

Examining noise produced by wind power plants

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The South Karelian Institute of Lappeenranta University of Technology (LUT) is examining the disruptiveness of the noise generated by wind power plants in Finland. The study combines the measurement of the noise produced by wind power with the noise experienced by humans in relation to sound pressure levels and the time and frequency behaviour of sound.

Wind power plants generate [noise](#) and, depending on the volume and characteristics of the noise, people exposed to it may suffer from physical and psychic symptoms. Despite this, not much is known about the link between the noise and the way in which it is experienced. Thus, the aim of the study conducted at LUT is to combine empirical knowledge and physical measurement data.

The study does not only measure decibel levels but also try to analyse what kind of noise the power plants generate. The way in which the noise is generated and it travels depends on the prevailing weather, wind conditions and the terrain.

'Simultaneously with the noise, we also measure wind, which means that we can combine the wind data with the volumes and characteristics of the perceived noise. In the future, it might be possible to use this data in the planning of [wind power plants](#),' explains Sari Janhunen, researcher at the South Karelian Institute.

Sites in Eastern and Western Finland examined

The study is being carried out in two municipalities which both have wind power parks. In both locations, the nearest settlements are located between 500 and 800 metres from the wind power parks.

The study started with a questionnaire to 1,600 persons. The questionnaire asked the residents about their noise experiences and factors concerning health and well-being. The study will also measure and record sound pressure levels of the wind power plants. Residents and people living close to the wind power parks will also keep a noise observation log. At the end of the study, the residents will also be interviewed.

'With the responses, we will be able to analyse how people perceive wind power noise in their own areas of residence compared with other sources of [environmental noise](#) in the vicinity.'

Data will be useful in the design of wind power plants

According to a new decree proposed, In Finland the daytime level of outdoor noise produced by wind [power plants](#) should not exceed 45 decibels. At night the level should not be more than 40 decibels. The noise volume is directly connected with the energy generated by the power plant. The information about the noise experiences collected in the study can be applied to the development of new technology.

The aim is to produce information that could be used in the development of [wind power](#) plants so that while the production could be maximised, the environmental impacts could be minimised,' Janhunen concludes.

Provided by Lappeenranta University of Technology

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