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Mini-grid power at Talek allows for income-generating activities, even at night. Photo © GIZ/ Alex Kamweru

Leading the way to rural electrification

Solar-hybrid mini-grids installed by the private sector are a promising approach to increase electricity access in remote areas

**The German Climate Technology Initiative
GIZ Promotion of Solar-Hybrid Mini-Grids in Kenya**



*Discussion with a mini-grid investor.
Photo © GIZ/ Alex Kamweru*

What is a mini-grid?

A mini-grid is an integrated local electricity generation, transmission and distribution system. It can operate in isolation from the national electricity distribution network and supply concentrated settlements with electricity at grid quality level. Mini-grids typically utilise renewable energy (solar, wind, biomass) plus battery, diesel or hybrid fuel to produce power.

GIZ ProSolar's role in enabling rural access

Mini-grid deployment is garnering increased attention for its potential to electrify remote rural areas in many parts of the globe. Yet along with the opportunities come challenges. One of the most pressing questions is whether mini-grids utilising renewable energy are commercially feasible for the private sector.

The GIZ project Promotion of Solar-Hybrid Mini-Grids (GIZ ProSolar) has set out to test the viability of mini-grids in Kenya, with the ultimate goal of promoting mini-grid electrification of remote areas in Kenya with the participation of the private sector and using this as a model for nationwide electrification. The vision is to increase levels of cost-effective, affordable and sustainable rural electrification through private sector leadership.

ProSolar is implemented by GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) as part of the German Climate Technology Initiative (DKTI).

Our approach to accelerate access

GIZ ProSolar has focused its approach in four specific areas:

1. The establishment of solar-hybrid mini-grids as part of Kenyan public policy towards rural electrification,
2. Development of mechanisms for the effective implementation of solar-hybrid mini-grids,
3. Improvement of the expertise of private actors in the planning, installation, operation and maintenance of solar-hybrid mini-grids,
4. Support for pilot projects, including feasibility studies and the testing of operator and business models.

ProSolar's target areas include Marsabit and Turkana, with a special focus on areas where the extension of the national power grid is unforeseeable or not economically viable.

Incentives for investment

A results-based financing (RBF) intervention aims to provide incentives to project developers to create a market for mini-grid electricity generation and trigger private sector investment. Funded by DFID and implemented through EnDev, the RBF component will be executed through a financial institution i.e. Barclays Bank of Kenya.



Setting up the grid infrastructure to power a community. Photo © GIZ/ Alex Kamweru



*Hands-on training for solar technicians.
Photo © Strathmore-University*



Battery maintenance at Talek Power Company. Photo © GIZ / Alex Kamweru

Achievements

A 10kW solar-hybrid demonstration system has been installed at Strathmore University in Nairobi for hands-on training. An advanced training course for solar technicians has been developed, in line with government regulations for solar technicians to be trained and certified, and is open to the public.

A pilot project, Talek Power Company in Narok County, consists of a 50kW solar-hybrid generation plant that provides power to a rural business centre. Being licensed, it provides valuable lessons while proving the social and economic viability and business model of mini-grids in Kenya. Using its experience from Talek, GIZ ProSolar has developed a tool to assist mini-grid developers. “How do we license it?” is a thorough guide to mini-grid licensing in Kenya.

ProSolar’s activities are also expanding to Turkana and Marsabit County, where the project supports the development of energy sector plans that serve as a benchmark in strategizing, mapping and monitoring the distribution and use of energy within the county.



Stakeholder forums are engaging policy makers and the private sector to identify strategies for the successful integration of mini-grids in rural electrification, aiming to spur the development of an incentive structure and financing instruments.