Project Sheet

Norway-Great Britain, North Sea Link

Project type	transmission
Project id	110
Created by	
Created on	Feb 8, 2021 3:08:46 PM

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Key Information

Cross Border Project
Offshore DC transmission cable
New

PCI number 1.10.1 (4th list, 31 Oct. 2019)
Under Construction

Description

North Sea Link is a 720 km long subsea interconnector between Norway and Great Britain which is planned to be commissioned in 2021. When realised, it will be the world's longest subsea Interconnector.

The main driver for the project is to integrate the hydro-based Norwegian system with the thermal, nuclear and wind-based British system. The interconnector will improve security of supply both in Norway in dry years and in Great Britain in periods with negative power balance (low wind, high demand etc.).

In addition, the interconnector will be positive for the European market integration, whilst also facilitating renewable energy in preparation for a power system with lower CO2-emissions.

The interconnector is planned to be a 515 kV 1400 MW HVDC subsea interconnector between western Norway (Kvilldal) and eastern England (Blyth).

Project promoters

National Grid
STATNETT

Countries

United Kingdom
Norway

National development plan(s)

National Grid Electricity Ten Year Statement, GB, 2018, Appendix C, Pg 3, Figure C2 [Interconnector to Norway]
https://www.nationalgrideso.com/insights/electricity-ten-year-statement-etys

Additional information on the project

http://northsealink.com/

Project sheet backlog

6 Nov. 2020 - Publication as part of the draft TYNDP 2020 package for consultation

Project Description & Context

Project Investments

Main investment(s): A 720 km long 515 kV 1400 MW HVDC subsea interconnector between western Norway and eastern England.

Type of element	Total route length (km)	From substation 1	To substation 2	Present status	Commissioning year	Progress of the investment	Explanation in case of delay or reclustering
Offshore DC transmission cable	720	Kvilldal (NO)	Blyth (GB)	Under Construction	2021	Investment on time	

Is the project in the reference grid?

Yes

System Needs addressed by the project

Project promoter(s) selected up to 4 system needs that are addressed by their project in a predefined list. Available needs ranged from reduction of price differentials between countries, improvement of system flexibility and stability, enabling cost-efficient connection of high volumes of RES, improvement of voltage stability...
As part of the TYNDP 2020, ENTSO-E released a study investigating cross-border system needs in the 2030 and 2040 horizons.

The project promoter did not select any need.

Interconnection targets

In 2017, the Interconnection Target Expert Group proposed alternative indicators to the 15% interconnection criteria for every country and electrified island with a new methodology developed collaboratively between the European Commission, ENTSO-E, ENTSOG, industry, universities and other experts. The methodology is based on three indicators:
1. Price differential between EU countries, with an objective to reduce it below 2 EUR/MWh
2. Ratio between nominal transmission capacity and installed RES capacity, with a target of past 30%
3. Ratio between nominal transmission capacity and peak load, with a target of past 30%

The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.

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Project Assessment

Transfer capacity increase (National Trends 2025)

	Border	A B	B A
Transfer capacity increase (in MW)	United Kingdom - Norway	1400	1400

Boundary capacity diagram

Network boundary the projects helps mitigate

Great Britain – Continental Europe and Nordics

Boundary capacity diagram

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CBA results

ENTSO-E has assessed the benefits delivered by each project in 2025 (scenario National Trends 2025) and in 2030 (three scenarios: National Trends, Distributed Energy and Global Ambition). Indicators B1 to B6 were computed by ENTSO-E, while promoters had the possibility to compute and submit so-called project-level benefits (B7 to B10). The benefits must be understood as benefits for Europe as a whole, not for the promoters of the project.
Results are presented per scenario.

This project chose not to request a cost-benefit analysis in the TYNDP 2020. The possibility to opt out of the CBA was offered to projects under construction or to very long-term project commissioning after 2035.

Non scenario-dependent indicator(s)

B8.0 Stability (Transient, Voltage and Frequency Stability)	Transient stability	Voltage stability	Frequency stability	
Norway - Great Britain (New HVDC)	++	++	+ (between sync areas)	Qualitative assessment by ENTSO-E based on information on the project technology provided by the project promoter(s). This indicator is not dependent on scenarios or time horizons.

Residual impact

Information on the residual impact of the project was provided by the project promoter(s).

Residual environmental impact

Investment	Investment status	Distance (km)	Type of sensitivity
Norway - Great Britain	Under Construction		

Project Costs

The project costs were provided by the project promoter(s).

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
424. Norway - Great Britain	1658.6		23.2
Total	1658.6		23.2

Explanation provided by the project promoter on the CAPEX uncertainty range:

424