Kenya hospital energy storage

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Kenya experienced its longest nationwide power blackout on August 25,2023, lasting more than 24 hours. While the cause of the system disturbance remains a mystery, the impacts were clear -- and severe.

Hundreds of people were stranded in darkness at Jomo Kenyatta International Airport, while many more faced flight delays and cancellations. Suppliers of milk, fish, meat and other perishable products had to throw out their stock due to lack of refrigeration. Restaurants, barbershops, cafes and other small businesses lost revenue from closures.

Some of the most concerning power losses occurred at hospitals and medical centers, where stable electricity is essential for powering ventilators and other life-saving devices. While some facilities were able to run backup diesel generators, these systems require expensive fuel and emit pollutants. But there was one hospital that remained operational without needing to switch on a generator.

Top Care Nursing Home, a hospital on the outskirts of Nairobi, uses power generated from an on-site solar PV and storage system, which helped it remain operational during the entire power blackout. People in the nearby community even came to the facility to charge their phones.

In Kenya and other parts of sub-Saharan Africa where power outages are a regular occurrence, hospitals and medical centers are seeking out stable sources of electricity. Distributed renewable energy installations like those at Top Care are emerging as a resilient and increasingly attractive solution.

Worldwide, 675 million people still lack access to electricity, with more than 70% -- 600 million-- living in sub-Saharan Africa. Lack of sufficient power generation capacity and inadequate distribution networks are a big part of the problem. But even many who are connected to the grid face an unreliable power supply due to poor maintenance of transmission and distribution infrastructure.

Reliable power is especially critical for health care services, which need it for lighting, vaccine storage, water provision, sterilization of medical equipment, and operation of critical appliances such as ventilators and oxygen concentrators. Yet 15% of medical facilities in sub-Saharan Africa lack connection to power, and only 40% of the connected ones receive a reliable supply.

While electricity access in Kenya has improved tremendously over the last decade, reaching 75% of the total population, 26% of the country"s medical facilities lack a power connection. And only 15% of the grid-connected ones receive uninterrupted electricity.

Decentralized renewable energy solutions offer many benefits. Due to their ease of installation coupled with onsite power generation capacity, they can help deliver affordable electricity to rural health facilities located in

areas where extending the grid may not be economically viable. When integrated with battery storage, these systems can also provide back-up power in areas experiencing irregular electricity supply from the grid, replacing expensive and polluting diesel generators.

Reduced operational and maintenance costs in the long-term are also a big benefit of distributed renewable energy systems -- both in alleviating the need for generators and offering savings compared to grid-provided power. In Makueni County, Kenya, where WRI Africa and Strathmore University are supporting the county government in developing its integrated energy plan, the local government incurs a monthly electricity bill of about $13,000 for just one of its main facilities, Makueni Level 6 hospital, which serves between 1,000 - 1,200 patients daily. The county government is exploring solar energy as a potential option to help reduce costs.

One of the biggest challenges of bringing distributed renewable energy to Africa"s health care sector is financing. For example, a recent report by Sustainable Energy for All (SE4All) estimates that electrifying Kenya"s health care facilities alone will require $235 million, including $133 million for private facilities and $102 million for public ones. While on-site solar power offers cost savings over the long-term, upfront equipment expenses can be steep.

Over the last two years, Differ Community Power (DCP) in collaboration with Population Services (PS) Kenya and WRI Africa have been supporting electrification of five health care facilities in Kenya using solar PV and storage. Top Care Nursing Home"s solar installation project offers an example of how innovative financing models can bring distributed solar within reach even for resource-strapped medical centers.