

The bright side of solar energy

How solar energy can be used as a tool to improve landscapes

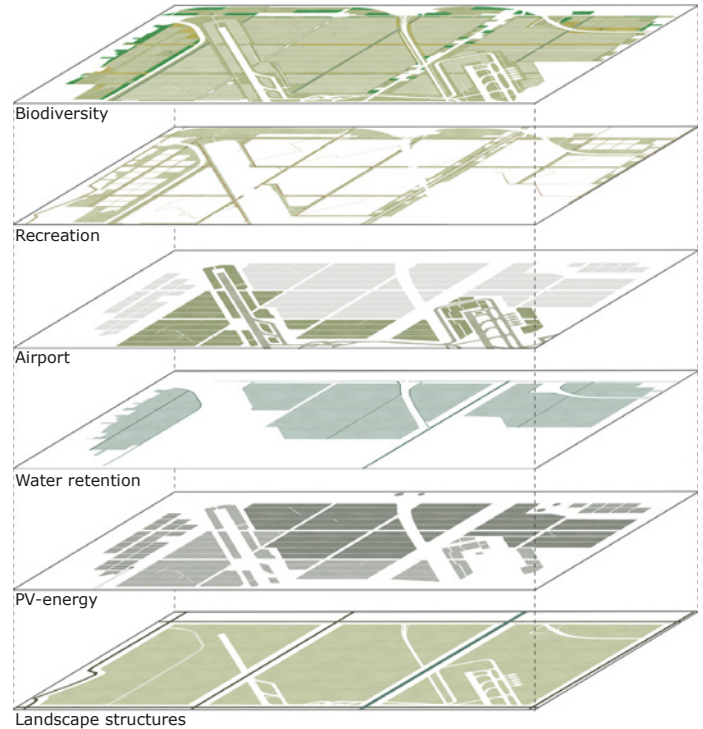
Coos van Ginkel, December 2019 (Master thesis project; Landscape Architecture chair group)

It is estimated that roughly 30,000 hectares of solar fields will be required on land in the Netherlands by 2050. Landscape experts urge that this energy transition should not harm the existing landscape but rather be used to improve spatial quality.

The objective of this project was to explore how an integral design for a 1,500ha multifunctional solar landscape in the Northwest Haarlemmermeer can improve the spatial quality of the region. Design guidelines were formed by analysing the layout and multi-functionality of three existing solar fields in the Netherlands, as well as the spatial identity and its challenges of the Northwest Haarlemmermeer. This analysis led to five additional functions that are relevant for the Haarlemmermeer: Biodiversity, water retention, airport, recreation and the reinforcement of landscape structures. While the extent of these functions varied for each of the models, the electricity generation was fixed to an amount of 3PJ for comparability.

The design guidelines were translated into three spatial models, in which the multiple functions are organized parallel, stacked or mixed, leading to different landscape identities. While the parallel model set the solar panels next to other functions, the stacked model puts them on top of each other and leading to a higher space efficiency. In the mixed model the plots per land use are smaller, leading to a higher variety within the landscape.

Organising the functions next to each other (parallel) is found to have a large positive impact upon spatial quality on the regional scale. However, the combination with partially stacked and mixed functions, e.g. water retention below panels, noise blocking along airstrips (see figure on the right), can be considered to increase the spatial quality even more.



Keywords

Solar landscape, solar park, solar energy, spatial quality, landscape quality, multi-functionality, energy transition, research through design, parallel, stacked, mixed

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