

## 200 kwp solar Lesotho

Does Lesotho have solar energy potential?

This study represents the first assessment of solar photovoltaic and wind energy potential production over Lesotho at high horizontal resolution (1 km), based on the state-of-the-art atmospheric model WRF.

Will Lesotho be able to pilot a hybrid solar PV mini-grid?

Successful pilot hybrid solar PV mini-grid in Lesotho paves way for a further 10 mini-grids that will provide first-time energy access to 30,000 people and clean power to seven health clinics.

How was the photovoltaic power potential map produced for Lesotho?

The photovoltaic power potential map for Lesotho was produced using WRF Sim2hourly values of normal, direct and diffuse solar radiation, 2 m temperature, 10 m wind and albedo. As for the wind energy assessment, the use of an hourly model output allowed us to take into account diurnal variability of the involved physical quantities.

What is the main power plant in Lesotho?

At present the Muela hydroelectric plant is the major power station in Lesotho with a total power of 72 MW and it is accountable for almost the total energy production of the country.

Is Lesotho launching a solar mini-grid project?

The second phase of a pioneering solar mini-grids project in Lesotho is underway following the completion of a pilot project funded by REPP in Ha Makebe village, north-east of Maseru.

Does Lesotho have a low electrification rate?

Lesotho, a landlocked nation surrounded by South Africa, has one of the lowest electrification rates on the continent, with about 62% of the population lacking access to electricity and with a rural electrification rate estimated at below 20%.

OnePower (1PWR) is a solar power developer based in Lesotho with both on-grid and off-grid projects. A consortium led by 1PWR won Lesotho's first tender for a utility scale 20MW PV plant, and 1PWR designed, built and operates the nation's first fully licensed and privately financed minigrid at Ha Makebe in Berea district.

To date, over 200 households and business customers in and around Ha Makebe have been connected to electricity for the first time following the construction of the country's first ever private mini-grid. Construction of the 50kWp solar mini-grid was made possible thanks to an LSL7m (Lesotho loti) loan from REPP in October 2018.

There is growing on-grid market demand for solar panels in Lesotho, driven by the government's renewable



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energy targets and the need to increase electricity access, particularly in rural areas. Lesotho aims to increase renewable energy use to 200 MW by 2025, which will likely involve significant investments in solar power. 5  
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It is estimated that the large-scale hydropower generation potential for Lesotho is approximately 450 MW. Additionally, there is significant potential for small scale hydro as well as wind and solar energy. As to small scale hydro, there are currently four mini hydro-power stations in the mountains at Semonkong, Tlokoeng, Tsoelike and Mants ...

Taking the average global solar radiation that ranges from 15 to 20 MJ/m<sup>2</sup> and cognizant of the short falls of other renewable energy sources in Lesotho, this paper focuses on the application of...

Solar PV mini-grid technology is a suitable option for rural electrification in Lesotho due to the country's abundant solar energy resources. Lesotho relies heavily on biomass and imported fossil fuels for energy. Switching to solar ...

With respect to solar photovoltaic, it is shown that Lesotho has a good potential countrywide, ranging from about 1600 to 1750 kWh/kWp; while concerning wind energy production much more variability appears, the range being from 1000 to about 4000 kWh per nominal kW installed, with higher values expected in the highlands.

In 2019, REPP extended a LSL 7m loan to 1PWR to finance Lesotho's first solar-battery mini-grid at the village of Ha Makebe. This project became operational in 2021 and now services 215 households and businesses in the community.

Mahlaseli Energy is a renewable company that provides solar energy solutions as well as water solutions in Lesotho. In our commitment to the country and planet, we shine bright and hydrate deep, paving the way for a greener, more vibrant future.

The company has been providing the rural population with electricity from small solar PV units ranging from 10 to 5000Wp, with a total of 200 kWp installed thus far. The core product...



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