

## WIND POWER

**Performance factors***Util. Policy* **62**, 100985 (2020)

Accurate performance characterization of energy generation technologies is important for policy makers and developers. It can enable better estimates of electricity costs and planning of infrastructure. This can be particularly important for renewable energy schemes that rely on support policies, such as wind farms. In the UK, offshore wind has become a renewable-power success story, with the country now hosting the world's largest operational capacity. Deployment of offshore turbines has been carried out in two phases under the Renewables Obligation scheme. Under this scheme, which started in 2002, electricity suppliers must source defined percentages of their electricity from renewable sources. Wind farms must also provide monthly operational data to the electricity regulator. Now, John Aldersey-Williams and colleagues at Aberdeen Business School use this publically available data to analyse UK offshore wind performance through the farm capacity factor.

The capacity factor of a wind farm is the ratio of the actual delivered electrical power to the nameplate capacity of the farm. Several factors can influence this performance indicator, including distance from shore, wind speed, wake effects and turbine efficiency. The researchers calculate the capacity factors for all wind farms from rounds 1 and 2 of the Renewables Obligation scheme. Consistent with earlier analyses, they find that the average capacity factor increased from round 1 to round 2 farms, from 34.9 to 41.0%. Through multiple linear regressions, they also find that the capacity factor correlates with farm commissioning date and water depth. This suggests that technological advances over time and greater wind availability further offshore are important for farm performance. Intra-year variability in capacity factors is found to be strongly seasonal; it is also greater than inter-year variability. The analysis could lead to better forecasts of power availability and cost projections.

---

Nicky Dean

Published online: 22 January 2020

<https://doi.org/10.1038/s41560-019-0545-5>