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TenneT records a more than 21 % increase in offshore wind energy transmission and sets new standard for the future

- **Transmission of 11.51 terawatt hours from sea to land accounts for a good 15 percent of total wind power generation in Germany**
- **TenneT is investing more than 10 billion euros in new technical standards using 2 gigawatt connections at 525 kV voltage level**

In the first half of 2020, the amount of wind energy transmitted onshore by the transmission system operator TenneT from the North Sea rose to 11.51 terawatt hours (TWh)*. This corresponds to an increase of 21.1 percent compared to the first half of 2019 (9.51 TWh). Power transmission from the North Sea accounts for a good 15.6 percent of total wind power generation in Germany, which reached 73.7 terawatt hours in the first half of 2020.

“The expansion and integration of offshore wind energy is of central importance for the European energy transition,” says TenneT COO Tim Meyerjürgens, “With Borssele alpha and – from mid-August – Borssele beta, we have now also successfully completed the first two offshore connections in the Dutch North Sea. We are making consistent progress in the key areas of innovation, standardisation and cost efficiency. Ever since TenneT set the standard for plastic-insulated direct current cables at 320 kilovolts (kV) in the offshore sector around ten years ago, we have been defining a new global benchmark for the future with our 525-kV direct current subsea cable system and its transmission capacity of two gigawatts (GW).”

This development programme is aimed at creating a standardised cable system that TenneT will be able to use in the five projects BalWin1, BalWin2, BalWin3 (German North Sea) and IJmuiden Ver alpha and beta (Dutch North Sea) by 2030, as well as in future projects with the same power and voltage. This will reduce costs, increase the security of supply and, at the same time, minimise the environmental impact.

“We have an investment programme of around 20 billion euros earmarked for connecting offshore wind energy in the Netherlands and Germany by 2030. More than half of it will be assigned to the new 2-gigawatt standard,” says Meyerjürgens. TenneT currently has 14 offshore grid connections in operation, two of them in the Dutch North Sea (including Borssele beta) and twelve in the German North Sea. At 7,132 megawatts (MW) in the German North Sea alone, TenneT’s connection capacity already exceeds the federal government’s target for 2020, which is 6.5 gigawatts for the North and Baltic Seas in total. In the Dutch North Sea, TenneT is set to

achieve 1,400 megawatts of connection capacity by mid-August 2020. By 2030, TenneT's offshore grid connection capacity will increase to around 17 gigawatts in Germany and 9.6 gigawatts in the Netherlands.

TenneT is also following the various hydrogen-related projects and initiatives with great interest and welcomes them – especially when it comes to clarification of the legal framework. As far as the North Sea Wind Power Hubs proposed by TenneT are concerned, coupling power to gas/hydrogen has been explicitly included in the concept right from the start. The North Sea Wind Power Hub project is currently dealing intensively with the issue of power to gas/hydrogen and the timely installation of hubs, and is pushing ahead consistently with these topics and studies.

In June, TenneT also made proposals to the EU and the Dutch and German governments to create an integrated energy system approach to the international development of offshore wind energy, including bespoke technology and regulations to facilitate the use of hybrid projects. “Alongside the standardisation of the HVDC technology that will be used in the future, we also need an internationally coordinated planning approach for diverse processes from spatial planning to regulation, as well as the issues of electricity market design and economic investment security,” explains Meyerjürgens.

Additional figures

In the German North Sea, the maximum infeed performance of offshore wind farms in the first half of 2020 was measured at 6,035 MW on 2 January. The capacity expansion of the offshore wind farms in the German North Sea brought this up to 6,679 MW by 30 June 2020. TenneT's offshore transmission capacity in the German North Sea is 7,132 MW.

The wind turbines in the Baltic Sea (50 Hertz grid area) generated 2.22 terawatt hours*) in the first half of 2020, making Germany's total offshore yield 13.73 terawatt hours during this period*). With an additional 59.67 terawatt hours*) of generated onshore wind energy, the total yield is thus 73.7 terawatt hours*).

For comparison, here are the full-year figures for 2019: German North Sea: 20.25 TWh. This would be enough, for example, to cover the annual consumption of more than six million households. German Baltic Sea: 4.13 TWh; onshore: 99.14 TWh.

**) Financially subsidised electricity in accordance with the German Renewable Energy Sources Act (EEG), without other direct marketing; using 2020 as the preliminary actual value. The energy volumes produced onshore for the months of May and June 2020 are incorporated as preliminary estimated values.*

About TenneT

TenneT is a leading European grid operator (Transmission System Operator (TSO)). We design, build, maintain and operate the high-voltage electricity grid in the Netherlands and large parts of Germany and facilitate the European energy market. We are committed to providing a secure and reliable supply of electricity, today and in the future, 24 hours a day, 365 days a year and to playing our role in driving the energy transition. We transport electricity over a network of

approximately 23,500 kilometres of high-voltage connections, from wherever and however it's generated, to over 42 million end-users while keeping electricity supply and demand balanced at all times. With close to 5,000 employees, we achieve a turnover of 4.1 billion euros and a total asset value of EUR 23 billion. TenneT is one of the largest investors in national and international onshore and offshore electricity grids. TenneT makes every effort to meet the needs of society. This will require us all to take ownership, show courage and connect with each other.

Taking power further