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The future Danish offshore wind farms, and how they fit in with 2 “energy islands” by 2030

Background and challenge

Denmark has long planned to establish tree offshore wind farms before 2030. The first, Thor, is currently being planned, and we have reported on the status of that project several times already during 2018-2020. Thor was a part of an Energy Agreement in the Danish parliament in 2018.

We have also reported that the Danish government – and indeed the vast majority of political parties in the Danish parliament – appears to have fallen in love with the concept of “energy islands”, which to some are artificial islands containing massive transformer stations collecting power from several offshore wind farms, and which also contain state of the art facilities to convert power to e.g. hydrogen and other green fuels (“Power-to-X”).

As one will gather it is not simple to plan three relatively large wind farms whilst at the same time plan two energy islands – how does all this fit together?

The Danish government’s plans

On May 20, 2020, the Government presented its proposal that Denmark should take the lead in a paradigm shift for offshore wind development and commencing the establishment of two energy islands in respectively the North Sea and the Baltic Sea with completion by 2030.

It was proposed that in the first phase of the energy islands (until 2030) a total of 2 GW offshore wind must be connected to each of the islands. It was also part of the plan that the two last offshore wind farms agreed in connection with the Energy Agreement of 2018 were to be included in the energy islands.

Subsequently, the Climate Agreement for energy and industry was entered into in the Danish parliament on 22 June 2020. In that plan it has now been decided that the energy island in the North Sea must be expanded to have 3 GW offshore wind capacity connected by 2030, but also that offshore wind farm No. 2 from the Energy Agreement 2018 must be established separately and in addition to the two energy islands and located at the (natural) island of Hesselø between Denmark and Sweden.

The parties to the agreement decided that offshore wind farm No. 2 should be completed by 2027 and thus will be advanced in time compared to the agreement that was made in the Energy Agreement of 2018. In addition the parties decided that offshore wind farm No. 3 from the Energy Agreement of 2018 should be included in the first phase of the energy islands, and will thus be realized by 2030.

If wind farms 2 and 3 should have been established individually, they would have to be completed in 2028 and 2029, respectively, according to schedules for Energy Agreement 2018. When wind farm 3 is “put into” the energy islands, the farm is expected to be completed by 2030, but the construction of wind farm 2 will be advanced, and thus the ambitions for the offshore wind development will be increased until 2030.

The climate agreement of 22 June 2020 will set up 4 GW further offshore wind in 2030 than agreed with Energy Agreement of 2018.

So ambitions are huge and massive decisions can be taken in short order, at least when it comes to offshore wind, which appears to be a subject that Danish politicians are very comfortable with.

Assessment and summary

According to the government, the climate agreement for energy and industry – signed a little over a two weeks ago - marks a paradigm shift in offshore wind development. Instead of continuing with the tradition of individual wind farms, Denmark will be able to continuously connect several offshore wind farms to the energy islands and be in a position to distribute power between the countries connected to the island.

That is, at least in theory, true. But it does require that Denmark can make arrangements with the neighbouring countries to off-take sufficient volumes of Danish electricity or produce power themselves via the energy islands.

Chances are good that an interesting and flourishing trading market could be established that way.

According to the government, there are multiple benefits from energy islands. One of the benefits is that energy islands can be built far out on the sea and can therefore help to secure one more efficient use of offshore wind resources far from the coasts. In addition, they can move parts of the electricity infrastructure away from land and out to sea, and that will mean less need for new electricity infrastructure on land and less load on the electricity grid. However, it will still be needed to expand the Danish electricity grid on land when the politicians make good of their plans to electrify the Danish society.

The political agreements are obviously dependent on what can actually be achieved in practice. This includes market conditions – not only prices and cost levels, but also which kinds of suppliers and contractors, installation vessels, wind turbine generators etc. are available and that can be contracted.

And of paramount importance is that developers and investors believe that they can develop commercially attractive projects from the government's plans and tenders.

These practical and commercial considerations apply to both the energy islands and the offshore wind farms.

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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@wsco.dk.

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