

FRAUNHOFER INSTITUTE FOR WIND ENERGY AND ENERGY SYSTEM TECHNOLOGY IWES

PRESS RELEASE

PRESS RELEASE

29 May 2017 || Page 1 | 4

Fraunhofer IWES presents Germany Wind Energy Report 2016

Wind energy now on par with nuclear energy

»Wind energy has become an integral part of the energy supply. A new milestone for the transformation of energy supply systems was reached last year with renewable energy now accounting for 29 percent of the gross energy consumption. That is more than the conventional nuclear and brown coal power plants. With 80 TWh, wind energy's contribution to the gross German energy generation is now 12.4 percent whilst nuclear energy lies at 13 percent. Energy production with offshore wind energy plants is gathering speed« says Prof Dr Kurt Rohrig, editor of the new »Germany Wind Energy Report 2016« published by the Fraunhofer Institute for Wind Energy and Energy Systems Technology in Kassel, as he outlines the significance of wind energy.

Onshore increase remains at a high level

4394 MW of newly installed capacity began operation in 2016, just falling short of the previous record of 4665 MW from 2014. Today, around 28,000 onshore wind energy plants across Germany contribute almost 46,000 MW of nominal power to the energy supply. The largest absolute increase in capacity took place in Lower Saxony with approx. 700 MW.

The average onshore plant commissioned in 2016 rotates at a hub height of 128 m with a rotor diameter of 109 m. The number of wind turbines in newly commissioned wind farms is decreasing due to the development of even larger wind power plants.

Offshore capacity 10x higher than in 2013

156 offshore wind energy plants began operation in 2016 with 818 MW of nominal power. A total of around 13,900 MW is generated by offshore wind energy plants worldwide. The majority – around 12,400 MW – in European waters, e.g. UK 4940 MW, Germany 4089 MW, Denmark 1271 MW, The Netherlands 1119 MW, Belgium 712 MW.

Offshore wind energy plants are being built even further offshore and deeper into the water: on average 53 km offshore and a depth of 27 m underwater. The offshore wind energy plants completed in 2016 in German waters have an average nominal capacity of 4.3 MW. »Plants with 5 to 6 MW are currently state-of-the-art technology, and plants with nominal capacity of up to 8 MW are currently being tested. A 10 MW offshore wind energy plant is no longer utopian« says Rohrig.

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Wind power met 12.4% of the German energy demand in 2016

Rohrig summarises the energy yield: »With a total supply of 188 TWh, renewable energy covered 29 percent of the German energy demand and thus, for the first time ever, provided more energy than any other source. For the first time ever, with 12.4 percent, wind energy accounts for just as much as natural gas (13 percent) or nuclear power (13 percent). Wind energy is therefore an essential pillar of the German energy transition«.

»Special reports« on current industry issues

The »Germany Wind Energy Report 2016« (only available in German) documents and illustrates the role of wind energy in the mix of renewable energies, the development of both onshore and offshore wind energy, and the challenges of grid integration using 100 illustrations and numerous tables. With this annual report, the Kassel-based Fraunhofer Institute has been providing numbers and statistics on the development of wind energy use since 1991. In five »special reports«, guest authors report on the following current research topics:

1. In-flight measuring systems
2. Floating substructures for offshore wind energy plants
3. Comparison of logistics concepts for commissioning offshore wind farms
4. Future wind energy cost development
5. Contribution to inter-sector collaboration for achieving climate targets

The report 2016 is only available in German and can be obtained from the publishers, Fraunhofer Verlag (<https://www.verlag.fraunhofer.de/bookshop/buch/Windenergie-Report-Deutschland-2016/247838>) as a bound A4 magazine (116 pages, over 100 illustrations, ISBN 978-3-8396-1195-1) or it can be found online at www.windmonitor.de under "Publications".

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PRESS RELEASE

29 May 2017 || Page 2 | 4

FRAUNHOFER INSTITUTE FOR WIND ENERGY AND ENERGY SYSTEM TECHNOLOGY IWES

PRESS RELEASE

29 May 2017 || Page 3 | 4

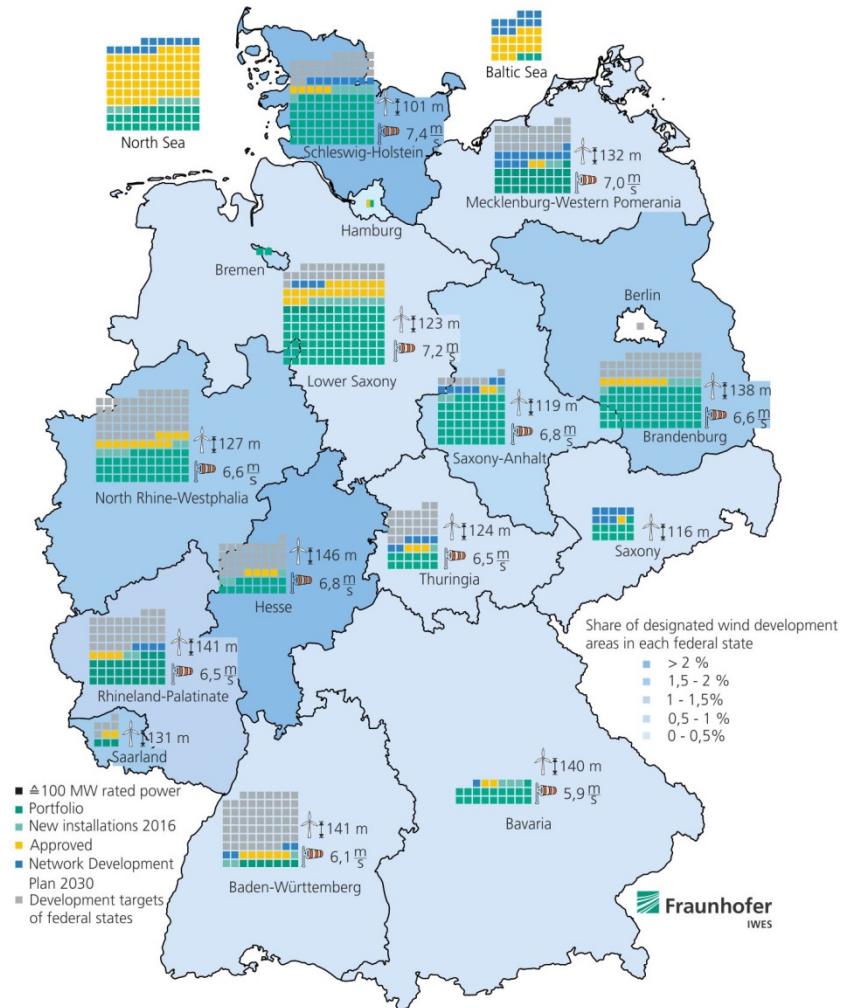
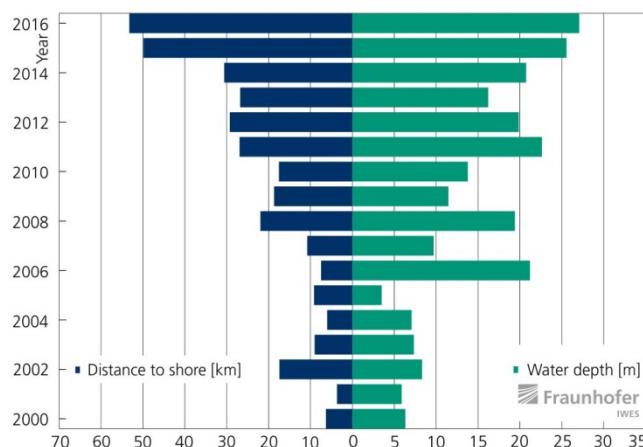


Figure 1: Wind energy use in Germany: Portfolio, addition in 2016, approved wind capacity with planned commission in 2017 or 2018 as well as extension scenario B and reported expectations for scenario design in 2030 grid development plan in the individual federal states, including for the North and Baltic Sea. In addition, average hub heights and average wind speeds are shown at hub heights. Wind speeds are shown from a minimum of 10 datasets for each state.

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PRESS RELEASE

29 May 2017 || Page 4 | 4

Figure 2: Offshore wind energy use worldwide: Development of the average distance from coast and water depth for new offshore wind energy plants installed between 2000 and 2016.
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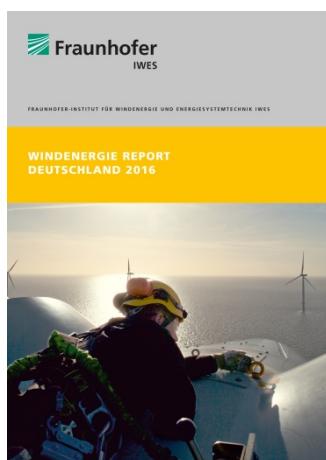


Figure 3: Cover photo for Germany Wind Energy Report 2016. Only available in German.
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