

Solar Energy China Analysis and Assessment



Overview

Accurate assessment of the photovoltaic (PV) power generation potential in China is important for the reduction of carbon emission intensity and the achievement of the goal of Carbon Neutral. This study used a PV power generation potential assessment system based on Geographic Information Systems (GIS) and Multi-Criteria Decision Making (MCDM) methods to investigate the PV power generation potential in China. Firstly, the high spatial-temporal resolution and high-quality ERA5 data and related technical, geographic, and social factors were used to assess the theoretical power generation and land suitability of PV power generation. Then, the theoretical power generation and land suitability were comprehensively considered to evaluate the PV power generation potential of China in 2015. The results showed that the average suitability score of land in China is 0.1058 and the suitable land for PV power generation is about 993,000 km² in 2015. The PV power generation potential of China is 131.942 PWh, which is approximately 23 times the electricity demand of China in 2015. 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. In areas that accounting for about 75% of the PV potential, population and electricity demand only accounted for. ••A GIS and MCDM based PV generation potential asse...

Article Content

Solar energy potential assessment: A framework to integrate ...

8 distribution of solar energy in China and estimates the solar energy potential from three 9 aspects: geography, technology, and economy. The results of this research showed that the 10 ...

Gridded Assessment of Mainland China's Solar ...

This study aims to fill these gaps by assessing mainland China's solar energy resources using the TMY method and China Meteorological Forcing Dataset. The results show that the data record length could significantly ...

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Comparative Life-cycle Assessment of Renewable Electricity ...

PV, concentrated solar power (CSP), wind, and nuclear generation technologies are used to assess the energy, material, water, and emissions implications of achieving a renewable ...

Changes in photovoltaic potential over China in a warmer future

A high-resolution, exhaustive assessment of the current spatiotemporal pattern of solar energy potential in China has been carried out by multiple studies, and the results ...

Solar energy potential assessment: A framework to integrate ...

This study analyzes the spatial and temporal distribution of solar energy in China and estimates the solar energy potential from three aspects: geography, technology, and economy.

Integrated assessment of environmental suitability and water-energy ...

Focusing on the desert area of Northwest China, recognized as the most promising region for solar energy development, this study aims to: (1) assess the ...

Assessing China's solar power potential: Uncertainty ...

Five-dimensional assessment of China's centralized and distributed photovoltaic potential: From solar irradiation to CO2 mitigation. Tiantian Wang Yanhua Wang Ke Wang Sha Fu Li Ding

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