Rollout of Solar-Hybrid Mini Grids in Tanzania

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Project Summary

Venture

JUMEME – Rural Power Supply Ltd. is a joint venture of experienced development partners for the purpose of constructing a large portfolio of solar-hybrid mini-grids in rural growth centers in Tanzania. With an extensive pipeline of projects, the initial phase includes 28 mini-grids to electrify more than 100.000 people and 2,340 shops and small businesses. **By 2022, JUMEME aims to supply high quality and reliable electricity to 1 mil. People in Tanzania through more than 200 solar-hybrid Mini-Grids.**

Partners

- **INENSUS** has a track record exceeding 5 years in mini-grid development and operation; with its first projects operating in Senegal since 2010;
- **TerraProjects**, a renewable energy project developer with a 10-year track record of developing large scale wind and solar projects and extensive East Africa experience.
- **St. Augustine University of Tanzania** in Mwanza provides access to high quality human resources.

Technology

Village based independent solar-diesel mini-grids with battery storage will provide reliable and cost-efficient 24/7 AC electricity; low voltage distribution networks connect households, small businesses and community facilities. A **unique tariff model** makes usage transparent to customers and predictable to the operator, enabling exact system sizing and optimized economics.

Project Summary

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Country

Tanzania provides one of the **most favourable market conditions for off-grid electrification**. As one of the first countries worldwide, Tanzania has a specific legal framework for the development and implementation of small power distribution projects with a cost-based tariff system.

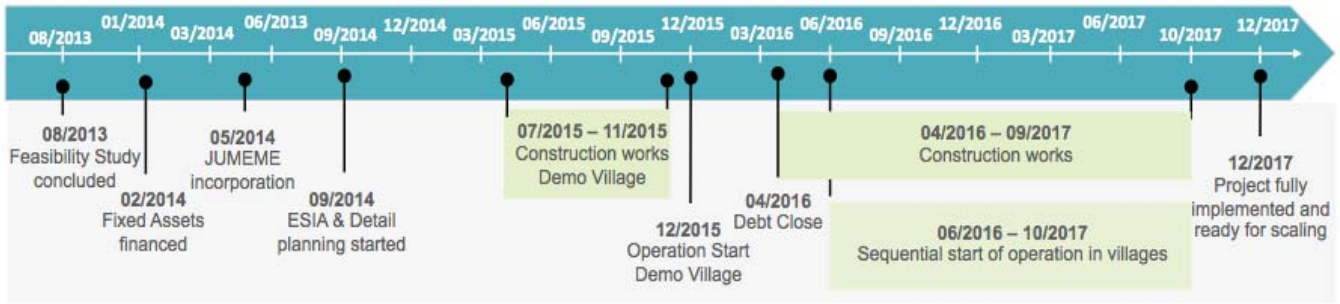
Market Potential

- **Best structured legal framework for mini-grids in Africa**
- Rural electrification rate < 10%
- 40 mil. People without access to Electricity & > 10,000 villages non-electrified
- Strong economic growth rate >7%

Financing

- Phase 1 – 28 Mini-Grids
  - **€ 16.4 mil CAPEX**
    - € 9.7 mil of private equity & non-repayable grants
    - € 6.7 mil of long-tenor debt
- Scaling & Rollout – 200 Mini Grids
  - **€ 80 mil. CAPEX**

Timeline



Mini-Grid Locations

Locations & selection criteria

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Location

The First Phase will be implemented in the 5 regions in the northwest of Tanzania. The project area has a very poor existing grid infrastructure but at the same time a large number of rural villages with a significant economic growth potential.

Selection Criteria

A comprehensive set of criteria has been used in order to identify the project locations, both from an economic and risk management perspective. Selected sites have a minimum distance to any existing or planned electricity grid. They show extraordinary indicators for economic growth potential after electrification and sufficient renewable energy resources.

→ Focus is given to the productive use of energy

Productive Use of Energy is the key for successful Mini-Grid Operation

Pilot System

Bwisya/ Ukara Island

Pilot System

The construction of the first Pilot solar hybrid mini-grid system already started in July 2015 and the system will be in operation by December 2015.

The mini-grid is implemented in the village of Bwisya on the Lake Victoria Island Ukara.

The **initial mini-grid system** has the following configuration;

Solar Power	60 kWp
Diesel Genset	30 kVA
Batteries	240 kWh C10
Inverters	54 kVA
Distribution Grid	7 km
No. of Connections	250
Total Village Population	> 5.000

In 2016, the mini grid system will be expanded to the other 7 villages on the Island, resulting in an installed solar power capacity of **380 kWp and 81 km** of low and medium voltage distribution grid.

Bwisya/ Ukara Island

Construction Site

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Bwisya/ Ukara Island

Distribution Grid

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Key Success Factors

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- Access to Information
- Regulated (unregulated) Framework
- Detailed Demand Assessment (avoid stranded Capital Costs)
- Strong Community Engagement/ Interaction
- Being more than a fully integrated Power Utility
- Actively support the Productive Use of Energy
- Reduction of Grid Connection Burden
- Customized Debt Facilities

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