



RENEWABLE ENERGY IN AFRICA:

An opportunity in a time of crisis

Uganda

State of electricity

State-owned Uganda Electricity Generation Company Ltd. competes with private players in the generation market, which is dominated by hydro of which 114 MW is small hydro, sugar cane bagasse and gasification of agricultural waste residues (96 MW) and solar (45 MW).¹ An oversupply in generation has stalled additional project approvals, and the country is investigating opportunities to export electricity to neighbouring countries.

Uganda Electricity Distribution Company Ltd. owns all distribution concessions, tendering them out to private players, and publicly-listed Umeme has won over 90% of these concessions. Uganda has many renewable projects locked into 'take-or-pay' contracts at prices that are no longer competitive compared with neighbouring countries and the de-facto utility in the country, Umeme, guarantees its shareholders a 20% return on investment. Subsidies are high and residential retail prices have increased 75% and industrial prices have doubled in the last 8 years.²

Uganda has one of the continent's poorest rates of electrification with 78% of the population or 31 million people lacking access to electricity.³

Relevant energy policy

Uganda has a universal electricity access target by 2035.⁴ The government announced free connections for all households to ensure they are connected, with a short-term goal to reach 26% rural electrification. The free connections will cost about USD 100 million.

The main catalysts of growth in the country's generation capacity has been the successful renewable energy feed-in tariff (REFiT), which offered attractive prices over 20-year contracts to hydro, biomass, wind and, most recently, solar developers. REFiT has run out of funding. Tax incentives are available (although sometimes lacking in transparency). Uganda's Global Energy Transfer feed-in tariff (GET FiT) program, launched in 2014, is the first competitive auction programme for renewables in East Africa.

Potential and ambition

Uganda has achieved its renewable energy generation target and it currently generates more than 90% of its power from renewable sources, including large hydro and biomass. Other technologies, such as wind and geothermal, are at the exploratory stage of development.

Uganda has more than 1 GW of grid-tied renewables. It will achieve its renewable capacity target by the end of 2019 when it will have more than 1,700 MW commissioned.

¹ <http://global-climatescope.org/results/ug#power-market>

² <http://global-climatescope.org/results/ug>

³ WRI, RELEASE: New Data Platform Helps Governments, Entrepreneurs Expand Access to Clean Electricity in East Africa. Accessed at: <https://www.wri.org/news/2019/09/release-new-data-platform-helps-governments-entrepreneurs-expand-access-clean-electricity-east-africa>

⁴ <http://global-climatescope.org/policies/4091>



Renewable energy projects

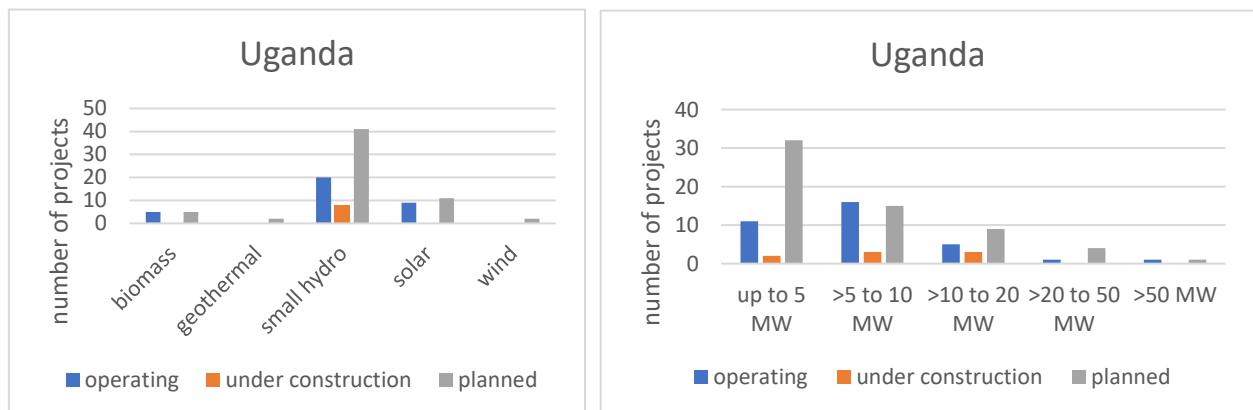
Uganda has four utility-scale solar power stations that added 50 MW to the grid between 2016 and 2019. A further 100 MW is proposed in two solar power station projects.

There are proposals for the first two geothermal power plants, one with 100 MW capacity proposed for completion in 2020, and another with 150 MW. The Renewable Energy Policy of Uganda (2007) estimates the combined geothermal potential from three major areas in Katwe-Kikorongo, Buranga and Kibiro, all in or near the Western Rift Valley, is 450 MW.⁵

Co-generation is viable where there is an excess of agricultural residues such as bagasse, coffee and rice husks, and is already being used by industries. Five sugar producers have total cogeneration capacity of approximately 110 MW.

The Renewable Energy Policy estimates there are about 500 functioning biogas plants in Uganda. The Sustainable Energy for All (SE4All) Action Agenda targets the installation of 60,000 domestic biogas plants by 2030.

Numerous development partners support the energy sector, including AFD, Danida, DfID, EU, GIZ, KfW, NORAD, SIDA, UECCC, UNDP/GEF, and the World Bank. These donors are key players for releasing funds for off-grid projects. Besides commercial banks, local financing stakeholders are the Uganda Energy Credit Capitalisation Company (UECCC) – a Government institution – and the Rural Electrification Fund, which is under the Rural Electrification Agency. In addition, there are a few micro-finance organisations, such as FINCA.



Distribution of renewable energy projects in Uganda by technology and scale, by stage of development ('operating', 'under construction', or 'planned'). Source: Authors' estimates from African Energy Live database, September 2019.

Off-grid

The Rural Electrification Strategy and Plan (RESP) for the period 2013-2022 targets rural electrification access of 26% by 2022. This translates to 1,415,000 new connections on-grid and off-grid. Development banks, including the World Bank and KfW, have already contributed to ongoing projects in these areas, but more support is required if the country is to meet these targets.

Private sector initiated mini-grids have to date been mainly in the remote islands on Lake Victoria. For example, a 230 kW solar PV mini-grid project to electrify Kitobo Island was developed with the support of

⁵ <https://www.rvo.nl/sites/default/files/2019/02/Final-Energy-report-Uganda.pdf>



the multi-donor fund, the Energy and Environment Partnership Trust Fund (EEP Africa). International funding for solar PV mini-grids includes EUR 24.7 million in support for a village mini-grid tender process, and for later upscaling.⁶

The domestic off-grid solar market is reportedly thriving, with dozens of companies using pay-as-you-go and mobile money models to great success. The maturity of this segment of the market is demonstrated by a healthy flow of investment from financial institutions.⁷

Local market

In terms of financing, commercial banks in Uganda lack experience in energy sector financing and due diligence. Interest rates for loans in local currency are high (20% plus margin), and 100 - 120% collateral requirement. Financing for infrastructure typically demands a 10-year credit line. Private companies lack sufficient knowledge to develop and implement a successful business model for energy provision or energy services. Only three of the 17 developers supported through GET-FiT are local. According to GET-FiT, local developers had developed both feasibility studies and environmental impact assessments, but needed financing. Likewise, few local companies have accessed EEP grants, which may reveal either a lack of awareness or ability to access financing.

Uganda must import components via overland shipping from the port of Mombasa, Kenya, an expensive and time-consuming endeavour. While many of these components are VAT-exempt, there remains a lack of clarity of what constitutes exemption and what does not. Uganda is also rife with corruption: many donor agencies have tightened the reins on investment. Umeme remains credible, but uncertainty around its ability to renew its distribution concessions in 2025 will fuel investor apprehension in the coming years.

Renewables projects are drawn out, it can take four years to get the approval for concessions and tariffs for off-grid generated electricity. The most efficient to date was approved in two years. Customs clearance is lengthy (up to 3-4 months), which impacts on cash flow. The regulation on customs duties has changed four times since 2011.

Lack of capacity of local companies and lengthy approval procedures are a challenge. Support to solar PV projects, especially solar home systems, need to emphasise the need for after-sales service provision. It is absolutely necessary to ensure that worn-out batteries are responsibly disposed of.

In relation to the recent announcement by the government of free connections to every household, it is not clear what the timeframe is, or whether free connections in remote rural areas will be covered through off-grid solutions.

Visit the report webpage at <https://350africa.org/renewable-energy-report>.

⁶ <https://sun-connect-ea.org/challenges-and-solutions-in-the-ugandan-mini-grid-market/>

⁷ <http://global-climatescope.org/results/ug#power-prices-and-icoes>