

**THEnergy Analysis: Rural Electrification Mini-grids to Become a Huge Energy Storage Market**

*New investments from companies such as Shell, Engie, Mitsui, Total, and Caterpillar will boost the energy storage market in the rural electrification segment to up to 50 MWh annually – in the long-term, 1 GWh per year will be possible.*

Munich (Germany), March 2018 – THEnergy releases new analysis based on 22 expert interviews with decision-makers from mini-grid developers and energy storage providers mainly covering markets in Africa and Asia. Until recently, development finance institutes (DFIs) and impact investors had invested in renewable energy based rural electrification. This has changed with the recent investments of Shell, Engie, Total, Mitsui, and Caterpillar which have also turned the segment into a serious business opportunity for energy storage providers.

In rural electrification applications, lead-acid batteries were traditionally used. The objective was to build first mini-grids at the lowest total cost to demonstrate the viability of the business model to potential investors. Additional risks such as from new lithium-ion storage technology also were to be avoided.

The decreases in cost of lithium-ion batteries are changing the situation. The difference regarding the total cost of ownership is tightening. The gap is often sufficiently small to swap to superior lithium-ion technology. In many cases, only capital constraints make private mini-grid developers opt for low CAPEX lead-acid batteries. Most of the mini-grid developers interviewed expect to pursue the technology shift within the next two years. Many also have stated that they would be interested in training from storage manufacturers.

It can also be observed that many developing target countries of rural electrification have, so far, no experience with lithium-ion batteries. This could lead to unexpected costs regarding export or transport. For example, in Kenya and Tanzania, lithium-ion batteries are subject to PVoC (Pre-Export Verification of Conformity) procedures.

First developers already use lithium-ion batteries to ensure that the plants they are building right now will still be viable in the future when the full cost degression potential of the new technology will have been realized. Other energy storage technologies such as flow-batteries so far do not play an important role in this segment. Despite a good fit from a technical point of view, further cost cuts are needed to make flow technology economically viable in rural electrification.

Amongst the main markets for energy storage solutions in the mini-grid segment are India, Nigeria, Tanzania, Kenya, Uganda, Mali, Ghana, Indonesia, Bangladesh, the Philippines, and Haiti. “The recent investments in rural electrification will enable the construction of several hundred mini-grids per year. The market segment will finally come to life – also from a commercial perspective,” predicts Dr. Thomas Hillig, Managing Director of THEnergy, a consultancy specializing in off-grid power generation. “In the short-term we will see an annual market potential of 50 MWh – in the long-term this could raise to 1 GWh. Storage manufacturers should consider entering this market early.”

For more information, please have a look at <https://www.th-energy.net/english/news/>

**About THEnergy**

THEnergy is a boutique consultancy founded in 2013 focusing on microgrids/mini-grids and offgrid renewable energy. For industrial companies, THEnergy develops energy concepts and shows how to become more sustainable – combining experience from conventional and renewable energy with industry knowledge in consulting. THEnergy also advises investors and energy companies regarding renewable energy opportunities in rapidly changing markets. The initial focus was on commercial and

industrial offgrid renewable energy projects, for example in mining ([th-energy.net/mining](http://th-energy.net/mining)), hospitality, telecommunications or on islands ([th-energy.net/islands](http://th-energy.net/islands)). Driven by investor needs, rural electrification and energy access have become additional consulting focusses. THEnergy has lead several large-scale due diligence processes in rural electrification.

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