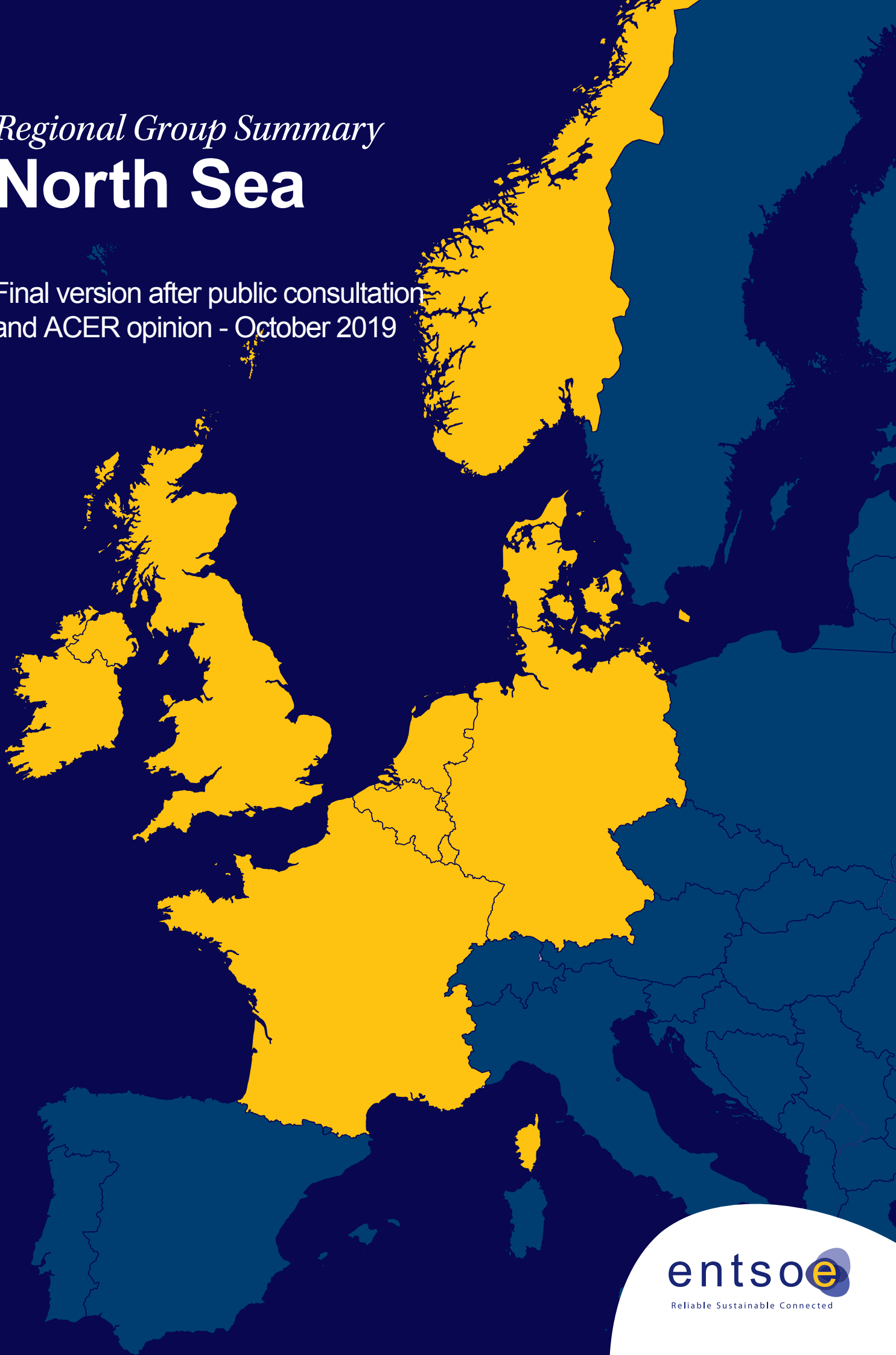
Regional Group Summary

North Sea

Final version after public consultation and ACER opinion - October 2019



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Reliable Sustainable Connected

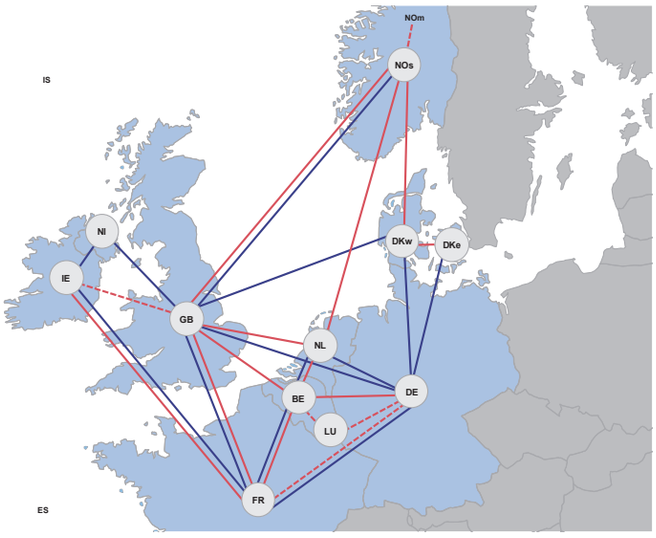
The regional group North Sea consists of the following countries: Belgium, Denmark, France, Germany, Great Britain, Republic of Ireland, Northern Ireland, Luxembourg, Netherlands and Norway.

The region comprises four synchronous areas (the island of Ireland, the British island, the Nordic system and the Continental system), which can be interconnected using HVDC technology.

2040 Needs

The map below shows potential needs for additional capacity increases in 2040 – beyond the 2020 grid.

Summary of capacity increases from 2020 to 2040



Increases already identified in TYNDP 2016[1]
Increases beyond 2030 in only one scenario
Increases beyond 2030 in at least 2 scenarios

— Further integration between Norway and Great Britain, due to price differences and the need for flexibility to optimize the RES generation (hydro/wind).
— Further integration between Norway and the synchronous Continental system, due to i) price differences, ii) the need for flexibility to optimise the RES generation (hydro/wind) and iii) provision of support to continental security of supply in low-wind periods.
— Further integration between Great Britain and the Continental system, due to i) price differences, ii) better optimisation of the RES generation and iii) challenged security of supply in high demand/low-variable RES (wind and solar) periods.
— Further integration between Germany and France, Belgium, and the Netherlands (east-west) due to i) optimisation of the production system and ii) challenged security of supply in high demand and low-variable RES (wind and solar) periods.
— Further integration between Ireland and Great Britain/France, due to i) price differences, ii) optimisation of the RES generation and iii) poor challenged security of supply in low-wind periods.

More information can be found in the Regional Investment Plan 2017 of this regional group and in the European System Need Report 2017.
— https://www.entsoe.eu/Documents/TYNDP%20documents/TYNDP2018/rgip_NS.pdf
— https://www.entsoe.eu/Documents/TYNDP%20documents/TYNDP2018/energy_power_system_2040.pdf

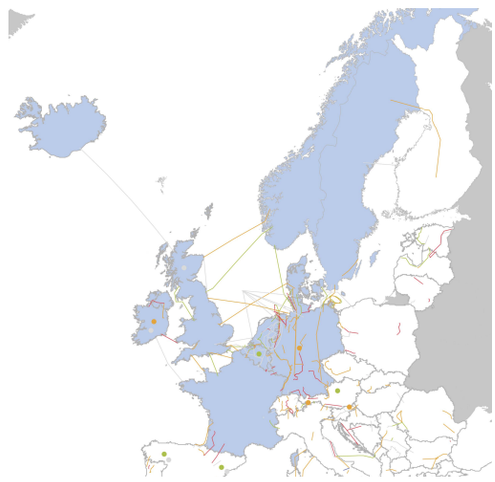
[1] Reference capacities of TYNDP 2016 for 2030 which for some borders had been adjusted for the TYNDP 2018 purpose. Projects commissioned in 2020 are not included as increases.

Key messages for the evolution of the region are:

— Continued structural changes in the generation fleet are expected, including i) a shift from thermal to RES generation, ii) a reduction of nuclear generation and iii) a shift from coal to gas.
— The development of offshore RES and related off- and onshore infrastructure contributes to these changes.
— The weather continues to have an increasing impact on the hourly adequacy situation, requiring stable mechanisms ensuring generation sharing.
— Flexibility in the system is needed to support adequacy and to avoid curtailment of RES.
— Closer connection across the region's main boundaries is needed to support adequacy and further integrate markets.

Projects

The map below shows the promoted cross-border projects that will be analysed with the CBA methodology in the TYNDP 2018.



Under consideration
Planned but not yet permitting
In permitting
Under construction

Benefits

Increasing capacities at the borders, as shown on the map to the left, would have a significant impact on the ENTSO-E electrical system and society as a whole.

Up to 16 €/MWh
reduction in marginal costs of electricity generation

19 to 97 TWh
less curtailed renewable energy

-5 to +23 Mton
reduction in CO_2

Up to 180 GWh
reduction in Energy Not Served