

Researchers study wind farms and sleep disruption

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It is the first time that data has been used at a national scale to judge how the beauty of the environment impacts onshore windfarm development. Credit: CC0 Public Domain

As wind power generation becomes more important, experts in Australia

are examining whether wind farm turbine background noise in the environmental can affect sleep and wellbeing of nearby residents.

In a review of existing literature on wind [turbine noise](#) effects on [sleep](#), the Flinders sleep researchers have weighed up the results of five prior studies. While previous studies showed no systemic effects on common sleep markers such as [time](#) taken to fall asleep and total sleep time—they did reveal some more subtle effect on sleep such as shifts in sleep stages and less time in deep sleep. "Comparing wind turbine noise to quiet background noise conditions showed no systematic effects on the most widely used objective markers of sleep, including time taken to fall asleep, total sleep time, time spent awake during the night and time spent asleep relative to overall time in bed," lead author Tessa Liebich says of a new review paper published in the international *Journal of Sleep Research*.

"However, some more subtle effects on sleep in some objective studies were established including shifts in sleep stages, less time spent in [deep sleep](#) and more time spent in light sleep.

Australian NHMRC funding, the Adelaide Institute for Sleep Health study at Flinders is studying sleep patterns in more than 70 volunteers in carefully controlled in-laboratory experimental study to investigate potential wind turbine noise impacts on sleep and daytime outcomes. Their final results are expected to be available around mid-2021

Senior author Dr. Gorica Micic says limited knowledge and data in this area emphasizes a need for further well-controlled experimental studies to provide more conclusive evidence regarding wind turbine noise effects on sleep.

"Environmental noises, such as traffic noise, are well known to impact sleep," she says. "Given [wind power generation](#) is connected with low

frequency noise that can travel long distances and more readily into buildings, it is important to better understand the potential impacts of wind turbine noise on sleep."

This study aimed to comprehensively review published evidence regarding the impact of wind turbine noise on the most widely accepted objective and subjective measures of sleep time and quality.

Subjective sleep outcomes were not sufficiently uniform for combining data or comparisons between studies, researchers explain.

"Nevertheless, the available self-report data appeared to support that insomnia severity, sleep quality and daytime sleepiness can be impacted by [wind](#) turbine noise exposure in comparison to quiet background noise.

"However, firm conclusions were difficult to draw from the available studies given inconsistent study methods, variable outcome measures and limited sample sizes," researchers conclude.

More information: Tessa Liebich et al, A systematic review and meta-analysis of wind turbine noise effects on sleep using validated objective and subjective sleep assessments, *Journal of Sleep Research* (2020). [DOI: 10.1111/jsr.13228](https://doi.org/10.1111/jsr.13228)

Provided by Flinders University

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