

## SolarTech Power Solutions

# Malawi Wind Solar



## Overview

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This article explores Malawi's renewable energy policies, compares them to successful global models, and proposes actionable solutions to accelerate the clean energy transition. Is Malawi suitable for solar energy?

**Solar resource assessment** The analysis of Malawi's solar energy potential revealed significant seasonal and regional variations in solar irradiance, essential for understanding its suitability for solar energy systems.

What is the average solar energy output in Malawi?

In Malawi, the annual average peak GHI is  $1106.45 \text{ W/m}^2$  with average daily energy inflow at  $6.76 \text{ kWh/m}^2$  /day. Solar potential peaks in October ( $1179.75 \text{ W/m}^2$ ,  $8.17 \text{ kWh/m}^2$  /day) and is lowest in June ( $998.85 \text{ W/m}^2$ ,  $5.61 \text{ kWh/m}^2$  /day). The average annual diffuse fraction is 10.61 %, suggesting low aerosol interference.

When is the best time to install solar power in Malawi?

During summer months, such as January, increased cloud cover and rainfall result in higher diffuse fractions, which can impact the overall efficiency of solar energy systems. Overall, Malawi has substantial solar energy potential, with high-GHI months such as October and September being optimal for PV power generation.

Which month in Malawi has the lowest solar intensity?

Conversely, June records the lowest solar intensity at  $998.85 \text{ W/m}^2$ , with an average daily energy of  $5.61 \text{ kWh/m}^2$  /day. Regional variations are evident, with the central and upper northern parts of Malawi consistently exhibiting higher GHI values, particularly in February, March, and September (Fig. 5).

Are solar PV resources available in Malawi?

This study's assessment of solar PV resources in Malawi, while thorough, acknowledges certain limitations: it encompasses a relatively short two-year

simulation period and omits a financial analysis of solar PV implementation.

What is the average diffuse fraction of solar energy in Malawi?

The average annual diffuse fraction is 10.61 %, suggesting low aerosol interference. The study showed an average annual solar energy yield of 14.11 TWh and a capacity factor of 21.48 % on each grid in Malawi, with a stable average COV for GHI at 24.84 %.

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