

SolarInnovate Energy Solutions

Benin Solar Power Supply System



Overview

How much does a photovoltaic power plant cost in Benin?

Photovoltaic power plants' levelized cost of energy ranges from 0.11 USD/kWh to 0.125 USD/kWh. Incentives and subsidies could lower the levelized cost of energy and increase solar photovoltaic investment in Benin. About 60.0% of Benin's population currently lacks access to reliable electricity to perform their daily activities.

Does Benin have solar power?

Despite the country's abundant solar resources, only 8.0 MW of solar capacity had been installed by 2017 (Mensah et al., 2022). The cities in the northern parts of Benin have the highest solar energy potential. However, these cities have the lowest access rates to electricity (Odou et al., 2020).

Can solar power improve living standards in Benin?

The Benin Republic has abundant solar energy resource, which could be harnessed efficiently to increase its access rate to electricity and improve living standards. This study evaluates the techno-economic viability of installing a 10.0 MW utility-scale grid-tied solar photovoltaic (PV) system in seven cities located in Benin.

Is solar power a viable option for rural electrification in Benin?

Besides, current projects on off-grid rural electrification in Benin, specifically Solar Energy Promotion Project (PROVES) and Renewable Energy Development Program (PRODERE), are based on stand-alone solar PV/battery only. Such a combination makes the overall cost high due to a big battery storage required to ensure reliable power supply.

How much electricity does Benin use?

According to the World Bank (2022a), Benin's annual electricity consumption per capita is about 100.225 kWh. This indicates that approximately 131,920

people could be supplied with electricity from the 10.0 MW solar power plant using 13,221.7 MWh as the benchmark.

Can Benin achieve universal energy access?

Regarding the country's energy sector, more effort is needed to reach the universal energy access goal . Benin Republic currently has one of the lowest national electrification rate in SSA (only about 30.4%), with a strong disparity in favour of urban areas closer to the main grid [17, 18].

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Techno-economic analysis of a utility-scale grid-tied solar

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