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## GIS-BASED DETERMINATION OF SOLAR POWER PLANT (SPP) SITES BY THE MCDA METHOD: OVACIK DISTRICT, KARABÜK-TÜRKİYE

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## Abstract

Countries whose industry constantly develops need to find different resources to those that they have been using so far to meet their energy needs. Among renewable energy resources, solar energy is being used highly prevalently due to its high potential, ease of use and environmentally friendly nature. In determining the installation locations of SPP, it is highly important to consider economic, environmental and social factors. In this study, it was focused to indicate areas inside the Karabük-Ovacık district suitable for SPP installation by using GIS and AHP. Although there are energy production plants in the province of Karabük and in some of its districts, there is no energy production facility in the study area of Ovacık. Moreover, it is emphasized Karabük Provincial Environmental Status report that a project for water heating with solar energy was planned for Ovacık for the purpose of reducing wood consumption. Thanks to this study, suitable SPP establishment areas were determined for the first-time in a location in Ovacık where clean energy is needed. According to the obtained results, it was determined that the Ovacık District had low, medium and high sensitivity properties for SPP construction, and the areas suitable for SPP construction providing medium and high sensitivity constituted 63.81% of the study area. While these areas suitable for SPP installation were distributing to almost everywhere in the Ovacık, mostly covering wide areas at the center and in the south and local areas in the northwest and northeast of the study area.

Keywords: analytic hierarchy process (AHP), geographic information systems (GIS), multi-criteria decision analysis method (MCDA), Ovacık, solar power

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