestic households but also provides for commercial and institutional products	Pivoted business models from PAYGO to PUE & institutional consumers such as schools & health centers
	Davis & Shirtliff is distributor, installer and after sales services provider of water solutions and solar products since 1996; the company offers solar products such as batteries, SHS and refrigerators	Residential, commercial and institutional products	Distributor and in-country partner for Agsol solar powered mills
	Village Energy is a distributor installer, consumer financier and after sales service provider of solar products like SHS, water pumps, water heaters and lights, since 2009	Products serve refugee camps, institutions like schools and commercial clients like SMEs	Supported the electrification of health centers in partnership with SENDEA & Signify Foundation
AB Matra Uganda Ltd	AB Matra is distributor and installer of solar powered products such as inverters, panels, home systems, lanterns and water heaters	Residential, commercial and institutional products, serve schools	Not available
	ADH Group is a distributor of solar powered products such as refrigerators, panels, and batteries at both retail and wholesale since 2013	Residential and commercial products	Not available





Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (4/15)

Business	Summary	Product offering	Milestones and updates
	Assen Ventures is a distributor, installer and after sales services provider on both electrical and solar powered products such as water pumps, water heaters and irrigation systems since 2008	Residential, commercial products, products can also serve and institutional clients	Executed solar water pumping projects in Palabek refugee settlements, Bidi refugee camp and Rhino refugee settlement
	Battery Plus Ltd is a distributor and installer automotive batteries and solar products such as batteries, inverters and water heating systems since 1996	Residential and institutional products	Not available
	D.Light is a distributor, installer, consumer financier and aftersales services provider of solar lighting systems and solar appliances like fans and TVSs since 2017	Residential and commercial products, serves small businesses	Launched rapid response rural healthcare solution, including solar arrays, smart phone and fridge for storing medicines
	Kirchner Solar is a distributor an installer of solar powered products like SHS, water heaters, TVs, etc. since 1996	Residential and commercial products, serves small businesses	Received EUR 400K subsidy to construct 22.5 kW mini-grid in central Uganda with Airtel as an anchor customer
	Solar Energy for Africa is a distributor, installer and after sales service provider of solar products like SHS, streetlights, batteries, etc., since 1995	Residential, commercial and institutional products, serves hospitals	Not available

Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (5/15)

Business	Summary	Product offering	Milestones and updates
	Water & Pumps international is a distributor and installer of solar products like water pumps, water heaters and street lights, since 2013	Residential products	Not available
Advanced Solar Power Ltd	Advanced Solar Power Ltd is a distributor, installer and after sales provider of solar products such as streetlights, solar water pumps and solar water heaters since 2015	Residential and commercial products	Not available
	African Energy Depot Ltd is a distributor of solar, mini-grid and power backup products since 2015; the company distributes solar products such as batteries, water pumps and lighting products	Commercial and institutional products for the government and medical centers, etc.	Expanded product portfolio to include higher capacity battery storage & high-performance remote monitoring equipment
	All in Trade is a distributor of quality solar products like inverters, water heaters and pumps and has installed ~25MW solar power to date since inception in 2008	Institutional, commercial products for corporate use	Supported the electrification of 46 health centers with support of various partners such as UNHCR & Care International
All Africa Ultimate Solar Energy	All Africa Ultimate Solar Energy is a distributor, installer and after sales services provider of solar products such as home systems, street lights, batteries and CCTV cameras	Residential, commercial products for hotels, gas stations, cold warehouses, etc. and institutional products for the gov't and hospitals	Not available




Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (6/15)

Business	Summary	Product offering	Milestones and updates
	Baseline Africa Ltd is a distributor of solar home systems and components such as batteries and inverters since 2002	Data not available	Not available
	Bitcom Delta EA Ltd is a provider of both ICT and power solutions since 2017; the company distributes and installs solar products such as batteries, inverters, panels and water heaters	Residential, commercial and institutional products	Installed C&I 172 kW solar project at NUCAFE factory in partnership with Village Energy
	Chloride Exide is a distributor and installer of automotive batteries and solar equipment such as panels, heating systems and batteries since 2001	Residential and commercial products that also serve small businesses	Not available
Crown Energy Systems	Crown Energy Systems is a distributor, installer and aftersales service provider of solar products such as panels and water pumps since 2010	Residential and commercial products	Not available
	Access to Solar Technologies is a social enterprise that distributes, installs and offers after sales services for solar products such as water pumps, water heaters, TVs, refrigerators, etc since 2016	Residential products	Implements a "Solar Village Project" model that prioritizes concentrated power supply to the entire village





Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (7/15)

Business	Summary	Product offering	Milestones and updates
ASE Solar Ltd	Ase Solar Ltd is a manufacturer and distributor of solar products such as panels, lighting products and energy backup systems like batteries and regulators since 2004	Residential products	Not available
	Azuri Technologies is a full-service provider of solar home systems and solar water pumps, offering all services across the value chain from manufacturing to after sales services since 2012	Residential and commercial products for small businesses like shops	Growfast, Azuri's solar irrigation solution, was named winner of Uganda renewable energy fund by the UN CleanStart program
	Barefoot Uganda is a social enterprise that distributes solar lighting products and solar phone charging systems since 2008	Residential and commercial products; mainly serve BoP consumers	One of the implementers of the Inclusive Dairy Enterprise project funded by the Netherland Embassy
	Basal Solutions is a distributor, installer and after sales services provider for solar products such as water pumps, water heaters, SHS and batteries	Residential, commercial and institutional products that can serve telecommunications companies	Supported the electrification of 46 health centers with support of various partners such as UNHCR & Care International
	Aptech Energy is a solar and water pump specialist since 2012; the company distributes, installs and offers after sales services on solar products such as water pumps, heaters, streetlights and batteries	Residential and commercial products	Received 250K debt funding from UNCDF for inventory financing (2018), and in 2021 was awarded funding from the Jack Ma Foundation

Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (8/15)

Business	Summary	Product offering	Milestones and updates
ARED SMC	ARED SMC is a service company that designs and distributes smart solar powered kiosks that offer phone charging, wifi connectivity and airtime purchase since 2013	Commercial products, targeting mainly women and low-income earners	Not available
Ekorn Solar Ltd	Ekorn Solar Ltd is a distributor and installer of energy saving and solar products such as batteries, SHS, water heaters, pumps, streetlights and refrigerators since 2011	Residential & commercial products for small businesses & farmers; serves institutions like prisons, hospitals & schools	Not available
 ENERGY SYSTEMS LIMITED	Energy Systems Limited is distributor, installer and after sales service provider of solar energy products such as refrigerators, water pumps and power hybrid systems since 2002	Residential, commercial, institutional products	Not available
	Epicenter Africa is a distributor, installer and after sales services provider of solar products such as home lighting systems, street lightings, solar water pumps and energy back up systems since 2009	Residential, and commercial products that serve industries	Implemented solar water pumping project in Kakuma refugee camp with funding from UNHCR
	E- Power Solutions is a distributor and installer of air conditioning and solar power products such as panels, streetlights, water pumps and batteries since 2004	Residential products	Not available

Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (9/15)

Business	Summary	Product offering	Milestones and updates
 <p>Fresca Investments</p>	Fresca Investments is a distributor, installer and after sales provider of both electrical and solar equipment; the company offers solar products such as panels and water heating systems since 2012	Residential, commercial and institutional products	Not available
	Global Solar Systems Limited is a distributor of solar powered equipment such as water heaters and water pumps since 2005	Data not available	Not available
	Great Seas (U) Ltd is a distributor of solar powered products such as water heaters, fans, refrigerators, lanterns	Residential and commercial products	Not available
	Green Power International is a manufacturer, distributor and installer of solar powered products such as water pumps, streetlights, panels and SHS since 2017	Residential and commercial products	Key projects include solar power system for NURI in Adjumani & 10 kW system for Kitalya prison
<p>Hagotech Gen. Electricals & Technical Service (HTGETS)</p>	HTGETS is a distributor, installer and after sales provider of solar products such as energy back up systems, refrigerators, water heaters and home & street lighting systems since 2015	Residential and institutional products for hospitals; also partner with NGOs on community electrification projects	Not available





Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (10/15)

Business	Summary	Product offering	Milestones and updates
	Solar Pipo is a system designer, installer and financier of solar cooling systems and water pumps mainly in the dairy sector	Commercial products; targeting dairy and agricultural projects	Installed 15 projects in the dairy sector with a total energy demand of 225 kW & has 3 projects in the pipeline
Kenni Invest Uganda	Kenni Invest Uganda is a distributor, installer and consumer financier of solar home systems since 2012	Residential products	Not available
LEEM Electronics	LEEM Electronics is a distributor and installer of SHS since 2014	Residential products	Not available
	Mr. Solar Limited is a distributor and installer of solar products like solar panels since 2018	Residential products	Not available
	Innovation Africa is a distributor & installer of solar powered products like motors and water pumps since 2005	Institutional products for schools and hospitals; supplies products for residential projects like water access in villages	Not available






Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (11/15)

Business	Summary	Product offering	Milestones and updates
	Nature Solar is a distributor of solar products like solar panels, since 2018	Residential and commercial products; sells to other solar distributors	Not available
New Age Solar Technologies	New Age solar Technologies is a distributor, installer and after sales service provider of solar products like street bulbs, batteries, inverters, refrigerators and TVs since 2010	Residential and commercial products for small businesses	Not available
	New Sun Limited is a distributor, installer and after sale service provider of solar products like solar panels, inverters, batteries, etc., since 2005	Residential & commercial products; also serves government & large organizations	Licensed importer of African Energy and Suntech solar panels
New Sun Solar	New Sun Solar is an installer of solar water pumps, since 2012	Institutional products for government organizations	Not available
	Powercon Solar Energy Company is an installer of solar products like SHS, since 2010	Residential and commercial products for small businesses	Not available






Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (12/15)

Business	Summary	Product offering	Milestones and updates
	Seven Hills Impex Limited is a distributor of solar products like solar panels and batteries, since 2001	Residential products	Not available
	Solar Point is a distributor of solar products like solar panels and lamps, since 2014	Residential products	Not available
	SoloGrid is a manufacturer, distributor, installer and consumer financier of SHS, since 2012	Residential and commercial products; also serves institutions like schools	Signed technology partnership with Angaza and has develop products targeted at the medical & school markets
	Solvic Solutions Limited is an installer of solar products like solar panels and charge controllers, since 2015	Institutional products for telecommunication companies	Not available
	Sunami solar is a distributor, installer, consume financier and after sales service provider of solar products like SHS, water pumps, TVs and fridges, since 2016	Residential and commercial products for small businesses	Not available






Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (13/15)

Business	Summary	Product offering	Milestones and updates
	Sunny Money is a distributor of solar lanterns, since 2008	Residential products	Not available
	SunTap Uganda Limited is a solar distributor and installer of solar products like SHS and streetlights, since 2015	Residential and institutional products; also serves international alert sites	Supported the electrification of health centers e.g Mpuge HC in Mukono
	Trans African Supply Services is a solar distributor and installer of SHS, water pumps and streetlight, since 2002	Residential and institutional products for government & organizations	Constructed solar piped water schemes in rural areas in Uganda in partnership Ministry of Water
	Ugasolar Suppliers Limited is a solar distributor and installer of SHS	Residential products	Not available
	Ultratec Uganda Limited is a distributor and installer of solar products like lamps, panels, water pumps and water heaters since 1999	Residential and institutional products for government organizations	Not available





Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (14/15)

Business	Summary	Product offering	Milestones and updates
	Village Power is a distributor, installer, consumer financier and after-sales service provider of SHS, since 2014	Residential products	Partnered with Mercy Corps to provide 54 households and 6 businesses in Bid bidi refugee camp with solar solutions
	W. Water Works is a distributor and installer of solar water pumps since 2015	Institutional and commercial products for farms and small businesses	Supported the electrification of health centers e.g. Mpuge HC in Mukono
	One Lamp is a distributor of solar lamps and solar milk chillers since 2014	Residential products	Received EUR 350K grant funding from EEP Africa to a solar-powered refrigeration and milk storage solutions for dairy farmers in Western Uganda
	Ital Trade Limited is a solar distributor, installer and after sale service provider of solar powered products like inverters, solar panels and batteries since 1996	Residential and commercial products	Not available
	Luk Solar Uganda is a distributor and after sales service provider of solar lamps since 2013	Residential clients and institutional products for government organizations	Not available


Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (15/15)

Business	Summary	Product offering	Milestones and updates
	gnuGrid Africa is a Uganda based fin-tech and clean-tech social enterprise that is enabling financial and energy inclusion through data	Credit reference bureau for informal financial institutions, CRM for solar companies and smart batteries for off-grid communities	Raised USD 612K seed round to pivot into fintech
	Mwezi is a last mile solar energy distributor that aims to improve the lives of households in rural communities	Residential and commercial products	Raised USD 500K investment from the BUILD Fund created in partnership with Bamboo Capital partners & UNCDF
	Yellow Solar is a last mile distributor of PAYGO solar home systems to low-income rural households	Residential products	Received debt financing of USD 4 million for expansion in Malawi and Uganda
	Fin-e Innovations Limited is a Ugandan based clean energy fintech that aims to decentralize and scale funding for Uganda energy SMEs	Commercial and industrial products	Closed pre-seed funding of USD 300K
	Balton Uganda is the Uganda subsidiary of Balton CP that offers environmentally friendly green solutions in areas of power and solar water heating systems	Commercial and industrial products such solar water heater, solar irrigators & solar pumps	Balton has a distribution partnership with Chromagen, a leading international manufacturer of solar and electric water heaters



E-mobility players are starting to get some traction in motorcycle, motor vehicle, and fishing boat markets

Business	Summary	Product offering	Milestones and updates
	<p>Kiira Motors is a vehicle manufacturer, launched in 2007 as a research project in Makerere University, Uganda. It was incorporated in 2011, and is owned jointly by the Government of Uganda (96%) and Makerere University (4%)</p>	<p>Several vehicles including solar powered buses and private cars</p>	<p>Currently in the final stages of construction of a factory in Jinja district, Eastern Uganda, with a projected capacity of 22 vehicles per day</p>
	<p>Bodawerk is a Ugandan social enterprise founded in 2017 that is developing mobility solutions in the field of lithium-ion batteries. Bodawerk retrofits existing bodas' petrol-driven power engines with electric ones</p>	<p>Electric motorbikes and electric tractors</p>	<p>Developed zero emission electric boda bodas and agricultural equipment with funding from FCDO and other development partners</p>
	<p>ASOBO is a start-up developing sustainable platforms for e-mobility services on the water in emerging markets. ASOBO e-Boarders are electric outboard engines for small fishing boats powered by renewable energy</p>	<p>Fishing boat engines</p>	<p>Closed grant funding of EUR 500K from EEP Africa to pilot a PAYGO model in Uganda, Tanzania and Kenya</p>
	<p>Zembo (Zero Emission Motorcycle Boda) is a start-up founded in 2018 specializing in innovative and sustainable mobility solutions for Africa</p>	<p>Electric motorbikes</p>	<p>Raised USD 3.4M from several international funders including Toyota and InfraCo to expand operations in Uganda</p>

A number of mini-grids have been constructed in Uganda due to support from the private sector, UG government, dev't partners & other financiers (1/4)


Region	Existing mini-grids	Years in operation	Technology & capacity*	Developer & partners	Funds raised and financiers
 Central	Tiribogo gasification	8	32kW Biomass gasification 170 connections	Developer: Pamoja Energy Ltd Partner: Former REA	Grant from Royal Institute of Technology Stockholm & Renewable Energy Business Incubator (REBI)
	Magara gasification	7	32kW Biomass gasification 72 connections	Developer: Pamoja Energy Ltd Partner: REA	Grant from Royal Institute of Technology Stockholm & Renewable Energy Business Incubator (REBI)
	Bukuzindu solar-diesel plant	7	Hybrid gen. station 600 kW (Solar) & 1.6MW (Diesel) 40 villages (~2500 hhs)	Developer: Kalangala Infrastructure Services	\$50M from a mixture of debt, grants and equity from Uganda Development Cooperation, Industrial Development Corporation of South Africa, Nedbank, Emerging Africa Infrastructure Fund & GuarantCo ^{1,2}
	Kiboga solar mini-grid	10	1kW Solar PV 11 connections	Developer: Centre for Research in Energy and Energy Conservation	Grant from National Council for Science and Technology (NCST)
	Kitobo Solar Plant	5	230kW Solar PV 541 connections	Developer: Absolute Energy Africa Ltd	\$730K grant financing from Energy and Environment Partnership (EEP) , Shell Foundation, FinAfrica ³

A number of mini-grids have been constructed in Uganda due to support from the private sector, UG government, dev't partners & other financiers (2/4)



Region	Existing mini-grids	Years in operation	Technology & capacity*	Developer & partners	Funds raised and financiers
 Central	Kichner solar minigrid	12	22kW Solar PV 60 connections	Developer: Kirchner Solar Ltd Partners: Former REA	\$246K grant subsidy from GiZ ¹
	Bunjanko Island mini-grids	<1	128 kW Solar PV 500 connections	Developer: Winch Energy Partner: Total Energies	Equity funding of USD 1M from both Winch Energy and Total Energies ^{2,3}
	Kiwumu solar mini-grid	<1	40 kW solar PV 300 households and 60 businesses	Developer: Equatorial Power Partners: UMEME, Power for All	Grant funding from the Rockefeller Foundation ⁴
 West	Kayanja Solar microgrid	7	5kW Solar PV 70hhs	Developer: Remergy Energy Ltd Partners: World-Wide Fund for Nature, Access 2 innovation	Equity from Remergy Energy solutions
	Bwindi community microgrid	7	64kW Hydro 42 connections	Developer: Bwindi Community Hospital Partners: GiZ & EnDev	\$1.23M - \$123M grant from GiZ and EnDev ⁵

Sources: UOMA research and analysis 1. Ivan Nygaard et al, Market for the integration of smaller wind turbines in mini-grids in Uganda, 2018 [\[Link\]](#) 2.UOMA consultations 3. Winch Energy website [\[Link\]](#) 4. Power for All, Twaake Pilot Factsheet, 2021 [\[Link\]](#) 5. SEforALL, Market study on available financial instruments in support of GMGs and assessment of GMG developer needs, 2017 [\[Link\]](#)

A number of mini-grids have been constructed in Uganda due to support from the private sector, UG government, dev't partners & other financiers (3/4)

Region	Existing mini grids	Years in operation	Technology & capacity*	Developer & partners	Funds raised and financiers
 West	Kisiizi Hydropower	37	300kW hydro & 60 kW hydroelectric & diesel generator of 80kva 710 connections	Developer: Kisiizi Power Partners: Kisiizi Hospital, Church of Uganda	\$900K; 30% equity from Kisiizi Hospital and 70% grant from the World Bank ¹
	Kyamagaruru solar plant	6	13kW Solar PV 68 connections	Developer: Energy for Development Partners: Former REA	Grant from University of Southampton
	Kanyegaramire solar plant	6	13kW Solar PV 74 connections	Developer: Energy for Development Partners: REA	Grant from University of Southampton
	Eco-Garden micro-hydropower plant	7	5kW Hydro 16 connections	Developers: Eco-Gardens Rwenzori Partners: Renewable Energy Business Incubator (REBI)	Equity from Eco-Garden Rwenzori
	Kabalega Hydropower plant	9	9MW Hydro 203 connections	Developers: Hydromax Limited Partners: Former REA	Equity from Hydromax; additional \$53.7M grant from the Norwegian government and \$23.7M debt from the French Development Agency ¹

A number of mini-grids have been constructed in Uganda due to support from the private sector, UG government, dev't partners & other financiers (4/4)

Region	Existing mini-grids	Years in operation	Technology & capacity*	Developer & partners	Funds raised and financiers
 West	RMS Pico Hydropower	8	5kW Hydro 3 connections	Developer: Rwenzori Mountaineering Services (RMS)	Grant from Private Sector Foundation Uganda (PSFU)
	Pamoja gasification – Kamwenge District	3	75kW Biomass gasification 500 connections	Developer: Pamoja Energy Limited	\$369K grant from Energy and Environment Partnership (EEP) Programme
	Nakivale Refugee camp Solar mini-grid	<1	10.8 kW Solar PV 4 connections	Developer: UNHCR Partner: Office of the Prime Minister	Grant support from UNHCR ¹
	Katiirwe solar mini-grid	<1	50 kW Solar PV 200+ connections	Developer: PowerGen Renewable Energy Partner: NRECA International	Equity from Kyegegwa Rural Electricity Co-operative Society
 East	Suam Micro Hydropower plant	8	40kW Solar PV 126 connections	Developer: GiZ and EnDev Partners: Former REA	\$1.2M - \$12M grant from GiZ and EnDev ²

There are several up-coming mini-grids across all regions in Uganda; some of these have already raised funds from DFIs and European governments (1/2)

Region	Developer/ Tender	Technology & capacity	Partners and funds raised & financiers
Central	Bakulu Power	<ul style="list-style-type: none"> Solar mini-grid total of 600kW in Buvuma district Potential to reach ~8,000 people 	Partners: Former REA, Energy for Impact
	Absolute Energy	<ul style="list-style-type: none"> Estimated capacity of 100kW Solar PV Located in Kalangala District with potential impact of 5,400 people 	Partners: Former REA
	AfDB and REA	<ul style="list-style-type: none"> (10) decentralized mini-grids on Lake Victoria 	Partners: Former REA
Western	ORIO Infrastructure Fund	<ul style="list-style-type: none"> (10) mini hydro projects Capacity of 50 to 500 Kw 	Partners: UECCC Funds raised & financiers: \$14.5M grant from Emerging Africa Infrastructure Fund, FMO (Dutch development Bank) ¹
	Tiger power	<ul style="list-style-type: none"> (3) Solar PV arrays in Kyenjojo Uganda Expected to serve 1000 households 	Partners: Former REA Funds raised & financiers: \$738K The Belgium government ²
	WWF Uganda	<ul style="list-style-type: none"> (6) solar mini-grids of a total capacity of 170 kW in Kasese of Rubirizi Expected to serve 900 households and 205 small businesses 	Partners: Former REA Funders: European Union (EU)






There are several up-coming mini-grids across all regions in Uganda; some of these have already raised funds from DFIs and European governments (2/2)

Region	Developer/ Tender	Technology & capacity	Partners and funds raised & financiers
Southern	Winch Energy	<ul style="list-style-type: none"> Capacity of 30kW to 80kW per site 15 villages in Rakai & Isingiro 	<p>Partners: GiZ and Former REA</p> <p>Funds raised & financiers: \$28.5M grant from the German government¹</p>
Northern	Mandulis Energy	<ul style="list-style-type: none"> 20MW biomass project in Gulu 	<p>Partners: KfW, Power Africa</p> <p>Funds raised & financiers: \$1M grant from Sustainable Energy Fund for Africa (SEFA) and African Development Bank²</p>
	Winch Energy	<ul style="list-style-type: none"> Capacity of 30kW to 80kW per site 25 villages in Lamwo District 	<p>Partners: GiZ and Former REA</p> <p>Funds raised & financiers: \$28.5M grant from the German government²</p>
Eastern	Equatorial Power	<ul style="list-style-type: none"> 600kW solar PV plant on Lolwe Island Namayingo District Expected to serve 3,700 connections 	<p>Partners: Engie^{3,4}</p>

International and local NGOs are increasingly playing a role in electrification of schools and health centers (1/2)

Business	Summary	Product offering	Milestones and updates
	Solar sister is an international NGO that empowers women entrepreneurs through energy access	Residential products including lanterns and accessories	Powered several health centers as part of their COVID response including health centers in Pushit & Amuro in N. Uganda
	We Care Solar is a global NGO reducing maternal mortality with solar powered reliable lighting & medical devices with a presence in Uganda, Liberia, Sierra Leone and Zimbabwe	Developed solar suitcase, a compact solar home system for maternal health facilities that includes medical lighting, phone charging, a fetal doppler, and thermometer	Launched the "Light every birth" program in Uganda in 2018 that included the donation of 350 solar suitcases to health centers
	Solar Electric Light Fund (SELF) is an international NGO providing energy solutions to the last mile in partnership with development partners such as UNHCR and UN Foundation	Residential and commercial products	Main contractor on a UN Foundation project that electrified 62 health centers in rural Uganda and Ghana; the electrification of 36 health centers in Uganda was sub-contracted to All in Trade
	Little Sun is a global NGO providing small portable solar lamps for energy impoverished communities living without electricity	Residential products such as lanterns and lamps	Distributed over 6,500 lamps to communities without electricity in Uganda in partnership with Energi Nord, a Danish energy company
	Innovation Africa is an NGO providing energy solutions for health centers and schools and has been active in 10 SSA countries including Uganda	Commercial products for institutional consumers including large modular systems, solar water pumps, and solar heaters	Electrified several schools and health centers in Uganda with systems including remote monitoring system for donors to monitor real time performance

International and local NGOs are increasingly playing a role in electrification of schools and health centers (2/2)

Business	Summary	Product offering	Milestones and updates
	<p>Green empowerment is a global renewable energy non-profit working with rural communities and partners to improve access to energy</p>	<p>Commercial products for institutional consumers such as schools and hospitals</p>	<p>Launched an app for remote data collection in partnership Medical Teams to support community service providers to understand their energy needs without having technical expertise</p>
	<p>Solar Health is a Uganda based non-profit founded in 2017 working with local and international orgs to address entrenched energy poverty</p>	<p>Commercial products for institutional consumers, including lights and solar pumps</p>	<p>Electrified 56 off-grid health centers, distributed over 144K pico lights to vulnerable communities, and established 2 women solar entrepreneur groups</p>
	<p>Stiftung Solarenergie is a German based NGO that promotes reliable, affordable and environmentally friendly energy for households and institutions</p>	<p>Commercial and industrial products for institutions such as schools and health centers</p>	<p>Supported the electrification of 43 health centers in partnership with Sendea association and Signify Foundation</p>
	<p>Solar Aid is an international development charity working to create a sustainable market for solar lights in Africa</p>	<p>Residential products such as solar lights, lamps, and lanterns</p>	<p>Opened offices in Uganda in 2014 and set up an entity now running as Xpreme Solar Solutions which has distributed over 80K solar lights</p>
	<p>Joint Energy and Environment Projects (JEEP) is an NGO working for an environmentally safe and clean Uganda</p>	<p>Commercial products targeted at institutional consumers such as solar lighting, phone charging & refrigerators</p>	<p>Electrified 63 schools with lighting systems, set up phone charging systems for 4 communities, and provided refrigerators to 3 health centers</p>

There have been many recent debt deals in the region

Investor	Company	Amount	Date
FSD Africa Investments	Nithio FI	US\$4.5M	2021
Development Finance Corporation	Nithio FI	US\$10M	2021
SunFunder	Winch Energy	US\$2M	2021
SEED	Peec Energy	US\$2M	2021
EDFI-ElectriFI	Nithio FI	US\$5M	2020
FMO	Greenlight Planet	US\$5.3M	2020
European Investment Bank	Fenix	US\$12.5M	2019
SunFunder, Developing World Markets, SIMA, responsibility	d.Light	US\$18M	2019
Lion's Head Global partners	BBOXX	US\$8M	2019
TRINE	Greenlight planet	US\$2.2M	2019
SunFunder, responseAbility, Oikokredit	SolarNow	US\$9M	2019
responsAbility, SunFunder, European Investment Bank, SIMA Funds	d.light	US\$50M	2018
Bamboo Capital Partners	BBOXX	US\$50M	2018
ElectriFI, TRINE	Azuri	US\$20M	2018
European Investment Bank	d.Light	US\$25M	2018
Symbiotics group, FMO	Zola Electric	US\$32.5M	2018
SunFunder	Zola Electric	US\$20M	2018
Finnfund	Mobisol	US\$12.4M	2017
Atlas Mara	BBOXX	US\$2M	2017
Essential Capital Consortium	BBOXX	US\$5M	2017
Responsibility	Mobisol	US\$12M	2017
Stanbic Bank, CDC, FMO, Norfund, Triodos, responsAbility, Symbiotics	M-KOPA	US\$80M	2017
SunFunder, responsAbility, Oikokredit	SolarNow	US\$6M	2017
SunFunder	SolarNow	US\$2M	2016
Oikokredit International	BBOXX	US\$5.3M	2016
Packard Foundation, Ceniath, the Calvert Foundation	Off-Grid Electric	US\$45M	2016
OPIC	SunFunder	US\$15M	2016
CBA	M-KOPA	US\$4M	2016

~US\$80M in regional debt financing from 2019 and 2021 which is much lower than >US\$380 from 2016 to 2018 figures, indicating smaller investments in recent years

A number of facilities have been set up in the region to promote the off-grid energy sector (1/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
SunFunder – Solar Energy Transformation Fund¹	Support 50 solar companies to grow, with a potential to serving up to 3 million people	Solar Energy	Debt	\$70M	East and 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 – Beyond the Grid Solar Fund (BTG)²	Specialist debt financing partner for solar companies 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 refrigerators. Awards are ongoing on an annual basis	Productive use	£100k	Dependent on co. & funds raised	SSA

A number of facilities have been set up in the region to promote the off-grid energy sector (2/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
SIMA Fund for Off-grid solar¹	Provide commercial capital and advisory to energy businesses with financial, social, and env. impact	High risk, earlier stage businesses	Debt	\$90M	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 Fund²	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

Source: Source: UOMA interviews & consultations, supplemented by

1. SIMA, [SIMA Off-Grid Solar and Financial Access Senior Debt Fund I](#); 2. Calvert Impact Capital, [Off-Grid Energy Access Fund \(FEI OGEE\)](#), 2019

A number of facilities have been set up in the region to promote the off-grid energy sector (3/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Pioneer Energy Investment Initiative	Support, scale, and learn from innovative energy companies impacting 8 M people through Acumen's portfolio by 2026	Energy generation (SHS, Solar & hybrid mini-grids) & Energy usage (Innovations for energy use)	Common & Preferred Equity, Convertible Debt	\$22.8M	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 and 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	\$10M – 30M / co	SSA excluding SA

A number of facilities have been set up in the region to promote the off-grid energy sector (4/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Efficiency for Access Coalition	Support & accelerate innovation in off-grid and weak grid appliance tech and markets; fund applications closed in 2019	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	Mobilize additional finance for infrastructure projects in sub-Saharan Africa; fund applications closed in 2019 ¹	Geothermal, hydropower, solar & wind power, transmission lines, sustainable cooking fuels	Grants blended with long term financing	~\$920M	SSA
Emerging Africa Infrastructure Fund	Encourage and mobilize private investment in infrastructure in SSA to promote economic dev't	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 (5/11)

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 (SEFA)	Support private-sector led economic growth through the efficient utilization of untapped clean energy resources	Clean energy	Grant and equity	\$95M	SSA
USAID-Derisking PAYGO	Mobilize additional finance for SHS co.s that wish to expand sales of PAYGO SHS in refugee settlements; fund applications closed in 2019 ¹	PAYGO SHS	Grant	Not available \$145k-175k/co.	Uganda
AlphaMundi Foundation – Powering Ag	Catalyse 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 (6/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
BEAM investment platform	Cloud-based platform, aiming to provide developmental infrastructure for off-grid energy services across SSA	Off-grid energy	Equity	\$50M	Africa
Solar Electric Light Fund¹	Design & implement solar energy solutions to assist people living in poverty	Solar	Grant	Not available	Uganda
Energy Access Venture Fund²	SMEs active in electricity generation and distribution, and electricity related services in SSA	SHS, Micro-grid infrastructure & hybrid technologies	Equity and Quasi-equity	\$55M	EA and Southern Africa
The EnAccess Foundation	Address innovation challenges that renewable energy companies face through lack of financing	Irrigation companies 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 (7/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Biodiversity Investment Fund	Provide attractive loan financing for businesses that can demonstrate impact or contribution towards biodiversity in Uganda	Off-grid energy	Equity	\$50M	Africa
EnDev Uganda	Give support in energy policy, improved biomass technologies, rural electrification & energy efficiency.	Pico PV & SHS Grid densification	No info	€12.25M	Uganda
EEP Africa	Provide 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	Develop, construct and operate renewable energy generation projects	Renewable energy	Equity or mezzanine debt	\$60M (\$227M – to verify) ¹	SSA

A number of facilities have been set up in the region to promote the off-grid energy sector (8/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Frontier Energy I Fund¹	Develop, construct and operate renewable energy generation projects; fund closed in 2017	Renewable energy	No info	\$60M	East Africa
USADF SCC Grants²	Support businesses to identify and scale innovative efforts to address energy access gaps for refugees; the grants were awarded in 2019	Off-grid energy, internet and digital technology	Grant	~\$370K	Uganda
USADF Off-Grid Energy Challenge³	Support entrepreneurs to develop and scale up off grid proven technologies in rural communities	Off-grid energy but women-led projects are targeted in Uganda	Grant	\$100K/co.	SSA
BEAM – ElectriFI Fund⁴	Provide early stage equity capital for SHS distributor companies to help further unlock debt capital	SHS	Equity	\$8M	Africa

A number of facilities have been set up in the region to promote the off-grid energy sector (9/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
SIMA Angaza Distributor Financing Fund¹	Invest in off-grid distribution companies to close cash flow gaps from customer instalment payments; fund is accepting applications	PAYGO companies	Debt	\$5.7Billion	Global
Renewable Energy Challenge Fund²	Aim to increase adoption of off grid PV solutions that can stimulate economic activity; fund is ended in December 2020	Productive use, solar and clean cooking	Grant	~\$4M	Uganda
KawiSafi Ventures Fund³	Invest capital to scale companies providing clean, affordable and efficient energy to low income populations	Off grid solar power	Grant and equity	\$70M	East Africa
SIMA Off-Grid Solar and Financial Access Senior Debt Fund I⁴	Finance innovative companies that invest in, manufacture, and/or distribute individual SHS; 5-year fund since 2017	SHS	Senior debt	\$90M	SSA and South Asia

A number of facilities have been set up in the region to promote the off-grid energy sector (10/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Climate Investor One¹	Provide funding to develop renewable energy projects to reduce power deficits, energy costs and CO2 emissions	Clean energy	Debt and equity	\$80M	SSA
GEEREF NeXt Funds²	Catalyse private sector investment for renewable energy through being an anchor investor to encourage other investors to co-invest	Renewable energy and energy efficiency	Grant, equity	\$765M	Global
ARCH Africa Renewable Power Fund (ARPF)³	Invest capital to scale companies providing clean, affordable and efficient energy to low income populations	Wind, solar PV, hydro power, geothermal and biomass	Equity	\$25M	SSA
Universal Green Energy Access Programme (UGEAP)⁴	Increase financing for renewable energy scaling up investments from local financial markets and the international private sector.	SHS, mini grids, on-grid installations	Debt, mezzanine debt, guarantees	\$500	SSA

A number of facilities have been set up in the region to promote the off-grid energy sector (11/11)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
Beyond the Grid Fund For Africa (BGFA3)¹	Establish up to 600,000 energy connections and benefit more than 3 million people in remote areas of Uganda.	Clean energy	Grant	€ 20.7M	Uganda
Nithio Financial Intermediary	Utilize innovative AI-enabled platform to finance off-grid energy companies; includes receivables and inventory financing	Mini-grids, SHS, Productive use, Microfinance	Debt	\$ 24.5M	East and West Africa
SIMA Energy Access Relief Fund (EARF)	Provide affordable financing to support off-grid solar firms facing financial issues due to disruptions caused by COVID-19	SHS	Debt	\$68 million	Sub-Saharan Africa and Asia

The Ministry of Energy and Mineral Development and several other agencies are dedicated to advancing access to energy

Government body



Ministry of Energy and Minerals Development (MEMD)

Mandate in industry

- Has the overarching mandate to promote development of sustainable use of energy and mineral resources
- Renewable energy department serves under this Ministry and runs a number of the programs for access both for on- and off-grid energy
- Recently re-absorbed the Rural Electrification Agency (REA) that had a mandate to support rural electrification access with special regard to marginalized communities



Electricity Regulatory Authority (ERA)

- 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
- Establishes tariff structures and investigates tariff charges, approves rates, terms, and conditions of electricity services provided by generation, transmission, and distribution companies

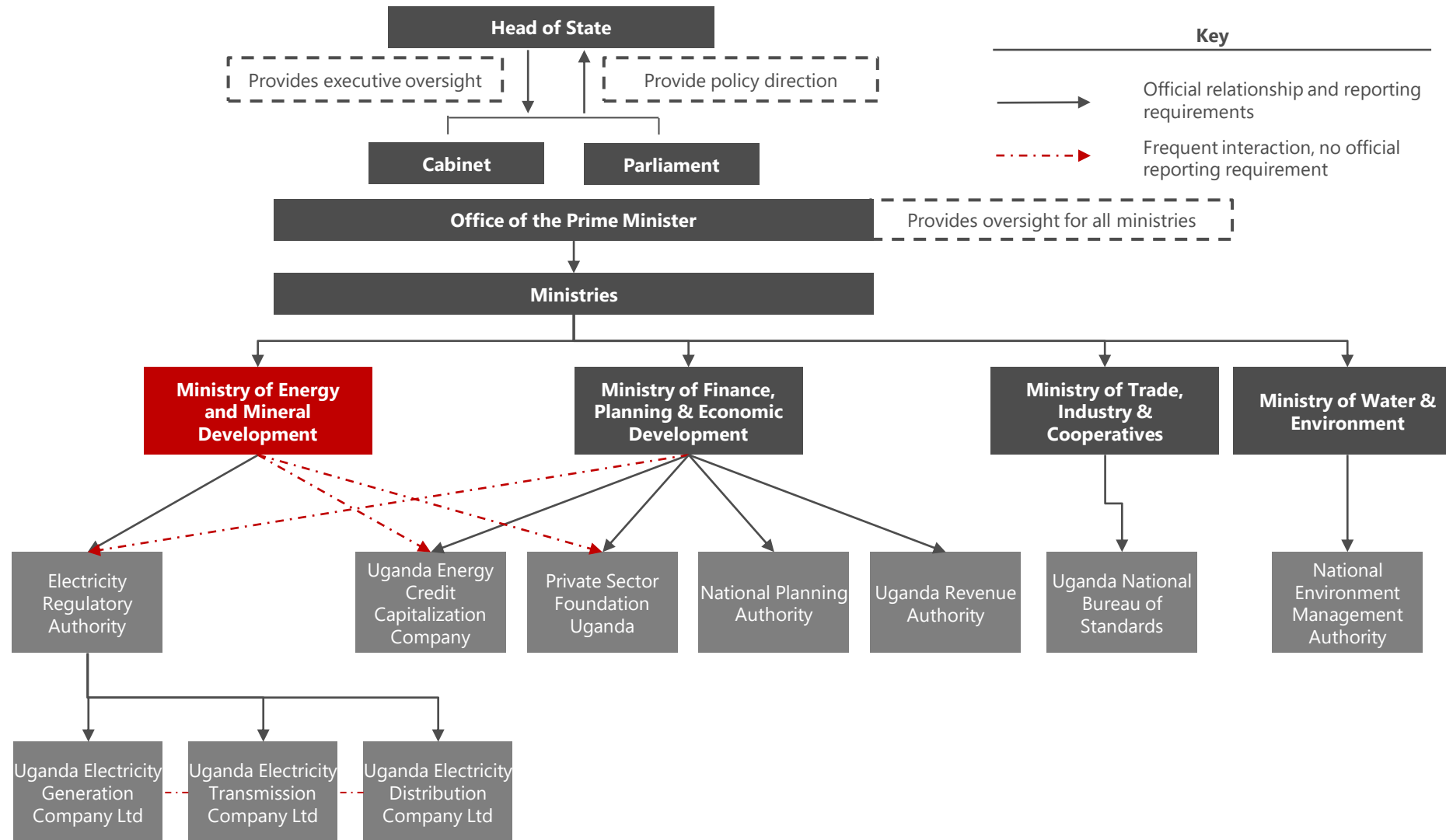


Uganda Energy Credit Capitalization Company (UECCC)

- Facilitates investments in renewable energy sector by providing financing products and technical assistance to firms in the sector
- Channels investment to projects as the administrator of Uganda Energy Capitalization Trust, the framework for pooling resources from government and development partners

Most notable change has been the reabsorption of REA into MEMD, with rural electrification ownership transferred back to the ministry

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



The European Union is supporting a number of programs to influence the private sector and advance off-grid access (1/5)



Program: Scaling-up rural electrification using innovative solar photovoltaic (PV) distribution models

Approach

- Provide business training & specific solar PV energy training to CBOs
- Provide 51 social institutions with solar PV systems
- Set up solar mini-grids in 6 trading centers in Kasese and Rubiziri districts

Impact to date

- 3,000 households connected to solar home systems
- Solar systems (1000W each) installed in 31 schools and 20 health centers in 6 districts
- Contractor selected for installation & management of 6 mini-grids
- Capacity of CBOs to install & manage solar photovoltaic technology strengthened

Affiliated organizations



Implementers:

WWF in partnership with Kasese District Local Government and Enterprise Uganda Foundation



Funders:

ACP-EU

Overview

- **Target action:** 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 & build local capacity to install & maintain solar PV systems
- **Project status:** Ongoing
- **End date:** 2023
- **Target industry:**



SHS



Mini-grids

The European Union is supporting a number of programs to influence the private sector and advance off-grid access (2/5)



Program: Access to energy services in rural and peri-urban areas in Northern Uganda (Teko Wa Project)

Overview

- **Target action:** Sustainable management of bio – energy resources, increasing use by households and social institutions of solar PV energy and energy efficient cook stoves
- **Project status:** Closed
- **End date:** April 2020
- **Target industry:**



SHS



Cook stoves



Bio fuels

Approach

- Provide a no. of social institutions with energy efficient cook stoves & solar systems
- Disseminate, in co-operation with private companies, SHS and cooking stoves to households
- Include awareness and build capacities of local communities in sustainable management of bio- energy resources

Impact to date

- 2,924 ha of woodlots and orchards established within by the project and a number of tree seedling businesses set up
- 35,366 households and 24 institutions accessed energy efficient stoves
- 25,750 households and 24 institutions accessed with solar home systems for lighting

Affiliated organizations



Implementers:

Church of Sweden in Partnership with Lutheran World Federation Uganda



Funders:

EU

The European Union is supporting a number of programs to influence the private sector and advance off-grid access (3/5)



Program: 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

Approach

- Provide several households and SMEs with access to energy services via SHS and solar mini-grids
- Facilitate bi-annual workshops for areas in the four countries concerned

Impact to date

- The project has 3,460 new SHS customers in Mali and Uganda (42% of the target). Target achieved in Mali and 60% customers recruited in Uganda.
- 4,496 SHSs have been installed in Mali, Guinea-Bissau and Uganda.

Affiliated organizations



Implementers:

Foundation Rural Energy Services



Funders:

ACP-EU

Overview

- **Target action:** Working to scale up access, in the predominantly rural, poor communities of the targeted countries in Cameroon, Mali, Uganda and Guinea-Bissau
- **Project status:** Closed
- **End date:** December 2020
- **Target industry:**



SHS



Mini-grids

The European Union is supporting a number of programs to influence the private sector and advance off-grid access (4/5)



Program: The Uganda Green Enterprises Finance Accelerator (UGEFA)

Approach

- The fund discounts loans of between US\$ 10,000 to US\$ 100,000 with 1/3 of the total loan amount repaid directly by a UGEFA grant, thereby reducing total principal and interest repayment amounts
- Additionally, investees receive 6 months of technical assistance to help restructure operations to build resilience under COVID-19

Impact to date

- Announced first call for application and admitted first cohort of businesses into the accelerator
- Announced second call for applications for green enterprises
- Signed MOUs with three Uganda banks including Yako Bank Limited, Equity Bank Limited and Opportunity Bank Limited to begin lending to entrepreneurs

Affiliated organizations



Implementers:

Finding XY, Adelphi



Funders:

EU

Overview

- **Target action:** Offers integrated package of enterprise capacity building through workshops and peer mentoring for investor readiness and;
 - Facilitation of tailored and accessible loans in partnership with local banks and;
 - Building an a supportive ecosystem around green SMEs by training business advisors and trainings for financial institutions
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Cook stoves

The European Union is supporting a number of programs to influence the private sector and advance off-grid access (5/5)



Program: COVID-19 Economic Relief Fund For The Off-Grid Solar And Cook Stove Sector

Overview

- **Target action:** To temporarily cover the costs of households to maintain their solar PAYGO systems, to temporarily cover solar and ICS companies' operating costs to maintain their activity and to implement trainings, while also allowing for strategic investments that increase the companies' resilience and future growth potential
- **Project status:** Closed
- **End date:** March 2021
- **Target industry:**



SHS



Cook stoves

Approach

- COVID-19 Relief to SMEs covering customer monthly payments– to mitigate loss of energy access in Ugandan households and the losses of energy access companies Provide ICS and solar companies funding to invest into their company for production and distribution infrastructure
- Develop the training offer from sector associations and other entities

Impact to date

- Disbursed grant support to 26 off-grid solar and improved cook stove companies ranging from early-stage to mature

Affiliated organizations



Implementers:

PSFU, EnDev



Funders:

EU

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



WORLD BANK GROUP

Program: Energy for Rural Transformation Phase III (ERT-3)¹

Overview

- **Target action:** Increase access to electricity in rural Uganda, with focus on three components:
 - On grid access
 - Off-grid access
 - Institutional strengthening through impact monitoring
- **Project status:** Ongoing; near completion
- **End date:** December 2021
- **Target industry:**



SHS



On-grid



Mini-grids

Approach

Off-grid component:

- Installation of solar PV systems for public institutions in rural areas
- Business development support
- Provision of credit facilities & quality standards enforcement support

Impact to date

- USD 8.5 million fund to be disbursed to local banks to provide working capital financing to SHS PAYG operators
- 944,963 people provided with access to electricity by household
- 37,364 people provided with electricity using off-grid and mini-grid solutions
- 329 health centers provided with access to electricity

Affiliated organizations



Implementers:

REA, MOWE, MOH, MOESD, UECCC, PSFU & MEMD



Funders:

World Bank/GEF

World Bank also runs independent programs to advance access & create a conducive environment for private sector growth



WORLD BANK GROUP

Program: Lighting Africa Campaign¹

Overview

- **Target action:** Enable access to off-grid lighting and energy products for 250 million people across sub-Saharan Africa by 2030
- **Project status:** Ongoing; near completion
- **End date:** December 2021
- **Target industry:**



SHS

Approach

Catalyze the market through:

- Market intelligence and quality assurance
- Access to finance
- Consumer education, business development support and policy and regulation support

Impact to date

- Market assessment study to determine demand for solar products, market bottlenecks, & assess options for supporting the growth; consumer awareness campaigns
- Supporting UNBS in adopting and enforcing internationally recognized standards
- 2M people impacted, ~920k quality products sold & ~185k GHG gas emissions avoided

Affiliated organizations



Implementers:

Broad global alliance – imps. varying by country



Funders:

World Bank / IFC

Additionally, World Bank is partnering with the government on an initiative on to scale up energy access for households, businesses and public institutions



WORLD BANK GROUP

Program: Uganda Electricity Access Scale-up Project (EASP)¹

Overview

- **Target action:** To increase access to energy for households, commercial enterprises, industrial parks, and public institutions
- **Project status: Pipeline;** Kick off expected in 2022
- **End date:** N/A
- **Target industry:**



SHS



On-grid



Mini-grids

Approach

Catalyze the market through:

- Market intelligence and quality assurance
- Access to finance
- Consumer education, business development support and policy and regulation support

Impact to date

- Currently holding workshops to get input from various stakeholders
- USD 400 million in funding commitments

Affiliated organizations



Implementers:

Ministry of Energy and Mineral Development (MEMD), Uganda Energy Credit Capitalization Company(UECCC)



Funders:

World Bank/IDA/IBRB

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (1/8)



Program: The Power Africa Uganda Electricity Supply Accelerator

Overview

- **Target action:** 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,
 - and enhance the enabling environment for clean energy investment
- **Project status:** Closed
- **End date:** 2020
- **Target industry:**



Approach

- Supported generation and access projects through grants, transaction advisory support, short term technical assistance and linkages with other Power Africa partner tools

Impact to date

- Power Africa, developed the national electricity connections Policy (ECP) in 2018 through which 223,058 on grid connections have been made, 1+ M people provided with access to power & ~USD 42 M mobilized
- Supported various sector stakeholders including USEA, REA and private operators such as Mandulis Energy

Affiliated organizations



Implementers:

Energy and Security Group



Subcontractors:

NRECA International, Nexant, African Solar Designs & Konserve Advisory Services



Funders:

World Bank/IDA/IBRB

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (2/8)



USAID
FROM THE AMERICAN PEOPLE

Program: Quality Assurance Framework for Mini-Grids¹

Overview

- **Target action:** Address some of the root challenges of providing safe, quality, and financially viable mini-grid power systems to remote customers
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Mini-grids

Approach

- Provide a flexible alternative to rigid top-down standards by defining:
 - Levels of service framework
 - Accountability and performance reporting framework

Impact to date

- Provided a formalized, common standard for classifying energy consumers
- Facilitated aggregation of mini-grid projects & unlock private investment from data generated
- Supporting implementation of consumer protections, thus a better consumer service

Affiliated organizations



Implementers:

NREL, DOE



Funders:

World Bank/IDA/IBRB

USAID's Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (3/8)



Program: Last Mile Distribution Results-Based Finance

Overview

- **Target action:** To increase energy access through solar home systems (SHS) to last-mile households in Uganda by incentivizing off-grid solar companies to develop sustainable business models towards reaching the last mile
- **Project status:** Ongoing
- **End date:** 2022
- **Target industry:**



SHS

Approach

- The project's strategy is to temporarily lower the cost of extending off-grid solar companies service coverage for Tier 2 products to last-mile areas and provide a risk protection mechanism for customer payment defaults. This strategy will be achieved through provision of up to three types of results-based financing incentives to companies selling solar home systems (SHS)

Impact to date

- Announced a call for proposals for first phase in November 2020

Affiliated organizations



Implementers:

EnDev, PSFU



Funders:

USAID

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (4/8)



Program: Electricity Expansion and Improvement program

Approach

- Develop 12 new master plans for all the rural service territories in Uganda
- Support REA to the develop a connections policy
- Support REA to develop an Off-grid Policy

Impact to date

- The first 3 masterplans completed & identified > 100 mini-grid sites in only 3 service territories
- > 120,000 new connections identified within the existing distribution footprint
- Electricity Connections Policy developed could add 1,400,000 new connections by 2022

Affiliated organizations



Implementers:

NRECA, REA



Funders:

Power Africa

Overview

- **Target action:** Rapidly increase electricity access in its rural areas
- **Project status:** Ongoing
- **End date:** 2022
- **Target industry:**



SHS



Mini-grids



On-grid

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (5/8)



Program: Uganda Electricity Regulatory Partnership¹

Overview

- **Target action:** 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
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Mini-grids

Approach

- Develop a practical guide to the regulatory treatment of mini-grids to outline the practical issues and potential decision-making tracks for regulators
- 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

Impact to date

- Examined international best practices on mini-grid technical requirements (e.g. interoperability, compatibility)
- Developed an outline on mini-grid technical requirements, interconnection to the national grid and business models for interconnection, power quality, and service quality
- Developed an isolated mini-grid regulation that was passed into law

Affiliated organizations



Implementers:

NRECA, ERA



Funders:

USAID / Power Africa

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (6/8)



USAID
FROM THE AMERICAN PEOPLE

Program: Power Africa Off-grid Project¹

Overview

- **Target action:** Support the development of Africa’s off-grid solar home system (SHS) and mini-grid sectors by providing technical assistance and targeted grant funding
 - Advance the role of the private sector in extending energy access by working with companies, investors and governments through a team of technical advisors
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



On-grid

Approach

- Offering broad-based market intelligence to investors/financiers to inform financial product design
- Advising governments on establishing supportive policy frameworks, and providing hands-on support to companies

Impact to date

- Supported several local SMEs with CFO support and treasure management; Offered sales and marketing support to local SMEs; Offered transaction advisory to local SMEs in the energy sector
- Conducted a market assessment for SMEs in Northern Uganda
- Drafted a country brief for Uganda
- Provided advisory support to 5 entities resulting in 5.5m USD in capital raised

Affiliated organizations



Implementers:

Open Capital, Persistent Energy and various others



Funders:

USAID / Power Africa

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (7/8)



USAID
FROM THE AMERICAN PEOPLE

Program: Uganda Strategic Investment Activity (SIA)¹

Overview

- **Target action:** USAID Uganda’s Strategic Investment Activity (SIA) works to accelerate and grow the investment ecosystem by increasing transparency, lowering transaction costs and risks, and creating partnerships that unlock commercial investments in productive use of energy, health and agriculture sectors
- **Project status:** Ongoing
- **End date:** 2026
- **Target industry:**



Prod. use

Approach

- To create a pipeline of up to 40 investable companies in energy & other sectors
- For transactions <500K the Activity mobilizes local service providers through results-based grants and subcontracts to facilitate deals to close
- For transactions >500K partners apply blended finance tools to de-risk larger investments and provide capital structuring, deal monitoring, and aftercare support

Impact to date

- Uganda SIA is working to mobilize \$140 million in additional private capital in agriculture, health, and productive use of energy, improving the livelihoods of 100,000 underrepresented and marginalized people in Feed the Future zones

Affiliated organizations



Implementers:

Chemonics



Subcontractors:

Open Capital, Cross Boundary



Funders:

USAID / Power Africa

USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (8/8)



Program: Power Africa COVID-19 response¹

Overview

- **Target action:** Power Africa’s COVID-19 response is working to support partner countries respond to the health crisis and to boost self-reliance for economic recovery
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Mini-grids



On-grid

Approach

- Providing demand-driven assistance to companies, investors, and industry associations aimed at ensuring business continuity, mobilizing relief funding, and advocating for government policies that recognize energy access as essential
- Electrifying rural health centers to ensure reliable energy supply given the need to power diagnostic equipment, ventilators, and cold chain demands

Impact to date

- Connected the health center on Bugala Island to the mini-grid to support COVID-19 resilience
- Disbursed two grants totaling \$363,607 to electrify seven healthcare facilities that provide maternal and child health services in Malawi and Uganda; The Uganda grant totaling USD ~225K was awarded to Sustain Solar to electrify 5 health centers in Namayingo Islands in partnership with Equatorial Power

Affiliated organizations



Implementers:

Sustain Solar



Subcontractors:

Equatorial Power



Funders:

USAID / Power Africa

FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation (1/4)



Foreign & Commonwealth Office

Program: Energy Africa Campaign¹

Overview

- **Target action:** Accelerate expansion of household solar market to help bring universal electricity access in Africa forward from 2080 on current trends to 2030
- **Project status:** Closed
- **End date:** 2020
- **Target industry:**



SHS



Mini-grids

Approach

- Campaign to improve policy and support conditions to accelerate market-based SHS delivery
- Core tool is Energy Africa Country Compacts matched with a coordinated multi-donor support offer

Impact to date

- Coordinated & signed Energy Africa Compact with Ug government and other stakeholders making commitment to address several challenges facing the SHS market
- Market assessment to be conducted in all countries in then campaign

Affiliated organizations



Implementers:

MEMD, DFID, REA, SE4ALL, USEA, USAID / Power Africa, UNCDF, et al.



Funders:

DFID

Sources: UOMA interviews & consultations, supplemented by

1. UK Government, [Energy Africa Campaign](#), 2015, 2. U.K Government, [DFID 7621 Transforming Energy Access - Research program delivery consortium](#), 2016, 3. Practitioner Network, [Applied research program - Transforming Energy Access](#), 2015

FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation (2/4)



Foreign &
Commonwealth
Office

Program: Transforming Energy Access (TEA)²

Overview

- **Target action:** Address critical evidence gaps, test innovative technology applications, business models, financing, & skills development to accelerate the provision of affordable, clean energy-based services to poor households & enterprises
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Cook
stoves



Bio
fuels

Approach

- Partnership with Shell Foundation to support private sector innovations
- Support Innovate UK's Energy Catalyst to stimulate technology innovation
- Build other strategic innovation partnerships

Impact to date

- Shell Foundation created Uganda Off-Grid Energy Market Accelerator to advance off-grid access
- Testing P2P Solar crowding platform
- Scoping potential partnership with Gates Foundation on Mission Innovation

Affiliated organizations



Implementers:

Shell Foundation, Innovate UK



Funders:

DFID

Sources: UOMA interviews & consultations, supplemented by

1. UK Government, [Energy Africa Campaign](#), 2015, 2. U.K Government, [DFID 7621 Transforming Energy Access - Research program delivery consortium](#), 2016, 3. Practitioner Network, [Applied research program - Transforming Energy Access](#), 2015

FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation (3/4)



Foreign & Commonwealth Office

Program: Africa Clean Energy Program (ACE)¹

Overview

- **Target action:** 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 across 14 countries in SSA
- **Project status:** Ongoing in **Zambia, Nigeria and Ethiopia**; Closed in **Uganda**
- **End date:** 2023
- **Target industry:**



SHS



Mini-grids

Approach

- Provide TA to improve the enabling environment for market-based approach for private sector delivery of SHS
- Finance businesses wanting to enter new and emerging SHS markets in SSA
- Test innovative approaches to stimulating private sector investment and market development

Impact to date

- REACT-HS awarded US\$ 7.4 million to 10 household solar companies with 8 disbursements beginning
- Invested US\$ 72.7M in technical assistance services to governments & companies entering the solar industry
- Invested US\$ 25M in development of the mini-grids sector

Affiliated organizations



Implementers:

AECF, TBC, IFC, DAI



Funders:

DFID, World Bank, AfDB

Sources: UOMA interviews & consultations supplemented by

1. UKaid, [Africa Clean Energy Programme \(ACE\)](#), 2019

FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation (4/4)



Foreign & Commonwealth Office

Program: Renewable Energy and Adaptation to Climate Technologies (REACT) Window, Africa Enterprise Challenge Fund¹

Approach

- Facilitate a market driven approach to increased energy access through off-grid renewable energy, as well as increasing resilience & adapting to climate change in rural areas

Impact to date

- Helping to demonstrate the viability of many of the companies that have accessed commercial investment (e.g. M-KOPA, Mobisol and Off-Grid Electric)
- Had invested >US\$ 20.6M by 2017 to developing low-cost clean energy and climate change technologies in selected African countries

Affiliated organizations



Implementers:

AECF



Funders:

DFID

Overview

- **Target action:** Incentivizing 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 catalyze greater investments into these sectors
- **Project status:** Closed
- **End date:** July 2021
- **Target industry:**



SHS

Sources: UOMA interviews & consultations

1. UKaid, [Renewable Energy Adaptation Climate Change Technologies, \(Africa Enterprise Challenge Fund\)](#), 2020

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



Program: The Inclusive Dairy Enterprise (TIDE) Project (Phase II)^{1,2}



Overview

- **Target action:** Provide dairy and crop farmers and their households with high quality, affordable and sustainable solar lighting systems and solar powered agricultural appliances
- **Project status:** Ongoing
- **End date:** 2023
- **Target industry:**



SHS



Solar agric. app

Approach

- Subsidy to provide farmers with access to 20,000 solar products with reliable after sales service (Phase I)
- Encourage commercialization of the dairy sector by actively supporting farmers to adopt a business approaches to dairy farming

Impact to date

- Over 10,000 systems in collaboration with lead partner Solar Now
- Encouraged farmers to co-invest at total of US\$ 7.4M to improve productivity
- Increased export value from dairy products, from US\$ 5.6M in 2015 to US\$ 111M in 2019; Regional prod. capacity increased from 100K to 1.5M litres of milk per day
- 300K students now have access to milk at school

Affiliated organizations



Implementers:

Solar Now, Barefoot Power, Uganda Crane Creameries Cooperative Union & other value chain managers



Funders:

Government of Netherlands

Sources: UOMA interviews & consultations

1. SNV, [SNV signs partnership with the Netherlands Embassy for phase II of its Uganda dairy project](#), 2019, 2. SNV, [The Inclusive Dairy Enterprise \(TIDE\) project - Phase II](#), 2019

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



Program: CleanStart¹

Overview

- **Target action:** Supports low-income household transition to renewable energy
 - Co-invests in early-stage business ideas of private companies that can bring affordable clean energy
 - Emphasis on the inclusion of women and youth in value chain
 - Increase consumer-product awareness and protection
- **Project status:** Closed
- **End date:** 2020
- **Target industry:**



Approach

- Performance-based grant to bring early-stage business ideas to market
- Advisory services to address implementation bottlenecks
- Research initiatives, M&E, networking events & nationwide campaigns
- Partnerships with government, dev partners, & other stakeholders to leverage resources & strengthen sustainability & impact

Impact to date

- Providing finance and business advisory services to 6 businesses under the Renewable Energy Challenge Fund- Clean cooking window
- Providing finance and business advisory services to 8 businesses under the Renewable Energy Challenge Fund- Solar Window
- With the Schatz Energy Research Center (SERC) Humboldt State University released study on Energy Access and Off-Grid Solar

Affiliated organizations



Implementers:

UNCDF

Funders:



RECF Uganda: Embassy of Sweden in Uganda (RECF), UNCDF, DFID Uganda
 CleanStart Global: Austrian Development Agency, Liechtenstein, Norad, Sida, UNCDF

Sources: UOMA interviews & consultations

1. UNCDF, [CleanStart Program](#), 2020

BMZ has provided support to both the government and private sector to further advance access & support clean energy (1/3)



Program: Promotion of Renewable Energy & Energy Efficiency program (PREEEP)¹

Approach

- Support MEMD on policies & roadmaps development regarding clean energy access; Support to private sector RE&EE associations & SMEs regarding access to finance and marketing campaigns; Training in installation and maintenance of RE & EE technologies; Support districts with RE&EE planning & experience dissemination jointly with MEMD; Gender mainstreaming regarding policy and skills development

Impact to date

- Supported revision of the 2002 energy policy (2019 energy policy pending cabinet approval)
- Supported set up of District Energy Coordination Structures and planning for clean energy access in 22 districts
- Conducted energy management trainings for 100 SMEs and 40 energy audits

Affiliated organizations



Implementers:

GIZ, MEMD, REA, ERA, 22 District Local Governments (DLGs)



Funders:

BMZ

Overview

- **Target action:** Improve framework conditions for access to clean energy in rural and urban areas
- Focuses on four areas:
 - Policy advise to MEMD
 - Market Development (RE and EE)
 - Skills Development (RE, PUE)
 - Decentralization activities with DLGs
- **Project status:** Ongoing
- **End date:** 2023
- **Target industry:**



BMZ has provided support to both the government and private sector to further advance access & support clean energy (2/3)



Program: Promotion of Mini-grids for Rural Electrification (Pro Mini-Grids)^{1,2}

Overview

- **Target action:** Promote decentralized electrification strategies such as mini-grids to support employment and economic development
 - Develop mechanisms to support private sector capacity for installation and operation of off-grid systems
 - Develop mini grid framework conditions to enable scale up of mini grids deployment
- **Project status:** Ongoing; near completion
- **End date:** December 2021
- **Target industry:**



Mini-grids

Approach

- Support Ministry of Energy to develop instruments for mini-grids implementation with the private sector
- Setup of up to 40 mini-grids operated with the private developers
- Support use of productive use of electricity in the mini-grids
- Train technicians for the installation and operation of decentralized systems

Impact to date

- Developed a tender mechanism with REA for bundled mini-grid development; installation ongoing for 25 mini-grids in Lamwo district and also developed a least cost electrification planning tool with REA for prioritization of mini-grid selection
- Developed a training program for solar electricians jointly with Nakawa Vocational Training College & Cologne Chamber of Skilled Crafts & Small Businesses & setup a Renewable Energy Training Centre at NVTC

Affiliated organizations



Implementers:

GIZ, MEMD, REA, ERA, Nakawa Vocational Training Institute, HWK



Funders:

EU

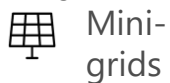
BMZ has provided support to both the government and private sector to further advance access & support clean energy (3/3)



Program: Green People's Energy

Overview

- **Target action:** Promotion of productive use of electricity (off-grid, mini-grids, solar irrigation)
- Energy access for primary schools, small businesses and health centers (solar PV)
- Technical advice to enterprises intending to invest into decentralized renewable energy solution such as captive power etc.
- Skills development/training on solar PV and solar irrigation and support to VTIs
- **Project status:** Ongoing
- **End date:** September 2022
- **Target industry:**



Mini-grids



SHS



Solar agric. app

Approach

- Set up training facilities and introduce practical curricula on solar PV and irrigation at 3 training centers; Train 50 VTI teachers and 150 renewable energy specialists in solar PV; Train 120 technicians and 180 farmers on solar-powered irrigation
- Design 50 solar-centric or solar-supported power supply systems for cooperatives, SMEs & social institutions; Rehabilitation of solar systems in 23 HCs in West Nile

Impact to date

- Solar training room, solar demo garden and computer lab set up at 1 VTI
- Developed 2 solar irrigation training manuals: one for technicians and one for users (farmers); 45 farmers and 20 technicians trained on solar irrigation
- 17 solar designs and simulations by November 2021; 3 solar PV charging stations for e-bodas installed in the Masaka corridor; 7 primary schools and 9 small businesses acquired plug-and-play solar systems

Affiliated organizations



Implementers:

GIZ GBE Uganda



Funders:

BMZ

BMZ has also provided support to both the government & private sector to further advance access & support clean energy in refugee areas and host communities



Program: Energy Solutions for Displacement Settings (ESDS)¹

Overview

- **Target action:** Seeks to address the lack of sustainable energy supply in refugee hosting areas through advisory services and the implementation of measures in three main areas:
 - Improving the enabling environment for sustainable access to energy
 - Greening UNHCR infrastructure
 - Sustainable, energy access for households, social institutions, and SMEs
- **Project status:** Ongoing
- **End date:** December 2022
- **Target industry:**



Mini-grids



SHS



Cook stoves



Solar lantern

Approach

- Advisory to MEMD & UNHCR concerning energy planning & inclusion of refugees in national service delivery systems; Develop market-based approaches for replacement of diesel gensets with cost-efficient RE; Pilot & promote market-based solutions for access to sustainable cooking energy and electricity for households, institutions and businesses benefiting both refugees and host communities

Impact to date

- Supported the development of the Sustainable Energy Response Plan (SERP) & establishment of a taskforce within MEMD in cooperation with UNHCR, OPM, CRRF secretariat, REA and World Bank
- Established two solar energy kiosks with local community groups to offer basic energy-based products & services in Ofua III & Siripi Zones of Rhino Camp refugee settlement & supported solarisation of two health centers as part of C-19 response

Affiliated organizations



Implementers:

GIZ



Partners:

MEMD, OPM, UNHCR



Funders:

BMZ

Source: UOMA interviews & consultations, supplemented by ESDS website ([Link](#))

BMWi has provided support to both the government and private sector to further advance access & support clean energy



Federal Ministry for Economic Affairs and Energy

Program: Project Development Programme (PDP)

Overview

- **Target action:** Enhancing uptake of solar PV in the commercial and industrial sector
- **Project status:** Ongoing
- **End date:** 2023
- **Target industry:**



Mini-grids



SHS



Solar agric. app

Approach

- Project development support regarding Solar PV installation and reduced diesel use for private sector high power consumers > 100 kW power demand
- Matchmaking with reputable German companies for project implementation
- Skilling local developers in commercial and industrial solar through the German Training Week

Impact to date

- First German Training week conducted with local developers and German developers
- Feasibilities studies done for 10 leads regarding solar PV installation for industries

Affiliated organizations



Implementers:

GIZ

Funders:



BMWi , AHK, DIHK

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



Program: NAMA-Green Schools project¹

Overview

- **Target action:** Provide sustainable energy solutions to boarding schools in the mainly off-grid rural areas with solar energy, efficient cook stoves, and biogas technologies
- **Project status:** Ongoing
- **End date:** 2030
- **Target industry:**



SHS



Cook stoves



Bio fuels

Approach

- Create a revolving loan fund for the planned large-scale roll out of green technologies in schools & design new business models for schools to pay back installation costs; Complement technologies with capacity-building & awareness trainings for companies and a Life Skills Programme for youth & local communities and; Streamline the roles & responsibilities of public & private stakeholders

Impact to date

- Project has been pre-selected to receive funding by Germany and the UK of up to US\$ 73.7M to support the development phase
- Installed 55K improved Institutional Cookstoves in 22K schools in rural Uganda
- Installed 1.1K biogas cook stoves fed by latrine bio-fuels
- Installed 1.6K solar PV systems in rural Uganda

Affiliated organizations



Implementers:

UNDP, MEMD

Funders:

UK, Germany



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



Program: Sustainable Use of Natural Resources and Energy Finance East Africa (SUNREF)¹

Overview

- **Target action:** Developing the share of renewable energy in the energy mix in East Africa
 - Improving energy efficiency for companies
 - Encouraging local banks to increase lending activities towards low-carbon projects
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Bio fuels

Approach

- Provide technical assistance to companies & banks to assist them in identifying opportunities for green investments
- Install & monitor projects
- Support partner banks in their risk assessment approach, communication strategy & marketing in green finance

Impact to date

- A cumulated commitment of > US\$ 147M to finance green investments in East Africa (Uganda, Kenya and Tanzania)
- Set up the Duomo House, a solar powered commercial real estate project which received US\$ 255K funding from DTB

Affiliated organizations



Implementers:

AFD, Diamond Trust Bank

Funders:



AFD, EU-Africa Infrastructure Trust Fund

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



Program: East African Centre for Renewable Energy and Energy Efficiency (EACREEE)¹

Overview

- **Target action:** Create increased access of modern, affordable & reliable energy services
 - Increased energy security in East Africa
 - Mitigation of negative effects e.g. local pollution & greenhouse gas emissions
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Bio fuels



Mini-grids

Approach

- Develop & implement a coherent regional RE&EE policy framework for the EAC & facilitate its implementation on national levels
- Develop & execute regional programs and projects in cooperation with GEF, other partners and mobilize funding & provide co-funding for demand-driven programs and projects executed by the private and public sector or civil society in the region

Impact to date

- Holding of various workshops that have culminated in the formulation of an Action Plan which outlines strategies & measures for the successful implementation of the first phase of the center
- Continue to conduct training workshops and establish networking platforms & events that give industry stakeholders insights on the regional status of the off-grid energy sector

Affiliated organizations



Implementers:

EACREEE

Funders:

UNIDO, ADA



The Shell Foundation has launched several initiatives to catalyze sustainable and scalable solutions (1/2)



Program: Market Development

Approach

- Market institutions used to tackle barriers and facilitate effective deployment of blended capital to accelerate market growth

Impact to date

- Help build demand through communications and market advisory
- Providing learning and analysis for key themes such as last mile distribution, rural utilities & gender impact
- Funding for industry associations such as GOGLA, GACCC, supporting local accelerators to act as neutral market influencers such as EPD in RW and UOMA in UG & supporting innovation for market infrastructure such as impact valuation

Affiliated organizations



Implementers:

Various

Funders:



Shell Foundation

Overview

- **Target action:** Leverage foundations, govt, private sector, DFIs and other financiers to amplify impact and accelerate market growth
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



Cook stoves



Prod. use

The Shell Foundation has launched several initiatives to catalyze sustainable and scalable solutions (2/2)



Program: Building an ecosystem to accelerate access to energy

Approach

- Provide grants, innovative financing products & technology
- Support development of business skills training & market linkages
- Provide support for development of disruptive solutions to increase the availability of energy

Impact to date

- Financing and technical assistance provided to:
- Energy Product manufacturers and service providers that providers aimed at rural households, productive use, communities and urban populations for example energy efficiency & storage, PAYG solar, waster to energy fuels etc
- Market Enablers such as supply chain intermediaries, financing facilities and catalytic institutions and bodies

Affiliated organizations



Implementers:

Various

Funders:

Shell Foundation



Overview

- **Target action:** 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
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



Cook stoves



Prod. use

Signify Foundation supports youth-focused, female-focused as well as SME training activities in Uganda

 foundation

Program: Village Academy

Overview

- **Target action:** 48 young men & women trained to be PV solar electricians by 2018
 - 60 out-of-school Ugandan & urban refugee youth trained to be by 2018
 - 20 of small/ medium size business owners trained in productive use of energy by 2019
 - At least 60% of graduates placed in employment and/or have increased income by 3Q 2018
 - At least 50% of trainees targeted being female graduates
- **Project status:** Ongoing
- **Target industry:**



SHS

Approach

- In-village trainings for youth on technical skills, sales & soft skills necessary to enter the solar industry
- Tailor made courses for energy companies on capacity building and soft skills
- Facilitate access to start-up financing, high quality solar products & mentorship on scaling for SMEs

Impact to date

- Held MCE Sales Agent 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
- Conducted Soroti Solar PV 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

Affiliated organizations



Implementers:

Village Academy

Funders:

Signify Foundation



Signify Foundation supported the electrification of 43 health centers in Uganda to support COVID-19 resilience



Program: Electrification of health centers in Uganda

Approach

- Support health centers identify energy needs through a needs assessment
- Partner with local solar associations to select and prioritize health centers to electrify
- Electrify health centers through in-kind donation of equipment and payment of labor and transport costs

Impact to date

- Electrified 43 health centers in various regions of the country; 36 health centers under the SENDEA association and the rest with various local solar operators

Affiliated organizations



Implementers:

MEMD, MOH, SENDEA & Village Energy



Funders:

Signify Foundation

Overview

- **Target action:** Improve service delivery for health centers across Uganda at the height of the COVID-19 pandemic
- **Project status:** Ongoing
- **Target industry:**



SHS

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (1/9)



Program: Energizing Development (EnDev)^{1,2}

Overview

- **Target action:** Achieve sustainable access to modern energy services for 21M people across 21 countries by 2021
- **EnDev Uganda (by 2024):**
 - Increasing household access to improved cooking by 680,200 people
 - Increasing access to energy for lighting/appliances for 157,800 people by mid-2019 & provide modern energy services for 1,100 social institutions & 1,600 SMEs
- **Project status:** Ongoing
- **Target industry:**



SHS



Cook stoves



On-grid



Solar lantern

Approach

- Rural partner synergy & private sector development approaches for cook stoves & solar market development; Specific focus on piloting & scaling market-based energy access in refugee & host communities; Implement innovative financing & distribution schemes; Enabling environment support including building association capacity, contributing to standards implementation & policy work

Impact to date

- Access to electricity or modern cooking equipment to over 23,8M people in private households; 29K social institutions and 74K SME's have access to efficient & sustainable energy; Created over 29,000 jobs
- **EnDev Uganda:** 130K people gained sustained access to electricity, with 1.2M people gaining access to modern cooking energy; 760 social institutions & 995 SMEs gained sustained access to modern energy

Affiliated organizations



Implementers:

GIZ Uganda

Funders:

Core funders: Netherlands, Germany, Norway, and Switzerland

Co-funded projects: with USAID, SDC, IKEA Foundation



Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (2/9)



Program: GET.invest¹

Overview

- **Target action:** Support government of Uganda to develop conducive frameworks for off-grid renewable energy access
- Support MEMD on Long Term energy planning and scenario modelling
- **Project status:** Ongoing
- **Target industry:**



Approach

- Support ERA in the development of a tariff and subsidy framework for mini-grids
- Support ERA in the development of Isolated Grid Standards
- Support MEMD in development of an Electricity Access Data Management System
- support MEMD on Uganda energy Sector planning gaps

Impact to date

- The final draft report of Tariff study submitted and approved by ERA
- All drafts for the IGS standards have been completed and submitted to ERA
- Soon finalizing the structure for the Electricity Access Data Management System
- Starting on the diagnostic to assess Uganda sector energy planning requirements

Affiliated organizations



Implementers:
GIZ, ERA, MEMD, UETCL



Funders:
EU, Germany, Sweden, Netherlands, Austria

Source: UOMA interviews & consultations, supplemented by 1.GET.invest, About GET.invest, 2019 [Link](#)

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (3/9)



Program: Support Uganda Solar Energy Association

Overview

- **Target action:** Promote industry-led market development for off-grid
 - Supporting USEA to have proper governance and management structure,
 - 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
- **Project status:** Ongoing
- **Target industry:**





Approach

- Develop annual work plan and strategy plan
- Recruit and train three full time secretariat staff
- Develop toolkit on building strong associations

Impact to date

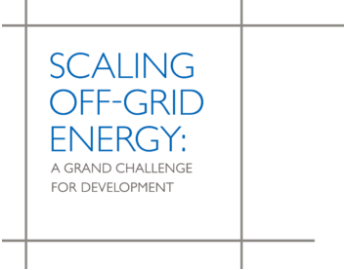
- Developed handbook for solar taxation & Implemented awareness campaigns in Eastern and West Nile
- Trained 40 technicians on installation and troubleshooting solar systems & launched business diagnostic for BDS support
- Provided financial & human resource support to help USEA develop the 2018 sales data report¹

Affiliated organizations

- 
Implementers:
 UNCDF, GIZ
- 
Funders:
 Energy Africa, DFID

Source: UOMA interviews & consultations supplemented by
 1. USEA, [USEA handbook on solar taxation](#) , UNCDF, 2019 [\[Link\]](#)

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (4/9)



Program: Energy and Environment Partnership/ Southern and East Africa¹

Approach

- Platform for leading donors and investors to incentivize technological innovation, fund early-stage companies, and support critical elements of the off-grid ecosystem

Impact to date

- 50+ companies & market enablers supported across 18 countries in sub-Saharan Africa
- 3.75M expected connections reaching over 15M people in SSA
- \$435M in private investment catalyzed

Affiliated organizations



Implementers:

USAID



Funders:

USAID / Power Africa, DFID / Energy Africa, Shell Foundation

Overview

- **Target action:** Accelerate the growth of a dynamic, commercial off-grid energy market to provide clean, modern, and affordable energy access to 20M of households and businesses beyond the grid in sub-Saharan Africa
- **Project status:** Ongoing
- **Target industry:**



SHS



Mini-grids

Source: UOMA interviews & consultations, supplemented by

1. GOGLA, [USAID Scaling Off-Grid Grand Challenge for Development \(SOGE\)](#), 2018, , 2. Scalling Off-Grid, [Interactive year-in-review](#), 2018

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (5/9)



Program: Energy and Environment Partnership/ Southern and East Africa¹

Overview

- **Target action:** 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
- **Project status:** Ongoing
- **Target industry:**



SHS



Mini-grids



Cook stoves

Approach

- Funding projects in all fields of renewable energy and energy efficiency, bridging the gap between a good idea and a bankable project
- 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

Impact to date

- Providing sustainable energy and agro hubs in Kamwenge district, clean energy for the Ugandan dairy industry, biogas for milk cooling & sustainable energy services for Kitobo island
- Had 15 grant funding calls for innovative programs and businesses since 2010
- Invested US\$ 85.9M in renewable energy ventures, impacted 5.1M people with enhanced energy access & created 8.2K jobs across 15 countries

Affiliated organizations



Implementers:

KPMG Finland



Funders:

Ministry of Foreign Affairs of Finland, DFID and The Austrian Development Agency

Source: UOMA interviews & consultations, supplemented by
 1. GOGLA, [USAID Scaling Off-Grid Grand Challenge for Development \(SOGE\)](#), 2018, , 2. [Scaling Off-Grid](#), [Interactive year-in-review](#), 2018

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (6/9)



Program: New Deal on Energy for Africa¹

Overview

- **Target action:** Increasing on-grid generation & transmission to add 160 GW of new capacity & create 130M new connections
- Increasing off-grid generation to add 75M
- Increasing access to clean cooking energy for ~130M households
- **Project status:** Ongoing
- **End date:** 2025
- **Target industry:**



Approach

- Mobilizing domestic and international capital for innovative financing in Africa’s Energy sector
- Supporting African countries in strengthening energy policy, regulation and sector governance

Impact to date

- Approval of 29 energy sector operations worth USD 1.7 billion to deliver:
 - 546 MW of additional installed capacity of which 526 MW are from renewable energy sources & 21,264 km of distribution lines
 - 641 km of transmission lines ,substations & 7,800 public lighting units
 - 688,950 new households/ businesses receiving electricity access

Affiliated organizations

Implementers:
AfDB

Funders:
AfDB, Africa Energy Leaders Group, Sustainable Energy Fund for Africa, SE4ALL, UK’s Energy Africa Campaign and Power Africa

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (7/9)



Program: Facility for energy Inclusion^{1,2,3}

Overview

- **Target action:** Providing consumer and corporate financing solutions to solar off-grid companies in the related ecosystem (OGEF)
 - Offering flexible project and corporate finance solutions to rural electrification projects of less than 25 MW and mini-grids (on-grid)
- **Project status:** Ongoing
- **End date:** 2025
- **Target industry:**



Approach

- Operate with a clear mandate to maintain focus on underserved markets & encourage innovative transactions that create long term market value for investments
- Provide flexible capital on commercial basis, including local currency & have management set up across Africa to maximize local engagement & understanding

Impact to date

- Reached its final equity close with US\$ 59M in committed equity capital & US\$ 36M in debt facilities to support off-grid energy access
- Raised US\$ 160M targeted towards financing rural electrification and mini-grid development projects

Affiliated organizations

Implementers:
LHGP & Fieldstone

Funders:
African Development Bank, UKaid, USAID, Shell Foundation, Nordic Development Fund, Global Investment Facility, All On, Calvert Impact Capital, DFID

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (8/9)



Program: Smart Communities Coalition^{1,2&3}

Overview

- **Target action:** Increasing efficiency in refugee camp management & service delivery
 - Empowering refugees to provide for themselves and their families
 - Addressing the needs of community members in and around refugee settlements
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



On-grid

Approach

- Employ an ecosystem approach to technology deployment:
 - Identify opportunities by engaging stakeholders on ground & establish working groups
 - Encourage exchange of ideas across groups & implement pilot projects
 - Monitor & evaluate progress

Impact to date

- Created market profiles highlighting the latest data in purchasing power, refugee skillsets, energy & mobile access in target settlements
- Hired expert staff in Nairobi and Kampala to lead stakeholder engagement, facilitate pilot implementation and reinforce capacity to drive results
- Awarded US\$ 465K in grants to 3 companies to increase energy access in refugee settlements in Uganda

Affiliated organizations



Chairs:

Mastercard & USAID/Power Africa



Members:

Over 35 members including; Mastercard, Mercy Corps, USAID, GIZ, SNV, Microsoft, Net Hope, Energy 4 Impact, Energy Peace Partners, FSD Africa, Lutheran Foundation, Total, World Vision, NRC, GSMA, etc.

Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (9/9)



Program: Utilities 2.0

Overview

- **Target action:** Seeks to combine centralized and decentralized technology (including solar home systems, mini-grids, grid, & smart grid systems) into an integrated, intelligent, & interactive energy network that can deliver customer-centric, clean energy solutions to end energy poverty at the lowest cost, in the fastest time
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



On-grid

Approach

- To illustrate how the comparative advantages of centralized and decentralized energy can create a robust, integrated energy system for grid and non-grid customers alike
- Leverage digitization and data analytics to integrate DRE technologies so that utilities can have new alternatives to grid extension, faulty transformers, and unprofitable connections

Impact to date

- Particularly in Uganda, Utilities 2.0 launched the “Twaake” pilot with UMEME, Makerere University, The Rockefeller Foundation & Power for All
- Constructed the first fully integrated mini-grid in Uganda in partnership with UMEME, PowerforAll and Engie Energy Access

Affiliated organizations



Funder:

The Rockefeller Foundation

Members:



Power for all, Shell Foundation, AMDA, ENGIE, PowerGen, Rensource, Fenix, East African Power (EAP), UMEME, Equatorial Power, EnerGrow, ZOLA Electric and others

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
USEA <i>Uganda Solar Energy Association</i>	<ul style="list-style-type: none"> Seeks countrywide mobilization of solar providers, coordinating stakeholders, playing an advocacy role and capacity building 	<ul style="list-style-type: none"> >100 members consisting of engineers running local businesses and solar product distributors; receives targeted support from dev partners like RECP, DFID, UNCDF & PSFU
BEETA <i>Bio-mass Energy Efficient Technologies Association</i>	<ul style="list-style-type: none"> Promotes biomass energy efficient technologies through networking, sharing information, and developing knowledge among member organizations / individuals 	<ul style="list-style-type: none"> 50 member companies involved in production of biomass efficient technologies, such as briquettes & stoves, & institutions involved in research and development of biomass energy
HPAU <i>Hydropower Association of Uganda</i>	<ul style="list-style-type: none"> Champions hydropower development in the hydropower sub-sector through advocacy, capacity devt & resource mobilization 	<ul style="list-style-type: none"> Membership open to private sector companies, organizations & associations, consumers, & policy makers; receives support from GIZ, CREEC, & WWF
EEAU <i>Energy Efficiency Association of Uganda</i>	<ul style="list-style-type: none"> Aims to foster provision for quality energy efficiency services, enhancing research, innovation & knowledge transfer 	<ul style="list-style-type: none"> Large capacity of technical members working to get association accreditation to certify Energy Efficiency Professionals in the country
UNBA <i>Uganda National Bio-gas Alliance</i>	<ul style="list-style-type: none"> Seeks to unite and support stakeholders as well as existing regional associations in the biogas sector 	<ul style="list-style-type: none"> National umbrella organization of the UG biogas sector; four associations organized according to regions, supported by partnership with GIZ
WPAU <i>Wind Power Association of Uganda</i>	<ul style="list-style-type: none"> Promotes uptake of wind power technology through uniting stakeholders, playing an advocacy role and capacity building 	<ul style="list-style-type: none"> >10 private sector companies involved in various aspects of wind power technology

Associations represent private sector interests, advocate policy issues to government

Organization

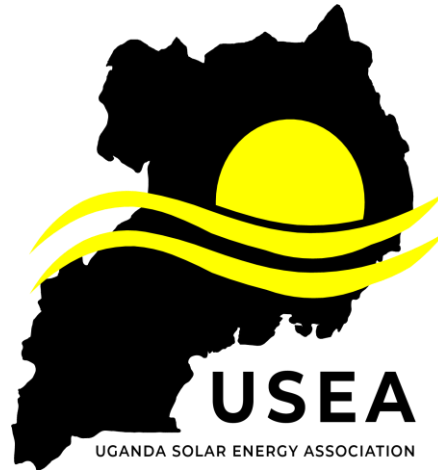


Work in Uganda

- 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
- 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
- The alliance aims to among other objectives:
 - Identify and disseminate best practices related to market development for renewable energy and energy technologies in Uganda.
 - Establish permanent working relationships with government institutions, civil societies as well as other sector stake-holders in the energy sector.
 - Initiate and upgrade a strong private sector led approach in the development of the renewable energy sub-sector in Uganda

Associations represent private sector interests, advocate policy issues to government

Organization



Work in Uganda

- 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.
- 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

To further its' objective, USEA has partnered with the following organizations:

- **USAID's Power Africa Uganda Electricity Supply Accelerator** – supporting USEA in solar market development, public awareness and promotion, creating linkages through the supply chain, business development and capacity and monitoring and evaluation
- **UNCDF/DFID** – market sales data collection in collaboration in with GOGLA & 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 & government to develop a tax handbook
- **PSFU/WORLD BANK** - 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 & Finance Expertise as well as TA in business strategy and financing models to adopt for an association

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

Organization



Work in Uganda

- Created to enhance private sector competitiveness by providing capacity through policy advocacy and enhanced business development services
- Also play a key role in implementing some government and donor projects
- Currently implementing technical capacity aspects of the Energy for Rural Transformation phase III such as empowering USEA



- Focuses on the thematic areas of rural electrification, energy for productive use, household energy and energy entrepreneurship
- Has two departments: testing services for product development & independent testing of cookstoves & solar, and project engineering for project implementation and consultancy



- 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
- 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

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

Organization



Work in Uganda

- Signed five-year working relationship with GoU to foster green economic growth implementing a planning framework with three outcomes:
 - Mobilize financing for implementation of green growth strategy
 - Support improved planning of secondary cities to catalyze green growth & urbanization
 - Support govt efforts to expand electricity investing in renewable energy



- 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
- 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



- Supports businesses serving off-grid communities with a range of services from business development services, access to finance and project development for innovative models
- Supporting the implementation of a number of initiatives such as the Off-grid Refrigeration Challenge and Transforming Energy Access programs

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

Organization



Work in Uganda

- 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
- Supporting the government of Uganda to develop and implement an integrated electrification strategy to drive energy access and economic growth



- Research and policy effort that aims to address the challenges around increasing access to modern energy solutions to underserved populations around the world
- Supporting the development of new, disruptive tools, such as the means to evaluate electricity access through machine learning techniques applied to aerial imagery data



- Support businesses, investors, development partners & governments globally to identify appropriate, impactful ways to support off-grid energy access
- Commissioned by the Rockefeller Foundation and Shell Foundation to develop a predictive model and report highlighting the critical climate finance opportunity that distributed renewable energy (DRE) can provide for unlocking both energy access and inclusive economic development in Uganda among several other African countries

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

Organization



Work in Uganda

- The E4D Network is run by the Sustainable Energy Research Group (SERG) at the University of Southampton.
- 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
- In Uganda, it has installed (2) mini-grids with a capacity of 13.5 kW



- The Alliance for Rural Electrification (ARE) is an international business association that promotes a sustainable renewable energy industry for the 21st century, activating markets for affordable energy services, and creating local jobs and inclusive economies.
- They accept members from Uganda who enjoy the benefits of advice and advocacy, knowledge and intelligence, business promotion & marketing & business creation and support



MAKERERE UNIVERSITY



- 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.

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

Organization



Work in Uganda

- 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
- 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 & insights for the market more broadly
- Published semi-annual market database for data collection in PAYG in Uganda



- 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
- 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
- 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

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

Organization



Work in Uganda

- 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
- 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
- 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



- Over the past 10 years, Open Capital has had 1,000+ engagements for businesses, investors, development organizations, and government across 25+ countries raising >USD 1 billion in capital
- In the off-grid energy space in Uganda, Open Capital has completed ~50+ engagements for private sector, development partners, and investors, supporting many of the large solar home system businesses with strategy and operations
- Completed strategy and growth engagements with off-grid energy distributors & PAYG operators, has close relationships with >12 mini-grid companies and continues to support the ecosystem through tailored support for commercial banks to accelerate local currency funding or operators & developers



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

contact@uoma.ug
<https://uoma.ug/>