



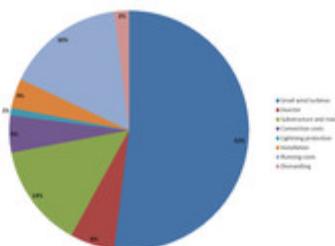
Wind energy is one of the cornerstones of the future power provision and could become increasingly important as a school topic.
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When wind energy goes to school

Pupils have now gone back to school in all of Germany's federal states, and the curricula for the new school year have been set. Experts led by the Independent Institute for Environmental Issues (UfU) have investigated how renewable energies can be better integrated into lessons as a subject area. For this purpose they have developed teaching materials and analysed the benefits and potential of wind turbines and photovoltaic systems at educational facilities.



A typical small wind turbine mounted on a roof
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A small wind turbine costs between 2,000 and 10,000 euros (according to BWE). This example shows how these and other costs can be distributed on a pro rata basis.
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The aim of the "RE School" project is to acquaint young people with the challenges and opportunities presented by Germany's Energiewende – its energy transition – and the associated expansion of renewable energies. In order to illustrate the topic, several schools have installed small wind turbines on their premises, mostly on the building rooftops. The Reiner Lemoine Institute from Berlin interviewed nine representatives from these schools and evaluated their experiences. With small wind turbines in residential areas it is important to pay attention to sound emissions. The sound is mainly produced on the wind turbines as the air stream separates from the rotor blades. In most cases the schools have opted for systems with a vertical rotor axis. These are very resistant to sudden changes in the wind direction that frequently occur in densely populated areas, and have low sound emissions. However, they are less efficient than horizontal axis wind turbines. Since the schools are often publicly funded, the installation of wind turbines is subject to special licensing regulations.

Wind energy as a teaching module

The experts have developed teaching modules for schools with and without small wind turbines. The modules, for instance for the Physics, Environmental Technology or Social Studies subject areas, are aimed at familiarising pupils with the topic of wind power in a practical and educationally engaging manner. For example, the pupils can carry out wind measurements during lessons and gain an understanding of fluctuating feed-ins. Using other measurements, they learn how to assess the performance of small wind turbines. In addition, they also learn about the technical design, energy flow and

losses. To ensure that school pupils continue to engage with the theme of wind energy on a sustained basis, it is intended that schools with their own wind turbines should provide displays and posters, and also publish the yield data, for example on the respective schools' websites.

Evaluation: Photovoltaics in school lessons

Similar projects to the wind energy scheme have already been conducted a few years ago on the subject of photovoltaics. 737 schools were provided with educational material and display screens for their photovoltaic systems as part of the "Making Renewable Energies Visible" project. The experts then evaluated the project objectives. 40 per cent of the school representatives surveyed said that the solar power systems are being increasingly incorporated into school lessons. At 53 per cent of the schools surveyed the interviewees rated the quality of the educational use as good or very good. It was shown that solar power systems are most frequently dealt with as a topic in Physics, followed by General Science (primary school) and Mathematics. Teachers are also keen to make use of the systems on project days or in after school clubs.

Manual with recommendations published

The experts have used the experiences gained from the "Making Renewable Energies Visible" project to support and advise schools that would like to more actively integrate the topic of wind energy within lessons. In addition, the Independent Institute for Environmental Issues has published a "Manual with recommendations for using and integrating wind energy and other renewable energies in schools and educational facilities". This and other extensive material from the "RE School" project can be found [here](#) (in German).

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