

**SolarTech Power Solutions**

# **Somalia Off-Grid Energy Storage System**



## Overview

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What is a sustainable power supply system (HRES) in Somalia?

The HRES is proposed to supply sustainable power to a rural community in Somalia. The techno-economic assessment of the proposed HRES and a comparative analysis of other configurations—namely the PV/WT/BESS and PV/DG/BESS systems is conducted using HOMER and MATLAB software.

Does Somalia have solar energy?

Based on this data, the average annual solar energy potential is approximately 6.26 kWh/m<sup>2</sup>/day, positioning the country as one of the sunniest regions globally . These factors indicate Somalia's significant potential for solar energy generation, given its proximity to the equator, where sunlight is abundant throughout the year.

How efficient is rural electrification in Somalia?

Due to the substantial share of the RF in this configuration (91.8 %), the system utilizes only 1,418 L of diesel. Therefore, the proposed system is the most efficient power supply choice for achieving sustainable rural electrification in Somalia, emitting a cumulative total of 3,712 kg/year in pollutant emissions.

How much electricity does Somalia have?

In Somalia, access to electricity remains a significant challenge, with only 49 % of the population having access, according to World Bank data. The country aims to increase its electricity capacity to 1,043 MW between 2022 and 2027, with the electrification rate expected to rise to 75 % .

What is the average solar radiation in Somalia?

The region's ambient temperature, which averages 27 °C year-round, provides favorable conditions for the longevity and efficiency of PV systems. In addition, Somalia's annual average solar radiation ranges from 5.62 to 6.67

kWh/m<sup>2</sup>/day.

How much does LCOE cost in Somalia?

The LCOE for this system is \$0.0900/kWh, which is slightly lower than that of the other cases under study, bearing in mind that the current LCOE for Somalia's residential consumers is in the range of (0.46–0.81) per kWh. Similarly, the NPC and operating costs are marginally reduced at \$96,899 and \$18,900.38, respectively.

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