

Solar power generation evaluation

What are the indicators of solar PV power efficiency?

Solar PV installed capacity and solar PV generation are the most basic indicators of solar PV power efficiency. Therefore, we selected solar PV installed capacity, the cumulative number of solar PV patents, gross capital formation, and labor as input variables and solar PV generation as the output variable.

Are there studies on solar PV power efficiency at the national level?

(1) There are few studies on solar PV power efficiency at the national level. Although solar PV generation is widespread and can provide electricity to meet the energy needs of economic development, few analyses have been conducted to assess solar PV power efficiency.

What variables are used in the evaluation of solar PV?

In particular, gross capital formation (% of GDP), labor, solar PV installed capacity, the cumulative number of solar PV patents, solar PV generation, the proportion of the urban population in the total population, GDP per capita, and carbon dioxide emissions were the variables used in the evaluation.

How is PV power generation potential assessed in China?

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.

How can we evaluate PV power generation potential in different regions?

In the past, many researchers have used different methods to evaluate the potential of PV power generation in different regions: Kais et al. proposed a climate-based empirical α -ngstrom-PreScott model, using MERRA data to evaluate the PV potential of the Association of Southeast Asian Nations (ASEAN).

What is the importance of assessing solar PV power efficiency?

The importance of assessing solar PV power efficiency is of interest to the vast majority of economies. A country should measure solar PV power efficiency and keep related records. Therefore, this study used economic dimensions in its analysis. The remainder of the paper is organized as follows.

Solar thermal electricity may be defined as the result of a process by which directly collected solar energy is converted to electricity through the use of some sort of heat to ...

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The performance ratio, a globally recognized metric that correlates with reported global solar radiation values, serves as a crucial indicator for evaluating the efficiency of grid ...

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Solar power towers, which constitute about 15% of operational plants ... Thermal energy storage intends to provide a continuous supply of heat over day and night for power ...

The generation of electricity using solar and wind energy worldwide from 2000 to 2023 shows that the use of solar power energy to generate electricity is increasing rapidly [75, 76]. Attig Bahar et al. [77] made ...

In a solar PV power plant, the plant availability factor is one of the important factors to be evaluated. This depends on the operative functioning of various components and ...

If you lease a solar energy system, you are able to use the power it produces, but someone else--a third party--owns the PV system equipment. The consumer then pays to lease the equipment. Solar leases often involve limited upfront ...

The utilization of solar and wind energy for steam generation and small-scale power generation system [12, 13], desalination [14, 15], solar thermal cooling [16], rooftop [17] ...

When the annual rate production of SD systems is low, the establishment of a SD solar power plant is worthwhile on many islands of Greece, which high cost of conventional ...

The results indicate a stable global increase in publications on solar power generation and a rise in citations, reecting growing academic interest. Leading contributors include China, the USA, ...

A solar chimney power plant (SCPP) can be a suitable commercial electric power generator provided that its system performance is enhanced and construction cost reduced. ...

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