

The Challenge

Chad has one of the lowest electrification rates in the world, 4%. UNIDO (United Nations Industrial Development Organization) and the Chadian Ministry of Oil and Energy selected Trama TecnoAmbiental (TTA) for the installation and operation of 3 pilot solar mini-grids as technology demonstration for improving the electrification rate in Chad with a sustainable management model ensuring the operation during the project lifecycle.



Trama TecnoAmbiental (TTA)

System components

Inverter/Chargers:	Studer 6 x Xtender, XTH 6000-48
Solar charge controller:	Studer 10 to 12 x VarioTrack, VT-80
Other:	Studer 1 x Remote Control, RCC-02 Studer 1 x Internet communication module, Xcom-GSM

Why Studer

Studer's high quality and reliable products are suitable to the extreme project conditions. The Studer solution allowed to configure the system to integrate the mini-grid management model functionalities and implement system information display (bonus, restriction) in the smart meters.

The Solution

The systems have PV generation of 36 to 45 kWp with OPzS battery storage and diesel generator as back-up. The electricity generated by the solar systems is distributed through an underground line installed in the village and finally delivered to the population through a service-based tariff scheme, based on an electricity dispenser installed at each user, capable to control both energy as well as limiting the current.

Studer's equipment matched the challenging requirements in terms of robustness and reliability in semi-desert isolated areas. In addition, Studer's solution allowed to fully integrate the service-based tariff scheme in to the system, by driving frequency control mode adapted to the management model implemented. The electricity dispensers perform all their functionalities and display the system information to the final user.

Project outcome

The 3 villages in Chad have a reliable electricity service with a local management model in place that will make it sustainable for the next 20 years. The use of the service-based approach integrated in the system has demonstrated many benefits:

- The mini-grids work within their design range with almost no black-outs
- The batteries maintain a good charge with the consequent benefit in term of life-span
- The use of the diesel genset is minimized, reducing the O&M costs
- The overdue payments are avoided

The Company

TRAMA TECNOAMBIENTAL SL (TTA)

Global consulting and engineering company with headquarters in Barcelona, Spain. Since its founding in 1986, fully committed to a sustainable energy development, TTA has been providing specialized services in distributed generation through renewable energies, energy management and efficiency, rural electrification, self-generation, integration of renewables in buildings, sustainable architecture, as well as, specialized training, education and technological development related to its activities.

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