

# Select Zhanyu Photovoltaic Solar Power Generation

What is the future dynamic photovoltaic (PV) power generation potential?

In this study, the future dynamic photovoltaic (PV) power generation potential, which represents the maximum PV power generation of a region, is evaluated. This study predicts suitable land resources for PV systems and calculates the PV generation potential based on these predictions.

What are the spatial distribution characteristics of PV power generation potential?

The spatial distribution characteristics of PV power generation potential mainly showed a downward trend from northwest to southeast. Meanwhile, there were clear spatial dislocations between the PV power generation potential and the population distribution and electricity demand in China.

What is the PV power generation potential of China?

The PV power generation potential of China was estimated using ERA5-Land hourly data with a spatial resolution of  $0.1^{\circ} \times 0.1^{\circ}$  (about  $10 \text{ km} \times 10 \text{ km}$ ), and a temporal resolution of 1 h. The quality of the data of ERA5 has also been improved compared to the previous data.

Should centralized PV power generation continue to receive subsidies?

If energy storage technology, cross-regional power allocation, and energy complementation can effectively improve the problems of transmission difficulties and the massive loss of light in these regions, then centralized PV power generation in these regions should continue to receive subsidies or other policy supports.

How profitable are distributed solar PV systems?

Approximately 92.73% of cities could achieve positive net profits for power generation from distributed solar PV systems, and 83.72% of all analysed cities showed an IRR greater than 8%, assuming a loan interest rate of 8%, which implied profitability. Grid parity indicates cost-neutral solar PV installations.

Where is PV power generation mainly concentrated in Xinjiang & Inner Mongolia?

In terms of provinces, PV potential is mainly concentrated in Xinjiang, Inner Mongolia, Qinghai, and other provinces west of the Hu Huanyong Line (Population Distribution Line). The PV power generation potential of the provinces east of this line basically does not exceed 3 PWh, and most of them do not exceed 1 PWh.

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