Small wind turbines with timber blades for developing countries: Materials choice, development, installation and experiences - DTU Orbit (29/03/2019)

The low cost wind turbines with timber blades represent a good solution for the decentralized energy production in off-grid regions of developing countries. This paper summarizes the results of investigations on the mechanical testing and choice of timber for wind blades, testing of different coatings and blades as well as installation and practical experience with wooden wind turbines in Nepal. The recommendations on the optimal choice of Nepali timber and coatings for low cost wind blades are summarized. The timber wood blades were designed and tested. On the basis of the recommendations, the wind turbines with timber (lakuri) wind blades were produced, and tested. The turbines with timber wind blades were installed on several locations around Nepal, and their usability was studied. It was demonstrated that the appropriate choice of timber and coatings ensures necessary reliability of the blades and turbines. It was further demonstrated that the low cost wind turbines with timber blades represent a promising and viable option for the decentralized energy production in developing countries, which also opens new areas for businesses.

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