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A GIS METHOD FOR ASSESSING ROOF-MOUNTED SOLAR ENERGY POTENTIAL: A CASE STUDY IN JIANGSU, CHINA

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Abstract

The abundant and inexhaustible solar energy has been widely considered a viable solution to the energy-shortage problem as well as the pollution of the environment. Therefore, it is an urgent need to perform detailed and reliable estimation of available solar resource in order to shift from traditional fossil fuels to the rich solar energy. However, such a scientific action has been often taken simply from the theoretical reserves, with few regards for the specific using scenarios. This paper initially presented a GIS based scenario method for assessing available roof-mounted solar energy resource. The data input are from land use map, meteorological data and aerial data, which are all easily reached; and the performance could give the potential of using roof-mounted PV system. Then Jiangsu province, one of the well-developed provinces in China, was chosen as a case study to calibrate it. The results gave estimation that annual electrical production capacity in the province could meet about 40% of the local demand. The huge potential is compared with the theoretical amount directly for the solar radiation. Analysis showed that this method was more reliable according to the actual situation of using solar energy, and could be directly promoted in managing traditional energy risk and making energy development plans.

Key words: available solar energy, GIS, Jiangsu Province, RMPV

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