

Does Macao have solar energy?

Clearly, Macao has a tremendous potential for developing solar energy, especially a grid-connected photovoltaic system. Its small and densely populated area, however, make it unsuitable for large-scale solar-power plants, and Macao has therefore chosen roof-top solar technology as the most effective way to utilize solar energy.

Can Macao increase solar energy?

The Macao government also sees an opportunity to increase solar energy. To encourage the installation of PV systems, officials passed a set of safety and installation regulations in 2015.

Does Macao have a photovoltaic energy contract?

The regulations require investors to enter into a 20-year contract for the purchase of photovoltaic energy with Macao's sole energy service provider, Companhia de Electricidade de Macau (CEM). Essentially CEM will purchase the electricity produced to ensure investors profit within a reasonable period.

Can Smart Grid technology improve Macao's power supply?

"Using smart grid technologies, we've improved the stability and quality of Macao's power supply," says Evan Liu, the Director of Power and Networks Dispatch for Companhia de Electricidade de Macau (CEM).

Is natural gas a problem in Macao?

As a member of the Smart Energy Group of UM's State Key Laboratory, which focuses on optimising clean energy use and production, Zhang believes expanding the use of natural gas poses major problems, especially in the city's older districts. "Many buildings and [much of the] infrastructure in Macao are outdated.

Does offshore wind energy make sense in Macao?

"In our view, as external observers, offshore wind energy in Macao's territorial waters makes sense, as does the development of distributed generation of photovoltaic energy. Macao has a lot of sun and many roofs. There is a potential to develop this vector in the medium-to-long term."

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"If we can install solar PV systems on only 20 per cent of these rooftops, we can reduce carbon emissions in Macao by 7 to 8 per cent," he says, adding that the sizable rooftops of integrated resorts are ideal sites for PV systems.

The Smart Grid is generally seen as the ultimate solution to enhance power supply reliability, empower customers' energy decision, optimize capital and operational efficiency, reduce emissions and improve social productivity and economic growth.

UM's PV system is the first in the public sector in Macao to have satisfied all relevant regulatory requirements and is fully operational when connected to the utility distribution network. It is expected to help promote green energy in the city.

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Looking to the future, the development of CEM's smart grid will be a key feature in Macau's transformation into a smart city, ensuring that the city continues to be an outstanding place to live, do business, and have fun.

Song and colleagues have no doubts: "Macao has some of the richest solar resources in the world" (with average annual sunlight time exceeding 1000 h, providing about 5000 MJ/m<sup>2</sup>). "Clearly, Macau has a tremendous potential for developing solar energy, especially a grid-connected photovoltaic system.

Macao has a large potential for the development of solar energy, especially for grid-connected photovoltaic systems. Roof-top solar technology has been chosen as the most effective way to utilize solar energy, as a 1-m<sup>2</sup> solar panel can ...

As of March 2024, Macau has 9 solar PV systems connected to the network, with a total installed capacity of 3,223 kWp, producing over four million kWh of green energy. It is anticipated that larger photovoltaic systems will be developed in the ...

Topography for solar PV around Macao, Macao. Macao is located on the southeast coast of China, at the mouth of the Pearl River Delta. The topography of Macao consists mostly of coastal flatlands with hills in the east and south. It's a densely populated urban area with limited open space.

