

Project 247 - AQUIND Interconnector

The Project is to develop a high voltage direct current subsea interconnector power transmission cable between the United Kingdom and France with the total capacity of up to 2000MW and other associated installations as explained herein. The interconnector will land and connect to the United Kingdom grid in the South East of England. The connection point in France will be on the Normandy Coast.

Classification Future project
 Boundary France - Great Britain
 PCI label
 Promoted by Aquind Limited



Investments

Investment ID	Description	GTC Contribution	Substation 1	Substation 2	Present Status	Commissioning Date	Evolution since TYNDP 2014	Evolution Driver
1381	New subsea HVDC link between France and the UK	100%	Lovedean (UK)	Le Havre (FR)	Planning	2020	New Investment	Planning status (though the project is simultaneously progressing some elements of the design and permitting activities)

Additional Information

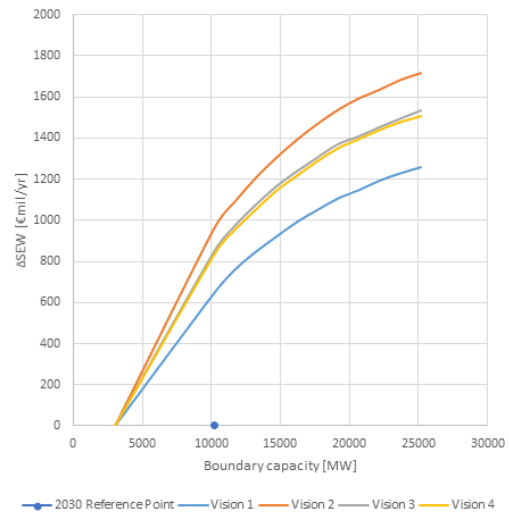
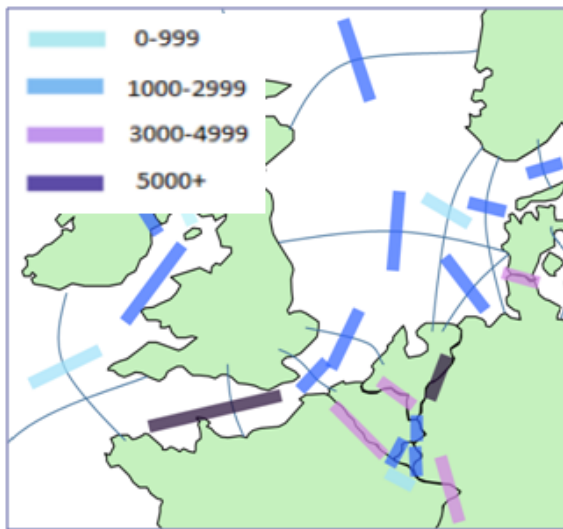
Project and company website - www.aquind.co.uk

Investment needs

This project was promoted for TYNDP inclusion by a non-ENTSO-E member, complying with the EC's draft guidelines for treatment of all promoters. This project proposal does not result directly from planning studies coordinated in ENTSO-E's Regional Groups. (additional statement needed from RG in case the project relates to an investment need for which a TSO project is in the list).

Market based capacity analysis performed in the TYNDP2016 show the need to increase the interconnection capacity between Great Britain and the continent . On the SEW/GTC graph we can see that even starting from a 2030 capacity of about 10GW between GB and the continental and Nordics areas, extra capacity still allows savings on the boundary.

This project is one of the links that will contribute in the future to increase the capacity on the boundary, and then facilitate energy exchanges between Great Britain and the continent.



Project Cost Benefit Analysis

This project has been assessed by ENTSO-E in line with the Cost Benefit Analysis methodology, approved by the EC in February 2015.

The indicators B6/B7 reflect particular technical system aspects of projects based on a summation of qualitative performance indicators, in line with the CBA methodology; these cannot be used as a proxy for the security of supply indicator.

General CBA Indicators

Delta GTC contribution (2020) [MW]	Delta GTC was not checked for 2020 and the 2030 values were considered for SEW, RES and CO2 assessment.
Delta GTC contribution (2030) [MW]	GB-FR: 2000
	FR-GB: 2000
Capex Costs 2015 (M€)	1400
Source: Project Promoter	
Cost explanation	<p>A number of scenarios have been costed depending on the technology used, the build method and the capacity of the Project. The expected investment requirements are estimated at £1 – 1.1bn, based on a single 1800MW bi-polar scheme using Voltage Source Converters.</p> <p>The lowest estimated investment costs are £700m, based on a single 1800MW bi-polar scheme using the conventional Line Commutated Converter (LCC) technology. The highest estimated investment costs are £1,320m, based on two parallel links of 1000MW each, using the Voltage Source Converter (VSC) tec</p>

	hnology. Each development scenario has its advantages and disadvantages and the Promoter would like to retain flexibility of choice until a certain point. The €/ exchange rates at the procurement and construction stages of the Project may be a key factor influencing the final investment requirements for the Project due to a potentially high share of capital expenditure arising from the countries within the single currency zone.
S1	NA
S2	NA
B6	+
B7	+

Scenario specific CBA indicators	EP2020	Vision 1	Vision 2	Vision 3	Vision 4
B1 SoS (MWh/yr)	N/A	N/A	N/A	N/A	N/A
B2 SEW (MEuros/yr)	N/A	80 ±10	140 ±10	120 ±20	130 ±10
B3 RES integration (GWh/yr)	N/A	<10	840 ±560	1330 ±440	750 ±290
B4 Losses (GWh/yr)	N/A	N/A	N/A	N/A	N/A
B4 Losses (MEuros/yr)	N/A	N/A	N/A	N/A	N/A
B5 CO2 Emissions (kT/year)	N/A	1600 ±300	400 ±400	-700 ±100	-900 ±400

Regarding GTC assessment :

- On the French side, depending on the final connection location, additional analysis will have to be performed in order to assess curtailment level needed to ensure N and N-1 safe operation of the French transmission system.

Regarding SEW assessment :

- The project's SEW accounts for saving in generation fuel and operating costs. The project could also enable savings avoiding investments in generation capacity, in particular for projects connecting electric peninsulas. The aspect has not been considered in the CBA methodology

As the accurate location and project scope are still under investigation, B4 indicator (impact on losses) was not assessed

Complementary information about the border on which the project is located	Vision 1	Vision 2	Vision 3	Vision 4
Average marginal cost difference in the reference case [€/MWh]	4.92	7.80	8.25	7.26

Standard deviation marginal cost difference in the reference case [€/MWh]	9.72	13.56	19.68	18.44
Reduction of marginal cost difference due to all mid-term and long-term projects [€/MWh]	16.60	13.49	10.67	11.29
