
Conference Abstract**Sound level measurement and the setback distance of the wind turbine**

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Abstract

Harnessing energy from the wind is the sustainable alternative method to produce electricity. However, while having positive environmental impacts such as reduced carbon emission, environmental pollution, and water consumption; they are having considerable noise pollution and negative impact on wildlife [1]. This study examines the sound level production at the upwind and downwind of the wind turbine and estimates setback distance which is the minimum distance between the receptor and closest wind turbine. This study will help to find the minimum distance to install the wind turbine in Sri Lanka while planning and review process of wind energy projects to protect human health and avoid unnecessary confrontation by the public. In this study, the sound level measurement was done repeatedly for ten days at the upwind and downwind of three wind turbines located at Palai area in Sri Lanka. It is found that the sound level reduced drastically from 85 dB to 60 dB at the setback distance of 400 m. The result shows that the sound level produced at the upwind is 3 dB greater than the sound level at the downwind. The noise could be louder in the proximity of the turbine and cause a noise nuisance to humans. Though the measured turbine is said to create a noise of 100 dB, the sound level was estimated as 60 dB beyond 400 m of the turbine, the psychological disturbances associated with such consistent noise can be significant within this limit.

Keywords: Wind turbine, Noise pollution**Reference**

[1] R. Saidur, et al., *Renew. Sust. Energ. Rev.*, (2011), **15** (5), 2423-2430