

Compensation for land occupation by photovoltaic panels

Can photovoltaic meet energy demands?

We investigate the potential of photovoltaic to satisfy energy demands given climate change and technological development. We find that conventional photovoltaic will require 0.5 to 1.2% of global land area to meet projected energy demands by 2085 without accounting for climate change effects.

How much land area does a photovoltaic need?

We find that conventional photovoltaic will require 0.5 to 1.2% of global land area to meet projected energy demands by 2085 without accounting for climate change effects. When considering climate impacts, this requirement increases to 0.7-1.5% of the global land area.

Does land use for solar energy compete with other land uses?

Based on the spatially defined LUE of solar energy, as well as the identified potential for solar energy in urban areas, deserts and dry scrublands, land use for solar energy competes with other land uses through the inherent relative profitability of each land use.

Can construction-integrated photovoltaic systems reduce land pressure?

This promising concept, known as agrivoltaics, may be difficult to scale up because the higher panels hinder mechanized agriculture and the selection of crop species¹⁰. In contrast, construction-integrated photovoltaic systems offer greater potential for relieving land pressure in the east.

Why is the scope of large-scale PV deployment limited?

Previous analyses have argued that the scope for large-scale PV deployment is limited because of competition with other land uses^{12,13}. Some land uses, however, are multifunctional, such as agri-voltaic systems¹⁴. Pastures are generally well-suited to agri-voltaic systems in which solar panels are placed above grazing livestock.

How does land use policy affect the development of PV industry?

The development of PV industry cannot be separated from policy support and constraints, and the land use policy is related to the definition and decision making of a series of issues such as the establishment of PV projects, revenue and whether they are illegal.

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Web: <https://publishers-right.eu/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

