2018 – 2019: Rapid Scale Up of Mini-Grids in Somalia

A mini-grid serving 27 households in Ragwe in Homa Bay County on the shores of Lake Victoria.

Advantages with SolarGen

- Highly Skilled Engineers
- State of the Art Technology
- Authorized Representative of Leading Manufacturers
- Large Warehouse and In-Stock Inventory
- Workshop Facilities for Quick Maintenance Services

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SUMMARY

Solar-powered mini-grids are an economically viable option for providing electricity in rural areas, especially in Somalia. These systems can provide basic lighting and charging points for small and medium appliances, power critical water pumps, and serve the energy needs for small and medium enterprises.

SolarGen Technologies proposes the financing, engineering, procurement, construction and commissioning of 10 new solar mini-grids in Somalia over the next two years. SolarGen also proposes the hybridization – expanding capacity by adding solar generation – of another 10 mini-grids, working with current operators of diesel powered community grids.

Based on DFID's piloting in Somaliland and the rapid expansion of the market in neighboring countries, we are confident in this solution to achieve affordable rural electrification. Thousands of families and hundreds of business would benefit. SolarGen estimates that this initiative would cost approximately $5 million.

BACKGROUND

Almost all Somalis already pay private grid operators for their energy needs. According to the African Development Bank's Energy Sector Needs Assessment (2015), these grids are powered by diesel generation and the electric power is supplied under the most primitive and inefficient conditions. In rural areas, the cost per kilowatt/hour to connect to these grids ranges from $1 to $3 – some of the highest rates in the world. This price point is unaffordable for much of the rural population. It also makes any attempts to spur the growth of small and medium enterprises relying on energy almost impossible.

As input prices for mini-grids have fallen dramatically over the last decade, African countries, especially Somalia's neighbors, are embracing mini-grids to achieve their rural electrification objectives. The Government of Kenya with support from the World Bank is now investing $40 million to expand rural electrification in 14 under-served counties through mini-grids. The EU and Germany are working with the Government of Uganda to tender 25 mini-grid. In Tanzania, there are multiple companies who have developed sustainable business models for mini-grids and attracted recent USAID Power Africa investments. And in the coming months, Ethiopia is set to license its first solar mini-grid.

Piloting of mini-grids in Somalia is now underway. DFID is nearing the end of Phase One of its project in Somaliland to hybridize 6 existing grids with additional solar capacity. In addition, SolarGen in the coming weeks will launch the construction of the first new solar-powered mini-grid in all of Somalia.

A 20kW mini-grid serving 110 households in Mutaroni Village in Tharaka Nithi County in Kenya.

Economics of Hybridizing a Diesel-Powered Community Grid

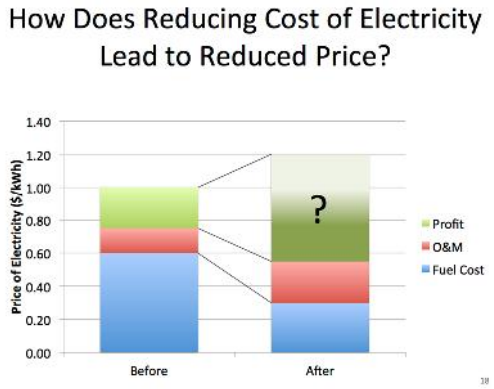

Chart developed by Altai Consulting for DFID's Energy Security and Resource Efficiency Project in Somaliland

THE BUSINESS MODEL

SolarGen is the only company in Somalia currently with the capacity to carry out a market assessment of a community's current and future energy demands and willingness to pay, and then engineer a viable solar system and accompanying distribution network.

For these rural communities, we propose primarily donor financing as recommended by the African Development Bank Needs Assessment:

> "This report proposes that, in accordance with the most recent best practice of electrifying rural areas of Africa, donors cover a substantial part of investment costs and consumers the rest as well as all operation and maintenance expenses….In broad terms, the proposal is for donors to finance 75% of investment costs, with the remaining 25% required of the private investor, to be repaid by users together with operation and maintenance expenses. This should permit a substantial fall in tariffs and thereby allow a much larger number of households to afford electricity."

SolarGen's first mini-grid in Warsheikh will serve about 200 households. The capital costs will be fully funded by the Somalia Stability Fund. The project is expected to generate enough cash flow over 20 years to cover all operational and maintenance costs and replacement of parts. The cash flow will also be sufficient to expand the system, as the town grows and energy needs increase.

Under this joint Somali government and UN initiative, we propose investment in 20 mini-grids:

- Ten new mini-grids: Two mini-grids in each federal member state (Galmadug, Hirshabelle, Jubbaland, Southwest, and Puntland) for rural areas and communities (e.g. Afmadow, Wanleweyne, Xuddur); and

- Ten expanded grids: The hybridization of two diesel-powered grids in each state for urban towns (e.g. Afgoye, Beletweyne, Galkayo) in partnership with existing operators.

All mini-grids would be governed by a locally negotiated public-private agreement that would ensure an affordable tariff structure.

We estimate that this initiative would cost an initial investment by donors of approximately $5 million ($2.5m for new grids, and $2.5m for expanding capacity of existing grids). SolarGen would commit to raising $1 million on its own to scale up its operations. In parallel, SolarGen would also work to raise capital for more mini-grids based on assessed local demand and the potential for private financing.

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FINANCING NEEDS AND SOURCES

SolarGen can raise the funding to cover the scale-up of its own operations. Costs include the recruitment of additional staff and the capacity to mobilize at multiple large project sites and to oversee the administration of the new mini-grids, as well carry out general operations and maintenance once the mini-grids are commissioned.

We kindly offer that the donor community cover most of the estimated $5 million in initial capital expenditures. We further suggest that resilience and stabilization partners supplement their initiatives in rural areas with investments in mini-grids, while the economic growth partners serve as primary investors in hybridizing existing systems in larger towns. We also believe that existing operators will be able to co-finance, or attract co-financing, for some percentage of the capital costs required for the expansion of their systems.

ENABLING ENVIRONMENT

In addition to financing, the following steps by the government and partners would contribute to its ultimate success:

- Exemption by the government of import duties for all solar-related materials. In doing so, the Somali government would match progressive policies for the promotion of renewable energy practiced by most of its East African neighbors;
- Logistical assistance offered by the UN to transport construction material to more rural areas;
- Public private dialogue on certification of technical personnel and quality standards for mini-grid systems; and
- Support for private led skills development initiatives, such as the partnership between SolarGen and City University to establish a renewable energy center for training and research.