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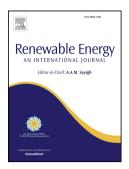
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Large scale PV sites selection by combining GIS and Analytical 1 Hierarchy Process. Case study: Eastern Morocco. 2 Ahmed ALAMI MERROUNI^{1,2,*}, Fakhreddine ELWALI ELALAOUI³, Ahmed MEZRHAB¹, 3 Abdelhamid MEZRHAB³, Abdellatif GHENNIOUI² 4 5 6 ¹Laboratory of mechanics and energy, Faculty of sciences, Mohammed 1st University, Oujda, 7 Morocco. 8 ²Research Institute for Solar Energy and New Energies (IRESEN), Green Energy Park, Bengrir, 9 Morocco. 10 ³Technologies of Geographical Information and Space Management's Team, GIS and Remote Sensing Centre, University Mohammed First, Oujda 60000, Morocco 11 12 13 *Corresponding author: alami.univ.oujda@gmail.com 14 15 16 17 **Abstract:** 18 19 In this paper, a combination of Geographic Information System (GIS) and the Analytical 20 Hierarchy Process (AHP) has been done to assess the capacity of Eastern Morocco to host 21 large-scale Photovoltaic (PV) farms. For this reason, a GIS database with high spatial 22 resolution has been built using data and layers provided from different governmental 23 organizations. Besides, and in order to pursue high accuracy results, the Global Horizontal 24 Irradiation (GHI) solar map used in this study was derived from a high-quality satellite map 25 with a spatial resolution of 1km/pixel and twenty years of time coverage. 26 Results show that from the entire region's surface, the highly suitable sites to host PV farms 27 make up 19%, while the unsuitable sites represent 15%. With those results our field of study 28 can be very competitive -in comparison to neighboring countries like Spain- to attract 29 investors in the field. Which will lead to an economical and sustainable development of the 30 region by creating new jobs and producing green electricity. 31 32 Keywords: GIS, MCDM, Photovoltaic, site suitability analysis, Morocco. 33 34

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