



# African Energy Solar Success Stories

## RESCO Installs a Solar Mini-Grid in Tanzania

RESCO Tanzania Limited (RESCO) is a solar energy contractor located in Dar Es Salaam and an African Energy customer. RESCO recently installed an 11 kWp Solar mini-grid in Kuruti village, a small Tanzanian island located in the Indian Ocean. The mini-grid currently serves 34% of the island inhabitants, including households, small businesses, schools and one medical clinic. The estimated population of the island is 1,213 people - this equates to around 192 households. Therefore, the system provides power to over 400 people in 65 homes. The power produced by the mini-grid is used for lighting and has the capacity to run a variety of appliances, such as refrigerators and televisions.



Outback inverter and charge controllers

The mini-grid is DC coupled with a PV array, consisting of 36 pieces of 305W Suntech solar modules, four 60A outback MPPT charge controllers, a 7 kW Outback Radian Inverter and a 144kWh OPZs battery bank. The mini-grid has successfully connected to over 30% of the island's population through a 2.6 km, low

voltage distribution network. Power is supplied to the customers via 50 mm<sup>2</sup> ABC cables that run between poles and a 25 mm<sup>2</sup> ABC service drop cable.

Customers are connected to the grid through smart meters where electricity supply and uses are monitored and controlled through a web-based application provided by the meter supplier. The metering has features for load limiting and prepayment billing and the customers have an option to pay bills through their mobile devices.



Suntech Solar Modules

The tariffs are set according to the customer's ability and willingness to pay for electricity. A preliminary survey in the island indicated that a household spends between USD \$7.90 to USD \$10.60 on energy for lighting, mobile phone charging and power for radio per month. This is equivalent to 7% of a typical household monthly income on the island. An average household is expected to consume 0.34 kWh a day for these energy applications

and the tariff is set at USD \$0.44 per kWh. Participating customers are encouraged to use LED lamps to receive the most benefit out of the provided services.

In the past, customers were not able to afford wiring costs in their houses. This was estimated at USD \$130 for a simple wiring. In response to this issue, the project organized the procurement of Ready Boards. A Ready Board is a pre-wired unit with a main switch, AC breakers, three socket outlets and one LED lamp. The unit costs about USD \$30.00 at a subsidized rate, where the market price is estimated at USD \$50.00. With Ready Boards, customers are able to enjoy electricity as they await the extension of cables to more appliances in their homes.



Connecting a home to the mini-grid

After the installation of the mini-grid, the demand for more energy services has risen. Customers are seeking more energy to power fans, televisions and refrigerators. Very few households have these appliances and since the installation of the mini-grid, the enthusiasm for these services has grown.

RESCO plans to add a 50 kWp extension of the plant in order to meet the energy demand on the island. This extension will serve the customers who already have access to the existing power distribution network and an additional 2 km of distribution line will be constructed to reach all other remaining households on the island.

