DPA
Wind turbines can not be arbitrarily tight build, otherwise the wind take away each other
They provide the largest share of renewable energy: wind farms. But the technology comes quickly to its limits than previously hoped - standing wind turbines close together, they slow are mutually exclusive.

Are getting bigger, the wind farms, which are intended to cover Germany's electricity needs in the future. But with their size decreases its efficiency, researchers report. The potential of wind energy could be smaller than previously expected.

Researchers at the Jena Max-Planck Institute for Biogeochemistry have studied the performance of large wind farms. According to their simulation, this could provide a maximum output of one watt per square meter. Published their results, the researchers in the "Proceedings of the National Academy of Sciences of the United States of America". **Previously researchers had expected a potential of seven watts per square meter.** However, the information based mainly on observed wind speeds, explains researcher Axel Kleidon. "But it is This works fine for a single turbine. The larger the wind farm is, the more important to consider other effects."

Stand-alone wind turbines can produce more power, because the performance of a single turbine is determined by the wind speed. If many plants are close together, no wind comes more in the middle of a field. Are the plants to close, each turbine provides less power. "The wind turbines the wind take each other off," says Kleidon.

According to the study wind farms can convert a maximum of 26 percent of wind energy into electrical energy. Then they have, however, reduced the wind speed by 42 percent. "The wind must ensure top for replenishment," says Kleidon, "but this vertical exchange is relatively low."

Scientists have simulated the effect based on a 100,000 square kilometer region in the wind-rich US state of Kansas. According to Kleidon the findings are transferable to other regions - and probably also on wind farms on the high seas. Currently being worked on a similar study of such offshore wind farms. "We see very similar effects."
Produced Countryside wind energy is the cheapest renewable energy, its current price is only slightly higher than that of coal and gas. 2014 wind energy covered about nine percent of German electricity requirements.

Kleidon stresses that this effect auftrete only in wind power, but not in alternative renewable energies such as solar energy. The tightly packed photovoltaic systems have no influence on each other. Their use should be comprehensively possible.