Cover story

How can access to solar energy be improved?

In light of the ever increasing costs of electricity, both in production and transmission, the Government and private sector are turning to renewable energy such as solar to light homes. Ali Twaha explains how this could be achieved.

As daylight fades into night daily, about 85% of Uganda's population living in remote areas turn to their wicker kerosene lamps and candles for lightening.

And more than 90% are still dependent on charcoal and firewood for their cooking energy needs. Hydropower, fossil fuels and biomass (firewood and charcoal) remain Uganda's main energy sources.

However, a recent study on kerosene use in Uganda by IndoorAir, an International Journal of indoor environment and health, established that particulate matter, a component of indoor air pollution from these fossil fuels and biomass, are associated with adverse acute and long term respiratory effects including lung cancer.

Yet decent energy access remains a major problem to the majority of the rural poor. Where access is available, the poor are often faced with erratic and unreliable supply from the grid caused by changes in climatic conditions or vandalism of transmission lines.



Solar panels spread outside a shop. Access to electricity through solar kits encourages business to grow



A solar water heater on display at a solar expo

RURAL ELECTRIFICATION

On the flip side, the Government investments in rural electrification through on-grid solutions has delivered little economic benefits as the poor cannot afford the monthly power bills.

A report from the Uganda Bureau of Statistics indicates that only 20% of Ugandans access electricity. Yet population growth continues to outpace grid expansion efforts by the Government to extend the grid there.

The impact of having households off electricity access negatively affects sectors such as education, health and start-up businesses, according to the World Bank.

Low electrification rate is considered a major barrier for economic development and poverty reduction, experts say.

For instance, a 2016 World Bank enterprise survey data indicates that business owners in developing economies perceive electricity lack there of as the biggest obstacle for activities, behind only access to finance.

For a newly incorporated start-up, it may be the case that obtaining a new electricity connection is difficult due to a burdensome connection process.

GOVT INTERVENTIONS

According to James Banabe, director energy resources at the energy ministry, there have been challenges to extending electricity availability to everyone quickly. This is due to scattered settlements. Areas with scattered settlements are characterised by low levels of "energy consumption and therefore it does not make economic sense" to the Government and funding partners.

So attention is turning to renewable energy sources like solar power.

To effectively tap into the renewable energy sources, the Government established the Uganda Energy Credit Capitalisation Company and the Rural Electrification (UECCC) Agency.

Part of UECCC functions is to co-ordinate funding from the Government, international development partners and the private sector to invest in renewable energy infrastructure.

Major solar components such as panels and batteries are tax exempted in Uganda since 2001 and the policy has resulted in massive importation and sale of solar product all over the country.

Some of the interventions have seen solar and other forms of renewable energy become an important electricity source because of the scarcity of electricity and escalating power tariffs from the conventional hydropower sources.

90%
Population
More than 90% of Uganda's population is dependent on charcoal and firewood for energy and cooking people by 2040

Data from the energy ministry shows it is estimated that over 200,000 solar institutional or home systems have been installed by companies since 2016 and at least three-10 solar kits are being obtained through pay as you go financing model.

While UECCC provides subsidised credit schemes through participating financial institutions to purchase solar equipment, the efforts have been minimal because such programmes remain largely unknown to the target communities.

IMPROVING ACCESS

Speaking during the launch of a solar working capital facility for solar companies supported by the World Bank, Specioza Ndagire, the managing director of UECCC, however, said getting sufficient collateral to secure loans from commercial banks has been a challenge for solar companies.

According to Banabe, the Government has put emphasis on three main priorities in order to boost electricity access across the country.

"First is to increase electricity generation capacity and expand the transmission network. Second is to increase access to modern service energy through rural electrification and renewable energy development. Third is promoting efficient legislation of energy and reduction of power losses in the system," Banabe said.

He explained: "The Government has developed the electricity connection policy that was approved by cabinet. In line with this policy, the Government re-subsidises the cost of making new electricity connections so that we can achieve a target of 60% by 2027."

Banabe noted that to ensure there is adequate power supply, the Government is developing the Karuma (600MW) and Isimba (183MW)dams. They will be complimented with smaller hydro power projects with a total of 150MW, mini grids and solar systems.

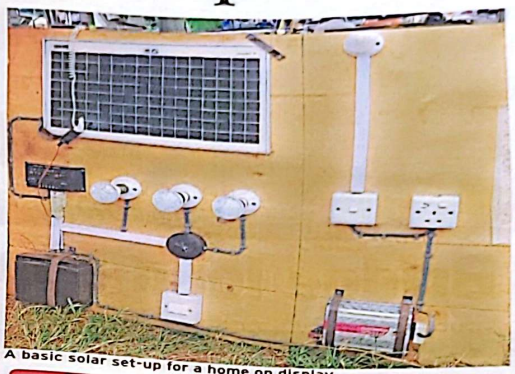
20%
Access
A report from the Uganda Bureau of Statistics indicates that presently, only 20% of Ugandans access electricity yet population growth continues to outpace grid expansion.

Mini-grids are isolated generation and distribution plants. They can be likened to the national grid but without the need for expensive medium and high voltage transmission lines.

GiZ, a German development agency and the European Union have been key partners in developing mini grids especially in northern Uganda.

LOW INVESTOR INTEREST

Uganda is faced with a challenge of attracting investors in the solar sub-sector despite its location astride the equator, which makes solar power an increasingly viable potential power supply to an increasing number of scattered



A basic solar set-up for a home on display

NEW APPROACHES

With many participating financial institutions maintaining a tight hold on their cash assets, solar companies are finding it difficult to get the funds they need.

Specioza Ndagire, the managing director of Uganda Energy Credit Capitalisation Company (UECCC), said a new approach of using receivables based financing could ease access to credit provided by the Government.

Receivable based financing involves the use of a borrower's account credit sales to secure short-term loans.

Meanwhile, Nabiruma noted that due to climatic changes can destabilise production of hydro power through siltation of dams, diversification of the country's energy mix to include other forms of energy is key.

"Uganda should be tapping into her geothermal, solar, wind and other renewable energy sources, that have great potential as identified in the 2007 Renewable Energy Policy," Nabiruma says.

To further deepen electricity access, the Government may also consider tax exemption on wiring accessories and appliances used in solar applications such as cables, sockets, connectors and phone charges.

Nabiruma explained that limited consumer awareness of quality solar products persists, according to surveys conducted.

She says that if consumer awareness was higher, they would compel the Government to enable importers to comply with importation of quality products to rid the market of fakes.

The energy ministry, however, notes that there is high interest in solar grid connection investment in Uganda from investors, although unsolicited bids for solar projects have been halted by the Electricity Regulatory Authority which prefers solicited bids for solar grid connection systems.

According to Diana Nabiruma, a senior communication officer at Africa Institute for Energy Governance (AFIEGO), the low investor interest in solar can be explained by rising poverty levels in the country.

"Investors do not envision that they will get good returns on their investments. If consumers cannot pay for your products, demand remains weak so why should an investor supply?" she asked.

Investors in the hydropower sub-sector, Nabiruma says, have dealt with governments which guarantees them returns on their investments.

On the other hand, the solar sub-sector ranging the [illegible] has limited government intervention.

"This means that solar investors deal with communities which are not able to guarantee returns on investments," Nabiruma said.

"While hydro power is cheap the world over, corruption including connivance of public officials with companies to sign 'bad deals' as the President has called the Bujagali one, makes hydro power too expensive for ordinary people. This means that access and consumption of hydro power remains low," Nabiruma added.

Currently, 70% of the 850MW of electricity from the grid is consumed by industries. This means that when more power comes on board, most of it will still have to be consumed by large industries.

The Government strategy is to achieve 26% coverage by 2022. However, such growth expectations lag behind actual trends, as well as falling short of the ambitions expressed in the national development plans strategy and Vision 2040.

Experts from the energy sector say renewable energy development is cost-effective and demand is higher than expected. Partnerships between mobile telecom companies and solar companies have not yet been fully exploited to adequately supply these products.

Players say there is need to tailor products to

SIDE BRIEFS

Government roles
- Addressing poverty/increasing income levels.
- Enforcing policies that restrict importation of poor quality solar products.
- Reducing taxes on clean energy products

Private sector roles
- Putting in place payment methods that favour the different socio-economic classes. For example, having farmer-tailored payment methods which will enable farmers to pay installments for clean energy technologies.
- Addressing information gaps on where to get genuine clean energy products such as Solar Home Systems.
- Making clean energy more accessible by opening up clean energy technology stores near communities.



A solar water pump



Solar charge controller prevents overcharging of batteries

It is estimated that over 200,000 solar institutional or home systems have been installed by companies since 2016 and at least three to 10 solar kits are being obtained through pay as you go plan

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