

Energy Poverty in Africa

BY LUNGILE MIKATEKO MUHLAVASI MASHELE

Energy poverty in Africa is gendered; it disproportionately affects women and girl children. Studies on the intersection between energy poverty and gender are well researched; however, no studies investigate the percentage of women with electricity access in Africa, making target setting difficult.

In most African societies, it is the women and girl children who are tasked with fetching firewood and water, making fires, boiling water for baths, cooking, etc. A world without electricity places a heavy burden on girl children and women to fulfil these tasks. They get up as early as 3 am to start with these daily chores, which extend late into the evening. This removes women from income-generating activities despite their personal ambitions; it also keeps girl children illiterate, which necessitates them to marry as they have no education. In some countries, girls attend school in the afternoon to try to address this crisis. The lack of electricity, amongst other variables, keeps girls physically unsafe in public spaces and susceptible to abuses such as child marriage. This practice is so pervasive that even in polygamous marriages, it is common practice to get a young wife for the sole purpose of staying at the family home, looking after ageing parents and carrying out manual tasks around the home.

Energy poverty is characterised as a situation in which a household cannot attain adequate levels of energy use due to a lack of affordability, leaving them unable to satisfy their basic needs; it is when households spend more than 10% of their income on energy. This means that in some of these societies, electricity is only used at certain times of the month or year as electricity tariffs are exorbitant. The cost of electricity (if available) is prohibitive, forcing many families to use alternative and often dangerous heating, lighting, water heating and cooking methods.

Post-apartheid, South Africa adopted the user pay principle (UPP) for services such as electricity and water. This principle refers to the concept that the cost of electricity should be directly related to the amount of electricity a consumer uses. In simpler terms, those who use more electricity pay more. This principle aims to promote responsible electricity consumption and encourage energy efficiency.

However, the outcome has been less than favourable. It has resulted in energy poverty not just for the poor, but for every South African. This includes not just electricity but biomass, paraffin, lignite, gas, petrol and other forms of energy.

The UPP deployed in South Africa has left each member of society vulnerable to energy poverty. India and China both grapple with setting electricity tariffs that balance affordability for a large underprivileged population with the need to sustain and invest in the power sector. Both countries consider the cost of services, subsidies and cross-subsidisation when setting tariffs. India uses a flat tariff structure for most consumers;

however, from 2025, time-of-use tariffs will be introduced. China, like SA, employs a tiered structure with increasing rates for higher consumption; however, electricity in China is heavily subsidised.

Key challenges to the UPP are the affordability of people living below the poverty line, the widening gap between social classes that will lead to social unrest, poor service delivery and limited access to affordable alternatives like solar panels. UPP prejudices a township dweller who lets out outside rooms for income or someone who cooks food from their home to sell or sews from their yard. UPP can create a situation of energy poverty, where people cannot afford the minimum amount of electricity needed for basic needs.

According to Good Governance Africa, 600,000 households live in extreme energy poverty in South Africa. These households heavily depend on paraffin, which is responsible for 5000 shack fires and 2000 deaths annually.

Contrary to popular belief, energy poverty does not just relate to the poor, as the rest of the world finds out. Wealthy nations like Germany are experiencing increased energy poverty due to high tariffs. Electricity consumers are increasingly using biomass to curb their electricity costs.

In Africa, grid access is costly, so in some countries, the grid will never reach remote areas. Thus, African utilities and governments are considering electrification models that are not reliant on the grid; one of these is microgrids. Microgrids are defined as a group of small, interconnected loads and distributed energy resources that are usually attached to a centralised national grid but can function independently.

Sierra Leone successfully launched microgrids during the Ebola outbreak in a spoke and wheel approach. They are attached to an anchor, i.e. clinic or school, and are powered using a combination of solar, battery and a diesel generator. Once the local clinic is electrified, there is an influx of people who set up homes in the direct vicinity in the hopes of being electrified too. These microgrid electrification efforts are always driven by the private sector with government support and foreign funding.

Microgrids aid in driving local economies. Women will buy freezers and stock them with fish from the market, they then sell this fish in the neighbourhood – this extends the working day of women for income-generating activities. Women also enter entrepreneurship by charging people a fee to charge their phones or opening a convenience store. It also allows street vendors to extend their trading hours when using streetlights. Distributors of solar home systems also use these convenience stores as distribution centres for solar equipment. Microgrids have allowed local clinics to store anti-venom and vaccines. They have also enabled

Lungile Mikateko Muhlavasi Mashele can be reached at lungile.mashele@gmail.com

women to give birth in well-lit, equipped rooms instead of candlelight.

Studies in sub-Saharan Africa suggest microgrid electricity costs might range from ZAR14 to ZAR16 per kWh (USD 80 – 90 cents). This is much higher than traditional utility tariffs in the region but perhaps potentially cheaper than alternative fuel sources like paraffin.

With over 60% of the population not electrified, Sub-Saharan Africa is fertile ground for deploying microgrids; however, they must be affordable, reliable and considerate of social and traditional contexts. Microgrids are not a one-size-fits-all solution; oftentimes, systems are deployed in rural areas with no operators, maintenance plan, or diesel availability for the backup generator. Those systems lie idle, and people return to using firewood. In other instances, systems are installed for nomadic people who are now indebted to the state, the private sector or the utility. These people cannot move as nomadic lifestyles require; they cannot

find grazing land for their animals or water for their sustenance. Entire social systems can be disrupted if socio-techno-economic systems are not well considered.

As microgrids expand in the continent, it will be imperative to create a conducive environment. First, policies that encourage renewable energy and microgrid development are crucial. This can include feed-in tariffs for excess power generation and streamlined permitting processes; models around community ownership and revenue creation can be explored. Investing in battery storage research can reduce costs and improve microgrid reliability. Finally, leveraging Africa's strong mobile network infrastructure to integrate ICT into microgrid management can optimise efficiency. Combining these elements allows African countries to create a favourable landscape for widespread microgrid deployment.