

Collecting and mapping carbon benefits of wind power, silviculture and peatlands

December 7 2021



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While renewable energy is needed, wind turbines cannot, for example, be built too close to residential areas due to noise and landscape factors. Then again, erecting turbines in uninhabited areas makes nature more fragmented and affects animals. The use of forests and peatlands has an

impact on carbon sinks. The LandUseZero project, coordinated by the Natural Resources Institute Finland (Luke), aims to build an operating model that makes land use sensible and acceptable for people and the environment.

The project will start by building a harmonized method to calculate the [climate](#) impact of [wind power](#), silviculture and peatlands based on [carbon dioxide](#) and other [greenhouse gas emissions](#). In this way, the net climate impact of each type of land use can be compared with each other.

"This is particularly challenging, as the impact of wind power is normally calculated in hours, that of forests in years, and that of peatlands in tens or even hundreds of years. What is more, the emissions reduction impact of wind power changes over time when the volume of fossil energy replaced decreases," says Anne Tolvanen, program leader and professor at Luke.

The operating model will be developed in cooperation between scientists, land use planners, and decision makers. The municipality of Ii will act as the pilot site.

"Ii was a natural choice, as it is merited in climate activities both nationally and globally, and we have already worked together, especially regarding the use and restoration of peatlands," Tolvanen says. Other pilot sites are located in the regions of Southwest Finland, Satakunta, and North Karelia.

"For Ii, the project serves to develop comprehensive and carbon neutral land use that addresses biodiversity, can be calculated, and supports the municipality's strategy and [forest](#) plan. It is better to sequester carbon and nutrients in forests and soil than to release them into the air and watercourses," says Lauri Rantala, coordinator of Ii River management

at Micropolis in Ii.

What are people's attitudes towards wind power?

A nationwide survey will start at the beginning of 2022. Its premise is that, while there is a general consensus in Finland about the necessity of climate change mitigation, the local impact of different measures may cause disagreement among people. The survey aims to identify people's attitudes towards wind power, and a climate-smart and biodiversity-fostering use of forests and peatlands.

"Our goal is to bring all of the aforementioned factors together to place wind power, the use of forests and the restoration of peatlands optimally on a map, while producing benefits for the climate and biodiversity, and making the outcome acceptable by people," Tolvanen says.

In addition, the financial review will examine the societal costs of climate measures, the willingness of people to participate, and forest owners' level of interest in climate measures carried out on their land.

The LandUseZero project will be conducted in several organizations. VTT Technical Research Centre of Finland and Recognis will evaluate the emissions reduction potential of [wind](#) power, and the Geological Survey of Finland (GTK) will examine the impact of [peatland](#) restoration on the climate and biodiversity. The University of Eastern Finland will be responsible for spatial optimisation. Luke will prepare calculations of the impact of forest use and the overall financial impact of different measures, and conduct the survey.

Provided by Natural Resources Institute Finland (Luke)

Citation: Collecting and mapping carbon benefits of wind power, silviculture and peatlands (2021, December 7) retrieved 21 June 2024 from <https://phys.org/news/2021-12-carbon-benefits-power-silviculture-peatlands.html>

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