

## GREEN TECH / WIND

## NEWS

## A Less Mighty Wind

Three reasons wind power could wane

By PETER FAIRLEY / JANUARY 2011



Photo: Doug Kanter/Bloomberg/Getty Images

**CHINA'S LOSS:** China is installing wind capacity fast, but the winds over the country seem to be slowing.

Sustainable Energy. He projects a 4 to 12 percent decrease in wind speeds in China for the last three decades of the 21st century (compared to the corresponding decades of the 20th). Since the energy in wind increases with the cube of the wind speed, Ren estimates that the slower winds would trim power from Chinese turbines by at least 14 percent.

There is now little doubt that China's surface winds are already slowing. Independent analyses published in 2009 and 2010 found that recent readings from weather station anemometers were lower than those taken in the 1960s and 1950s. In both cases, the majority of Chinese stations reported slowing near-surface winds, and the largest declines occurred in the windiest regions—in the north, on the Tibetan Plateau, and along China's coastline.

Comparable stilling is occurring across the Northern Hemisphere, according to an October report by a team centered at France's Laboratoire des Sciences du Climat et l'Environnement (LSCE). Their report in the journal Nature Geosciences found that winds slowed by 5 to 15 percent over almost all continental areas in the northern midlatitudes between 1979 and 2008.

Experts in the wind-power industry pooh-poo such warnings. Peter Thomas, a senior engineer with the wind energy consultancy GL Garrad Hassan, based in Bristol, England, concedes that the projections are of a scale that could "impact the economics of the wind-power industry." But he questions their veracity.

Thomas argues that data sets from anemometers are not robust enough to support such interdecadal comparisons, because measurement practices were poorly standardized as recently as the 1980s and may be corrupted by construction around weather stations, many of which are at airports or near cities. "It is important to separate these potential influences from the measured data before conclusions are drawn," says Thomas.

Wind turbines wring energy out of a free-flowing fuel supply that may be losing some of its punch. Surface winds appear to be weakening across the Northern Hemisphere, including in the United States, Western Europe, and China—the world's top three markets for wind power. And climate change threatens to weaken them further during this century as faster warming over northern latitudes trims the temperature gradients that energize airflows.

China could be the hardest hit, according to modeling by University of Texas–Austin research scientist Diandong Ren in the November issue of the Journal of Renewable and

That data-quality critique is wearing thin, however, according to Jean-Noël Thépaut, who runs the data division for the European Center for Medium-Range Weather Forecasts in Reading, England, and is a coauthor of the French report. Thépaut says the team applied a stringent screen to remove questionable anemometer data, narrowing its analysis to reports from just 822 out of roughly 10 000 possible anemometers worldwide. "My colleagues from LSCE have been very careful with the quality control," says Thépaut.

Still, even Thépaut sees unanswered questions, starting with why winds are slowing and whether the stilling will continue. The French study identified climate change as the most likely cause of stilling over central Asia, which means Ren's modeling could well foretell a less productive future for wind power in China.