

WIND SPEED ANALYSIS AT DHARWAD

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The kinetic energy in the wind power is expressed by the formula:

$$P = \frac{1}{2} \eta^p A V^3$$

Where P=Power in Watts

η =Efficiency

A=Projected area of the blades (sq m)

V=Wind speed (km/hr)

It is clear that the power is proportional to the area and cube of the wind speed and the importance of wind speed is obvious. Studies on the analysis of wind power were done by Thomas (1981a, 1981b, 1985) in Gujarat and by Sarkar *et al.* (1984) in Bangladesh. This report presents a classification of the days of wind speed into four categories of average wind speed from the wind data at Dharwad.

The daily average wind speed data (1981-1984) of the Agro-meteorological Observatory, College of Agriculture, Dharwad were used to classify the days of wind speed into four categories viz., low (0 to 6.0 kmph), moderate (6.1 to 12.0 kmph), high (12.1 to 18.0 kmph) and very high (18.1 kmph and above). The lowest absolute speed was 1.5 kmph and the highest was 24.7 kmph.

Out of a total of 1461 days during 1981-84, 279 days were with light wind, 698 with moderate wind, 401 with high wind and 83 with very high wind (Table 1). Thus, the moderate wind - speed days had the highest percentage of 47.8, followed by high (27.5), low (19.1) and very high wind - speed days (5.7). The Dharwad region appears to be suitable for installation and running of wind mills on account of moderate and higher wind speeds prevalent for over 80 per cent of the total days.

Table 1. The percentage frequency distribution of wind speeds for the years 1981-1984 at Dharwad

Year	Low	Moderate	High	Very high
1981	17.0	49.8	28.8	4.4
1982	19.7	49.3	26.6	4.4
1983	22.7	45.5	26.9	4.9
1984	16.9	46.4	27.6	4.1
Average	19.1	47.8	27.5	5.7

Analysis of the mean monthly number of days of wind speed in each category (Table 2) revealed that high and very high wind speed prevailed during May to August and moderate winds persisted during the remaining eight months of a year. Conclusively, installation of wind mills to harness wind power in Dharwad region is considered most feasible.

Table 2. The mean monthly number of days of wind speed for the period 1981 - 1984 at Dharwad

Month	Low	Moderate	High	Very high
January	18	13	0	0
February	12	16	1	0
March	4	26	1	0
April	2	22	6	0
May	0	13	16	2
June	0	1	22	7
July	0	2	22	7
August	0	5	21	5
September	3	19	8	0
October	10	19	2	0
November	11	17	2	0
December	9	21	1	0

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