

ENERGY PRODUCTION WITH FLOATING SOLAR FARMS

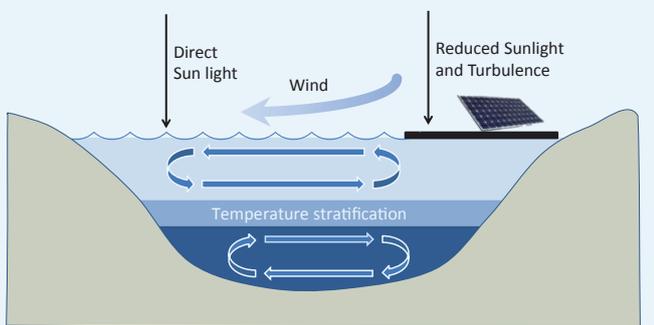
Sustainable energy production is booming business. More and more wind and solar farms are appearing in rural areas. As alternative locations, surface waters such as lakes, rivers and estuaries may be converted into areas for energy production. Indeed, many local, regional and national managers of water-rich regions are receiving applications for the approval of the installation of photo-voltaic systems (PV systems) on water. The national consortium 'Zon op Water' (Floating Solar) supports research on this topic. The challenges are not only technical: legislation also needs to be developed.

also affect the degradation of pathogens in water reservoirs for drinking water and therefore a reduction in water quality or other detrimental side-effects.

A symposium on floating solar energy was held in June 2017, bringing together public and private bodies such as Rijkswaterstaat, water authorities, drinking water companies, STOWA, provincial authorities, Eneco, the Port of Rotterdam Authority, ECN, Deltares, TNO and KNMI. Deltares presented all the different aspects of legislation at different organisational levels such as the national government, provincial authorities, municipalities and water authorities. In this way, bodies planning PV systems on water obtained an overview of all the legislative considerations that may play a role.

A quantitative estimation tool was also developed showing the results of the dynamic 3D modelling of lakes and reservoirs, focusing on how PV systems affect water quality, and particularly light, temperature and oxygen levels. Initiators can use the generic model results to dimension their systems in line with the water surface available. Permit authorities can use the tool to support their decision-making about when and where to grant permits.

The tools assume a generic approach that allows both the authorities and the organisations planning floating solar panel farms to qualitatively scan and quantitatively assess the impact of the planned PV systems on a wide range of surface water bodies. In future projects, the results from the dynamic 3D modelling tool can be used to study other water quality issues such as the effects of heat discharge and algal blooms by adding water quality factors from the D-WAQ process library. 



Potential effects of solar panel farms

Deltares was commissioned to evaluate the effect of placing solar panels on surface waters. Anticipated effects include the limitation of the infiltration of sunlight into the water column, and changes in water temperatures and oxygen levels. Many plants, fish and other animals rely on light penetrating the water column. The introduction of floating solar farms could

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Further reading:

Further reading: <https://www.seac.cc/en/national-consortium-floating-solar-first-symposium/>

A photo-voltaic system near a waste water treatment plant on the island of Texel (The Netherlands)

