

Providing an insight into potential of solar energy in The Netherlands

“Our data is at the basis of sustainable goals in society. Only by working together and combining available high-quality data, can we achieve a solid base of the full picture for solar energy potential.”

Frank Tierolff
Chair Executive Board
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and Mapping Agency,
The Netherlands

The Netherlands Cadastre, Land Registry and Mapping Agency (Kadaster) has created a database of information related to solar potential and solar photovoltaic (PV) installations, which is very useful for policymakers to reach targets related to the Climate Agreement. The data is used gain an insight into the potential for solar energy.

Kadaster has developed a method to assess this potential using two approaches. The first combines a 3D model based on aerial photography with objects from the Key Register Addresses and Buildings.



The second approach uses object detection, which is a deep learning technique used to manage the Key Register Topography. This technique automatically detects changes in the landscape, such as the appearance of solar panels on roofs.

A 3D model, based on high resolution elevation data, was used to calculate solar radiation multiple times per day and several days per year. Deep learning techniques were employed to detect existing solar panels from very high-resolution aerial images for the whole of the Netherlands. The results of both techniques provide data for all individual buildings which is combined with information about function and ownership.

This is a good example of GeoAI, where the best of both worlds are combined to use large geographic datasets and create useful policy and monitoring information for the energy transition.



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Benefits

- Generates insight into roof ownership, for example are they citizens, companies or housing associations, which is important for local governments to develop their communication and implementation strategies.
- Helps policymakers to speed up the energy transition by providing information on where and how much space is available to generate solar energy. At the same time, the data is easy to understand and visualise.
- Provides an insight on not only where the potential lies, but also categorises it by building and owner type, which is much more useful to the policymakers.
- Assists the statistics Netherlands organisation called CBS to improve the quality of their solar panel statistics, which are mostly based on register information.
- Presents a realistic insight on solar potential of building rooftops which is useful in urban planning applications.
- Enables consultancy to develop new products and services based on the solar potential and existing solar panel information.
- Enables electricity network operators to make more accurate investment plans for the electricity network using this information.