



# Off-grid energy in Uganda

## Market Map

2023 edition

# Preface

Uganda, like the rest of the world and especially other developing countries in the region, is vulnerable to the negative impacts of climate change. It is a threat to fragile ecosystems, people's livelihoods and ultimately the national development efforts of our country. As we work towards universal energy access in 2030, there is increasing recognition of the role that clean renewable energy supply including off-grid solar technologies can play in not only mitigating against climate change but also helping the most at-risk populations adapt and thrive.

In the last seven years, the Uganda Off-Grid Energy Market Accelerator (UOMA) has worked closely with various stakeholders in Uganda's energy sector to foster increased access to off-grid solar technologies. UOMA has implemented 18+ direct interventions to industry players that have led to capital inflows of USD 35 million to businesses supported, informed 10+ government papers, and published 18+ reports (including 6 editions of the annual market map). UOMA continues to play a central role as a neutral body, coordinating and facilitating conversations across the public and private sectors.

Despite recent progress, Uganda's electrification rate remains low, with only 57% of households having energy access in 2021, the majority of which are off-grid connections. This highlights the need to continue efforts to promote off-grid solar technologies, alongside other energy solutions where appropriate to ensure we achieve universal electricity access by 2030.

Stakeholders across public and private sector have made great strides towards increasing access to off-grid solar technologies over the past year. Notably, the government has played a pivotal role in improving the enabling environment, working along side its development partners to launch significant projects such as the USD 638 million Energy Access Scale-Up project and a USD 130 million lending facility with UECCC. Furthermore, it intends to strengthen regulatory frameworks in pivotal subsectors like electric mobility and pay-as-you-go solar home systems. It is crucial to underscore, however, that the success of these endeavors hinges on the collaboration between the government, development partners, and the private sector.

This year's annual Market Map publication provides an in-depth review of the current state of the off-grid energy sector in Uganda. It analyzes the key activities and emerging trends over the past year. We hope you find it insightful!



Eng. Frank B. Sebbowa, PhD  
Senior Energy Advisor

# Acknowledgements

The market map was prepared by a team from Open Capital comprising of Dr. Frank B. Sebbowa, Reza Fazel, Jonathan Maraka, Perez Magoola, Leshna Kirabo and Patrick Kakembo. The team extends its appreciation to all partners who peer-reviewed the report including Dr. Brian Isabirye from the Ministry of Energy and Mineral Development, Dr. Nicholas Mukisa from the National Renewable Energy Platform (NREP), Joyce Nkuyahaga from USAID Energy Empowers East and Central Africa and Marsida Rada, Peter Kakuru from EnDev

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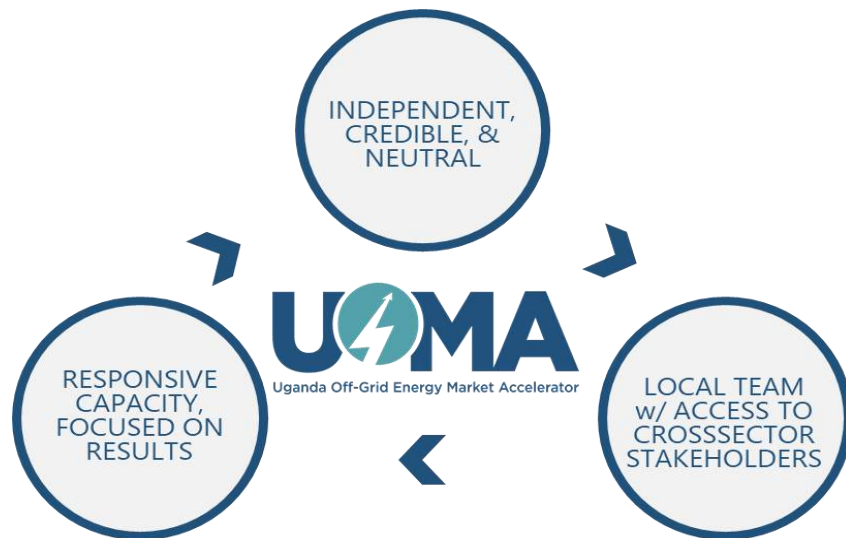
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# The Uganda Off-Grid Energy Market Accelerator (UOMA) is a dedicated and neutral intermediary, focused on scaling off-grid energy access through 5 core initiatives

**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 7<sup>th</sup> 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 7 years, UOMA has published more than 18 research pieces, supported capital raises of more than USD 35 M, and facilitated over 150K new connections

## Direct interventions



**18+**  
Innovative pilots enabled to reach unserved areas and scale prod. use tech



**150,000+**  
New connections from pilots for UG's hardest to reach



**10+**  
New key gov't papers informed and influenced



**35M+**  
Capital deployed following deal-focused TA to local financiers and operators

## Research & insights



**18+**  
New, influential research pieces & insights



**12,000+**  
Downloads of market map across Uganda and globally



**90%**  
Feel UOMA helps to improve market transparency



**90%**  
Believe UOMA positively facilitates sector deals

## Independent coordination



**6**  
Annual versions of market map, now an industry-standard, landmark "go-to" document relied upon by sector



**400+**  
Annual individual interactions - with investors, development partners, several others - outside of core activities



Local expert team works closely with sector actors to collaborate on and facilitate several targeted workshops and matchmakings

More of UOMA's research can be found here: [uoma.ug](http://uoma.ug)

# 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

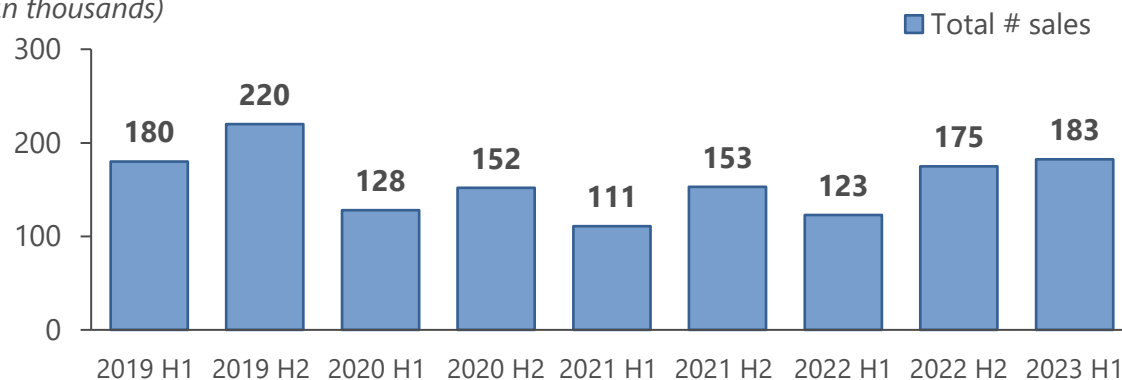


# Industry update

## Solar Home Systems: SHS sales are growing but unclear tax regulations, financing challenges & rural supply chain challenges hinder potential to scale

SHS unit sales of GOGLA affiliates in Uganda 2018-2023<sup>1,2</sup>

(in thousands)



### Sales are increasing year on year, indicating a positive trend of growth in the sector and resilience in demand

- Sales in H1 2023 increased by 4% compared to H2 2022 and were 48% higher compared to H1 2022
- Year-on-year increase in sales indicates that the sector is gaining momentum and there is still high demand for SHS

### Technical assistance providers are offering subsidized services to businesses to support recovery

- GET.Invest provided finance readiness TA to local OGS companies<sup>3</sup>
- Power Africa offered financial access, business performance, and market dynamics TA to local OGS and PUE companies<sup>2</sup>
- EnDev provided tailored business dev't support for solar SMEs<sup>4</sup>

### The OGS sector has grown, providing reliable electricity access, but there is a need for higher capacity and quality products

- The off-grid solar sector in Uganda has seen significant growth, providing reliable electricity access. In 2021, 57% of households had energy access, with two-thirds relying on off-grid connections<sup>5,6,7</sup>
- Uganda has become a leader in Sub-Saharan Africa in expanding energy access, achieving approximately 60% of its off-grid market potential, indicating a mature market<sup>6</sup>

### Unclear tax regulations, coordination issues, financing barriers, and rural supply chain limitations hinder potential to scale

- Restricted mobile money network coverage and high transaction costs hinder the accessibility and affordability of Pay-As-You-Go energy for unserved populations
- Government's inconsistent implementation of VAT and tax exemptions for OGS creates uncertainty and risk for companies and investors, as the ability to avail these exemptions can vary<sup>7,8</sup>
- Limited access to affordable financing hinders the scaling up of the sector, as HHs and businesses struggle to obtain working capital for purchasing equipment due to high upfront costs
- SHS companies in rural and displacement settings face sustainability challenges stemming from mismatched financing, high distribution expenses, and a lack of skilled technicians<sup>2,7,8</sup>

# Mini-grids: UG now has 39 operational mini-grids with a growing pipeline of projects coming up; developers are focusing on deploying PUE to improve economics

Current mini-grid capacity is 2 MW with 39 mini-grids operational

Type of mini-grid	Known number of mini-grids in Uganda <sup>1</sup>	
	Existing*	Total capacity (kW)
Bio-mass	3	54
Solar powered	33	1,716
Solar-diesel	3	450
<b>Total</b>	<b>39</b>	<b>2,220</b>

### The Medium-long-term pipeline of projects is promising

- Equatorial Power secured permits for 15 mini-grid sites in Central and Eastern Uganda with a combined capacity of 1.56 MW<sup>4</sup>
- 120+ mini-grids were expected to be tendered by the German Development Bank (KfW) under the GET ACCESS Mini-grid Solar Program<sup>3</sup>
- Additionally, Beyond the Grid Fund for Africa (BGFA) is currently funding Winch Energy to develop of 23 mini-grids in Northern Uganda<sup>4</sup>

### Mini-grid viability remains a challenge & ecosystem players are deploying PUE assets and providing technical assistance to improve sustainability

- Equatorial Power and EnerGrow, along with Winch Energy and AVSI Foundation, are deploying PUE assets<sup>4</sup>
- CEI Africa & CLASP are providing PUE equipment subsidies for mini-grid developers<sup>5,6</sup>

### Development partners are supporting mini-grid development through subsidy and grant funding

- Winch Energy is constructing 14 mini-grid sites in South-Western Uganda as part of GIZ’s USD 28.5 M mini-grid development subsidy under the Pro Mini-grids program<sup>2</sup>
- UNCDF is providing up to 60% in subsidy support for the development of 2 mini-grids in one or two proposed locations in Mukono or Wakiso in partnership with the local government<sup>7</sup>

### Limited access to capital, an uncertain regulatory environment, and poor mini-grid economics hinder sector growth

- Inadequate access to capital, especially debt, as financiers are skeptical about the financial viability of mini-grids<sup>4</sup>
- There is a lack of regulatory security of tenure and lack of clarity on compensation upon grid arrival<sup>4</sup>
- Despite the tariff ceiling, most developers don’t have a PUE strategy to increase energy demand and improve economics<sup>4</sup>

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

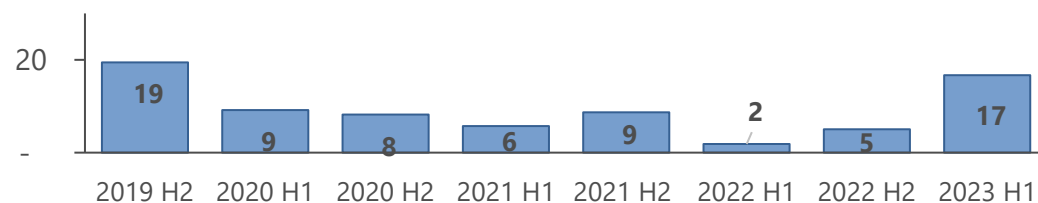
Sources: 1. ERA Mini-grid data 2. ERA, Application for Licence Exemptions, 2022 [Link] 3. The Independent, Germany, EU provide Uganda Shs136bn for solar mini-grids, 2022 [Link] 4. UOMA consultations 5. CEI Africa website [Link] 6. CLASP, PUE Financing Facility [Link] 7. UNCDF, RFA to Install 2 mini-grids, 2023 [Link]



## Productive use: PUE sales have bounced back to pre-Covid performance; outlook is promising with continued support from gov't, development partners and investors

### Combined solar appliance sales in UG 2019-23<sup>1,2</sup>

(in thousands)



### Sales of solar appliances have risen but haven't reached pre-pandemic levels

- Sales increased by 231% in H1 2023 compared to H2 2022 and were 798% higher compared to H1 2022
- Sales of TVs, solar water, pumps, and refrigerators are dominating but remain below pre-pandemic levels

### Development partners, investors and gov't are providing funding and technical assistance to support research and product testing<sup>1,3</sup>

- The EnDev Last-Mile RBF pilot, supported by USAID and PSFU are providing incentives for companies to expand their operations into rural and remote areas
- The EUR 8M SEEFA project, funded by EnDev and the IKEA Foundation, targets Uganda to promote sustainable energy in the dairy and horticultural value chain
- MEMD, USEA, and GOGLA have collaborated to develop the National Roadmap for Productive Use of Solar Energy (NR-PUSE)

### PUE companies are increasingly adopting innovative models to optimize cash flows and boost profitability<sup>4,5</sup>

- The COVID-19 pandemic highlighted the need for companies to enhance cash flow management, develop profitability strategies, outsource non-core activities, and digitize operations to improve efficiency and reduce costs
- OGS companies are increasingly using third-party services for after-sales support, payment collection, and data management to streamline PayGo revenue collection and reduce internal costs.
- OGS companies are diversifying their portfolios to include PUE products to enhance profitability and cash flow. Companies such as M-KOPA and d.light are leading this trend by distributing smartphones and cookstoves using PayGo models<sup>5</sup>

### Despite efforts to support PUE adoption, barriers to growth and implementation still remain<sup>2,4,5</sup>

- Limited access to suitable financing for PUE providers, due to high ticket sizes and stringent qualifications, hampers their ability to extend credit to underserved consumers
- Inconsistent application of tax regulations concerning VAT exemptions for appliances, such as refrigerators, undermines consumer affordability
- Limited awareness of consumers regarding the full offer of PUE appliances on the market limits uptake by the public

## Enabling environment: The gov't is strengthening the regulatory environment through new regulations & policies and establishing UNECL



### MDA restructuring

**The formation of Uganda National Electricity Company Limited (UNECL), a merger between UEGCL, UETCL and UEDCL, is in its advanced stages**

- The structure of the proposed new company – the Uganda National Electricity Company has been drafted and the organization will operate under a public-private partnership (PPP)<sup>1</sup>
- UNECL will assume responsibility for electricity generation, transmission, and distribution following the government's decision not to renew Eskom Limited's and Umeme Limited's concessionary contracts<sup>2</sup>

### A number of regulations, strategies and policies have been passed...

- National Energy Policy, 2023<sup>3</sup>: Aims to expand access to modern energy services, promote renewable energy, improve clean cooking and enhance energy efficiency
- National Road Map on Scaling Up PUE<sup>4</sup>: Provides a situational analysis and the needed strategic interventions to leverage the productive use of solar energy (PUSE) in Uganda
- PAYGO Scale-up Roadmap: Proposes policy and regulatory interventions needed to increase access to PAYGO
- E-Mobility Transition Strategy<sup>1</sup>: Seeks to provide an enabling environment for sustainable development of the domestic e-mobility ecosystem in Uganda.
- Standards for Solar Driers for Vegetables & Fruits<sup>1,5</sup>: Provides standards for solar driers to support producers meet international standards
- Tax waivers for E-Mobility<sup>1</sup>: One year import duty tax waiver for electric and hybrid vehicles

### .... while several others are in the pipeline<sup>1</sup>

- Net metering Regulation: Advanced billing approach empowering energy users offset their surplus energy is currently under review
- National Electrification Strategy: Strategy to guide universal access by 2030 is expected to be launched in 2024
- Standards for Isolated Grid systems: Standard to improve quality of service & guidelines for integration with the main grid are expected to be passed in 2023
- National Energy Transition Plan: Plan laying out aspirations for Uganda to achieve net-zero GHG emissions is being drafted & will be released ahead of COP28
- Roll out Strategy for Institutional Cooking: Implementation plan for transitioning institutions to clean cooking energy sources was drafted is currently under review
- National E-Mobility Strategy: Strategy providing a pathway for Uganda to e-mobility for public transport by 2030 & private vehicles by 2040 is being drafted

Notes: MDA means Ministry, Departments and Agencies

Sources: 1. UOMA Consultations 2. Deep Earth, Uganda National Electricity Company To Replace Umeme, Eskom, 2022, [\[Link\]](#) 3. NREP, Energy Policy for Uganda 2023, [\[Link\]](#) 4. GOGLA, National Road Map on Scaling Up Productive Use of Solar Energy, 2023, [\[Link\]](#) 5. World Trade Organization, Standards for Solar Driers for Vegetables & Fruits, [\[Link\]](#)

# Funding: Multinationals continue to account for majority of funds raised with growing availability of concessional finance from dev partners & investors

## Local companies still struggle to raise capital with majority of funds going towards multinationals

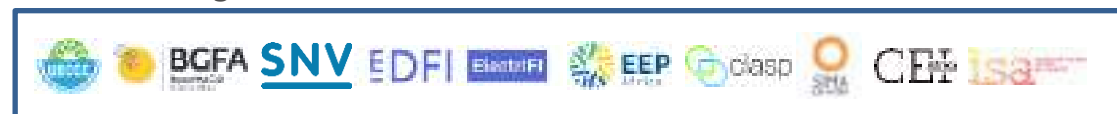
- M-Kopa raised USD 250M in debt and equity funding from Sumitomo Corporation and other investors to expand its PUE portfolio in Uganda among other countries<sup>1</sup>
- Popo Africa raised EUR 2M from BGFA in debt funding and GBP 2M in equity funding from UDB to scale access to mobile battery solutions<sup>2</sup>
- BrightLife raised funding from BGFA to increase access to SHS solutions<sup>3</sup>
- Winch Energy raised EUR 4M to support the development of 23 mini-grids in Northern Uganda<sup>2</sup>
- Equator solar raised USD 30M from FEI to scale its C&I portfolio in Uganda & Kenya<sup>4</sup>
- Tulima Solar raised USD 4M from BGFA to increase access to solar water pumps in Uganda<sup>3</sup>
- Afresco raised USD 1.5 M from InfraCO to develop C&I solutions for customers in Uganda, DRC & Malawi<sup>5</sup>
- Spiro secured USD 63M in funding to extend e-mobility solutions to Uganda among other countries<sup>6</sup>

## Commercial banks continue to provide working capital financing on limited scale<sup>7</sup>

- Stanbic Bank, Equity, Centenary Bank & Housing Finance are some of the commercial banks providing SME financing

## Development partners and investors continue providing concessional funding to drive universal energy access

- UECCC with funding from World Bank is providing is ~ USD 110M in intermediated and direct lending to solar & ICS companies<sup>8</sup>
- BGFA provided up to EUR 6.2M to mini-grid, SHS and PUE companies in the 5<sup>th</sup> call for proposals<sup>9</sup>
- SNV through its IMEU program is providing RBFs of up to USD 200K and grant funding of up to USD 50K to energy efficiency companies<sup>10</sup>
- ElectriFI is currently operating a EUR 5M facility for early-stage renewable energy companies<sup>11</sup>
- EEP continues to provide grants and repayable of EUR 260 – EUR 1 M with a minimum co-financing requirement of 30%<sup>12</sup>
- CLASP and Nithio provided PUE subsidy to companies in 6 countries including Uganda. The subsidy is capped at EUR 260K<sup>13</sup>
- SIMA's Energy Access Relief Fund (EARF) continues to provide debt funding of USD 50K to USD 2.5M<sup>14</sup>
- CEI Africa provided grant funding for PUE projects in UG among other countries<sup>15</sup>
- ISA provided grant funding to solar start-ups through its grand challenge<sup>17</sup>



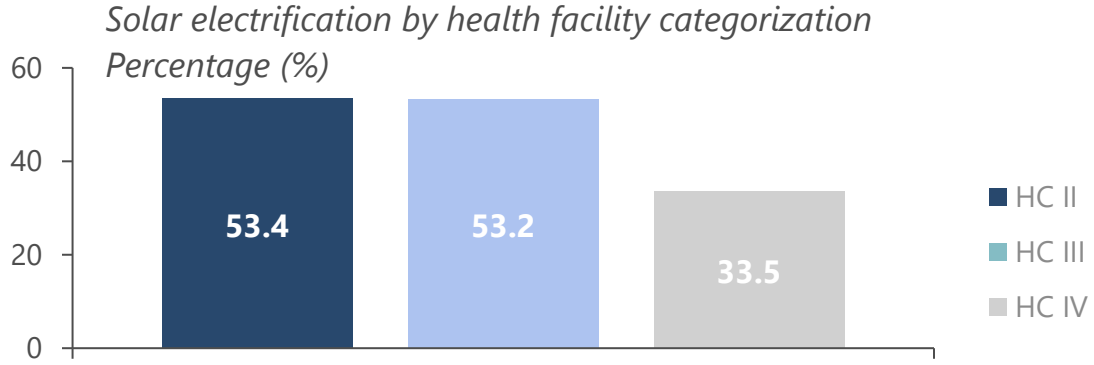
1. Techcrunch, M-KOPA press release, [Link](#), 2. UOMA consultations 3. BGFA, BGFA programme signs further projects in Uganda and Zambia, [Link](#) 4. Cygnum Capital, FEI provides USD 30 million to Equator Energy, [Link](#) 5. InfaCo Africa, Energy-as-a-Service, [Link](#) 6. Cleantechica, Spiro Secures \$63 Million Financing Solution, [Link](#) 7. Equity, Equi Green Loan Product Launch, [Link](#) 8. UECCC, Electricity Access Scale Up Project, 2023 [Link](#) 9. BGFA Website, [Link](#) 10. SNV, IMEU project, [Link](#) 11. ElectriFI launches EUR 5 M facility, 2022 [Link](#) 12. EEP, Clean Energy Financing, [Link](#) 13. CLASP, Financing facility for PUE, [Link](#) 14. SIMA, Energy Access Relief Fund, [Link](#) 15. CEI Africa, Smart Outcomes Component, [Link](#) 16. ISA, SolarX Grand Challenge, [Link](#)

# Industry insights



# Healthcare: While there is continued interest by OGS companies to electrify health centres with support from dev partners, sustainability remains a key challenge

## Despite solar electrifying majority of lower tier health centres<sup>1...</sup>



## Private sector OGS players continue collaborating with funders to electrify rural health centres

- Equatorial Power in partnership with GIZ is in the process of installing solar power solutions at 27 health centres in villages in West Nile with a total capacity of 150kWp<sup>2</sup>
- Aptech Solar with funding from UNDP and government, installed and commissioned solar power systems at 11 health centres across Uganda<sup>3</sup>
- Equatorial Power with grant funding from Power Africa electrified 11 public healthcare facilities on the Lake Victoria islands in the Buvuma and Kalangala districts<sup>4</sup>

## Development partners are providing support to increase sustainability of business models through research and pilots

- WRI undertook a market assessment for off-grid electrification of healthcare facilities in Uganda. The assessment highlights the potential addressable Health Facility Electrification (HFE) markets within Uganda and leverages GIS to support private sector operators become more targeted in providing solutions<sup>5</sup>
- GIZ EnDev piloted an O&M service model that supported health centres in displacement settings generate additional income from phone charging and sale of sundries to subsidize the cost of maintenance of solar systems<sup>6</sup>

## However, long-term sustainability of solutions remains a challenge

- Most of the health centres lack maintenance budgets for solar systems installed<sup>7,8</sup>
- Many of the systems become inoperable in 3-5 years due to lack of maintenance and repair services<sup>7</sup>
- In other cases, the arrival or extension of the grid renders solar systems redundant<sup>7</sup>

**30%** of systems installed on ERT I are non-functional<sup>9</sup>

**13%** of 522 systems installed on ERT II are non-functional<sup>9</sup>

Notes: ERT – Energy for Rural Transformation; ERT I was implemented from 1999 to while ERT II was implemented from

Sources: : 1 MEMD, National Electrification Report, 2020 2. Africa Energy Portal, Equatorial and GIZ team up to solarize 27 rural clinics, 2022 [Link] 3. Aptech website [Link] 4 USAID Awards an additional USD 2.3M in grant funding for healthcare electrification, 2022 [Link] 5. WRI, A GIS-based demand assessment methodology to estimate electricity requirements for health care facilities: a case study for Uganda, 2023 [Link] 6. EnDev, Solutions for Displacement Settings: Electrification of Health Centres, 2021 [Link] 7. Solar for Health: Five Ways Solar Power Can Make Universal Healthcare a Reality, 2019 [Link] 8. UOMA consultations 9. MEMD, Uganda Energy Access Scale-up Project, 2020 [Link]





# Healthcare: UN Foundation electrified 36 health centres with Solar PV solutions of 2-6 kWp capacity and provided follow-on O&M contracts to increase sustainability

## Case description



The United Nations Foundation in partnership with the World Health Organization under its Powering Healthcare Program electrified 36 facilities at healthcare II (HC II) and healthcare III (HC III) levels with solar PV solutions. The project was implemented by the Solar Electric Light Fund (SELF). The project was implemented in coordination with the Ministry of Health from 2016 to 2019<sup>1,2</sup>

## Overview

- The program designed single, centralized systems for the entire facility instead of multiple systems to improve efficiency & provide flexibility to power any equipment<sup>1</sup>
  - The program intentionally designed solar PV systems that not only meet the facility's essential needs, unlike previous programs like the World Bank's ERT program but also account for future growth
- Health centres that were selected were at least 5 km from the national grid and delivered key services such as maternity and also served critical areas such as being the only facilities in the neighbourhood or subdistrict<sup>1</sup>
- The systems were equipped with remote monitoring to keep track of system functionality and to enable remote trouble shooting<sup>1</sup>

## Results

- 36 health centres were provided with solar PV systems of 2–6 kWp capacity enough to power staff quarters in addition to the health centres<sup>1</sup>
- The program provided Operations and Maintenance (O&M) contracts with project developers for 1.5 years<sup>1,3</sup>
- To promote buy-in, the program set up stakeholder groups with MoH technicians, local leaders, district health officers & local communities<sup>1</sup>

## Sector considerations

- Reliable electricity is a key element for quality health services, yet stakeholders have not yet adequately reflected this as a development priority e.g policy making is still siloed with separate national electrification plans and national strategic plans<sup>1</sup>
- Remote, resource-constrained settings experience limited availability of solar vendors to service systems and provide spare parts to repair them – which affects the reliability and quality of electricity supply
- Funds allocated by governments and other funders for providing reliable electricity access in health-care facilities are insufficient, and do not reflect the importance of electricity for ensuring essential health services

# E-mobility: E-mobility sector is nascent, but sector stakeholders are strengthening the enabling environment to increase private sector involvement & drive growth

## Emissions reduction and efforts to tackle air pollution in Kampala are poised to benefit from the adoption of EVs

- 250K T** Transition to e-mobility would result in an annual reduction of 250, 000 tonnes CO<sub>2</sub> worth USD 15 million in carbon credits every year<sup>2</sup>
- 18%** Road vehicles, including buses, cars, 2 wheelers and 3 wheelers account for almost 18% of transport CO<sub>2</sub> emissions globally<sup>1</sup>
- 6X** Kampala’s air quality index (162µg/m<sup>3</sup>) is 6 times worse than the WHO Air Quality Guidelines, and worse than more industrialized cities such as Beijing (48µg/m<sup>3</sup>)<sup>2</sup>

## Government and other sector stakeholders are strengthening the enabling environment

- Uganda Revenue Authority (URA) provided temporary import duty waivers for fully assembled e-vehicles and Lithium-ion batteries<sup>3,13</sup>
- STI is developing a strategy to fully transition Uganda to e-mobility by 2040<sup>3</sup>
- E-mobility companies with support from AEMDA are creating a sector association<sup>3</sup>
- Development partners have implemented pilots and provided grant funding to e-mobility companies e.g., Open Capital with support from Shell Foundation implemented an integrated Kampala mobility project to connect first & last-mile transport and Siemens Stiftung provided R&D grants to e-mobility companies<sup>3,4</sup>

## Although e-mobility sector is lagging behind other regional markets various stakeholder interventions are expected to catalyze growth

- Asset financing companies have raised capital and are partnering with e-mobility companies to increase access
  - Watu raised USD 7M and recently partnered with GOGO to provide access to e-motorbikes, Asaak raised USD 30M to expand financing to riders for motorbikes & Tugende raised USD 3.6M to expand their offering to e-mobility<sup>5,6,7,8</sup>
- Regional companies are entering the market while players from nexus sectors are expanding their offering going existing players such as Zembo, GOGO, Modjoe Energies & Kiira EV
  - Spiro raised USD 63M to support in part to expand to Uganda while Nexus Green and SafeBoda partnered to pilot EVs<sup>9,10</sup>
- Mini-grid developers and operators are implementing e-mobility pilots e.g Equatorial Engie with funding from PREO piloted an e-outboard pilot, Winch is piloting e-motorbikes in partnership with Asaak & IS4D piloted e-bikes in displacement settings<sup>11,3,12</sup>

## Despite increased activity, the sector still faces challenges to scale<sup>3</sup>

- 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
- Limited capitalization hinders implementation of PAYGO model, which is intended to offset high upfront acquisition costs of EVs

Note: \*STI stands for Science, Technology and Innovations, \*\*AMEDA stands for Association for Electric Mobility and Development in Africa

Source: 1. Efficiency for Access Coalition, Solar Appliance Brief, [\[Link\]](#) 2. GreenHub, Kampala Pre-Feasibility Study,[\[Link\]](#) 3. UOMA consultations 4. Siemens Stiftung, Call for R&D in E-Mobility [\[Link\]](#) 5. Watu capital raise [\[Link\]](#) 6. Asaak capital raise [\[Link\]](#) 7. Tugende website [\[Link\]](#) 8. Gogo partnership with Watu [\[Link\]](#) 9. Spiro secures \$ 63M [\[Link\]](#) 10. Nexus Green website [\[Link\]](#) 11. PREO website [\[Link\]](#) 12. EnDev website [\[Link\]](#) 13. EAC Gazzete [\[Link\]](#)



# E-mobility: Equatorial Engie deployed 15 e-outboards on Lolwe Island in L.Victoria and early results show significant impact on operating costs & emissions

## Case description



Equatorial Engie, a mini-grid developer and operator, with funding support from Powering Renewable Energy Opportunities (PREO) program implemented an electric outboard (e-outboard) pilot for fishing in Lolwe Island, Lake Victoria. The pilot deployed 15 e-outboards with charging hubs connected to the solar installed mini-grid on the Island<sup>1,2</sup>

## Overview

- The pilot deployed 15 e-boats to replace an equal number of existing internal combustion engine (ICE) boats on the island<sup>1</sup>
- Two different e-outboard kits were selected<sup>1</sup>:
  - 5 units of EZ outboard S10 tiller equivalent to a 10 HP ICE, with 2 battery modules of 48V -4.6 kW supplied by GOGO (formerly BodaWerk)
  - 10 units of ePropulsion Navy 6.0, equivalent to a 10 HP ICE with one battery module of 48V – 8.96 kW
- The e-outboards were provided a fee of UGX 25K for short trips<sup>3</sup>
- Initially, fishermen only recharged the batteries via the charging station installed at the Productive Hub run by ENGIE Equatorial but three other charging stations were set up across the island to promote flexibility<sup>3</sup>

## Results

- Operating costs for e-outboard users were 50% lower compared to ICE users<sup>4</sup>
- Maintenance costs reduced for users reduced by 46% as Engie Equatorial took on maintenance responsibility for pilot clients<sup>4</sup>
- Analysis indicates a saving of around 3.46 tons of CO2 equivalent GHG for each boat per year which translates to 519 tons of CO2 equivalent saved assuming a 10 year operating period for the electric outboards<sup>5</sup>

## Sector considerations

- E-outboards kits cost 4X as much as ICE outboards putting them out of the affordability of most fishermen. Asset financing is required to increase access in order to unlock the benefit of reduced operating costs<sup>4</sup>
- Frequency of use of the outboards is influenced by seasonality therefore business models must be designed to appropriately accommodate the ebbs and flows of the business<sup>5</sup>
- Value chain development of E-outboards is required to make it a competitive option. This involves developing a spare parts supply chain and training mechanics to become conversant with making repairs similar to ICE value-chains<sup>5</sup>

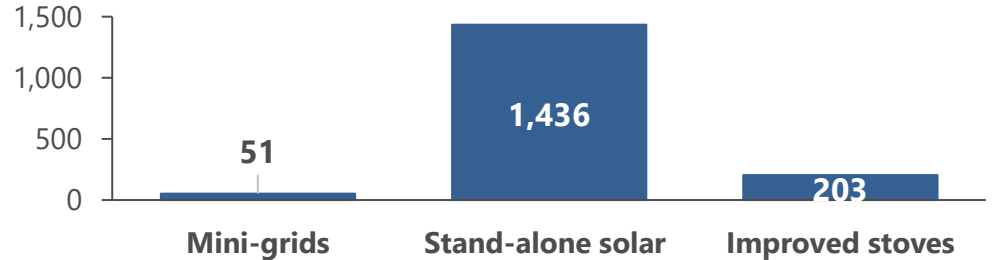
Note: An Outboard is a propulsion system for boats, consisting of a self-contained unit that many includes engine, gearbox and propeller or jet drive, designed to be affixed to the outside of the transom

Sources: 1. Engie Equatorial, E-mobility for fishermen on Lake Victoria: Part 1, 2022 [\[Link\]](#) 2. PREO website [\[Link\]](#) 3. Engie Equatorial, E-mobility for fishermen on Lake Victoria: Part 2, 2022 [\[Link\]](#) 4. Engie Equatorial, E-mobility for fishermen on Lake Victoria: Part 3, 2022 [\[Link\]](#) 5. Engie Equatorial, E-mobility for fishermen on Lake Victoria: Part 4, 2022 [\[Link\]](#)

# Innovative finance: Dev't partners and private companies are using innovative methods to pool funds & access capital, aiming to bridge the \$2.3B funding deficit

## Funding required to close the energy access gap in Uganda is significantly high

Volume of financing required to close the energy access gap<sup>1</sup>  
(USD, millions)



## There is growing interest from development partners to support innovative financing instruments

- EASP implemented by UECCC rolled out a facility to provide relatively cheap credit to commercial banks to on-lend to off-grid companies<sup>2</sup>
- UNDP Climate Aggregation Platform provided grant funding companies innovating<sup>3</sup>
  - Hypoport Africa is exploring securitization of mini-grids
  - Mirova SunFunder is exploring setting an SPV to aggregate carbon rights of energy companies
  - Solaris is testing a platform to scale off-balance sheet financing
- UNDP is supporting the piloting of D-RECs for health centres in Uganda<sup>4,5</sup>

## Climate financing is gaining traction across all off-grid technologies

- Mini-grid developer Equatorial Engie applied for support from the World Bank's Multilateral Investment Guarantee Agency (MIGA) to cover up to USD 22M in equity and loans to advance project development<sup>6</sup>
- Mini-grid developer Winch Energy supported by Energy Peace Partners (EPP) conducted the forward sale of its P-RECs to generate additional revenue<sup>7</sup>
- Cleantech company PowerTrust is managing the commercialisation of the D-REC initiative<sup>8</sup>
- SHS company Engie Energy Access partnered with CarbonClear to issue and sell data-driven and impactful carbon credits<sup>9</sup>
- C&I company SolarPipo continues to tap relatively cheap finance crowdfunding platform – GoParity<sup>10</sup>

## To further scale innovative financing, further support from government and development partners is required

- There is significant opportunity to tap into both demand-side and supply side public financing mechanisms such as grants, credit lines and guarantees especially for nascent technologies e.g PUE, e-mobility<sup>5,11</sup>
- There is an opportunity for government to proactively strengthen the regulatory environment to catalyze more financing innovation<sup>11</sup>

Source: 1. SE4All and Catalyst Off Grid Advisors, Taking the Pulse 2019 [Link] 2. UECCC, EASP Credit Support Facility Manual, 2023 [Link] 3. UNDP CAP Winners [Link] 4. UNDP partners with D-REC Initiative [Link] 5. UOMA Consultations 6. AfricaBusiness+, Equatorial Engie MIGA Guarantees [Link] 7. EPP, Winch Energy [Link] 8. D-REC Initiative [Link] 9. Engie Carbon Off-sets [Link] 10. GoParity Website [Link] 11. ESMAP, Designing Public Funding Mechanisms In The Off-grid Solar Sector, 2022 [Link]



# Innovative finance: Winch Energy raised financing through the forward sale of P-RECs to support the installation of streetlighting across 25 villages in Northern Uganda

## Case description



Winch Energy is raising funding through the forward sale of Peace Renewable Energy Certificates (P-RECs) a form of Distributed Renewable Energy Certificates (D-RECs) from the P-REC aggregation fund managed by Energy Peace Partners, Oydesy and CAMCO for its mini-grid projects operating in Lamwo district, Northern Uganda<sup>1</sup>

## Overview

- Lamwo district where Winch operates 25 mini-grids was some years ago overrun by the Lord’s Resistance Army (LRA) – a rebel group<sup>1</sup>
- The region subsequently suffered greatly and remains poor, with lasting displacement and a lack of development<sup>1</sup>
- Winch Energy intends to sell P-RECs to the aggregation fund for their 936-kW portfolio of clustered solar mini-grids developed in Lamwo, Northern Uganda<sup>1</sup>
- The P-REC aggregation fund is a USD 10M revolving credit facility created to address delays in finding buyers for P-RECs by advancing developers up to 10% of their capex<sup>2</sup>
- P-RECs for up to 10 years can be sold to provide the developer with upfront capital<sup>2</sup>

## Results

- The project is expected to generate 1,000 P-RECs annually<sup>1</sup>
- Historically, P-RECs have been priced between USD 25- 50 per P-REC while the target price for the P-REC fund is USD 10-12 given funding is paid upfront<sup>2</sup>
- Revenue from the forward sale of P-RECs was used to support the procurement, installation, and operation of streetlights across the 25 villages in the Lamwo District<sup>1</sup>

## Sector considerations

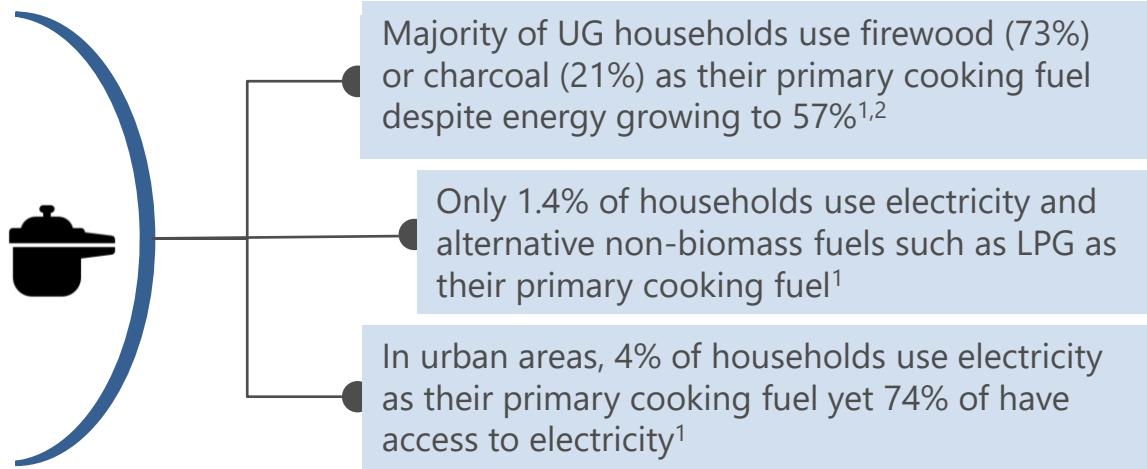
- P-RECs and other climate financing mechanisms can provide developers upfront capital when sold forward to develop much needed projects through reductions in capital outlays at the beginning of the project<sup>3</sup>
- P-RECs and other D-RECs provide an opportunity for developers to tap into new streams of corporate capital by offering buyers an entry point to fund high impact projects<sup>3</sup>
- P-RECs provide targeted financing to enable developers increase energy access for the hardest to reach in fragile locations such as refugees or populations impacted by conflict<sup>4</sup>

Sources: 1. EPP, Lamwo Spotlight, 2022 [\[Link\]](#) 2 UOMA consultation 3. Shell Foundation, Innovative Financing to Scale Renewable Energy for Off-grid Communities: The Role and Potential of Decentralized Renewable Energy Certificates (D-RECs), 2022 [\[Link\]](#) 4. South Pole, Q&A: What are P-RECs?, 2019 [\[Link\]](#)



# E-cooking: Adoption of e-cooking solutions is low however stakeholder interventions and promising carbon market offer future growth promise

## Despite increasing access to energy, adoption of e-cooking solutions remains low



## A variety of factors make the opportunity for e-cooking in Uganda attractive

- Uganda has a sizeable and well-financed SHS sector which may lay the foundations for a future profitable business model for off-grid e-cooking solutions<sup>1</sup>
- E-cooking companies such as UpEnergy and PowerUP are tapping into carbon credit markets offsetting purchase costs to increase affordability<sup>3</sup>
- Uganda is rapidly increasing energy access with a variety of sources<sup>1</sup>
- Energy efficient appliances e.g., EPCs are compatible with Ugandan cuisine & provide potential to drastically reduce energy consumption<sup>1</sup>

## Gov't has developed plans to increase energy access while development partners have provided financial & distribution support

- Gov't has implemented policies and targets, such as the National Energy Policy, 2023 and rolled out a tiered declining block e-cooking tariff to support the transition away from biomass<sup>3,4,5</sup>
- Development partners have facilitated greater access to e-cooking appliances by offering funding & directly distributing the products
  - Pesitho and Mercy Corps collaborated to create the ECOCA, a solar-powered electrical cooker that provides clean cooking and lighting to refugees<sup>6</sup>
  - GiZ intends to partner with local distributors to distribute electric and advanced biomass cooking solutions<sup>7</sup>

## Despite interventions, barriers limiting scaling of e-cooking solutions remain

- Limited awareness of the benefits of e-cooking compared to traditional cooking methods hinders wide-scale adoption and uptake<sup>3</sup>
- Lack of electricity access and stability in remote areas also hinder market growth outside urban centres<sup>3</sup>
- Limited clarity in the tax environment regarding the differentiation between VAT-exempt and non-exempt appliances<sup>3</sup>
- Lack of access to finance by PUE providers hinders ability to offer credit to consumers<sup>3</sup>

Source: 1. MECS, Uganda e-Cooking Market Assessment, 2021 [\[Link\]](#) 2. AfDB Press Release: Uganda launches last-mile connectivity to increase electricity Access to Rural Communities, 2021 [\[Link\]](#) 3. UOMA consultations 4. ERA, Revised Electricity Tariff Structure, 2021 [\[Link\]](#) 5. GoU, Revised National Energy Policy, 2023 [\[Link\]](#) 6. PESITHO, The ECOCA, [\[Link\]](#) 7. Leverist, Distribution of Electric Cooking and Biomass Cooking Solutions in Uganda, [\[Link\]](#)



# E-cooking: PowerUP a climate tech start-up is designing and manufacturing IoT integrated EPCs that are being used to issue e-cooking carbon credits

## Case description



PowerUP is a clean-tech product development company that designs affordable Electric Pressure Cookers (EPCs) for low Income households. These EPCs have in-built energy monitoring and are accessible under a PAYGO financing model, supporting faster clean cooking with reduced carbon emissions compared to biomass cooking alternatives<sup>1</sup>

## Overview

- PowerUP focuses on product development of EPCs, operating a B2B model that partners with distributors to access remote last-mile markets<sup>1,4</sup>
- The EPCs have in-built energy monitoring (IOT) allowing PowerUP to track usage and power consumption, leveraging this data for emissions tracking
- Distribution partnerships are structured based on data sharing to allow carbon credit issuance and the sale of emissions reductions to customers seeking climate and social impact
- UpEnergy, a social impact enterprise, collaborates with the Gold Standard's digital MRV platform to automate carbon credit verification and issuance processes, generating credits through the replacement of traditional stoves with PowerUP products

## Results

- PowerUP has sold more than 5,000 EPC units, aiming to scale up operations in 2024, to extend reach across Kenya and Tanzania<sup>2,4</sup>
- Through PowerUP's EPCs, UpEnergy issued the world's first carbon credits linked to emissions savings from clean cooking devices verified by the Gold Standard<sup>2,4</sup>
- 500,000 of these credits are set to be auctioned off in 2023, through the Intercontinental Exchange, Inc<sup>3,4</sup>

## Sector considerations

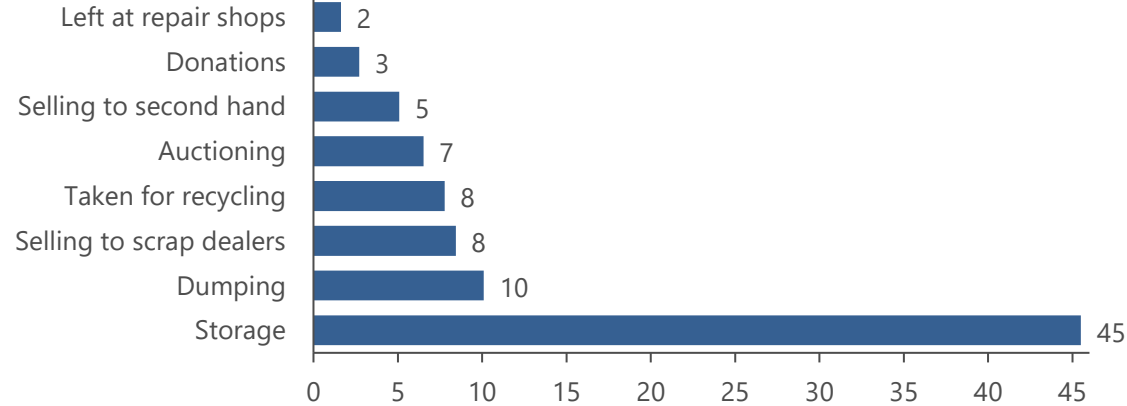
- Lowering upfront costs through import duty subsidization and E-cooking tariffs can drive adoption of clean cooking solutions by reducing end-user prices to bridge the affordability gap<sup>2</sup>
- Innovations in carbon credits directly tied to emission reductions such as integration of IoT technology offering shorter verification windows, promise to de-risk clean energy investments by providing cost-effective alternative financing to scale operations<sup>2</sup>
- To support sustainable adoption of higher tier cooking solutions such as EPCs, higher tier energy access e.g tiers 4 & 5 is required<sup>2</sup>



# E-waste: Significant progress has been made in addressing e-waste disposal concerns, with various government working on strengthening regulations

## E-waste distribution along different mgt. approaches<sup>1</sup>

(in thousands of tons)



## There is growing concern regarding the disposal of e-waste, and multiple stakeholders are involved in the development of new regulations

- The generated E-waste in Uganda was estimated at 17,000 tons in 2018 and is projected to increase by 4,500 tons annually<sup>2</sup>
- There has been a growing concern about how to handle and dispose of electronic waste (e-waste) due to the increasing number of electronic products being sold<sup>3</sup>
- Various stakeholders, such as the government, development partners, and the industry, are taking steps to strengthen waste management laws and regulations. However, the regulatory framework for this is still uncertain<sup>3</sup>

## Development partners and the private sector are playing a key role in the sector through research and business model innovation

- IOM and Mercy Corps collaborated on an Innovation Norway-funded project in Bidibidi to address e-waste risks. The project focused on raising awareness about proper e-waste disposal<sup>3</sup>
- E-mobility companies are focusing on circular economy practices such as e-waste handling e.g. GOGO (formerly BodaWerk) repurposes old Lithium-Ion cells to create powerbanks & torches<sup>4</sup>

## The government is making strides in addressing the e-waste management problem

- The gov't recognizes the issues associated with e-waste and has implemented measures to support its sustainable management through inclusion of e-waste provisions in the National Environment Act, 2019 and Waste Management Regulations 2020<sup>4</sup>
- The National E-waste Management Facility has been established in Kampala, with the National Steering Committee (NEC) as the designated collector to manage e-waste sustainably through recovery, reuse, refurbishment, and recycling<sup>5</sup>

## Despite growing interest in e-waste management, key barriers persist

- The standards authorities lack sufficient infrastructure and capacity to enforce compliance with applicable standards<sup>6</sup>
- High costs associated with processing e-waste due to complexities involved in safely recycling and disposing of electronic devices<sup>6</sup>

Sources: 1. AAE Africa, [Assessing e-waste generation and management in Uganda](#), [Link] 2. GIZ, Sector Brief Uganda: Renewable Energy, [Link] 3. GOGLA, Off-Grid Solar Market Trends Report 2022, [Link] 3. Relief Web, Uganda's Largest Refugee Settlement Adopts Electronic Waste Management, [Link] 4. Bodawerk, In 2018, The E-waste Generated In Uganda Was A Total Estimate Of 17,000 Tonnes, [Link] 5. NEC, National E-waste Centre launched, 2021 [Link] 6. UOMA consultations



# E-waste: IOM in partnership with TOESS & Bright Products piloted e-waste recycling in Bidi Bidi refugee settlement using BATLAB- a solarized mobile container

## Case description



**BRIGHT**

IOM in partnership with Bright Products, Total Off-grid Solar Solutions (TOESS) piloted BATLAB, a solarized mobile container used to recover, repair and recycle solar batteries. The pilot was implemented in Bidi Bid refugee settlement and was intended to reduce e-waste and improve the sustainability of solar products<sup>1</sup>

## Overview

- TOESS installed BATLAB made by cleantech company – Aceleron, allowing unrepairable solar products to be reassembled into battery packs for powering homes, businesses, or other facilities<sup>1</sup>
- The pilot provided training to solar technicians on e-waste management and in addition trained youths in the community to repair solar lanterns<sup>2</sup>
- Some of the viable solar lanterns were repaired and handed back to their owners improving sustainability of solar products<sup>2</sup>
- To improve sustainable procurement of solar products, research focusing on the solar e-waste value chain was conducted<sup>1</sup>
- The pilot conducted sensitization and knowledge sharing through workshops with key stakeholders from the government, humanitarian agencies, and the private sector<sup>2</sup>

## Results

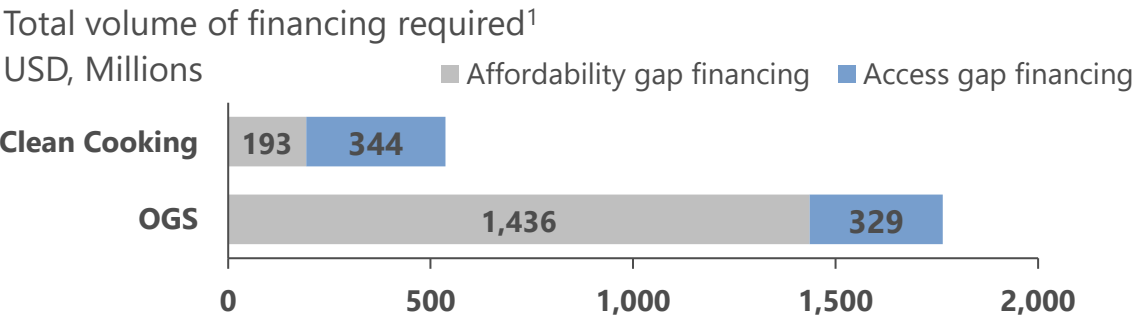
- The initiative employed 10 community mobilizers across Bidibidi's five zones and the host community<sup>2</sup>
- Old batteries from spoilt lanterns were tested in TOESS's state-of-the-art battery laboratory, with viable ones repurposed into second-life battery packs capable of running small businesses, powering schools and hospitals<sup>2</sup>

## Sector considerations

- Although the government has strengthened the regulatory environment for e-waste by passing the Waste Management Regulation, 2020 more needs to be done from an enforcement perspective to ensure regulations are followed<sup>3,4</sup>
- Fiscal measures such as waste-holder financing, consumer financing and producer financing where various stakeholders pay towards e-waste are needed to incentivize mainstreaming of e-waste management practices<sup>4</sup>
- Creation of guidance documents recommending principles regarding changes to waste management service provision can be used for training and education on the impact of e-waste and how to repair, recycle, and dispose of e-waste appropriately

# Demand side subsidies: Several DSS programs are currently in the pipeline but more needs to be done to close the affordability gap

**Total financing required for Uganda to close the affordability gap for OGS and clean cooking is ~670M**



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

- Unlike other subsidies, DSS close the affordability gap by directly reducing the price paid by end users for OGS products<sup>2</sup>
- 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<sup>2</sup>

**A few DSS programs are currently in the pipeline**

- EnDev is implementing a DSS pilot in Northern Uganda expected to reach 20K households & 197K households with ICS<sup>3</sup>
- UECCC, with funding from the Energy Access Scale-up Project (EASP), will implement a DSS project, leveraging synergies and lessons learned from the EnDev pilot<sup>3,4</sup>

**End-user subsidy design should follow a clear design framework broken down into pre-design, design and implementation**



**Pre-design considerations<sup>2</sup>**

- Define DSS goal:** Define the high-level goals to achieve with a DSS through initial conversations with sector stakeholders
- Determine a funding amount:** Establish the total funding required to reach the intended number of beneficiaries
- Evaluate stakeholder resources:** Evaluate current resources of implementing partners compared to the total required budget
- Establish a need for a pilot:** Determine whether a pilot is required to test design options

**Design principles<sup>2,3</sup>**

- Targeting:** Determine an approach to targeting that is relevant to the market context
- Subsidy level:** Determine subsidy amounts based on planned product selection and existing affordability gap
- Delivery:** Define key design considerations to ensure subsidies are efficiently delivered to intended beneficiaries
- Verification:** Confirms that the subsidy was delivered to their intended recipients
- Exit strategy:** Develop an exit strategy that ensures all planned objectives are met, and provides contingencies

Source: 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. UOMA consultations 4. UECCC, EASP RBF Manual, 2023 [Link]



# 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

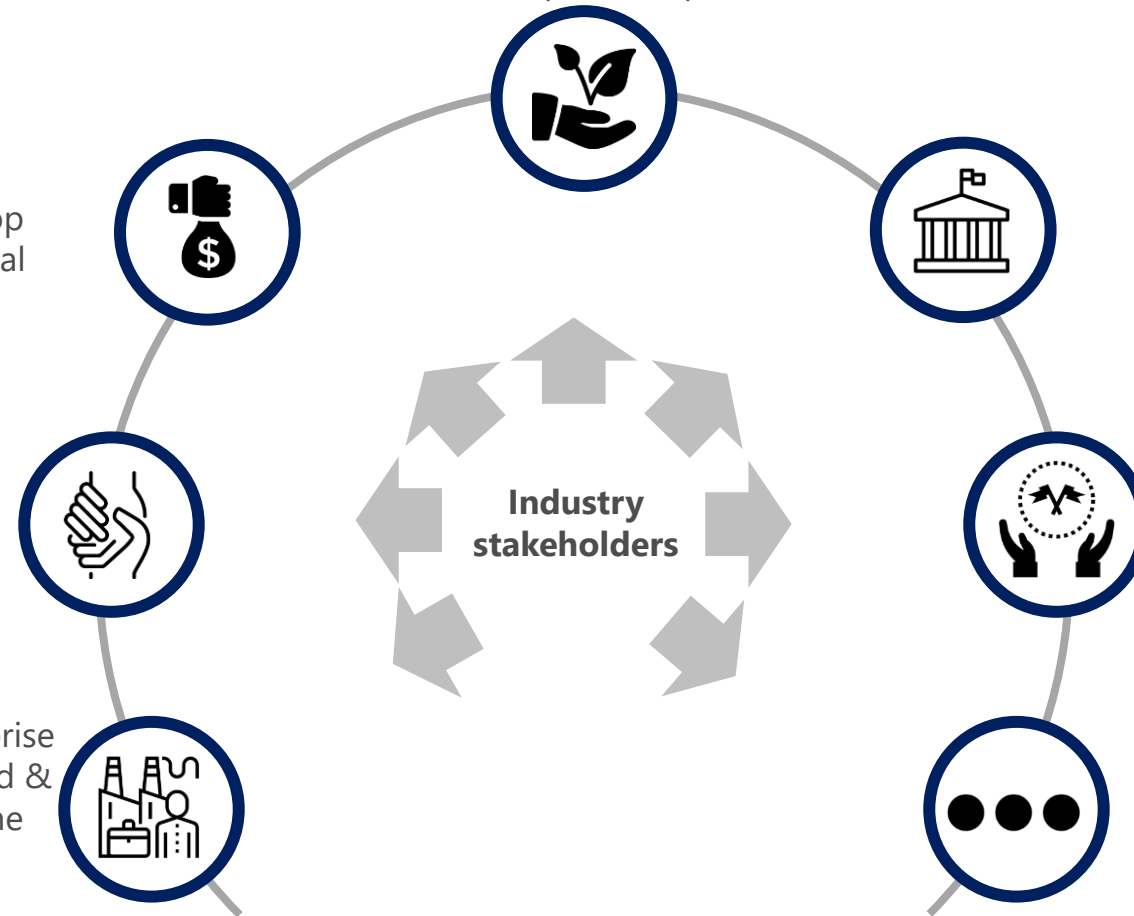
**Government** consists of bodies that have the mandate for regulation distribution & generation of energy

**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 (1/20)

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	Launched an expanded product range of high-quality PAYGo solar home systems under the MySol brand
	SolarNow is a, distributor, installer, consumer financier and after sales service provider of solar products since 2011	Institutional & commercial C&I solar products, serving businesses and institutions like hospitals & schools	Rebranded as an engineering first business, shifting its focus to C&I solar solutions
	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 accelerating efforts to expand energy access 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	Received results-based financing from BGFA to scale its operations distributing 136,700 clean energy devices to Eastern and Northern Uganda
	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	Closed USD 250M in debt and equity funding to expand its PUE portfolio

## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (2/20)






Business	Summary	Product offering	Milestones and updates
	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
	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	SunKing 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	SunKing raised USD 260M in series D funding from a consortium of funders led by BeyondNetZero
	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
	Adritex 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 (3/20)

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
	Power Trust is a service company supplying, installing, and servicing solar PV systems since 2011	Residential, commercial & institutional water pumping solutions, power back-up systems and electrical works	Installed more than 996 Cold Chain kits to various District Vaccine Stores and health facilities
	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
<b>AB Matra Uganda Ltd</b>	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 (4/20)





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 TVs 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 (5/20)

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
<b>Advanced Solar Power Ltd</b>	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	Partnered with Sawa Energy as its local executing partner in Uganda, enabling clients to acquire Solar systems with no upfront costs
<b>All Africa Ultimate Solar Energy</b>	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 (6/20)

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
<b>Crown Energy Systems</b>	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 (7/20)

Business	Summary	Product offering	Milestones and updates
<b>ASE Solar Ltd</b>	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 (8/20)

Business	Summary	Product offering	Milestones and updates
<b>ARED SMC</b>	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
<b>Ekorn Solar Ltd</b>	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
 <b>ENERGY SYSTEMS LIMITED</b>	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 (9/20)

Business	Summary	Product offering	Milestones and updates
 <p><b>Fresca Investments</b></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><b>Hagotech Gen. Electricals &amp; Technical Service (HTGETS)</b></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 (10/20)






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
<b>Kenni Invest Uganda</b>	Kenni Invest Uganda is a distributor, installer and consumer financier of solar home systems since 2012	Residential products	Not available
<b>LEEM Electronics</b>	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 (11/20)

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
<b>New Age Solar Technologies</b>	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
<b>New Sun Solar</b>	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 (12/20)






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 (13/20)

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 (14/20)

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 (15/20)

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	gnuGrid rolled out a last-mile credit scoring pilot with support from GIZ, and was licensed by BOU as the first indigenous Credit Reference Bureau
	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	Yellow closed its Series B funding round, raising USD 14M, which brings the total capital raised to USD 45M
	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






## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (16/20)

Business	Summary	Product offering	Milestones and updates
	PowerUP is a clean-tech product development company that designs affordable electric pressure cookers (EPCs) with in-built energy monitoring for low-income households	Residential and commercial products such as EPCs	Sold up to 5,000 EPCs, leveraging emissions tracking data to support carbon financing
	UpEnergy leverages carbon finance to support product supply chains for household energy products such as efficient electric cookers and improved fuel-saving stoves	Residential and commercial products focused on decarbonization such as water treatment systems and clean technology	Issued the world's first carbon credits linked to emissions savings from PowerUP's clean cooking devices
	Equator Energy is a fully integrated solar power provider that covers the entire cost of planning, construction, commissioning, and operation of the solar power plants in its portfolio.	Grid-tied solar power plants	> 68 MWp of solar power has been generated from over 140 installations.
	Maintenance Palace Limited is an electrical-solar contracting company that has designed, installed and maintains electrical-solar works since 2012	Residential, commercial and institutional products	Not available
	Kwin Solar is a distributor, installer, and after-sales service provider of solar-powered products and hybrid solar systems	Residential products including lithium battery systems, solar floodlights, solar cameras, and MMPTs	Has installed more than 850 solar systems

## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (17/20)






Business	Summary	Product offering	Milestones and updates
	<b>Nexus Green Ltd</b> is a Ugandan solar energy company that supplies and manufactures affordable solar-powered solutions.	Solar-powered irrigation systems, solar street lighting, and solar and battery storage	Engaging with GoU to set up 687 solar-powered irrigation sites by 2024, in addition to the Lopei Multipurpose dam project
	Amush Energy is a distributor and installer of affordable solar powered battery systems since 2017	Solar panels and gel batteries, inverters, split solar streetlights, hybrid solar systems, lithium battery systems, and MPPT charge controllers	More than 4500 solar powered systems installed, impacting up to 10,000 individuals
	Battery World Ltd is a renewable energy distributor specializing in wind energy and wide rooftop solar installation	Solar and Backup system installation, Solar Water Heating, Street lighting, Automotive batteries and Wind energy systems	Installed 5KW wind turbine in Lufudu landing site powering up to 30 households
	Bernoulli Engineering Services is an energy engineering company specializing in water and solar solutions, civil works and power extension services	Supply and installation of solar panels, charge controllers, inverters, solar water heaters, solar water pumping systems and grid tie systems	Installed a Solar water pump project in Kayunga and provided solar systems for the schools of the deaf in Mulago and Ntinda
	Ebenezer Saving Stoves Limited is an energy enterprise that manufactures and supplies clean, energy efficient cook stoves and lighting solutions	Solar Cook stoves that integrate volcanic rocks for efficiency and lighting solutions for home and commercial use	Not available

## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (18/20)

Business	Summary	Product offering	Milestones and updates
	Equator Solar Group is a distributor, installer, and after-sales service provider of solar solutions and energy efficiency expertise	Provides tailored technical project-design support focused on solar fish hatchery solutions, solar home systems and solar water pumps	Equipped a dairy farm/factory with a 200kWp grid-connected solar system and installed 96KWp Solar PVs across multiple health centers
	FRES Uganda provides affordable solar solutions to households, businesses and refugee settlements across south-western Uganda since 2010	Solar home systems (SHS), nano and mini-grids, and productive use platforms	Installed over 5,392 solar home systems (SHS) and a total installed capacity of 950kWp across multiple projects
	GreenEra Engineering Solutions Ltd is a private Ugandan company that specializes in renewable energy solutions, installations and system maintenance	Commercial and industrial products such as security systems, generator repair-maintenance and structured cabling	Not available
	Harmony Energy is a distributor and installer of provider of solar PV systems, solar water heaters, power backup systems and streetlights	Commercial and industrial products such solar water heater, solar irrigators & solar pumps	Installed solar water heaters and streetlighting systems in several businesses and outdoor parks
	Innovex is a Uganda technology company providing cloud-based IoT solutions to enable remote monitoring and management of energy systems	Facilitates after-sales support and PAYG actuation for commercial PUE systems	Received more than USD 400K in grants and debt financing. Raised seed funding from the Gaia Impact Fund in 2021







## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (19/20)






Business	Summary	Product offering	Milestones and updates
	Signalytic delivers stable solar-powered infrastructure for remote healthcare facilities allowing real time stock visibility across the network since 2017	Commercial and institutional products, partnering with dev partners to serve health centres	Installed S+ System Units in 25 healthcare facilities and successfully closed a seed funding round, raising USD 1.6M
	Solar Nation Limited is an Engineering, Procurement, and Construction (EPC) company specializing in the design, procurement, installation, and maintenance of solar systems since 2019	Provides commercial and industrial design and construction of solar systems such as solar drier, solar water pumping and street lighting services	More than 235,099 KWh installed capacity through the Mubende Lights project
	Solar Connect is a service company that deals with sourcing, supplying, and installation of solar PV systems and clean energy products	Commercial and industrial products such as batteries, fridges, inverters, panels, and water pumps	Not available
	Sunculture is a distributor, installer, and after-sales service provider of off-grid solar technology	Residential and commercial products, that allow reliable access to water, irrigation and lighting	Secured syndicated debt funding of USD 12M from Mirova Sunfunder and Nithio
	Tulima Solar offers a variety of solar water pumps for various applications such as crop irrigation, animal husbandry, domestic use, horticulture, and more	Institutional and commercial products for farms and small businesses	Not available




## Business models, product offering, regional distribution and sales to date by SHS and PUE operators in Uganda (20/20)

Business	Summary	Product offering	Milestones and updates
	<p>Sawa Energy is an affordable, predictable solar electricity solution company that installs and manages solar systems for their clients, allowing them to switch to solar energy and reduce costs without any initial expenses</p>	<p>Solar systems</p>	<p>Completed projects include data centers, telecos, banks, commercial centers, schools, hospitals, and non-profits in multiple countries</p>
	<p>Water and Energy Solutions specializes in the design, installation, and maintenance of cost-effective systems for open and greenhouse farming</p>	<p>Commercial and institutional products such as water pumps, boreholes, generators, solar equipment, irrigation</p>	<p>Not Available</p>
	<p>POPO is clean solar power company supporting off-grid access smart portable batteries on a Pay As You Go basis through its scalable battery rental platform</p>	<p>Residential and commercial products</p>	<p>Signed financing agreement with BGFA, to scale up its solar-powered battery rental services in northern Uganda supporting access to up to 82,800 people</p>
	<p>Equator Energy is a solar solutions company focused on C&amp;I solar installations with guaranteed energy savings and zero up-front cost</p>	<p>Commercial &amp; institutional products including solar-diesel hybrid grids</p>	<p>Supported over 140 C&amp;I installations with more than 68 MWp of installed capacity</p>



# Business models, product offering and regional distribution to date by E-mobility companies in Uganda

Business	Summary	Product offering	Milestones and updates
	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%)	Several vehicles including solar powered buses and private cars	Currently in the final stages of construction of a factory in Jinja district, Eastern Uganda, with a projected capacity of 22 vehicles per day
	GoGo, formally know as Bodawerk, an E-mobility enterprise founded in 2017 that is developing mobility solutions and retrofitting motorcycle petrol-driven power engines with electric ones	Electric motorbikes and electric tractors	Rebranded to GoGo, launched the E-Boda Commuter, and signed a financing agreement with Watu Credit to bring over 1,000 EVs to market
	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	Fishing boat engines	Closed grant funding of EUR 500K from EEP Africa to pilot a PAYGO model in Uganda, Tanzania and Kenya
	Modjo Energies is a Ugandan tech company using sustainable technologies to innovate & deploy accessible and affordable transport solutions	Electric motorbikes	Received USD 20K from NSSF Hi Innovator program to scale access to e-motorbikes
	Zembo (Zero Emission Motorcycle Boda) is a start-up founded in 2018 specializing in innovative and sustainable mobility solutions for Africa	Electric motorbikes	Raised USD 3.4M from several international funders including Toyota and InfraCo to expand operations in Uganda

## 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
 <b>Central</b>	<b>Tiribogo gasification</b>	8	32kW Biomass gasification 170 connections	<b>Developer:</b> Pamoja Energy Ltd <b>Partner:</b> Former REA	Grant from Royal Institute of Technology Stockholm & Renewable Energy Business Incubator (REBI)
	<b>Magara gasification</b>	7	32kW Biomass gasification 72 connections	<b>Developer:</b> Pamoja Energy Ltd <b>Partner:</b> REA	Grant from Royal Institute of Technology Stockholm & Renewable Energy Business Incubator (REBI)
	<b>Bukuzindu solar-diesel plant</b>	7	Hybrid gen. station 600 kW (Solar) & 1.6MW (Diesel) 40 villages (~2500 hhs)	<b>Developer:</b> 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 <sup>1,2</sup>
	<b>Kiboga solar mini-grid</b>	10	1kW Solar PV 11 connections	<b>Developer:</b> Centre for Research in Energy and Energy Conservation	Grant from National Council for Science and Technology (NCST)
	<b>Kitobo Solar Plant</b>	5	230kW Solar PV 541 connections	<b>Developer:</b> Absolute Energy Africa Ltd	\$730K grant financing from Energy and Environment Partnership (EEP) , Shell Foundation, FinAfrica <sup>3</sup>

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

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	<b>Kisiizi Hydropower</b>	38	300kW hydro & 60 kW hydroelectric & diesel generator of 80kva 710 connections	<b>Developer:</b> Kisiizi Power <b>Partners:</b> Kisiizi Hospital, Church of Uganda	\$900K; 30% equity from Kisiizi Hospital and 70% grant from the World Bank <sup>1</sup>
	<b>Kyamagaruru solar plant</b>	7	13kW Solar PV 68 connections	<b>Developer:</b> Energy for Development <b>Partners:</b> Former REA	Grant from University of Southampton
	<b>Kanyegaramire solar plant</b>	7	13kW Solar PV 74 connections	<b>Developer:</b> Energy for Development <b>Partners:</b> REA	Grant from University of Southampton
	<b>Eco-Garden micro-hydropower plant</b>	8	5kW Hydro 16 connections	<b>Developers:</b> Eco-Gardens Rwenzori <b>Partners:</b> Renewable Energy Business Incubator (REBI)	Equity from Eco-Garden Rwenzori
	<b>Kabalega Hydropower plant</b>		9MW Hydro 203 connections	<b>Developers:</b> Hydromax Limited <b>Partners:</b> Former REA	Equity from Hydromax; additional \$53.7M grant from the Norwegian government and \$23.7M debt from the French Development Agency <sup>1</sup>

## 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
 <p>West</p>	<b>RMS Pico Hydropower</b>	9	5kW Hydro 3 connections	<b>Developer:</b> Rwenzori Mountaineering Services (RMS)	Grant from Private Sector Foundation Uganda (PSFU)
	<b>Pamoja gasification – Kamwenge District</b>	4	75kW Biomass gasification 500 connections	<b>Developer:</b> Pamoja Energy Limited	\$369K grant from Energy and Environment Partnership (EEP) Programme
	<b>Nakivale Refugee camp Solar mini-grid</b>	2	10.8 kW Solar PV 4 connections	<b>Developer:</b> UNHCR Partner: Office of the Prime Minister	Grant support from UNHCR <sup>1</sup>
	<b>Katiirwe solar mini-grid</b>	2	50 kW Solar PV 200+ connections	<b>Developer:</b> PowerGen Renewable Energy	Equity from Kyegegwa Rural Electricity Co-operative Society
	<b>Suam Micro Hydropower plant</b>	9	40kW Solar PV 126 connections	<b>Developer:</b> GiZ and EnDev <b>Partners:</b> Former REA	\$1.2M - \$12M grant from GiZ and EnDev <sup>2</sup>

## 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
 <b>East</b>	<b>RMS Pico Hydropower</b>	9	5kW Hydro 3 connections	<b>Developer:</b> Rwenzori Mountaineering Services (RMS)	Grant from Private Sector Foundation Uganda (PSFU)
	<b>Lolwe Island mini-grid</b>	<1	600kW solar PV plant on Lolwe Island Namayingo District Expected to serve 3,700 connections	Developer: Equatorial Power	Development through a joint-venture with Engie Energy Access
 <b>North</b>	<b>Lamwo Mini-grids, Northern Uganda</b>	<1	Capacity of 30kW to 80kW per site 25 villages in Lamwo District	<b>Developer:</b> Winch Energy <b>Partners:</b> MEMD	\$28.5M grant from the German government



## 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	<b>Bakulu Power</b>	<ul style="list-style-type: none"> <li>Solar mini-grid total of 600kW in Buvuma district</li> <li>Potential to reach ~8,000 people</li> </ul>	<b>Partners:</b> Former REA, Energy for Impact
	<b>Absolute Energy</b>	<ul style="list-style-type: none"> <li>Estimated capacity of 100kW Solar PV</li> <li>Located in Kalangala District with potential impact of 5,400 people</li> </ul>	<b>Partners:</b> Former REA
	<b>AfDB and REA</b>	<ul style="list-style-type: none"> <li>(10) decentralized mini-grids on Lake Victoria</li> </ul>	<b>Partners:</b> Former REA
	<b>Equatorial Power</b>	<ul style="list-style-type: none"> <li>(15) Solar mini-grids on Lake Victoria Islands with a combined capacity of 1.56 MW</li> </ul>	<b>Partners:</b> MEMD
Western	<b>ORIO Infrastructure Fund</b>	<ul style="list-style-type: none"> <li>(10) mini hydro projects</li> <li>Capacity of 50 to 500 Kw</li> </ul>	<b>Partners:</b> UECCC <b>Funds raised &amp; financiers:</b> \$14.5M grant from Emerging Africa Infrastructure Fund, FMO (Dutch development Bank) <sup>1</sup>




## 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
<b>Southern</b>	<b>Winch Energy</b>	<ul style="list-style-type: none"> <li>Capacity of 30kW to 80kW per site</li> <li>15 villages in Rakai &amp; Isingiro</li> </ul>	<p><b>Partners:</b> GiZ and Former REA</p> <p><b>Funds raised &amp; financiers:</b> \$28.5M grant from the German government<sup>1</sup></p>
<b>Northern</b>	<b>Mandulis Energy</b>	<ul style="list-style-type: none"> <li>20MW biomass project in Gulu</li> </ul>	<p><b>Partners:</b> KfW, Power Africa</p> <p><b>Funds raised &amp; financiers:</b> \$1M grant from Sustainable Energy Fund for Africa (SEFA) and African Development Bank<sup>2</sup></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
	<p>Solar sister is an international NGO that empowers women entrepreneurs through energy access</p>	<p>Residential products including lanterns and accessories</p>	<p>Powered several health centers as part of their COVID response including health centers in Pushit &amp; Amuro in N. Uganda</p>
	<p>We Care Solar is a global NGO reducing maternal mortality with solar powered reliable lighting &amp; medical devices with a presence in Uganda, Liberia, Sierra Leone and Zimbabwe</p>	<p>Developed solar suitcase, a compact solar home system for maternal health facilities that includes medical lighting, phone charging, a fetal doppler, and thermometer</p>	<p>Launched the “Light every birth” program in Uganda in 2018 that included the donation of 350 solar suitcases to health centers</p>
	<p>Solar Electric Light Fund (SELF) is an international NGO providing energy solutions to the last mile in partnership with development partners such UNHCR and UN Foundation</p>	<p>Residential and commercial products</p>	<p>Main contractor on UN Foundation project that electrified 36 health centers, sub-contracted to All in Trade. Implemented solar streetlight solutions to reduce sexual assault in partnership with Rape Hurts Foundation</p>
	<p>Little Sun is a global NGO providing small portable solar lamps for energy impoverished communities living without electricity</p>	<p>Residential products such as lanterns and lamps</p>	<p>Distributed over 6,500 lamps to communities without electricity in Uganda in partnership with Energi Nord, a Danish energy company</p>
	<p>Innovation Africa is an NGO providing energy solutions for health centers and schools and has been active in 10 SSA countries including Uganda</p>	<p>Commercial products for institutional consumers including large modular systems, solar water pumps, and solar heaters</p>	<p>Electrified several schools and health centers in Uganda with systems including remote monitoring system for donors to monitor real time performance</p>

## 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>Ayuda en Accion (AeA) is a nonprofit committed to enhancing financial inclusivity through microfinance solutions and fintech impact investing</p>	<p>Supports access to commercial products for refugee consumers in including solar heaters and lights</p>	<p>Signed an MOU with USEA to support access to solar irrigation panels in the West Nile region</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 80 off-grid health centers, distributed over 24,425 pico lights to vulnerable communities, and established 2 women solar entrepreneur groups</p>
	<p>Stiftung Solarnenergie 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. Also, set up a 45Kw solar plant system at IITA</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 &amp; refrigerators</p>	<p>Electrified 63 schools, installed phone charging systems for 4 communities, provided refrigerators to 3 health centers, and initiated a climate action program for better and sustainable livelihoods</p>

## A number of facilities have been set up in the region to promote the off-grid energy sector (1/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>SunFunder – Solar Energy Transformation Fund<sup>1</sup></b>	Support 50 solar companies to grow, with a potential to serving up to 3 million people	Solar Energy	Debt	\$70M	East and West Africa
<b>Mobile for Development Utilities Innovation Fund</b>	Test & scale the use of mobile to increase access to energy, water and sanitation	Seed grants and market validation grants	Grant	\$2.6M	SSA
<b>SunFunder – Beyond the Grid Solar Fund (BTG)<sup>2</sup></b>	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
<b>Global LEAP Awards</b>	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 (2/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>SIMA Fund for Off-grid solar<sup>1</sup></b>	Provide commercial capital and advisory to energy businesses with financial, social, and env. impact	High risk, earlier stage businesses	Debt	\$90M	SSA
<b>Solar Frontier Capital</b>	Provide local currency lending for pay-as-you-go off-grid solar companies across sub-Saharan Africa	PAYG companies	Debt	\$100M	Africa
<b>Off-grid Energy Access Fund<sup>2</sup></b>	Catalyze local financial markets' support for innovative energy access strategies	The household energy access sector including distributors, manufacturers & credit providers	Debt	\$500M	SSA
<b>TRINE</b>	Invest in solar energy in growing markets	Solar Energy	Crowdfunding	Dependent on co. & funds raised	SSA

## A number of facilities have been set up in the region to promote the off-grid energy sector (3/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Pioneer Energy Investment Initiative</b>	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
<b>Energy Entrepreneur Fund</b>	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
<b>ResponAbility Energy Access Fund</b>	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
<b>African Renewable Energy Fund</b>	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 (4/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Efficiency for Access Coalition</b>	Support & accelerate innovation in off-grid and weak grid appliance tech and markets; fund applications closed in 2019	Productive use	Grant	\$1M	SSA
<b>Facility for Energy Inclusion Off-Grid Energy Access Fund</b>	Development of state of the art tech., electricity storage	SME's Incubation support	Mezzanine debt	\$50M	SSA
<b>EU-Africa Infrastructure Trust Fund</b>	Mobilize additional finance for infrastructure projects in sub-Saharan Africa; fund applications closed in 2019 <sup>1</sup>	Geothermal, hydropower, solar & wind power, transmission lines, sustainable cooking fuels	Grants blended with long term financing	~\$920M	SSA
<b>Emerging Africa Infrastructure Fund</b>	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 (5/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Development Innovation Ventures</b>	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
<b>Sustainable Energy Fund for Africa (SEFA)</b>	Support private-sector led economic growth through the efficient utilization of untapped clean energy resources	Clean energy	Grant and equity	\$95M	SSA
<b>USAID-Derisking PAYGO</b>	Mobilize additional finance for SHS co.s that wish to expand sales of PAYGO SHS in refugee settlements; fund applications closed in 2019 <sup>1</sup>	PAYGO SHS	Grant	Not available \$145k-175k/co.	Uganda
<b>AlphaMundi Foundation – Powering Ag</b>	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 (6/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>BEAM investment platform</b>	Cloud-based platform, aiming to provide developmental infrastructure for off-grid energy services across SSA	Off-grid energy	Equity	\$50M	Africa
<b>Solar Electric Light Fund<sup>1</sup></b>	Design & implement solar energy solutions to assist people living in poverty	Solar	Grant	Not available	Uganda
<b>Energy Access Venture Fund<sup>2</sup></b>	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
<b>The EnAccess Foundation</b>	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 (7/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Biodiversity Investment Fund</b>	Provide attractive loan financing for businesses that can demonstrate impact or contribution towards biodiversity in Uganda	Off-grid energy	Equity	\$50M	Africa
<b>EnDev Uganda</b>	Give support in energy policy, improved biomass technologies, rural electrification & energy efficiency.	Pico PV & SHS Grid densification	No info	€12.25M	Uganda
<b>EEP Africa</b>	Provide early stage & catalytic financing to innovative clean energy projects, technologies	Solar PV	Grant	Not available €200k – 500k/co.	EA and Southern Africa
<b>Frontier Energy II Fund</b>	Develop, construct and operate renewable energy generation projects	Renewable energy	Equity or mezzanine debt	\$60M (\$227M – to verify) <sup>1</sup>	SSA

## A number of facilities have been set up in the region to promote the off-grid energy sector (8/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Frontier Energy I Fund<sup>1</sup></b>	Develop, construct and operate renewable energy generation projects; fund closed in 2017	Renewable energy	No info	\$60M	East Africa
<b>USADF SCC Grants<sup>2</sup></b>	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
<b>USADF Off-Grid Energy Challenge<sup>3</sup></b>	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
<b>BEAM – ElectriFI Fund<sup>4</sup></b>	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 (9/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>SIMA Angaza Distributor Financing Fund<sup>1</sup></b>	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
<b>Renewable Energy Challenge Fund<sup>2</sup></b>	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
<b>KawiSafi Ventures Fund<sup>3</sup></b>	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
<b>SIMA Off-Grid Solar and Financial Access Senior Debt Fund I<sup>4</sup></b>	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 (10/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Climate Investor One<sup>1</sup></b>	Provide funding to develop renewable energy projects to reduce power deficits, energy costs and CO2 emissions	Clean energy	Debt and equity	\$80M	SSA
<b>GEEREF NeXt Funds<sup>2</sup></b>	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
<b>ARCH Africa Renewable Power Fund (ARPF)<sup>3</sup></b>	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
<b>Universal Green Energy Access Programme (UGEAP)<sup>4</sup></b>	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 (11/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Beyond the Grid Fund For Africa (BGFA3)<sup>1</sup></b>	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
<b>Nithio Financial Intermediary</b>	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
<b>SIMA Energy Access Relief Fund (EARF)</b>	Provide affordable financing to support off-grid solar firms facing financial issues due to disruptions caused by COVID-19	SHS	Debt	\$68M	Sub-Saharan Africa and Asia
<b>ElectriFi Uganda Country window</b>	To mitigate the effects of climate shocks and build resilience by accelerating clean energy access	Clean energy		€ 5M	Uganda

## A number of facilities have been set up in the region to promote the off-grid energy sector (12/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Regional Off-Grid Electricity Access Project (ROGEAP)<sup>1</sup></b>	Building regional capacity to develop a regional market and improve access to finance for stand-alone solar businesses	Solar PV technologies and standalone off-grid solar	Grants, Recoverable Grant	\$338M	West Africa
<b>The Facility for Energy Inclusion's Off-Grid Energy Access Fund<sup>2</sup></b>	Support the growth of energy access companies across Africa and develop their capacity to sustainably access capital at scale	Renewable Energy	Debt	\$100M	SSA
<b>The Africa Enterprise Challenge Fund (AECF)<sup>3</sup></b>	Support innovative enterprises in agribusiness and renewable energy with the aim of reducing rural poverty and creating jobs	Agriculture and renewable energy	Grants	\$100M	SSA
<b>Sustainable Energy for Smallholder Farmers (SEFFA)<sup>4</sup></b>	Accelerate innovative business cases for renewable energy technologies for productive use of energy in the agricultural sector	Productive use of renewable energy for agricultural development	N/A	€22,500/co	SSA

## A number of facilities have been set up in the region to promote the off-grid energy sector (13/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>BRILHO Energy Africa Programme<sup>1</sup></b>	Support African government's efforts in realizing their universal energy targets	Electric and thermal energy, solar systems and clean cooking solutions	Catalytic Grants, Results-Based Financing	\$29M	East Africa
<b>Africa Renewable Energy Fund II-Africa<sup>2</sup></b>	Developing, building and operating renewable energy generation or storage projects in Sub-Saharan Africa	Run-of-river hydropower, wind and solar projects, as well as battery storage opportunities	Direct equity, Debt, intermediate equity	€130M	SSA
<b>Adaptation to Climate Technologies (REACT SSA)<sup>3</sup></b>	Stimulate SMEs to develop business models, services, and products in renewable energy and energy efficiency	Renewable Energy	Grants, Working Capital, Zero interest loans	\$33M	SSA
<b>Scale Up PURE!<sup>4</sup></b>	Help the off-grid solar sector advance solar PURE technologies	Productive use	N/A	€4M	Africa, Asia

## A number of facilities have been set up in the region to promote the off-grid energy sector (14/14)

Fund/Facility	Purpose	Focus	Instrument	Fund Size	Region Focus
<b>Pioneering Energy Investment Initiative PLUS<sup>1</sup></b>	Support the new wave of energy access entrepreneurs serving communities living in poverty	Renewable Energy	Seed and Series A equity financing	\$25M	India, East and West Africa
<b>Distributed Renewable Energy Ecosystem Model (DREEM)<sup>2</sup></b>	Create a replicable model using solar power to increase access to electricity, boost local economies, and address climate change	Solar PV and Productive Use	N/A	\$3M	East Africa
<b>The Energy Go-Getters Fund<sup>3</sup></b>	Accelerate universal energy access and climate resilience across the African continent, with a particular focus on underserved countries	Renewable Energy	N/A	\$33M	Africa
<b>The Universal Energy Facility (UEF)<sup>4</sup></b>	Provide financial support to build solar mini-grids in communities without access to clean energy	Electricity and clean cooking solutions	Results-based financing facility	\$10M	SSA

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

## Government body

## Mandate in industry



### Ministry of Energy and Minerals Development (MEMD)

- Has 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 consolidated the generation, transmission and distribution of electricity under the state-run Uganda National Electricity Company Limited (UNECL) following non-renewal of privatization agreements with Eskom Uganda Limited and UMEME Limited upon natural conclusion



### Electricity Regulatory Authority (ERA)

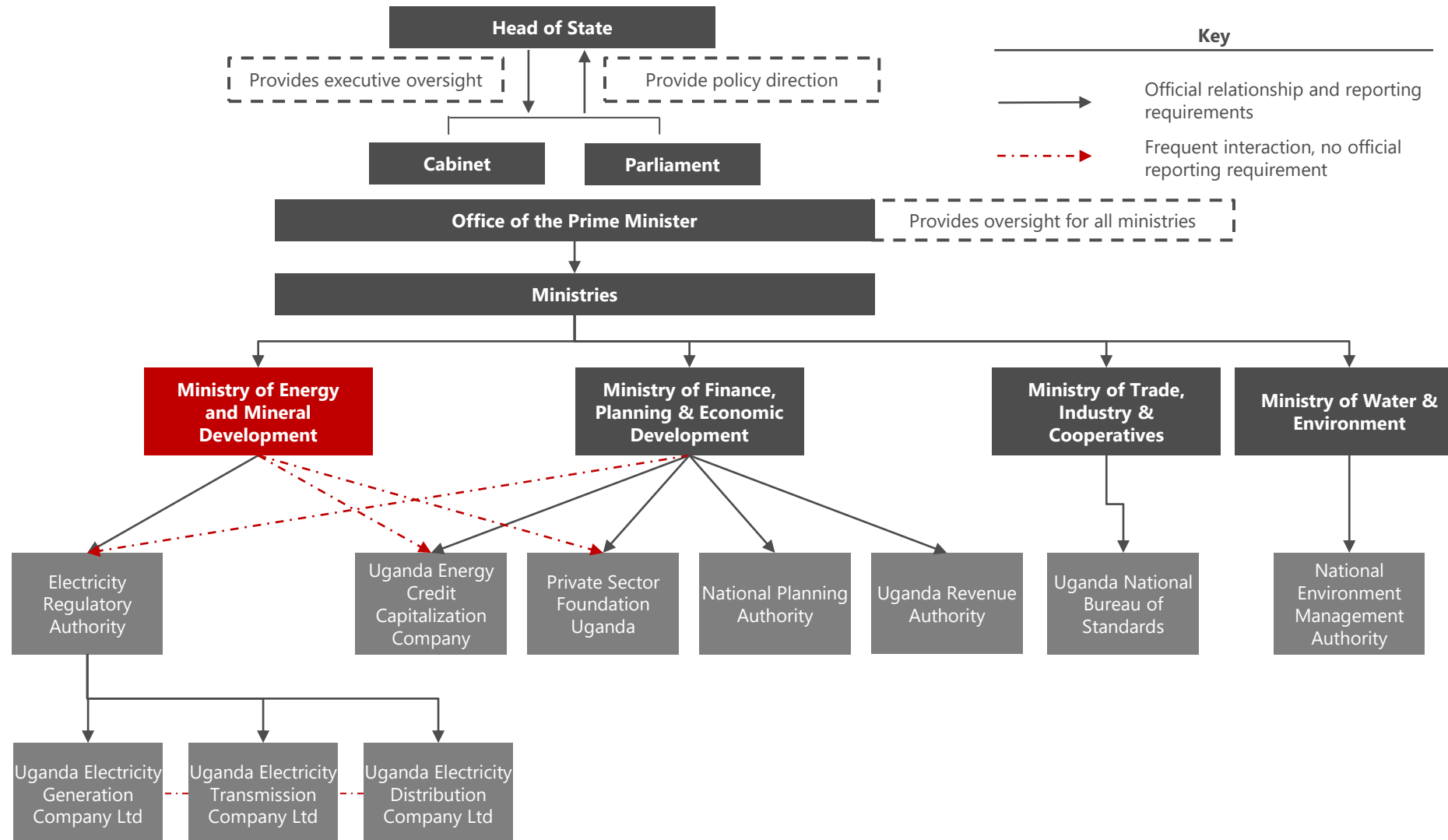
- Regulates the electricity supply industry and issues licenses for generation, transmission, distribution or sales of electricity, as well as ownership or operation of transmission systems
- Establishes tariff structures and investigates tariff charges, approves rates, terms, and conditions of electricity 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

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



## Uganda has several policies in place to guide the energy sector (1/2)

Policy name	Policy description	Status
<b>Energy policy, 2023</b>	Sets out to achieve universal access to sustainable, affordable, and quality energy services by 2040 to support socioeconomic transformation and meet the energy needs of the population sustainably	Active
<b>Renewable Energy Policy 2007</b>	Serves as the framework for renewable energy projects throughout the country and seeks to increase the share of renewables in the energy mix and make modern renewable energy a substantial part of the national energy consumption	Active
<b>National Electrification Strategy</b>	This off-grid regulation will help Uganda's energy sector to encourage further private sector investment and achieve its ambitious national electrification target of 80% electricity access by 2040	Active
<b>Electricity Act 1999</b>	Provides the legal, regulatory and institutional framework governing the energy sector in Uganda. It contains provisions on rural electrification, licensing requirements for the energy sector; electricity supply activities; land use for electrical supply activities; and criminal penalties for licensing-related offenses	Active



## Uganda has several policies in place to guide the energy sector (2/2)

Policy name	Policy description	Status
<b>Electricity Amendment Bill, 2022</b>	The objects and principles of this bill are to amend the Electricity Act, Cap. 145 to provide for among other things deterrent penalties for theft of electricity and vandalism of electrical facilities	Active
<b>Electricity Connections Policy, 2018-2027</b>	The policy was developed by the Government to address the challenge of low connection rates and aims to achieve a 60% level of access to electricity for Uganda by 2027	Active
<b>Isolated Grid Regulation, 2020</b>	This off-grid regulation seeks to help Uganda's energy sector to encourage further private sector investment and achieve its ambitious national electrification target of 80% electricity access by 2040	Active
<b>Rural Electrifications Strategy plan 2013-2022</b>	RESP seeks to increase off-grid energy services by approximately 140,000 additional installations of solar PV systems and mini-grid distribution service connections by 2022	Active
<b>Guidelines for electronic waste management in Uganda</b>	The overall objective of the E-waste management policy is to facilitate the sustainable management of E-Waste in Uganda, including OGS waste	Active

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



**Program:** The Uganda Green Enterprises Finance Accelerator (UGEFA)

## Approach

- Partner with financial institutions to co-create funding mechanisms for green SMEs and launch them with enterprises that have completed the acceleration program
- Support green enterprises through a comprehensive and finance-focused accelerator program to develop the necessary business and financial skills for accessing financing

## Impact to date

- UGEFA's blended finance model has unlocked over UGX 4.0Bn from debt finance using partial loan repayment schemes
- Entered a strategic partnership with Stanbic Bank, in addition to MOUs signed with Equity Bank, Opportunity Bank and others to provide green financing for SMEs
- Conducted Training of Trainers, designed to equip individuals with the necessary tools and expertise to guide scalable green enterprises effectively

## Affiliated organizations



**Implementers:**

Finding XY, Adelphi



**Funders:**

EU

## Overview

- **Target action:** Offers an 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
  - Building a supportive ecosystem around green SMEs by training business advisors and financial institutions
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Cook stoves

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



**Program:** Get Access  
Mini- Grid systems

## Overview

- **Target action:** Improve clean energy access in rural areas by establishing a market for privately financed and operated mini-grids as an alternative for publicly funded grid connections, addressing energy demand
- **Project status:** Ongoing
- **End date:** Feb 2028
- **Target industry:**



SHS



Mini-grids

## Approach

- Competitive tendering processes for mini-grid developers to demonstrable technical and financial capacities, to identify and supported low cost mini-grids
- Providing expert services to support the implementation of the dedicated Productive Use (PUE) components that stimulate power demand

## Impact to date

- Installing up to 150 solar powered Mini-Grids in rural areas with about 25,000 to 30,000 connections, improving clean energy access for up to 150,000 people
- At least 700 businesses and 800 institutions are accessing climate friendly energy, with an estimated 23,000 tons CO2 saved over lifetime of project

## Affiliated organizations



### Implementers:

Ministry of Energy and Mineral Development (MEMD), Ugandan Electricity Regulatory Authority (ERA)



### Funders:

ACP-EU, BMZ, KfW

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



**Program:** Response to Increased Environmental Degradation and Promotion of Alternative Energy sources in Refugee Hosting Districts (RED)

## Approach

- Improving access to sustainable alternative sources of energy reducing reliance on bio-mass fuels to address conflicts between refugees and host communities
- Developing and distributing 44,000 Improved Cooking Stoves (ICS) for vulnerable households, and increasing community awareness through installation and demonstrations

## Impact to date

- The project is addressing sustainable livelihoods and entrepreneurial initiatives for 3,000 disadvantaged youth and women, providing them with technical skills to operate and maintain ICS through integration with the Youth Innovation Lab
- Assessing Inclusive market systems and alternative energy sources in refugee hosting districts (RHDs) to analyze trends and gaps in environmental and energy usage

## Affiliated organizations



**Implementers:**

Save the Children, Enabel, ICRAF, JEEP



**Funders:**

EU's Trust Fund for Africa (EUTF)

## Overview

- **Target action:** Working to address environmental degradation and related challenges in West Nile regions of Arua, Madi Okollo, Terego, Adjumani, Yumbe and Kiryandongo
- **Project status:** Ongoing
- **End date:** December 2025
- **Target industry:**



Prod. use



Cook stoves

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



**Program:** Promotion of Mini- Grids in Northern Uganda (Pro Mini- Grids NU)

## Approach

- Steering policy and developing regulatory mechanisms that promote private sector engagement, regulating mini-grid electrification and fostering scaling up
- Ensuring productive use through access to finance for SMEs and advancing private sector capabilities to operate mini-grids by providing Technical and Vocational Education and Training (TVET) for technicians

## Impact to date

- 25 villages in refugee hosting areas, have gained energy access through solar powered mini-grids
- Over 100 individuals have been provided with training and access to finance for procurement of productive use of energy appliances to run businesses
- Over 20,000 people have been connected to the mini-grid benefiting from clean, sustainable, quality and solar electricity

## Affiliated organizations



**Implementers:**

GIZ, Ministry of Energy and Mineral Development (MEMD), Rural Electrification Agency (REA), Winch Energy



**Funders:**

ACP-EU

## Overview

- **Target action:** Scale up mini-grids to offer a viable solution for supplying reliable electricity in rural areas and villages where grid extension is unaffordable
- **Project status:** Ongoing
- **End date:** 2023
- **Target industry:**



Prod. use



Mini-grids

# 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

## 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 14 solar and 12 cookstove companies with different support lines spanning from support for trainings, inventory stock ups and production as well as digitalization of their sales operations
- Some beneficiaries provided payment holidays to their PAYGO customers struggling to make installment payments, safeguarding energy access

## Affiliated organizations



**Implementers:**

PSFU, EnDev



**Funders:**

EU

## 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

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



**Program:** Uganda Electricity Access Scale-up Project (EASP)<sup>1</sup>

## Overview

- **Target action:** To increase energy access by expanding off-grid and on-grid energy solutions
- **Project status:** Ongoing
- **End date:** 2027
- **Target industry:**



## Approach<sup>2</sup>

- Expanding lines of credit for Financial Institutions (FIs) collaborating with ESCOs to provide results-based grant financing
- Enhancing energy access for refugees by allocating funds for grid connections in Refugee Hosting Communities (RHCs)
- Establishing project coordination and implementation units at MEMD to reinforce the enabling environment for energy access

## Impact to date

- Established a project steering committee to provide strategic oversight, ensure compliance, and monitor social and environmental impact issues
- Stakeholder workshops are being conducted in partnership with UECCC to gather industry insights for designing pro-poor RBF solutions and improving energy access in underserved markets

## Affiliated organizations



### Implementers:

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



### Funders:

World Bank/IDA/IBRB



# World Bank has partnered with stakeholders to jointly design smart and effective end user subsidies



**Program:** End User Subsidy Lab

## Overview

- **Target action:** To optimize the impacts of end user subsidies, by aligning them with other 'pro-poor solutions' like fiscal support, financial innovations, supply-side subsidies.
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



On-grid



Mini-grids

## Approach

- Facilitating a pipeline of end user subsidy opportunities by leveraging insights from prior subsidy schemes to design and implement effective subsidy models
- Collaborating with government and development partners to create and test subsidy prototypes addressing energy access barriers in ongoing programs

## Impact to date

- Conducted webinars on off-grid solar and clean cooking subsidy design guidelines and published a discussion paper on how these fit the public financing toolkit for universal energy access
- Tracked the implementation of four pilot standalone solar end-user subsidy programs, emphasizing innovative industry models that boosted affordability through end-user price subsidies

## Affiliated organizations



### Implementers:

GOGLA, ESMAP/Lighting Global, EnDev and Africa Clean Energy (ACE), and The Clean Cooking Alliance



### Funders:

World Bank

# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (1/6)



**Program:** Uganda Strategic Investment Activity (SIA)<sup>1</sup>

## 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:**



## 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
- SIA conducted a PUE landscape assessment highlighting challenges and identifying opportunities to scale PUE adoption for both off-grid & on-grid use cases

## 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 (2/6)



**Program:** Energy Efficiency for Development (EE4D)

## Overview

- **Target action:** The EE4D provides technical resources and expert advice to advance energy efficiency strategies and achieve more resilient and sustainable economic development
- **Project status:** Ongoing
- **End date:** 2026
- **Target industry:**



Prod.  
use

## Approach <sup>1,2</sup>

- EE4D provides technical assistance to energy system planners, regulators, and utility managers, overcoming challenges associated with implementing energy efficiency programs
- Partnering with MEMD to establish regulations on the energy performance of refrigerators, the largest energy consumer for urban households after lighting

## Impact to date

- Integrating energy efficiency into national power development and integrated resource policy plans, enabling targets and strategies for low emissions development strategies (LEDS)
- EE4D is expected to benefit both the consumer and the grid by reducing electricity bills, increasing access to refrigeration, and stimulating demand through increased affordability

## Affiliated organizations



### Implementers:

Ministry of Energy and Mineral Development (MEMD), Lawrence Berkely National Lab



### Funders:

USAID / Power Africa

# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (3/6)



**Program:** Energy Empowers East Africa<sup>1</sup>

## Overview

- **Target action:** aims to increase the inclusion of women in electrification programs throughout East Africa, beginning with Uganda
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



## Approach

- Developing tailored training materials empowering women to develop and expand income-generating activities, and improving access to efficient and productive electric equipment (PUE)
- Organizing matchmaking events to bring together women entrepreneurs, financing houses, women groups associations, and entrepreneurial support programs

## Impact to date

- USAID and LBNL co-organized a workshop with more than 85 diverse stakeholders, focused on Productive Use of Electricity (PUE), addressing critical energy challenges and opportunities at a country level
- CEE team in Uganda trained 240 women entrepreneurs across southwest Uganda, skilling them on how to develop business plans, cost assessment and benefits of investing in energy-efficient electrical equipment<sup>2</sup>

## Affiliated organizations



**Implementers:**  
Clean Energy Enthusiasts (CEE), MEMD



**Funders:**  
Power Africa

# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (4/6)



**Program:** Health Electrification and Telecommunications Alliance (HETA)

## Overview

- **Target action:** USAID’s HETA partnership works to catalyze public-private partnerships for sustainable business models that increase access to reliable, renewable energy and digital connection
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



## Approach

- Partnering with context-driven business models that treat energy as a service, with healthcare systems paying for electricity delivered, not just equipment installation
- HETA aligns health objectives with private sector investments, co-funding and co-designing renewable energy solutions linked to mobile networks

## Impact to date

- HETA is leveraging \$47 million in seed funds to support emerging market investments and streamline installation with health and climate impact
- HETA’s partnerships are strengthening the enabling environment for renewable energy and digital inclusion in the health sector in addition to filling funding access gaps

## Affiliated organizations



**Implementers:**  
Abt Associates, RESOLVE



**Funders:**  
USAID / Power Africa



# USAID’s Power Africa is playing a crucial role in leading and coordinating initiatives in Uganda (5/6)



**Program:** Uganda Electricity Regulatory Partnership<sup>1</sup>

## 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 (6/6)



**Program:** Power Africa Off-grid Project<sup>1</sup>

## 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

- Partnered with AEMDA to provide advice on setting up the Uganda Electric Mobility Association (UEMA) for members of an e-mobility consortium
- Supported Kinetic Hydro pilot a portable turbine deployable at mini-grid sites, that will drive insights into Uganda’s PUE market
- Supported Yellow structure a USD 5M debt facility from Oikocredit, expected to benefit more than 89,000 HHs in Malawi, Rwanda, Uganda, and Zambia

## Affiliated organizations



### Implementers:

Open Capital, Persistent Energy and various others



### Funders:

USAID / Power Africa

## 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



Prod. use





# FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation(1/3)



**Program:** Climate Finance Accelerator (CFA) Uganda

## Overview

- **Target action:** Supporting climate action at scale through capacity building of innovative low carbon projects to develop attractive propositions for investment
- The program selection criteria includes:
  - Climate mitigation potential
  - Projects beyond the pre-feasibility stage
  - Financing needs of at least USD 1MN
  - Gender Equality and Social Inclusion (GESI) impact
- **Project status:** Ongoing
- **End date:** 2024
- **Target industry:**  Mini-grids  SHS  Prod. use

## Approach

- Identifying barriers to accessing finance and tailoring project capacity building to creating a pipeline of 'investment ready' bankable low carbon projects
- Securing primary financing through blended finance products, refinancing and events like workshops match making project developers, finance providers and policymakers to unlock funding for climate projects at scale

## Impact to date

- The project held a launch event putting out an open call for proposals with selection of 6-8 projects to be approved by Post and DESNZ

## Affiliated organizations



### Implementers:

PWC, Bethel Advisors



### Funders:

FCDO, UK DESNZ

# FCDO initiatives work to increase investment in off-grid energy firms, overcome regulatory barriers & foster innovation (2/3)



**Program:** Transforming Energy Access (TEA)<sup>2</sup>

## 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, Carbon Trust



### Funders:

FCDO

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



Foreign &  
Commonwealth  
Office

**Program:** Energy Catalyst<sup>1</sup>

## Overview

- **Target action:** Assist in combating climate change by facilitating access to clean energy for communities in Sub-Saharan Africa, South Asia, and the Indo-Pacific regions. This is achieved by supporting businesses that:
  - Offer affordable, reliable, and low-carbon technology or business model
  - Consider the role of gender equality and social inclusion (GESI)
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids



Cook stoves



Prod. use

## Approach

- Helping innovators speed up and showcase their energy poverty solutions
- Facilitating partnerships to commercialize new energy technologies and business models
- Assisting innovators to boost economic growth and improve lives in Africa and Asia
- Promoting gender equality and social inclusion for sustainability and societal impact

## Impact to date

- Provided £120 million in Overseas Development Assistance grant funding to date, and have secured over £200 million in follow-on funding
- Provided funding for the PAY-N-PUMP, a digital pay-as-you-go water-pumping and irrigation solution for small-scale farmers in Uganda, developed by Aptech Africa Ltd
- Partnered with EcoLife Uganda to promote sustainable agriculture and tackle food waste and preservation issues in rural areas

## Affiliated organizations



### Implementers:

Innovate UK



### Funders:

FCDO, Department for Science, Innovation and Technology (Ayrton Fund)

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



**Program:** The Inclusive Dairy Enterprise (TIDE) Project (Phase II)<sup>1,2</sup>



## 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 liters 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

# UNCDF collaborated with LGs to improve urban governance, promote prosperity, and highlight the use of public-private partnerships as viable funding alternatives



**Program:** Programme on Integrated Local Finances for Sustainable Urban Development in the Greater Kampala Metropolitan Area (PIFUD)

## Overview

- **Target action:** To demonstrate the viability of Public Private Partnerships (PPP) as alternative sources of capital, by establishing two solar mini grids in partnership with the host Local Governments
- **Project status:** Ongoing
- **End date:** May 2024
- **Target industry:**



SHS



Mini-grids

## Approach

- Allocating financing for two solar mini grids, established in partnership with the host Local Governments (LGs) and expected to generate at least 100 KWp across 300 household connections
- Supporting policy dialogue and capacity building to address implementation bottlenecks

## Impact to date

- Invited applications from registered entities to collaborate with Local Governments and other government stakeholders in the design, installation, operation, and maintenance of two solar mini-grids in the districts of Mpigi, Mukono, and Wakiso

## Affiliated organizations



**Implementers:**

KCCA, FMDV and GKMA municipalities



**Funders:**

UNCDF

Sources: UOMA interviews & consultations

1. UNCDF, PIFUD, [Link](#) 2. KCCA, PIFUD Factsheet [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)

## 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

- Several 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:**  
BMW , AHK, DIHK

## 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

# 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)<sup>1</sup>

## 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 (MEMD recently launched the 2023 energy policy)
- 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:**



SHS



Cook stoves



Mini-grids



Solar agric. app

Source: UOMA interviews & consultations

1. GIZ, PREEP [Link](#)





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



**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:** Closed
- **End date:** September 2023
- **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

- Developed 2 solar irrigation training manuals: one for technicians and one for users (farmers); 45 farmers and 20 technicians trained on solar irrigation
- Held several solar energy training courses (photovoltaic training)
- German experts were hired to collaborate with local individuals in constructing a wind turbine prototype on Lake Victoria.

## Affiliated organizations



**Implementers:**

GIZ GBE Uganda, KFW



**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(3/3)



**Program:** Energy Solutions for Displacement Settings (ESDS)<sup>1</sup>

## 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 2024
- **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



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



**Program:** NAMA-Green Schools project<sup>1</sup>

## 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
- Initiated the CAP Financial Innovation Challenge to crowdsource innovative financial aggregation models for small-scale, low-carbon energy assets<sup>2</sup>

## Affiliated organizations



**Implementers:**

UNDP, MEMD



**Funders:**

UK, Germany, Global Environment Facility (GEF)

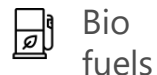
# AFD has partnered with local banks to finance renewable energy investments in order to reduce the carbon footprint in East Africa



**Program:** Sustainable Use of Natural Resources and Energy Finance East Africa (SUNREF)<sup>1</sup>

## 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:**



## 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

- Plans to provide several Ugandan banks with a reduced-rate credit facility totalling €35 million
- Set up the Duomo House, a solar powered commercial real estate project which received \$255K funding from DTB
- Financed rural electrification projects in West and southern Uganda, with GoU support to reinforce economic dynamism<sup>2</sup>

## Affiliated organizations



**Implementers:**  
AFD, Diamond Trust Bank



**Funders:**  
AFD, EU-Africa Infrastructure Trust Fund

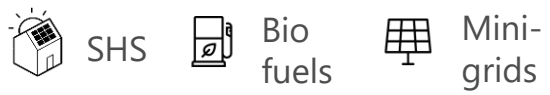
# UNIDO supports the EAC’s initiative aimed at refining energy policy, capacity development and knowledge management in East Africa



**Program:** East African Centre for Renewable Energy and Energy Efficiency (EACREEE)<sup>1</sup>

## 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:**



## 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

## 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

## 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



# 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 aimed at rural households, productive use, energy efficiency & storage and PAYG solar among others
- Providing strategic planning and fundraising support to Equatorial Power (EP), currently piloting a project to install 65kWp Solar PV capacity to connect 400 households and businesses in Mukono<sup>2,3</sup>

## 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



**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

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (1/13)



**Program:** Energizing Development (EnDev)<sup>1,2</sup>

## Overview

- **Target action:** Achieve sustainable access to modern energy services for 36M people across 20 countries by 2025
- **Project status:** Ongoing
- **Target industry:**



SHS



Cook stoves



On-grid



Solar lantern

## Approach

- Providing strategic market-based support to private sector cookstove companies increase sales and supporting uptake through financial schemes (RBFs)
- Building market linkages through energy kiosk models, enhancing local service delivery to support clean energy access for refugee host communities
- Tailoring business development support for solar SMEs geared towards investment readiness, business resilience, policy advisory and awareness creation through demos

## Impact to date

- More than 104K individuals have achieved sustained electricity access, with 2.2M people gaining access to modern cooking energy. Additionally, 1,223 social institutions and 2,038 SMEs now have sustained access to modern energy<sup>2</sup>
- EnDev Uganda facilitated a second phase of business development support for SMEs in the solar and cooking sectors between March 2023 and August 2023, as a follow up to the first phase that was completed in February 2022<sup>3</sup>

## 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 (2/13)



Program: GET.transform<sup>1</sup>

## Overview

- **Target action:** De-risk Uganda's mini grid industry to attract private investment enabling scale up of mini grid development through reduced cost of service
- Support MEMD on long term energy planning and scenario modelling
- **Project status:** Ongoing
- **Target industry:**



## Approach

- GET.transform is working with ERA to enhance mini-grid regulations, including tariff framework and technical operating standards
- Creating an impact monitoring tool for PUE to track the socio-economic effects of mini-grid electrification in collaboration with GIZ PREEP and Pro Mini-Grids
- Supporting MEMD in the dev't of an Electricity Access Data Management System

## Impact to date <sup>1,2</sup>

- Developed new mini-grid technical standards in partnership with ERA to implement existing regulations effectively, enhance service quality, and facilitate integration with the main grid
- Organized a Peer Review and Learning Network (PRLN) dissemination workshop in collaboration with Power Futures, focusing on effective strategies to attract investments in renewable energy

## Affiliated organizations



### Implementers:

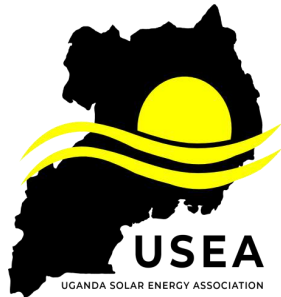
GIZ, ERA, MEMD, UETCL



### Funders:

EU, Germany, Sweden, Netherlands, Austria

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (3/13)



**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:**



SHS



On-grid



Mini-grids

## 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 a handbook on solar taxation and implemented awareness campaigns in Eastern and West Nile regions
- Trained 40 technicians on solar system installation and troubleshooting, & launched a business diagnostic for BDS support
- Signed a Memorandum of Understanding (MoU) with Ayuda en Accion to enhance collaboration in carbon credit initiatives and institutional capacity building

## Affiliated organizations



**Implementers:**

UNCDF, GIZ



**Funders:**

Energy Africa, DFID

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (4/13)



**Program:** Energy and Environment Partnership/Southern and East Africa<sup>1</sup>

## Overview

- **Target action:** Contribute to reducing 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<sup>2</sup>

- Provided funding for Zembo to launch prototypes of electric motorcycles and built solar charging stations to test & verify the technology and payment solutions
- Provided funding to ASOBO to showcase an innovative e-mobility technology and business model on African lakes.
- Provided funding to Agsol to expand into new markets and distribute solar mills through local partners in Kenya, Tanzania, Uganda, and Zambia

## Affiliated organizations



### Implementers:

KPMG Finland



### Funders:

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

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (5/13)



**Program:** New Deal on Energy for Africa<sup>1</sup>

### 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
- Extended partnership with USAID through the Regional Development Objectives Agreement (RDOAG) to accelerate the just energy transition, contributing up to USD 500M in financial, technical, and operational support to stakeholders<sup>2</sup>

### Affiliated organizations



**Implementers:**

AfDB



**Funders:**

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

### 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:**



SHS



Mini-grids



On-grid

Source: UOMA interviews & consultations, supplemented by

1. AfDB, New Deal on Energy for Africa, [Link](#), 2. AEP, USD 500M deal between AfDB and US [Link](#)



# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (6/13)



**Program:** Facility for energy Inclusion<sup>1</sup>

## 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:**



SHS



Mini-grids



On-grid

## 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
- Established a \$30 million multi-country facility partnership with Equator Energy to fund the expansion of its Commercial and Industrial (C&I) portfolio<sup>2</sup>

## 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 (7/13)



**Program:** Smart Communities Coalition (SCC)<sup>1</sup>

## 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:** Closed
- **End date:** Dec 2023
- **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

- Awarded US\$ 465K in grants to 3 companies to increase energy access in refugee settlements in Uganda
- Held its second call for proposals and selected initiatives will receive funding ranging from EUR 40K to 80K to implement sustainable approaches<sup>2</sup>
- SCC officially closed in 2023 and merged operations with Response Innovation Lab to facilitate funding opportunities and improve livelihoods in refugee settings<sup>3</sup>

## 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 (8/13)



**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

- Constructed the first fully integrated mini-grid in Uganda in partnership with UMEME, PowerforAll and Engie Energy Access
- Launched the "Twaake" pilot project aiming to support establishing a replicable model for expediting connections with over 350 households and 60 local businesses connected so far

## 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

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (9/13)



**Program:** Response Innovation Lab (RIL)

## Overview

- **Target action:** To support the humanitarian response to 1.4 million refugees and their host communities across 13 districts in the country through innovative approaches, systems, technologies and products
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



SHS



Mini-grids

## Approach

- Provides guidance to jointly develop solutions and incubate innovations by:
  - Convening stakeholders to create a developer Eco-system
  - Finding and developing solutions for identified challenges, utilizing innovations from other piloting and project scaling
  - Supporting business development, funding, and market entry for pilots

## Impact to date

- Launched the AMPERE Project to test and build evidence for quality affordable, market-driven energy access solutions in the Bidibidi refugee settlement
- Launched SMILE, an interactive ecosystem map, to facilitate partnerships among organizations and individuals within the ecosystem
- Supported a pilot by Akaboxi to digitise village savings and loan associations (VSLAs) and link them to banks and other finance institutions

## Affiliated organizations



**Implementers:**  
Mercy Corps, Save the Children



**Funders:**  
UNCDF, SNV,



# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (10/13)



**Program:** The Global Platform for Action (GPA)

## Overview

**Target action:** To promote actions that enable sustainable energy access in displacement settings

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



SHS



Mini-grids



On-grid

## Approach

- Partnered with TEA to ensure that more inclusive refugee-led approaches are adopted within the humanitarian energy sector through:
  - Providing inclusionary analysis on the energy needs of all displaced people.
  - Enabling transformative policy change to deliver access to clean energy
  - Supporting climate action and radical decarbonisation in humanitarian settings

## Impact to date

- Partnered with the Global Refugee-Led Network (GRN) and others to host a workshop on mainstreaming humanitarian settings and community-driven methodologies within the existing programmes under the Transforming Energy Access Programme (TEA)

## Affiliated organizations



**Implementers:**

Mercy Corps, SNV, Clean Cooking Alliance, WFP



**Funders:**

UKaid, Nordic Development Fund, FCDO, IKEA Foundation



# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (11/13)



**Program:** Promoting Solar Powered Energy Efficient Stoves In Kyangwali Refugee Settlement Project (PROSPERS)

## Overview

- **Target action:** improving the accessibility of quality and affordable clean energy solutions to refugees in the Kyangwali refugee settlement
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Cook stoves



Bio fuels

## Approach

- The program is implemented under two arms:
  - The User Referral Bonus (URB) model offers the ACE package to refugees in PAYGO installments. It also allows for waivers based on peer recommendations
  - A briquetting program that supports members with knowledge and equipment for clean biomass briquette production.

## Impact to date

- A total of 8 focus group discussions (FGDs) have been conducted, to gain implementation insights using Open Data Kit (ODK) from a total of 386 households

## Affiliated organizations



### Implementers:

CARE International, African Clean Energy (ACE) Kabarole Research and Resource Centre (KRC)



### Funders:

Dutch Relief Alliance Innovation Fund



# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (12/13)



**Program:** The Journey 2 Scale Grant

## Overview

- **Target action:** To support expansion of current local production and assembly in Bidibidi refugee settlement
- **Project status:** Ongoing
- **End date:** N/A
- **Target industry:**



Cook stoves



Bio fuels

## Approach

- Setting up Pay-As-You-Cook system (PAYC) payment based on usage
- Establishing of a Carbon Credit Scheme and emission compensation
- Build and operate ECOCA East Africa SMC (EEA) as a local implementing arm of PESITHO

## Impact to date

- With financial support by Elrha, established a local assembly station at the Bidibidi Refugee Settlement in Yumbe, employing both from the host communities and refugees

## Affiliated organizations



**Implementers:**

PESITHO, Mercy Corps



**Funders:**

Humanitarian Innovation Fund and Elrha

# Many development partners have partnered on initiatives to further accelerate progress towards shared access goals (13/13)



**Program:** The Beyond the Grid Fund for Africa (BGFA)

## Overview

- **Target action:** To build markets for off-grid energy and support access to clean, affordable off-grid energy to for at least 6 million people by 2025 across Africa
- **Project status:** Ongoing
- **End date:** 2025
- **Target industry:**



SHS



Mini-grids



Prod. use

## Approach

- BGFA has launched several funding rounds towards off-grid energy businesses with focus on, accelerating access to renewable and clean off-grid energy, supporting high quality off-grid products and services affordable for customers and unlocking early structural challenges in the market

## Impact to date

- Provided support to d.light Design Uganda and ENGIE Energy Access Uganda worth EUR 5.2M, enabling the establishment of up to 370,000 high-quality energy service connections
- Launched a job creation and skills programme targeted at energy service providers supporting the creation of local jobs and gender inclusivity in the off-grid energy sector

## Affiliated organizations



### Implementers:

PowerAfrica, REEEP, NEFCO, KFW



### Funders:

SNV, Nordic Development Fund



# Associations represent private sector interests, advocate policy issues to government

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

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

# Associations represent private sector interests, advocate policy issues to government and improve sector coordination

## Organization

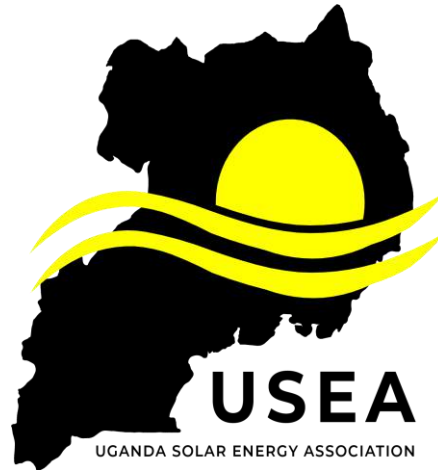


## Work in Uganda

- 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 and improve sector coordination

## 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

# The National Renewable Energy Platform was created to optimize sector coordination and increase access to partnership opportunities

## Organization



## Work in Uganda

### NREP vision

- The national renewable energy platform seeks to be the lead platform for sustainably developing and utilizing renewable energy resources, services and products in Uganda

### Mission

- To boost national collective action, harmonization, and subsidiarity for sustainable and competitive development of Uganda's renewable energy sector. Key to NREP's vision and mission is the recognition of critical value-addition to national collaboration among actors to meet the energy needs of the Ugandan population, by providing adequate and reliable energy supply for socio-economic growth and sustainable development.

### NREP has the following goals:

- Optimize coordination of players/stakeholders and increase access to wider partnership opportunities in the development and delivery of collective actions to address shared challenges in the renewable energy sector
- Shape and develop a harmonized strategic direction for the renewable energy sector
- Strengthen private sector and institutional capacities in the renewable energy sector
- Ensure quality assurance of technology implementation within the renewable energy sector
- Strengthen national and global partnership to improve access to low-cost finance for renewable energy and energy efficiency
- Improve access to pristine management of information, including funding opportunities for the renewable energy sector in Uganda and regionally
- Conduct scientific and research studies, develop and introduce new technologies

# 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



- 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

# Several stakeholders have formed working groups to facilitate collaboration and knowledge exchange among technical experts in the renewable energy sector (1/3)

## Overview

**BGFA Off-grid Technical Working Group:** The Off-Grid WG, operating under NREP, will facilitate the exchange of experiences and information among stakeholders, monitor regulations and policies, and provide a collaborative platform for government agencies, external organizations, Cooperation Partners, industry representatives, and civil society to address challenges and agree on next steps<sup>1</sup>

**Productive Uses of Renewable Energy (PURE) Working Group Committee:** The WG focuses on promoting the growth of the sector by conducting market assessments, advocating for conducive policies, and creating evidence on socio-economic impacts and sector contributions to energy policy and SDG 7. It is overseen by a steering committee consisting of members from GOGLA, MEMD, USEA, and Open Capital<sup>1</sup>

**Sustainable Energy Working Group:** The Sustainable Energy Development Programme established a dedicated WG that will effectively coordinate stakeholders within the sector. It will be responsible for addressing the various challenges faced in the sub-sector, under the guidance and coordination of the govt<sup>2,3</sup>

**Clean Energy Technical Working Group (CETWG):** NREP supports CETWG under the Sustainable Energy Development Programme (SEDP) of the National Development Plan III (NDPIII). NREP will contribute to the CETWG through a representative, while the CETWG will be responsible for planning, coordination, and monitoring of clean energy initiatives under the SEDP<sup>3</sup>

## Objectives

The WG aims to share progress in integration for the off-grid technical working group, prioritize thematic areas of action as sub-committees to address market barriers and changes in the off-grid energy sector, and discuss the terms of reference and set up of sub-committees and participants

The WG aims to enhance inclusive financing in the renewable energy sector by identifying and promoting innovative financial modalities such as results-based financing, financial aggregation, and emerging financial technologies.

The WG aims to facilitate coordination among sector players through the appropriate working group under the Sustainable Energy Development Programme to address and overcome sub-sector challenges effectively.

CETWG is responsible for monitoring the implementation of clean energy sections of the Programme Implementation Action Plan (PIAP), reviewing program performance reports, ensuring harmony with other sector strategies, developing position papers on policy and strategic issues, and reviewing project concept notes

# Several stakeholders have formed working groups to facilitate collaboration and knowledge exchange among technical experts in the renewable energy sector (2/3)

## Overview

**Power for All PUE Agriculture Accelerator Working Group:** PUE in agriculture working group to foster collaboration and strengthen the enabling environment through advocacy. The working group was started in 2020 and includes stakeholders from development partners, government, private sector players among others

**Household Solar Funders Group (HSFG):** The working group, consisting of USAID, Power Africa, FCDO, AfDB, and Shell Foundation, was established in mid-2020 to build upon the SOGE initiative. It was initially hosted by the Shell Foundation but has been hosted by AECF since July 2023

**NREP's WG on Affordable Renewable Energy Financing:** The WG examines finance challenges and the roles of public and private finance in expanding energy access. It explores private sector innovations like PAYGO models and public finance innovations. It advocates for financing utility-scale projects with lower transaction costs, high greenhouse gas reduction potential, and credit-based finance instruments

**NREP's WG on Renewable Energy Capacity Building, Research, Communities of Practice:** The WG focuses on energy research, think tanks, communities of practice, and experts in renewable energy and policy support. Its goal is to gather and analyze data to support discussions and advocacy for renewable energy and related trade strategies and policy issues

## Objectives

The working group's objective to increase adoption of PUE in agriculture by improving coordination, increasing awareness and strengthening the enabling environment

The HSFG platform aims to accelerate the household solar market by promoting funder collaboration, filling programming gaps, identifying synergies, avoiding duplication, and enabling better decision-making for programmatic, strategic, and financial aspects

The WG aims to enhance inclusive financing in the renewable energy sector by identifying and promoting innovative financial modalities such as results-based financing, financial aggregation, and emerging financial technologies

The WG seeks to identify effective mechanisms for developing the renewable energy sector in Uganda through the transfer of technical skills expertise and discourse among communities of practice

# Several stakeholders have formed working groups to facilitate collaboration and knowledge exchange among technical experts in the renewable energy sector (3/3)

## Overview

**NREP’s working group on Renewable Energy Policy, Planning, and Market Development:** The working group aims to address issues such as inappropriate policy environments, lack of equitable market access, and limited capacity for policy implementation. Its actions will focus on generating evidence and advocating for appropriate policy enactment and implementation

**NREP’s Working Group on Renewable Energy Technology and Innovation Development:** The working group focuses on improving renewable energy technologies and innovations through identification, development, transfer, piloting, and action research. It aims to promote the adoption of new technologies, establish market connections, and scale up through commercialization and business incubation centers

**NREP’s WG on Data, Information, and Knowledge Mgt for Affordable Renewable Energy:** The WG plans to collect and share data and information on the renewable energy sector in Uganda, including policy and tech dev’t, financing, and capacity building. It will monitor the specific objectives of the National Renewable Energy Program and create a results framework and monitoring plan for the energy sector

## Objectives

The working group aims to develop policies and frameworks to enhance the market performance and commercialization of renewable energy, promote its rapid adoption and deployment, and facilitate capacity building and information dissemination.

The working group intends to enhance renewable energy technological development, deployment, and transfer. This involves promoting innovation, piloting and transferring effective technologies, adopting the latest technology, developing market linkages, and scaling up through commercialization and business incubation centers

The main objective of the working group is to serve as a national center for collecting, synthesizing, and packaging information on all aspects of renewable energy, including deployment, development, capacity building, and information exchange in the sector





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

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