

# Energy storage system in microgrid Namibia

Does Namibia have a power grid?

Most un-electrified areas in Namibia are far away from the national grid and considered to have low population densities or highly dispersed settlements. Hence, it is often neither technically nor economically viable to provide access to modern energy services using the utility grid connection (Ministry of Mines and Energy 2017a).

Could a mini-grid be more profitable in Namibia?

Sufficient training in the context of entrepreneurial activities of Namibian communities could have led to a more profitable operation of the mini-grid through better use of daytime solar power and better use of energy-efficient equipment.

Are mini-grids a viable option for energy generation?

That mini-grids are indeed acknowledged as a valid option for energy generation by the government is highlighted in the Renewable Energy Policy (Ministry of Mines and Energy 2017b). The framework that focuses on off-grid electrification is the Off-Grid Energisation Master Plan for Namibia (OGEMP).

Why do we need a regulated environment in Namibia?

Despite the admittedly transparent and relatively stable national regulatory environment in Namibia, which is important when seeking to attract investors, the use cases further demonstrated the significant need to transfer regulatory knowledge, technical guidelines and issued codes from large energy projects to smaller off-grid initiatives.

Does Namibia have a power supply monopoly?

The Namibian electricity supply industry started a transformation process in the 2000s. Initially, the state-owned national power utility 'NamPower' had a quasi-monopoly in the market, being responsible for the generation, transmission, and distribution of electricity (Hauser 2018).

Will NamPower take over the mini-grids?

Since the takeover was planned, NamPower and several REDs have been immensely reluctant to inherit the responsibility of operating and managing the mini-grids, due to the "lack of viability, relevant expertise, and regulatory uncertainty" (Stockmayer et al. 2015).

This study explores social innovation in microgrid projects, focusing on integrating micro-agrovoltaics (APV) with flywheel energy storage systems (FSSs) and small-scale water desalination and purification plants.

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general theme of energy storage and its relevance to Namibia's electricity supply system; Section 5 presents an overview and classifies modern energy storage systems; Section 6 summarises the main roles, relevance and applicability of contemporary energy storage systems and technologies;

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This paper presents a detailed optimal sizing and economic evaluations of a stand-alone microgrid for a remote village (Amarika) in Namibia. Several renewable energy sources such as wind turbines and photovoltaic arrays were considered with a battery backup storage system and a reverse osmosis desalination plant for water supply.

