



UGANDA
GREEN ENTERPRISE
FINANCE ACCELERATOR



Clean Energy

UGEFA Sectoral Brief

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Sectoral Context

The clean energy sector is integral to the transition to a green and inclusive economy in Uganda. Lowering greenhouse gas emissions through renewable energy usage, generating resource savings through energy efficiency measures, and improving lives and livelihoods through increasing access to electricity are central aspects of green and inclusive growth.

Generation capacity in Uganda is dominated by hydropower, and supported by heavy fuel oil and biomass cogeneration power plants. The 250MW Bujagali hydropower plant alone accounts for just under 50% of Uganda’s capacity for electricity generation. Competition for water resources for domestic and agriculture use, and climatic events such as prolonged drought cause energy shortages and highlight the vulnerability of the hydro-dependent sector to climate change. Promotion of renewable and cheap energy sources, and securing these sources in the face of changing climate conditions are key to the supply of clean energy.

Electricity consumption per capita remains one of the lowest in the world, however demand is increasing at an annual rate of 10-12% ([Netherlands Enterprise Agency, 2019](#)). Much of this demand is for biomass for cooking: in 2017, the Global Alliance for Clean Cookstoves estimated that unprocessed biomass makes up the majority (85%) of cooking fuels in Uganda. This is followed by the use of charcoal (13%), mainly in urban and periurban areas, LPG, and kerosene (<0.5 % each). The remaining 0.8 percent is a mix of fuels produced by small enterprises ([Institute of Development Studies, 2017](#)).

Energy access reaches nearly 60% of the population in urban areas, but in rural areas is still limited to 18% of the population ([European Investment Bank, 2020](#)). There is significant opportunity to address increasing demand and the access to energy gap in coming years.

Relevant Policies and Strategies

[Uganda Vision 2040](#)

[The Uganda Green Growth Development Strategy \(2017\)](#)

[National Climate Change Policy \(2015\)](#)

[Third National Development Plan \(NDPIII\) 2020/21 – 2024/25](#)

[Renewable Energy Policy \(2007\)](#)

[Draft National Energy Policy \(2019\)](#)

Government Stakeholders

Ministry of Energy and Mineral Development

Rural Electrification Agency

Electricity Regulation Authority



8%
of rural households
are connected to
the grid



<1%
are connected to
a mini-grid



28%
use solar systems
and lanterns



3%
have solar home
systems


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Priority Topics in Clean Energy

Based on the supply and demand pressures of the sector, the clean energy sector is driven by priority areas such as increasing access to electricity, installing infrastructure for energy generation, and leveraging electrification for productive use. Key priority areas as they relate to small and medium enterprises include:


- 1. Increasing access to and productive consumption of electricity.** The [Uganda Vision 2040](#) looks to increase electricity per capita consumption to 3,668kWh by 2040.
- 2. Encouraging clean alternative energy sources.** Uganda looks to increase the use of LPG in urban areas by 1 million households by 2030 ([World Bank, 2017](#)).
- 3. Promoting distributed generation.** Small, mini and micro hydro plants, photovoltaic mini-grids and stand-alone systems for households, agriculture and industry offers potential for distributed generation of renewable energy ([GET.invest, 2020](#)).
- 4. Promoting energy efficiency.** The [Renewable Energy Policy 2007](#) focuses on promoting energy efficiency, including through the dissemination of more energy efficient technologies (such as improved cook stoves).

Expected Impacts of clean energy SMEs




Productivity

- Reduction in energy consumption costs through energy efficiency measures
- Generation of energy (over product lifetime)
- Increase in enterprise revenue and tax




Job creation

- Direct Employment creation (full time and part time)
- Indirect Employment creation
- Benefits provided to employees



Inclusion

- Rural electrification and access to energy
- Co-benefits of reduced health risks from smoke particles, children studying by solar light



Climate change mitigation

- Reduction of carbon emissions
- Reduction of deforestation

by 2030

Uganda Green Growth Development Strategy Targets

- Renewable energy for domestic use for at least 56% households;
- Creation of 54,609 service jobs, with a labour productivity of US\$5,217.65 per worker;
- Reduction of 13.0 MtCO_{2e} through efficient cook stoves;
- Reduction of 1.1 MtCO_{2e} through solar energy;
- 50% reduction of domestic per capita consumption of biomass

SME Impact Chains





How do we trace SME impacts, while supporting SMEs to do the same?

SMEs bring innovative technologies to the market that contribute to national targets. Impact mapping involves tracing SME impact chains, considering:

- 1 **Technology**
Resource efficiency
Sustainable consumption and production
- 2 **Business activities**
Production
Distribution
Installation
Servicing / maintenance
- 3 **Direct SME Impacts**
Productivity
Job creation
Inclusion
Environmental
- 4 **National Targets**
Green growth
Sustainable development

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Common Sector Technologies and SME Activities

| | Role of SMEs | Common business activities |
|---|--|--|
|  <p>Biogas</p> | <p>~10,000 biodigesters & ~20 bio digester construction companies in Uganda (SNV, 2019)</p> | <p>Design, installation and repair of bio-digesters</p> |
|  <p>LPG</p> | <p>Competitive market of LPG suppliers is emerging with SMEs offering smaller canisters (3kg) for household use (SEforALL, 2019)</p> | <p>Packaging LPG, distributing and bundling products while offering pay-as-you go schemes (William Davidson Institute, 2018)</p> |
|  <p>Biomass Briquettes</p> | <p>Hundreds of micro-scale briquette producers, producing less than 20 tonnes per year mainly for households (International Water Management Institute)</p> | <p>Producing, packaging, and distributing biomass briquettes</p> |
|  <p>Clean Cookstoves</p> | <p>Many artisanal producers make up to 100 stoves each per month, ~240-300,000 stoves per year (Development in Practice, 2020)</p> | <p>Research and design, production, distribution, and repair of stoves, as well as producing stove parts or bundle products (Institute of Development Studies, 2017)</p> |
|  <p>Solar</p> | <p>17.5% of households use off-grid solar (OGS) devices, with the majority of them owning pico-PV lamps that provide few additional services beyond lighting (UNCDF, 2020)</p> | <p>Distributing off-grid solar devices in rural areas; customising solar home systems, and offering pay-as-you go services (UNCDF, 2017)</p> |





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Common SME Financing Needs



Start Up

| | | | |
|--------|---|----------|---|
| Common | <ul style="list-style-type: none"> • Financing to test prototypes • Investment into STEM education to provide pipeline of skilled employees | Sectoral |  <p>Research and design, as well as financing engineers to develop efficient cook stoves</p> |
|--------|---|----------|---|

Working Capital

| | | | |
|----------|--|--------|--|
| Sectoral |  Financing high import fees for imported products/ components, and time resources to understand import requirements    Capital for maintaining high levels of inventory | Common | <ul style="list-style-type: none"> • Inventory financing • End-user/consumer financing (one solution: innovate end-users financing models, moving beyond PAYG and drawing in successful examples from LPG) • Rent, office space financing |
|----------|--|--------|--|

Growth

| | | | |
|--------|---|----------|---|
| Common | <ul style="list-style-type: none"> • Employee and distributor trainings (one solution: grants to subsidise training costs) • Collateral to secure capital for growth (one solution: funding commercial banks to cover collateral of loans, e.g. first loss, loan guarantees) • Open regional hubs to reduce distribution costs • Investment into quality equipment (often imported) | Sectoral |  High initial capex required, and high costs to scale technology.  Investment into transportation e.g. motorbikes to reduce distribution costs |
|--------|---|----------|---|

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Ecosystem Insights

Partnerships and ecosystem support are central to supporting clean energy SMEs to access the financing they need to start and grow their business. Core areas for partnership and support include:

1. **Engaging financial institutions** with end user and consumer financing alternatives to PAYG, and looking for options to reduce the risks of non-repayment.
2. **Providing finance-focused capacity support** designed to help enterprises build and communicate bankable business models.
3. **Support information-sharing** in topics such as import requirements for solar components, and opportunities that exist to secure collateral.
4. **Taking an ecosystems approach** to partnerships and scaling green enterprises e.g. sharing regional hubs, distribution routes or staffing.

Industry Associations



Insight Contribution from Ecosystem:

| | | |
|------------------------|-------------------------|--|
| All in Trade Ltd | GoodFire Ltd | Renewable Energy Business Incubator |
| Amarin Financial Group | Josa Green Technologies | Rural Women and Youth Empowerment Centre |
| Ansole Uganda | KennInvest Uganda Ltd | Safeplan Uganda |
| Anuel Energy Uganda | Lifeline Fund | Solar Nation Uganda |
| B-One Group | MASUPA Enterprises | Spend Smart |
| BiInnovate Africa | Open Capital | Sunny Money |
| Creation Energy | Pesitho | UNFCCC |
| ENVenture | Power for All | Ultimate Gas Professionals Ltd |
| Fine Reed Limited | Power Trust East Africa | USAID |
| Fresca Investments | Reliefline | Wind Power Association Uganda (WPAU) |



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