

# Planting under photovoltaic panels in Northeast China

Where are PV power plants located in China?

Eventually, we established a map of PV power plants in China by 2020, covering a total area of 2917 km<sup>2</sup>. We found that most PV power plants were situated on cropland, followed by barren land and grassland, based on the derived national PV map. In addition, the installation of PV power plants has generally decreased the vegetation cover.

Does China need a comprehensive map of PV power plants?

With the world's highest cumulative and fastest built PV capacity, China needs to assess the environmental and social impacts of these established PV power plants. However, a comprehensive map regarding the PV power plants' locations and extent remains scarce on the country scale.

Do PV power plants reduce vegetation in China?

The PV power plants in China are more likely to be installed in suitable natural conditions but with low power demand or in areas with high local energy demand. We also found that installing PV power plants will generally decrease the vegetation. Our dataset is conducive to policy management and environmental assessment.

How big are PV power plants in China?

The total area of the PV power plants in China is about 897 km<sup>2</sup>, based on Dunnett's dataset. We manually modified this dataset with Google Earth's background to ensure that the PV samples are located inside the PV power plants.

Where is photovoltaic power installed in China?

In addition, the total installed photovoltaic capacities in Southwest and South China are relatively low, while the competitive patterns of photovoltaic power installation in Northeast China, including Heilongjiang and Liaoning provinces are becoming increasingly obvious.

How many ground-mounted PV power stations are there in China?

According to our dataset, China has a total of 2467.7 km<sup>2</sup> ground-mounted PV power stations in 2020. The top three largest provinces refer to Xinjiang, Inner Mongolia and Qinghai, whose PV area ratio are 14.92%, 12.49% and 11.26%, respectively, with a total of nearly 40% of all the PV power stations of China.

The treated drainage water from the coal mines is channeled from these mines to the solar power base and used to clean the solar panels and water the plants. Standing under a solar panel array in Chaideng, Zhang ...

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Chinese PV manufacturing accounts for the vast majority of global PV production. In 2020, China accounted for 76% of global polysilicon production, 96% of PV wafer production, 78% of PV cell production and 70% of global PV panel ...

without any restoration measures under the PV panels is significantly higher than with restoration measures and outside the PV plant. However, most scholars have found through research that ...

under the PV panels was highlighted. Furthermore, impact of APV on water saving was further discussed (Fig. 3). 2 Microclimate change under PV panels The variation of microclimate ...

A 83.9% increase in vegetation cover and 68.7% increase in plant biomass were associated with PV panels in the Gonghe Basin, Qinghai Province, China (Li et al., 2016). Similarly, Wang et al. (2016) reported a ...

Amid a vast expanse of solar panels, sheep roam and graze on fresh grass, while farmers cultivate drought-resistant plants and medicinal herbs for profits. China's leading ...

Agrioltaics (APV) combine crops with solar photovoltaics (PV) on the same land area to provide sustainability benefits across land, energy and water systems (Parkinson and ...

Scientists led by the China Agricultural University have created a national-scale map and dataset of ground-mounted PV power stations in China. The data is based on Sentinel-2 imagery from 2020 ...

Siyuan Fan's 27 research works with 353 citations and 1,193 reads, including: A dynamic modeling method using channel-selection convolutional neural network: A case study of NOx ...

Solar photovoltaic (PV) is one of the most environmental-friendly and promising resources for achieving carbon peak and neutrality targets. Despite their ecological fragility, ...

1 Introduction. Due to factors such as the growing global energy demand, the non-renewable energy crisis, and climate change, etc., there is an international consensus to ...



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