

## Update on “energy islands” in Denmark

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We have previously reported on the concept of “energy islands” as a means of promoting renewable energy production and trade.

On 22 May 2020, the Danish government published its first climate plan. A key component of the plan is to build two energy islands, with a minimum capacity of 4GW. According to the government the two islands will be capable of powering four million Danish homes or 7 million electric vehicles with power from renewable sources.

Production of electricity in this scale appears to vastly exceed Danish domestic needs, so a key part of the future of an energy island will be the opportunities for energy trade between Denmark and other European countries.

Also, the electricity production should probably go into other, innovate energy production types such as power-to-hydrogen, power-to-ammonia etc., also called “Power-to-X”, for the energy islands to truly make sense.

The energy islands will be placed in the North Sea and by the Danish Island of Bornholm in the Baltic Sea. The Danish Government has stated that it intends to start a dialogue with the Netherlands and Poland in order to connect the two offshore wind hubs to those countries as well.

Traditionally, offshore wind farms have been built as individual non-connected entities. An energy island serves as a hub for electricity generation from the surrounding wind farms, by collecting and distributing the electricity between countries connected by an electricity grid.

A number of European countries are currently trading electricity through the day-ahead and intraday markets. According to the Danish government, construction of energy islands will help Denmark lower global emissions, by increasing export of renewable electricity to Sweden, Norway, the United Kingdom, the Netherlands, Germany and Poland.

Both energy islands will have an initial capacity of 2 GW. However, the energy island North Sea can be expanded to host a minimum capacity of 10 GW. According to the government it is technically feasible to complete construction of both islands and the surrounding offshore wind farms by 2030.

Currently, the world’s largest offshore wind farm Hornsea 1 has a capacity of 1.2 GW and is located 100 km from the Yorkshire coast in the United Kingdom. This record will be beaten when its neighbor Hornsea 2 becomes operational in 2022 (with a capacity of 1.4 GW).

In our view, offshore wind energy production in the scale foreseen by the Danish government under its plans for the two energy islands cannot stand alone.

The Danish government has announced plans to ramp up its efforts on “Power-to-X” and to join commercial partners in order to produce hydrogen, methanol and ammonia. Thereby, power from offshore wind can - in the long run - be utilized to produce more climate friendly fuels for shipping, aviation, heavy industry or heavy-duty vehicles.

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For questions or comments to this newsletter or energy and offshore in general, please contact Bo Sandroos on +45 4088 5422 or [bos@wsko.dk](mailto:bos@wsko.dk).

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