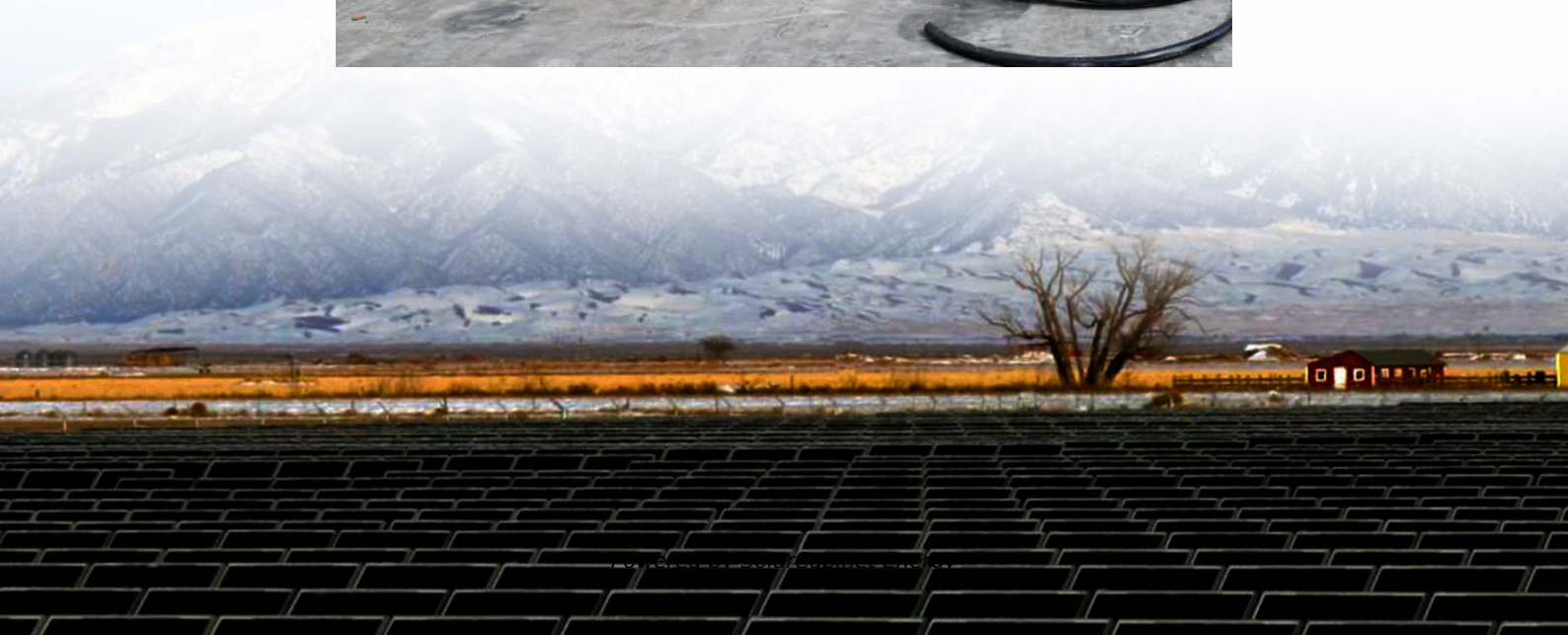


Forest Farming Photovoltaic Energy Storage





Overview

Are solar farms a viable alternative to forests?

Forests and solar energy are both critical to achieving the climate goals proposed by the Paris Agreement. However, large-scale deployment of solar farms requires vast land areas, potentially posing conflicts with other land uses. For example, solar farms have been built in forested regions or with a direct cost to forests (through deforestation).

Can solar farms be built over forests?

Land-use conflicts between solar farms and forests have occurred partly because of weak institutions (Kim et al., 2021; Moreira-Dantas and Söder, 2022) and have been further strengthened by the assumption that building solar farms over forests is feasible and highly energy-efficient. However, this assumption has not been well evaluated.

Should forests be cleared for solar farms?

To examine whether forests should be cleared for the construction of solar farms, the biophysical effects of deforestation on the solar capacity factor were obtained by comparing the simulations of deforest-globe and piControl (deforest-globe minus piControl) for the last 30-years of the model run.

Are solar farms causing deforestation?

Given that environmental expenses have not halted the placement of solar farms over forests, it is necessary to revisit the land-use conflicts between solar farms and forests and determine the extent of deforestation due to solar farm construction.

Do solar farms change the forest landscape?

The first is solar farms that exhibited a consistent presence within forests spanning the time from 1992 to 2018 (hereafter referred to as “Solar farms built in forested areas”), suggesting the construction of solar farms in forests



did not significantly change the forest landscape.

How can governments reduce land competition between solar farms and forests?

Governments should act now to mitigate the land competition between solar farms and forests and require technological innovation to place solar farms over deserts, abandoned mines, artificial canals, reservoirs, and rooftops, despite these sites being characterized by more scarce, more unstable, and more expensive solar energy.



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