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Assessment of the visual landscape impact and dominance of wind tubines in Austria using weighted viewshed maps

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Due to efficiency reasons and broadly availability of wind, wind energy is in focus of strategies regarding the expansion of renewable energy and energy transition policies. Nevertheless, the dimensions of the wind turbines and rotating dynamics have a significant impact on the landscape scenery and recreation as well as tourism activities.
This often leads to local opposition against wind energy projects and is a major criterion regarding the acceptance of wind energy. In the project TransWind, the social acceptance of wind energy is surveyed on the basis of different development scenarios for Austria.
Therefore, a GIS-based viewshed indicator was developed to assess the visual impact of different development scenarios as well as the current situation using weighted – regarding distance, amount and masking – viewshed analysis.
This weighted viewshed maps for Austria allows a comprehensive evaluation of existing and potential wind energy sites regarding dominance and visual impact and can contribute to the spatial development process of wind energy site. Different regions can be compared and repowering strategies can be evaluated. Due to the large project area, data resolutions, generalized assumptions (e.g. tree heights) and missing data (e.g. solitary trees, small hedges) at local level further analysis are necessary but it supports the assessment of large-scale development scenarios can be identified.