



Political vision for the North Sea Energy Island

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Energistyrelsen

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- 2021- : Technical Director, Center for Energy Islands, Danish Energy Agency
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- 2013-2016: Head of Campus Support, Copenhagen University
- 2004-2013: Deputy Head of Division, Coastal Authority





With the energy islands, Denmark is leading the way in Europe by contributing to the green transition among our neighbouring countries, through the export of green and renewable energy, and by continuing to support green innovation and commercial potential.

Addendum to the climate agreement on energy and industry of 22 June 2020, regarding the ownership and construction of energy islands etc., 4 February 2021

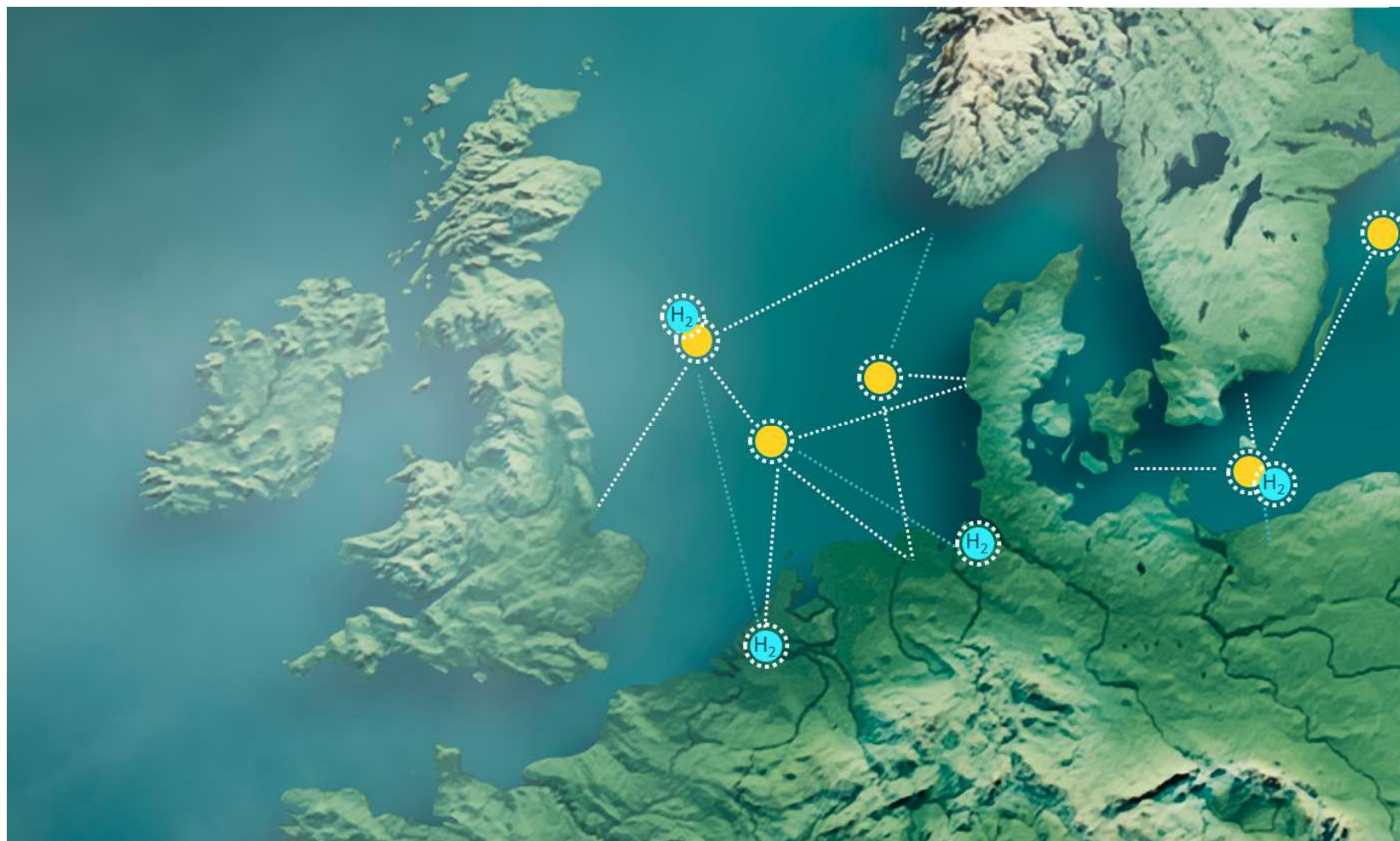
Strong political support

- Broad agreement behind the energy islands in the North Sea and at Bornholm
- The Esbjerg Declaration: "The North Sea to be Europe's green power house"
- The EU aims at reaching at least 300 GW of offshore wind in 2050
- Baltic Sea Countries Agree to increase offshore wind capacity sevenfold by 2030



Long-term vision


- Very significant in achieving a carbon neutral society
- Several energy islands and a large scale power grid
- Sector coupling and regional integration
- Green electricity and e-fuels from renewable energy
- Energy independence and lower electricity prices





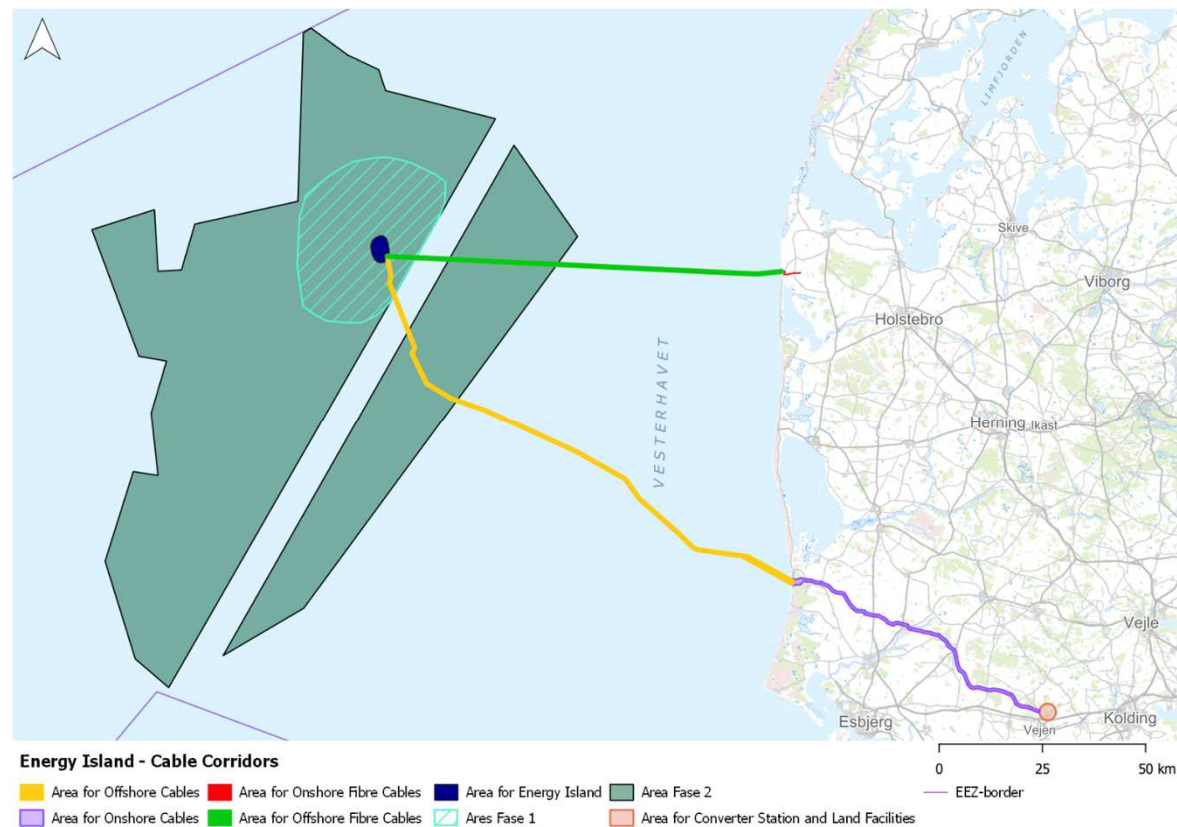
Plan for Program Energy Island North Sea

Virtual information meeting
6. september 2022
Susannah Keller Finn
The Danish Energy Island



CONTENT

- What is an Energy Island?
- Where will the Energy Island be located?
- Status?
- What does the Plan for Program Energy Island North Sea contain?



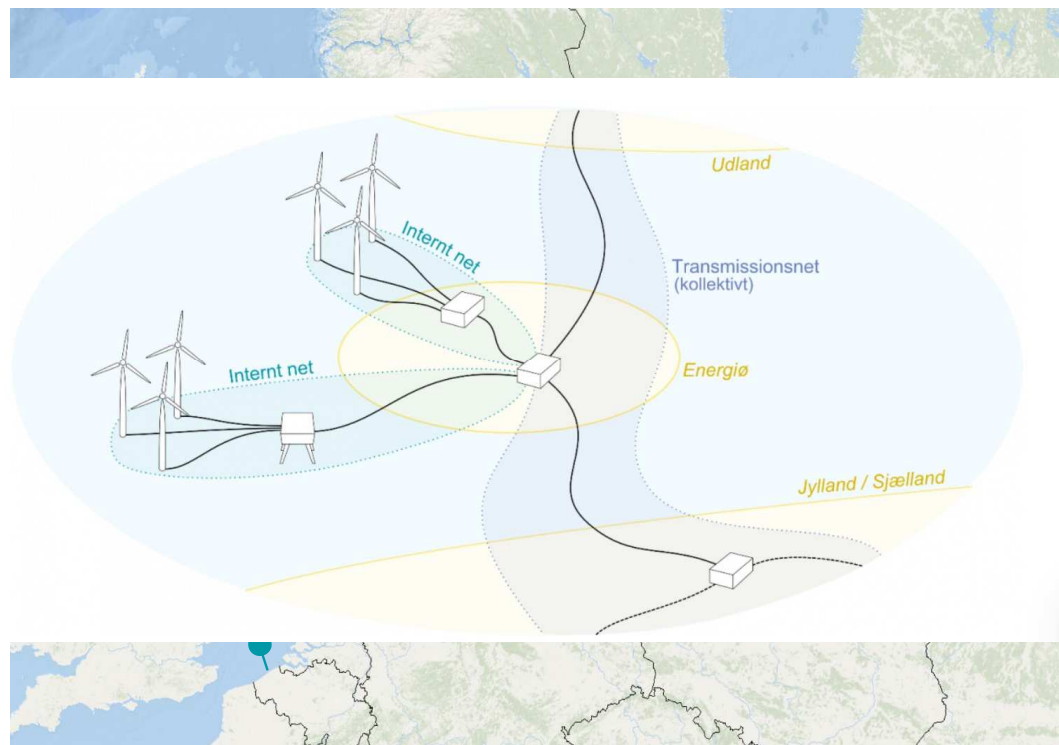


WHAT'S AN ENERGY ISLAND?

The EU has an ambition to increase the European capacity with offshore wind equivalent to 300 GW by 2050.

Solution:
Energy Islands and offshore grids

- ✓ Effective utilization of offshore wind
- ✓ Comprehensive planning and flexible expansion
- ✓ Regional cooperation and electricity market integration
- ✓ Allowing increased electrification and innovative solutions



North Sea Energy Island – important milestones

June 2020

A broad majority of the Danish Parliament agrees to initiate the realization of the world's first energy islands – in the North Sea and in the Baltic Sea (2 GW).

February 2021

Political agreement reached to build The North Sea Energy Island as an artificial Island with a capacity of 3 GW with the possibility to expand to 10 GW.

May 2022

Germany, Belgium, the Netherlands and Denmark announce a joint pledge to build at least 150 gigawatts (GW) of offshore wind capacity in the North Sea by 2050.

June 2022

Political agreement reached to build the North Sea Energy Island as a flexible island concept, combining a reclaimed island with electricity transmission and energy conversion with platforms close to the island. The island will comprise at least 3 GW of offshore wind power in 2033, and a total of at least 10 GW in 2040.

August 2022

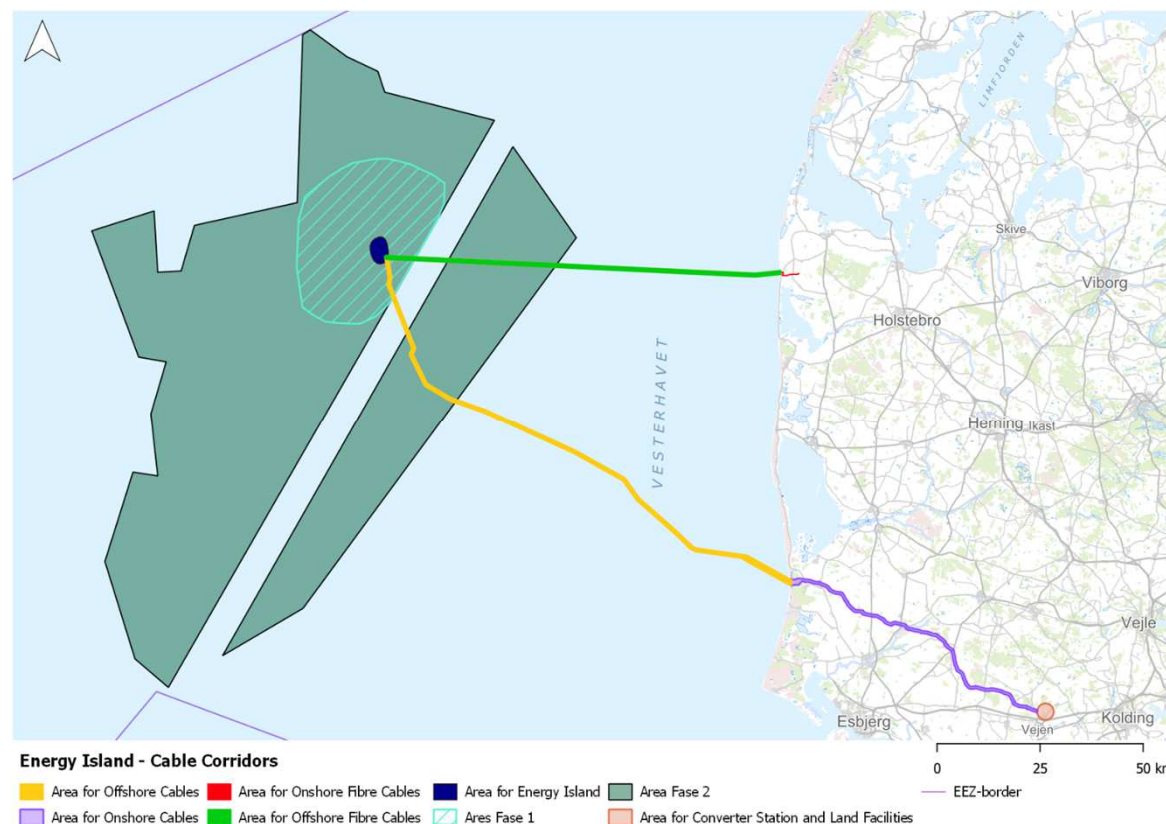
Public hearing starts for Denmark's energy island in the North Sea. The public hearing runs until 26 September 2022.

LOCATION OF THE ENERGY ISLAND NORTH SEA

Gross areas are identified on the basis of a number of reports, taking into account e.g. costs, wind resource, sea depth, geology, infrastructure, environmental and planning conditions*.

Energinet carries out geophysical and geotechnical preliminary investigations of an area of approx. 1,050 km², while environmental studies are carried out on an approx. 2,500 km² large area.

*The reports are available at ens.dk/energioeer





ENVIRONMENTAL ASSESSMENTS FOR THE ENERGY ISLAND NORTH SEA

Strategic Environmental Assessment (SEA): The DEA carry out an SEA for the plan for Program Energiø Nordsøen – onshore and offshore.

Planning Permission: Local area planning permissions for the onshore high voltage substation.

Environmental Impact Assessment (EIA) onshore: Energinet will conduct an environmental impact assessment (EIA) of the onshore parts of the project in coordination with the process of preparing the planning basis.

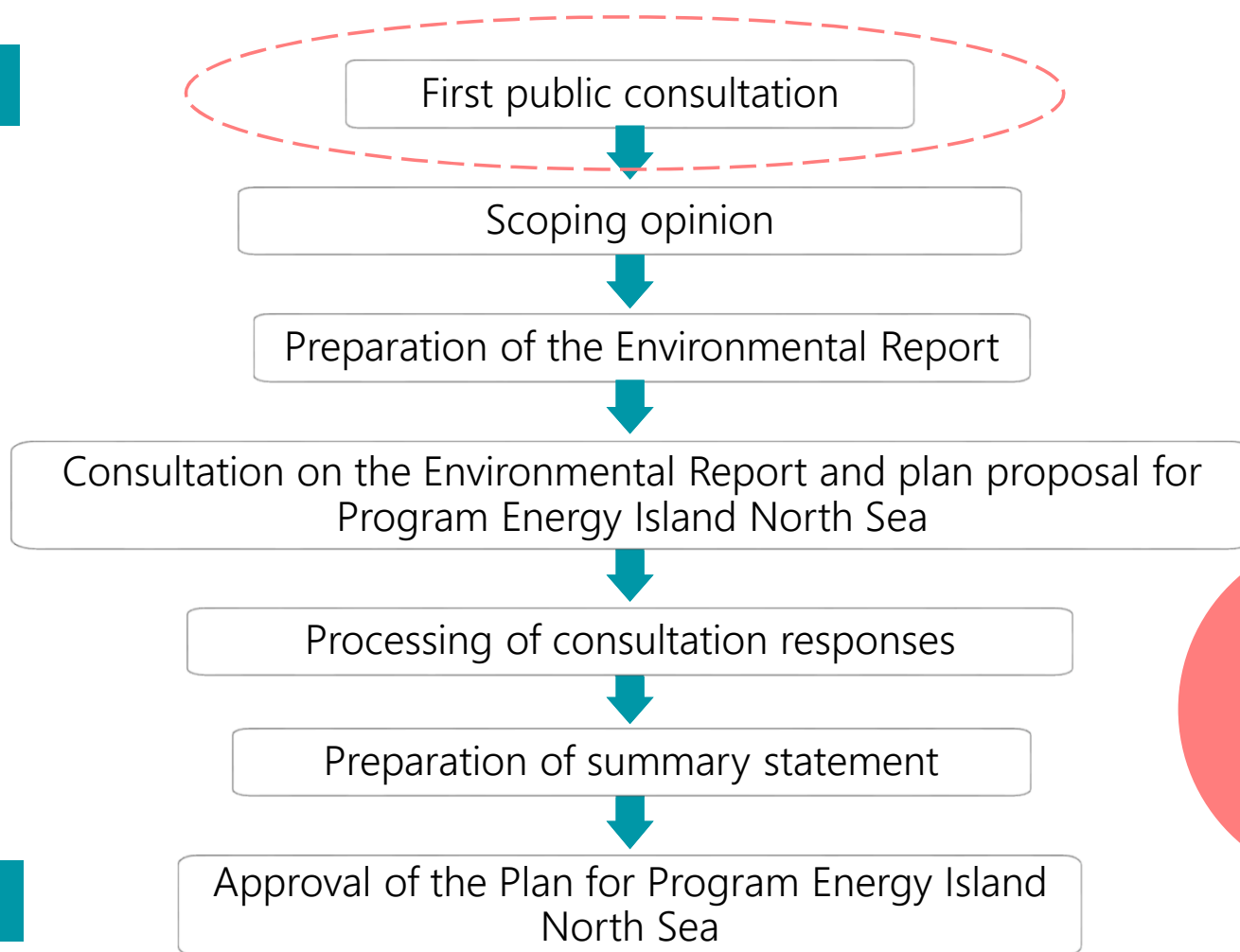
Environmental Impact Assessment (EIA) flexible island: Once the tender for the artificial island has been completed, the winner must conduct an EIA of the island.

Environmental Impact Assessment (EIA) offshore wind farms: When the tender for the offshore wind farms has been completed, the winner(s) must conduct an EIA of the specific project(s) for the installation of offshore wind turbines and the associated export cables to the artificial island's point of connection.

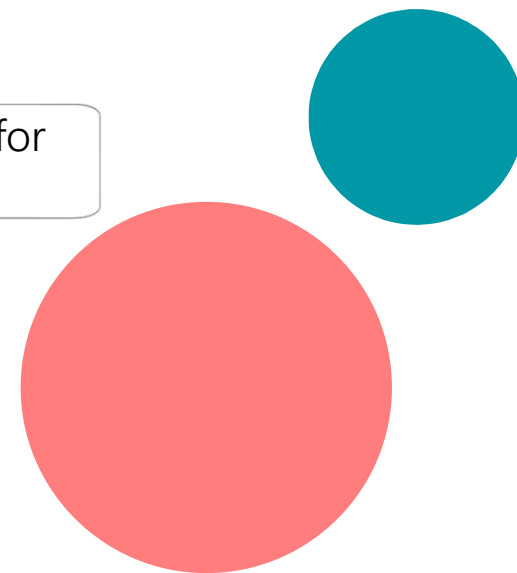


STRATEGIC ENVIRONMENTAL ASSESSMENT THE ENERGY ISLAND NORTH SEA

August 2022



Autumn 2023

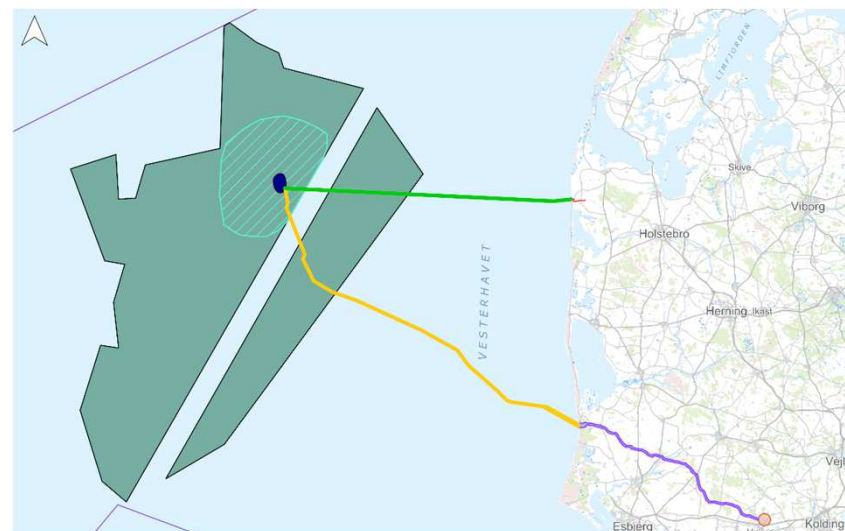




PLAN FOR PROGRAM ENERGY ISLAND NORTH SEA

The first phase of Plan for Program Energy Island North Sea includes:

- a flexible island concept with associated platforms for transmission equipment,
- minimum 3 GW offshore wind, but if the effect per km² is increased, there will be the possibility of a construction of up to 12 GW within the same area, internal cable network and submarine cables to islands,
- platforms for transmission equipment, including electricity transmission and energy conversion,
- subsea cables to the west coast of Jutland and abroad
- possibility of PtX facilities on platforms/facilities or the dammed island with associated pipelines to Jutland and/or abroad,
- possibility of innovation facilities (innovation other than PtX) on platforms/facilities or the dammed island,
- a land-based plant in Jutland (buried land cables and high-voltage substation including HVAC/HVDC converter plant).



PLAN FOR PROGRAM ENERGY ISLAND NORTH SEA

The second phase of Plan for Program Energy Island North Sea includes:

- a total construction of offshore wind of at least 10 GW (first and second phase) according to the political agreements, but if the effect per km² is increased, there will be a possibility of a total construction of up to 40 GW* (first and second phase) within the same area, internal cable network and submarine cables to islands or platforms,
- platforms for transmission equipment, including electricity transmission and energy conversion,
- possibility of subsea cables to the west coast of Jutland and subsea cables (interconnector) abroad,
- possibility of PtX facilities on platforms/facilities or the dammed island with associated pipelines that can go to Jutland and/or abroad,
- possibility of innovation facilities (innovation other than PtX) on platforms/facilities or the dammed island,
- possibility of a land-based installation in Jutland (buried land cables, possibility of a coastal switching station, high-voltage station including any HVAC/HVDC converter installations), and possibility of network reinforcements

