

Year
2014

DEUTSCHE
WINDGUARD

STATUS OF OFFSHORE WIND ENERGY DEVELOPMENT IN GERMANY

On behalf of:



STATUS OF OFFSHORE WIND ENERGY DEVELOPMENT

The status of offshore wind energy development in Germany as of 31st December 2014 is described by statistics and graphs within this factsheet. Table 1 shows the data for additions during 2014, as well as the cumulative portfolio data for offshore wind energy in Germany.

Three degrees of completion are distinguished: offshore wind turbines (OWT) after completion of the first feeding-in to the grid, completely installed OWT before feed-in and completely installed foundations.

Table 1: Offshore Wind Energy Development as of 31.12.2014

Status of Offshore Wind Energy Development		Capacity [MW]	Number [OWT]
Additions 2014	OWT (feeding-in)	528.9	142
	Installed OWT (no feed-in)	1 218.1	268
	Foundations w/o OWT		211
Cumulative (31.12.2014)	OWT (feeding-in)	1 049.2	258
	Installed OWT (no feed-in)	1 303.1	285
	Foundations w/o OWT		220

Turbines feeding-in to the grid

In the year of 2014, 142 OWT with a cumulative capacity of 528.9 MW, were connected and started feeding-in to the grid. Of these, 86 OWT with a cumulative capacity of 309.6 MW already had been installed the previous year (2013). The other 56 OWT with a cumulative capacity of 219.3 MW, reached operational phase in their year of installation (2014). By 31st December 2014, a total of 258 OWT with a cumulative capacity of 1 049.2 MW, were feeding-in to the grid within German waters.

The progress of offshore wind energy development since 2008, as demonstrated by the number of feeding-in OWT, is illustrated in Figure 1. In 2014, the additional capacity feeding-in to the grid was more than double that of the previous year.

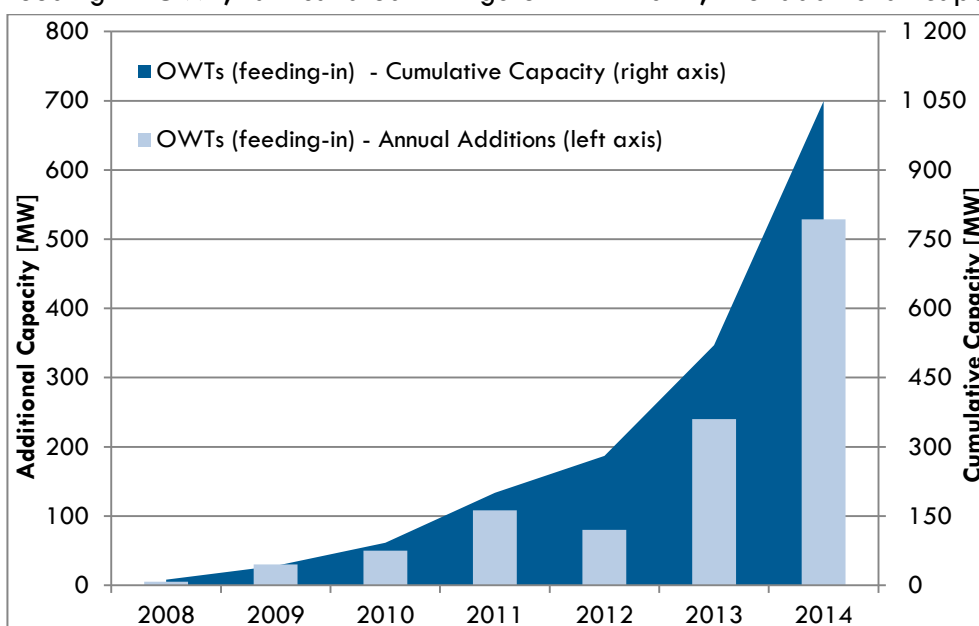


Figure 1: Development of Offshore Wind Energy in Germany (OWT feeding-in), Status: 31st December 2014

Furthermore, the cumulative capacity feeding-in to the grid during 2014 surpassed the one gigawatt threshold.

Installed Turbines and Foundations

In addition to the turbines which now are grid-connected, further OWT and foundations were installed during 2014. A total of 268 OWT with a cumulative capacity of 1 218.1 MW (not yet feeding-in) were installed in 2014. Altogether, 285 OWT with a capacity of 1 303.1 MW, were completed and awaiting grid-connection to the grid by 31st December 2014. Furthermore, another 923.2 MW will be erected – being part of offshore wind farms (OWF) which are currently under construction.

During 2014 261 foundations have been installed, 211 of these are still awaiting the erection of OWT. The cumulative number of completed foundations ready for OWT totalled 220 by 31st December 2014.

Development Target

The current political target for offshore wind energy, set by the federal government of Germany, aims for a total installed capacity of 6 500 MW by 2020. The progress towards meeting this target, as of 31st December 2014, is shown in Figure 2 below. The figure depicts OWT currently feeding-in, as well as those OWT in a solid installation process (meaning that at least the construction of the OWF's foundations had commenced). It was found that around 3 275.5 MW of offshore capacity is either under construction, installed or already connected to the grid. This equates to 50.4 % of the 6 500 MW required by 2020. Figure 2 provides an overview of these statistics and also shows how much additional capacity is still necessary to achieve the 2020 development target set by the German government.

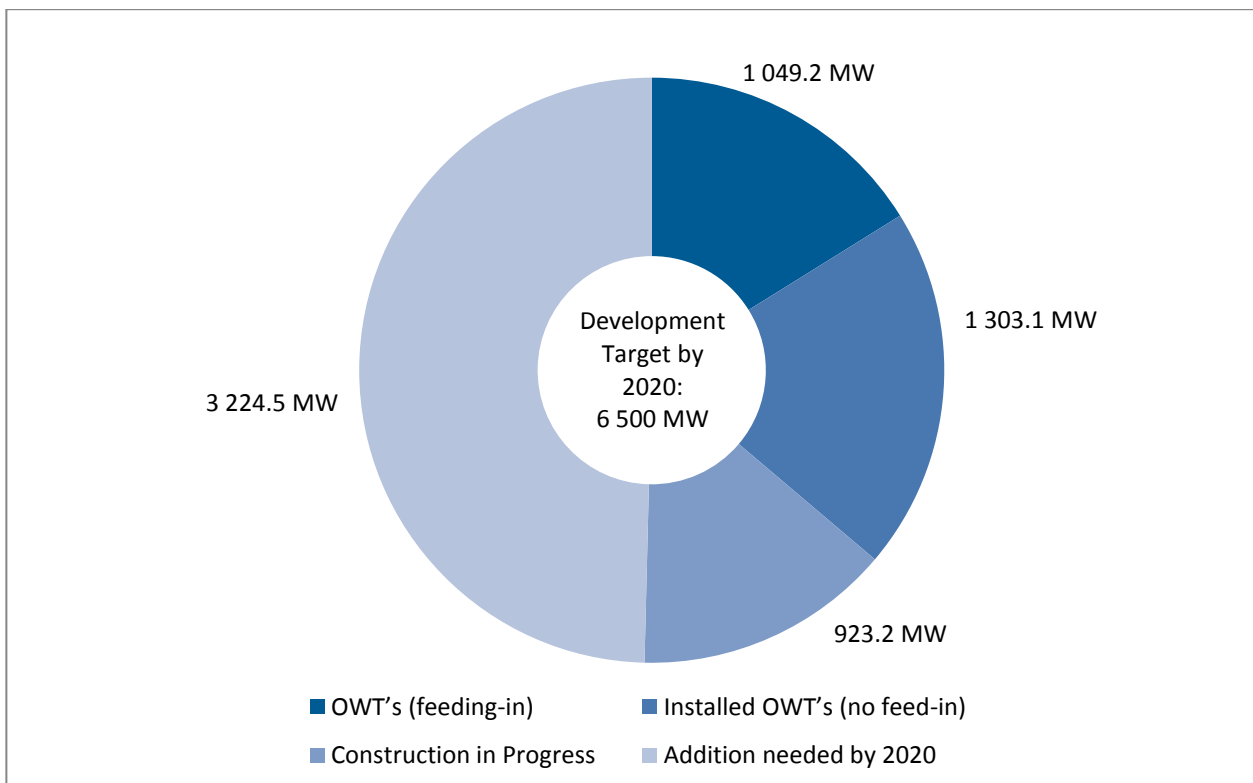


Figure 2 Offshore Capacity in solid Implementation (meaning at least being under construction) and its Part in the Development Target of the German Federal Government of 6 500 MW by 2020

TURBINE LOCATION

The distribution of grid-connected and installed OWT, as well as completed OWT foundations between the North and Baltic Seas in 2014 is shown in Table 2. Additionally, the cumulative status of the development for both offshore regions is displayed. During 2014, OWT as well as foundations were installed in both sea basins. All turbines which began feeding-in for the first time during 2014, are located in the North Sea. Overall, by 31st December 2014, a total of 998.4 MW had been feeding-in to the grid in the North Sea, compared to 50.8 MW in the Baltic Sea. Moreover, there were 251 completely installed OWT, not yet feeding-in and 186 completed foundations in the North Sea. There were some 34 OWT erected and another 34 foundations ready for OWT installation in the Baltic Sea.

Table 2: Distribution across the North and Baltic Seas, Status: 31.12.2014

Regional Distribution		North Sea		Baltic Sea	
		Capacity [MW]	Number [OWT]	Capacity [MW]	Number [OWT]
Additions 2014	OWT (feeding-in)	528.9	142	0.0	0
	Installed OWT (no feed-in)	1 095.7	234	122.4	34
	Foundations w/o OWT		186		25
Cumulative (31.12.2014)	OWT (feeding-in)	998.4	236	50.8	22
	Installed OWT (no feed-in)	1 180.7	251	122.4	34
	Foundations w/o OWT		186		34

TURBINE CONFIGURATION

Table 3 shows that the average nameplate capacity of OWT, which first began feeding-in during 2014, was 3.7 MW. The average rotor diameter was 119.8 m and the average hub height was 89.2 m. Table 3 also shows the characteristics of the cumulative feeding-in OWT portfolio which has an average nameplate capacity of 4.1 MW, an average rotor diameter of 118.4 m and an average hub height of 88.8 m.

Table 3: Average Turbine Configuration of OWT with Grid Connection, Status: 31.12.2014

Average Turbine Configuration of OWT (feeding-in)	Addition 2014	Cumulative
Average Nameplate Capacity	3 725 kW	4 067 kW
Average Rotor Diameter	119.8 m	118.4 m
Average Hub Height	89.2 m	88.8 m

OFFSHORE WIND FARMS – ACTIVITIES IN 2014

During 2014, two OWF in the North Sea (Riffgat und Meerwind Süd/Ost) started feeding-in of all their OWT and became fully operational. Another three OWF (DanTysk, Global Tech I and Nordsee Ost) are in the commissioning phase and managed to achieve the first grid-connection of some of their OWT by the 31st December 2014. The OWF Borkum West II in the North Sea has been completely installed, however, commissioning had not started before the end of 2014. Three OWF in the North Sea (Butendiek, Borkum Riffgrund 1 und Amrumbank West) as well as the OWF Baltic II in the Baltic Sea were still under construction.

All OWFs that started feeding-in during 2014, were installed or were under construction in the North Sea are depicted in Figure 3. The OWF under construction in the Baltic Sea is shown in Figure 4.

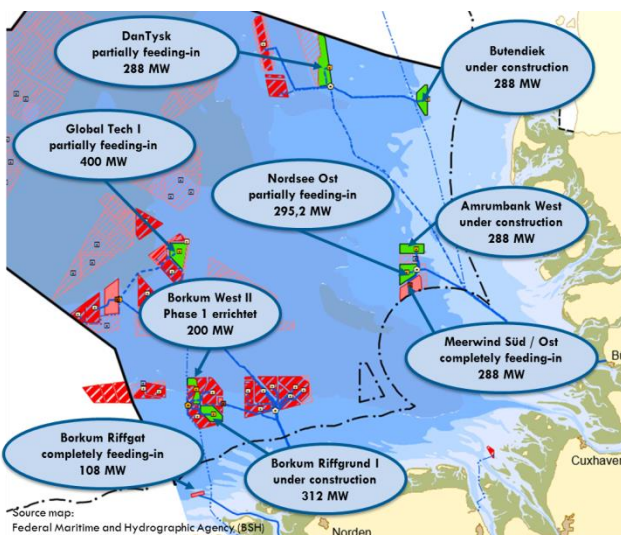


Figure 3: Offshore Wind Farms under Construction, Installed and newly feeding-in in the North Sea in 2014

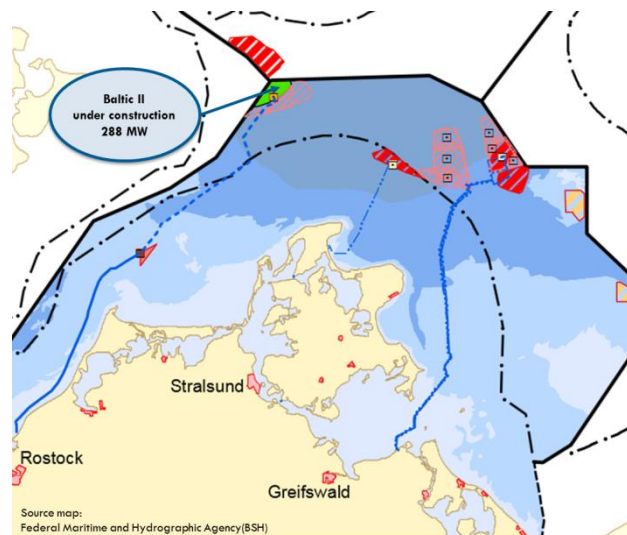


Figure 4: Offshore Wind Farm under Construction in the Baltic Sea in 2014

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