

عنوان مقاله:

Assessment of Wind Power Plant Potentials via MCDM Methods in Marmara Region of Turkey

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خلاصه مقاله:

Today, the use of renewable energy sources is increasing day by day. The essential advantages of wind energy are that it is clean, low cost, and unlimited. In this paper, the wind energy potential of provinces of the Marmara region in Turkey was evaluated by multi-criteria decision-making (MCDM) methods. In the study, TOPSIS and PROMETHEE methods were used for analysis criteria weights were determined by two different approaches. In the first approach, the criteria weights were taken equally. In the second approach, the criteria were weighted using the AHP method. When the methods were applied by taking the criteria weights equally, Balıkesir and Çanakkale were determined as wind priority provinces in potential, while Kocaeli and Sakarya took the last rank. After the criteria weights were determined via AHP when TOPSIS and PROMETHEE methods were applied, Balıkesir ranked first, and Kocaeli ranked last. Spearman's Correlation Coefficient determined the level and direction of the relationship between the rankings obtained from TOPSIS and the PROMETHEE method. When the methods were applied, the value of "0.636" indicated that the relationship between the rankings was "positive" and "moderate". When the criteria were weighted with AHP and the methods were applied, the correlation coefficient was obtained as "0.909". This value indicated a "positive" and "very high" level of relationship. It was determined that the ranking results obtained when the methods were applied after the criterion weights were calculated with AHP were more supportive of each other.

کلمات کلیدی:

AHP, TOPSIS, PROMETHEE, wind energy, Wind power plant

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