

Eco solar corridor

Discovering the symbiotic strength of utility-scale solar energy systems and ecological networks in Brummen, the Netherlands

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While the need for utility-scale solar energy systems in landscapes is rising to reach the national climate goals, the rivalry with agriculture and the development of nature is increasing too. While the combination of solar panels and agriculture is already tested in several projects, the possible combination of solar energy with ecological networks is not yet researched in depth.

The objective of this research was to explore potential synergies arising from the implementation of solar fields in a gap of an ecological networks at Brummen, the Netherlands. The solar landscape with a total capacity of 11MW, was meant to both bridge the greater ecological network, and increase the ecological value of the agricultural landscape. The potential of interventions was rated with an ecosystem service approach, describing the direct and indirect contributions of ecosystems to human well-being.

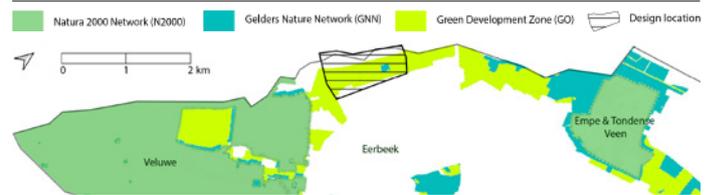
The existing flora, fauna and ecosystem services of the site were mapped to have a clear point of departure, before adding services like the provision of electricity.

The input of the research resulted in two spatial models for the solar landscape of Brummen, with one more improving the ecological network and the other increasing the power generation. By evaluating the expected performance of the ecosystem services, the most favourable components of the models were identified and brought together in a hybrid design.

The design and the potentially provided ecosystem services show that extensive solar fields can function as a bridge within an ecological network while still including e.g. existing agriculture. However, it is crucial to consider the specific local ecological needs. Generally, the improvement of the ecosystem performance is considered to have more impact if the solar landscape is implemented in locations where the existing ecosystem is performing poorly.



Ecosystem services provided by design



Bridged ecological network

Keywords

Solar landscape, solar park, solar energy, spatial quality, landscape quality, multi-functionality, energy transition, agriculture, research through design, ecosystem services, ecological network

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