Project 225 - 2nd interconnector Belgium - Germany

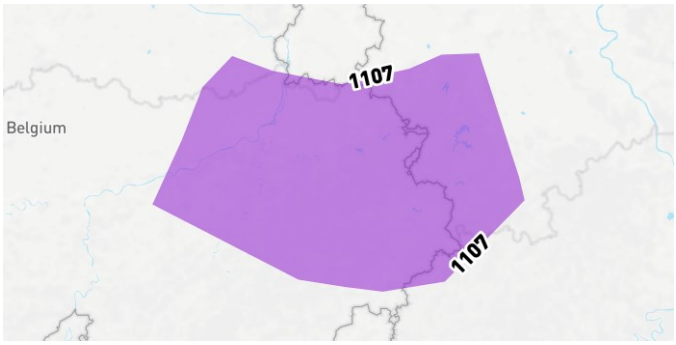
This project considers the possibility of a second 1GW interconnection (DC is an option) between Belgium and Germany. Preliminary studies have indicated potential for further regional welfare increase by further increasing the interconnection capacity between Belgium and Germany.The determination of the optimal capacity, location, technology, potentially needed internal grid reinforcements and possible synergies with the long-term concept of a "west-east corridor" in the North Sea area are subject of further studies. In this context, Elia and Amprion are conducting a bilateral study.

Classification Long-term Project

Boundary Belgium - Germany

PCI label

Promoted by AMPRION;ELIA



Investments

Investment ID	Description	GTC Contribution	Substation 1	Substation 2	Present Status	Commissioning Date	Evolution since TYNDP 2014	Evolution Driver
1107	2nd Interconncetor BE-DE: envisions the possibility of a second 1 GW HVDC interconnection between Belgium and Germany. Subject to further studies.	100%	to be defined (BE)	to be defined (DE)	Planning	2025	Rescheduled	The project has been rescheduled with an indicative date of 2025 related to its potential to security-of-supply (adequacy) contribution within a context of planned nuclear phase out. The evaluation of this potential as well as interaction with reinforcements on neighboring borders are subject of further studies.

Additional Information

The project is integrated in Elia's National Development Plan 2015-2025 (http://www.elia.be/en/grid-data/grid-development/investment-plan/federal-development-plan-2015-2025) and is being put forward as part of the reference in the scenario framework for the new German National Development Plan (NEP edition 2017).

Investment needs

The transition of the energy mix in Belgium and Germany is characterized by a planned nuclear phase out and an ambitious target for the integration of RES. This generates a corresponding potential to develop transmission capacity between the Belgian and German power systems, enabling the utilization of the cheapest available energy across the border.

The ALEGrO-link (project 92) develops a first 1 GW interconnection capacity on the DE-BE border. The potential for further development of interconnection capacity between Germany and Belgium is captured via project # 225 and preliminary quantified as 1 GW. This quantification is subject to further studies evaluating the feasability of different implemenation options, the potential to security-of-supply (adequacy) contribution within context of planned nuclear phase out, as well as interaction with reinforcements on neighbouring borders.

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]	DE-BE: 1000
	BE-DE: 1000
Capex Costs 2015 (M€) Source: Project Promoter	500 ±100
Cost explanation	The cost represents the currently expected total investment cost.Uncertainty range reflects the fact that optimal location, capacity & route is subject to further studies
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	20 ±10	<10	10 ±10	10 ±10
B3 RES integration (GWh/yr)	N/A	10 ±10	10 ±10	170 ±70	80 ±20
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	400 ±100	±100	±100	-100 ±200

Highest SEW values in the coal before gas scenario 2030V1 due to replacement of gas-fired production in Belgium with cheaper production, such as coal-fired production, from Germany. In 2030V3 & 2030 V4 the evolution in the production park is combined with a merit order switch between gas and coal, leading gas-fired production setting the price during most of the year and consequently a smaller potential for price convergence.

The substitution effect of gas-coal is reflected in the CO2 impact indicator.

A further elaboration of the benefits is ongoing within the bilateral study that Elia and Amprion are conducting, hereby assessing the contribution of the project for market integration, RES integration and security of supply, and also evaluating the interaction with reinforcements on neighboring borders as well as the potential need for complementary internal grid reinforcements.

The project's SEW accounts for savings in generation fuel and operation cost. The project could also enable savings by avoided investments in generation capacity. This has not been considered by the CBA analysis.

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]	1.50	0.55	1.22	0.88
Standard deviation marginal cost difference in the reference case [€/MWh]	5.10	3.02	7.92	6.34
Reduction of marginal cost difference due to all mid-term and long-term projects [€/MWh]	13.64	12.40	6.55	7.83