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Sierra Leone: Closing the energy access gap with mini-grids

This milestone project, implemented by Off-Grid Power * (funded by PIDG company, InfraCo Africa) aimed to provide first-time electricity to 6,657 households & businesses in Sierra Leone, making it the largest off-grid solar energy initiative in the country.

Sierra Leone has one of the lowest electricity access rates in the world: the national electrification rate is approximately 26 percent; however, this figure drops to only 6 percent in rural areas. To close the electricity access gap, mini-grids can present a least-cost solution while providing higher tiers of energy services.

Reliable access to energy 24/7: The solar microgrids will provide round-the-clock renewable power to the general hospitals and health centers, to improve the delivery and quality of healthcare services and better health outcomes across Sierra Leone.

As part of efforts to address the electrification gap in the African continent, clean energy microgrids paired with battery storage have been rolled out as an affordable and reliable option. Since 2017, Systems Sunlight has been engaged in strengthening energy infrastructure through Sierra Leone"s Rural Renewable Energy Project, aiming to ...

Arizona State University (ASU) researchers have unveiled a rapid microgrid design that aims to cut design costs and speed acceleration of electrification in rural areas and undeveloped countries.

ASU is now using the design in Sierra Leone on the coast of West Africa, a project that highlights the benefits of electrification to women and girls.

Researchers developed the microgrid mapping project to reduce the cost and time involved in minigrid and microgrid feasibility assessments, especially in emerging markets, said Nathan Johnson, associate professor at The Polytechnic School at ASU and director of ASU"s Laboratory for Energy And Power Solutions (LEAPS).

The researchers say their system can cut design costs by 60% to 80% and by 90% for the time required for site assessments of mini grids -- off-grid systems -- as well as microgrids that are tied to the grid.

The effort in Sierra Leone is getting a boost from students, who are participating through YouthMappers, along with the Mapillary and ASU teams. YouthMappers are students worldwide who use public geospatial technology to help identify settlement patterns, road networks and existing electrical grid infrastructure to help with development. Mapillary, recently acquired by Facebook, provides street level views and map data.

Without this remote mapping, feasibility studies involve time-consuming in-person visits, said Johnson.

In developing countries, in-person feasibility studies require workers to go door to door and talk to residents and shop keepers, asking about their demand for electricity and ability to pay for it. In addition, workers gather GIS points that identify where generation assets are located. "It"s a person literally walking around and writing down coordinates," said Elena van Hove, off-grid solutions lead at LEAPS. This can be time-consuming, expensive and inaccurate, she said.