

Abstract

Considering the strong potential of wind power in Sistan as one of the renewable energy sources, it is necessary to find the optimal location for deploying wind energy utilization equipment and facilities. In this regard, the present study aims to determine the suitable location for the construction of wind power plants according to the criteria and sub criteria of the climate (Wind speed and wind direction), geographic (elevation and slope), socioeconomic (distance from residential areas, distance from communication routes and proximity to power transmission network) and environmental (distance from protected areas and distance from surface water resources) Using fuzzy hierarchical analysis method and geographic information system in Sistan region, was carried out. For this purpose, the weight of each criterion and options was determined by using fuzzy hierarchical analysis method. Spatial analysis and layer integration using Arc GIS software and land suitability map for wind power plants in four classes (excellent, good, medium and weak) were prepared. Based on the results, 7130 square kilometers of the total area of the studied area (16207 square kilometers), located in Nimroz city, A perfect fit for the construction of a wind power plant. The results of this research show that using Fuzzy hierarchy analysis method using GIS as a backup system can identify areas of higher competence in addition to providing the possibility of sustainable development of the region, the success of the use of modern energy in the region Follow.

Key words: Sistan, wind power plant, fuzzy hierarchy analysis, geographic information system, modern energy



University Of Zabol
Graduate School
Faculty Of Water and Soil
Department Of Water and Soil Engineering
The Thesis Submitted for M,S.C Degree
(In The Field Of Desertification)

**Land Suitability Assessment for the Construction of Wind
Power Plants through Fuzzy Hierarchical Analysis (a Case
Study on the Sistan Plain)**

Supervisor:

Dr. H. Piri Sahragard

Advisor:

Ms. M. Amiri

Ms. A. Mir

By:

S. Tanakian

October 2017