

عنوان مقاله:

Assessment and Evaluation of potential wind energy in Savojbolagh and Taleghan Counties, Alborz province, Iran

محل انتشار:

دهمین کنگره ملی مهندسی ماشین های کشاورزی (بیوسیستم) و مکانیزاسیون ایران (سال: 1395)

تعداد صفحات اصل مقاله: 24

نویسندگان:

Hiva Sadeghi - MSc Student, Department of Biosystems Engineering, University of Tehran

Reza Alimardani - Faculty Member, Department of Biosystems Engineering, University of Tehran

Majid Khanali - Faculty Member, Department of Biosystems Engineering, University of Tehran

خلاصه مقاله:

Feasibility study is the first step on the establishment of wind farms that final aim of them is to evaluate the feasibility of establishing a wind power plant to be technically and economically in a specified site and use of specific turbines. In this paper, wind speed data were analyzed and evaluated by two models (Weibull and Rayleigh distributions) in Savojbolagh and Taleghan counties for years 2010-2015. The highest and lowest average wind speed belonged to March with value 3.25 m/s and December with value 1.55 m/s in Savojbolagh and June with value 2.38 m/s and December with value 1.09 m/s in Taleghan. The yearly standard deviations values were 1.19 m/s and 0.72 m/s in Savojbolagh and Taleghan, respectively. The highest and lowest yearly shape factor (K (dimensionless)) values were 4 and 1.25 in Savojbolagh and these values were 3.71 and 1.81 in Taleghan. The scale factor values ranged from 2.26 to 3.76 m/s and 1.56 to 2.85 m/s in Savojbolagh and Taleghan. The RMSE values of Weibull and Rayleigh distributions were 0.00012 and 0.00039 in Savojbolagh and were 0.020 and 0.016 in Taleghan, also the coefficient of determination (R^2) values of Weibull and Rayleigh were 0.941 and 0.936 in Savojbolagh, 0.968 and 0.964 in Taleghan. The wind power density values ranged from 22 to 66 W/m² in Savojbolagh, 8 to 27 W/m² in Taleghan for 10 to 50 m heights. The highest and lowest wind power density values belonged to December with value 17719 W/m² and July with value 175.15 W/m² in Savojbolagh, March with value 176.22 W/m² and December with value 29.48 W/m² in Taleghan. The maximum and minimum wind energy density values belonged to December and July with values 13183.42 and 130.31 kWh/m² in Savojbolagh, March and December With values 131.11 and 21.93 kWh/m² in Taleghan. The prevailing wind directions were West, South, South-South-East (SSE) and West-South-West (WSW) in Savojbolagh and West, South-West (SW) in Taleghan for years 2010-2015.

کلمات کلیدی:

Rayleigh distribution, Savojbolagh, Taleghan, Weibull distribution, Wind energy, Wind power

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/563605>



