Project Sheet

FR-BE: PSTs Aubange-Moulaine

Project type	transmission
Project id	173
Created by	Lea Dehaudt
Created on	Feb 8, 2021 3:55:31 PM

Index

Key Information 3
Description 3
Project Description & Context 5
Project Investments 5
System Needs addressed by the project 5
Interconnection targets 6
Project Assessment 10
Transfer capacity increase (National Trends 2025) 10
CBA results 10
Non scenario-dependent indicator(s) 10
Residual impact 10
Project Costs 10

ENTSO-E

Key Information

Cross Border Project
Phase shifting transformer
New

Under Construction

Description

Installation of two phase shifting transformers in Aubange, one on each of the 225kV circuits of the Aubange-Moulaine interconnector.

Project motivation:

The main driver is relieving congestion on the French-Belgium border resulting from higher bulk power flows within the CWE area, transporting energy through and to Belgium.

The 225kV axis between Aubange and Moulaine is electrically speaking highly influenced by both France - Belgium and France - Germany cross border flows. Today this axis is occasionally a bottleneck in day-ahead flow-based market coupling. Given the expected increase in power flows, it will become a structural bottleneck. Solving this bottleneck is complementary to project 23 (HTLS upgrade Avelin/Mastaign - Horta) in developing the potential for additional market exchange capacity on the FR-BE border.The investment in PSTs continues to build upon the investment done in 2009/2010 when a second circuit has been installed, as it allows to continue to use the capacity of this 225kV axis in an efficient way.

Project promoters

ELIA
RTE

Countries

Belgium
France

National development plan(s)

NDP1, Belgium, 2015-2025, p.102

Additional information on the project

More information about the project can be found following this link:

- National Development Plan:
https://www.elia.be/-/media/project/elia/elia-site/infra-and-projects/investment-plans/federal-development-plan-2020-2030/nl/20190516_federaal-ontwikkelingsplan_nl.pdf?la=en

Project sheet backlog

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

ENTSO-E

Project Description & Context

Project Investments

Main investment(s): "Investment consists of the installation of two phase shifting transformers in Aubang, one on each of the 225kV circuits of the Aubange-Moulaine interconnector."

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
Phase shifting transformer				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.

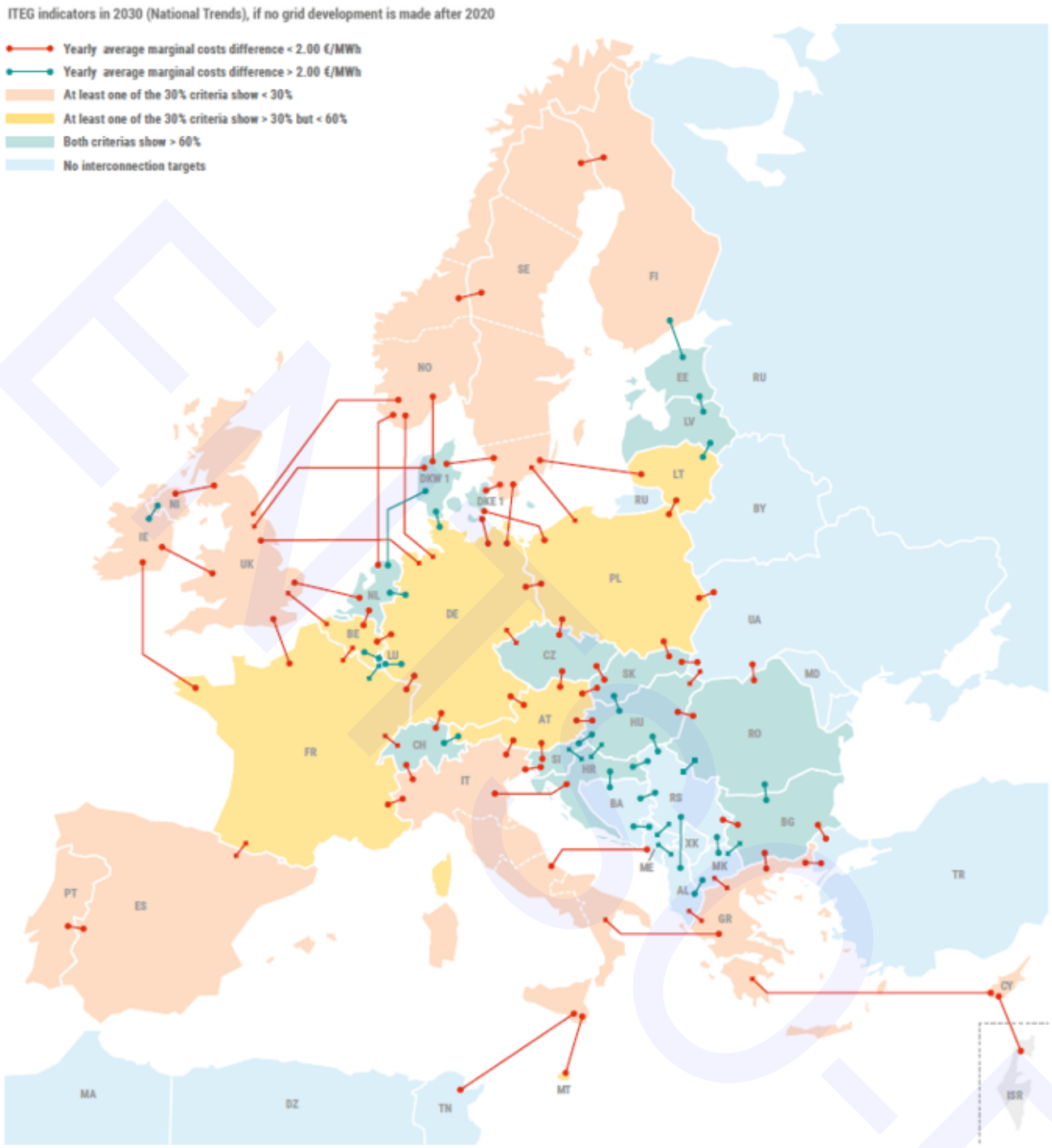
Need		How the project addresses each need (explanation provided by the project promoter(s))
€	Infrastructure to reduce price differentials between EU and/or non-EU countries	This project increases the degree of interconnectivity between Belgium and France. The possibility of higher market exchanges between these two bidding zones leads to a higher price convergence in more hours yearly and reduces therefore the price differentials. This is also included as key trigger of the 2030 interconnection criteria.
ITEG	Infrastructure to tackle a Need identified by one of the European ITEG indicators referring to the 15% interconnection target for 2030:1.	Based on IOsN report, 15% IC-target requires higher cross border transmission capacity. This project

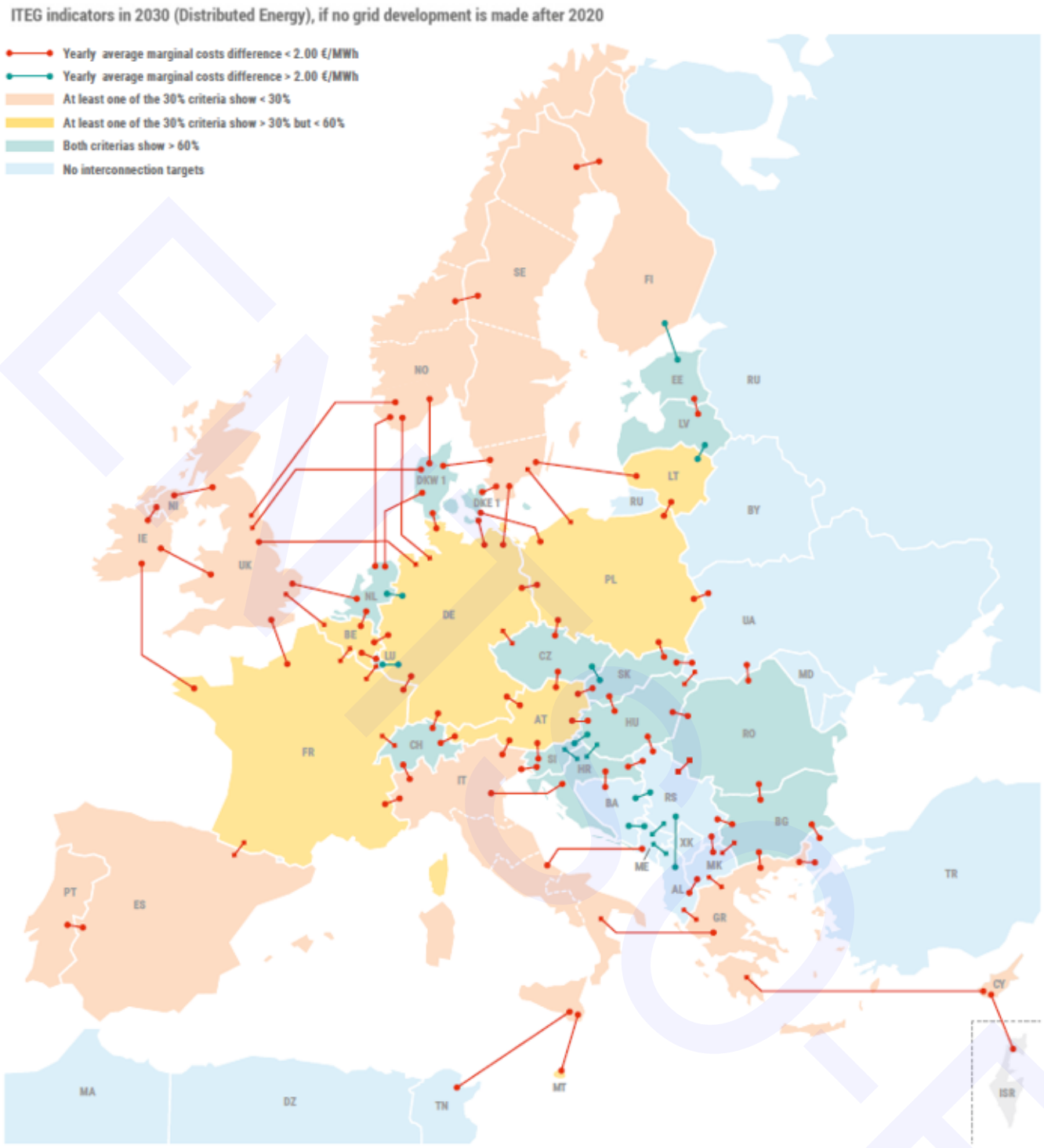
Need		How the project addresses each need (explanation provided by the project promoter(s))
	Reduce the price differential between EU countries to below 2EUR/MWh.2. Contribute to pushing ratio between nominal transmission capacity and installed RES capacity past 30%.3. Contribute to pushing ratio between nominal transmission capacity and peak load past 30%.	contributes to satisfy this need, provided that the project benefits outweigh its costs.
	Contribution to the power system's operational flexibility by controlling power flows and optimizing use of existing infrastructure	These PSTs will help to balance the flows over the different cross border lines of the French Belgian interconnector.
	Infrastructure designed to enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	RES integration implies higher flows in the meshed AC-grid and thus increases the need for cross border transmission capacity. This project satisfies this need in a cost-efficient manner.

Interconnection targets

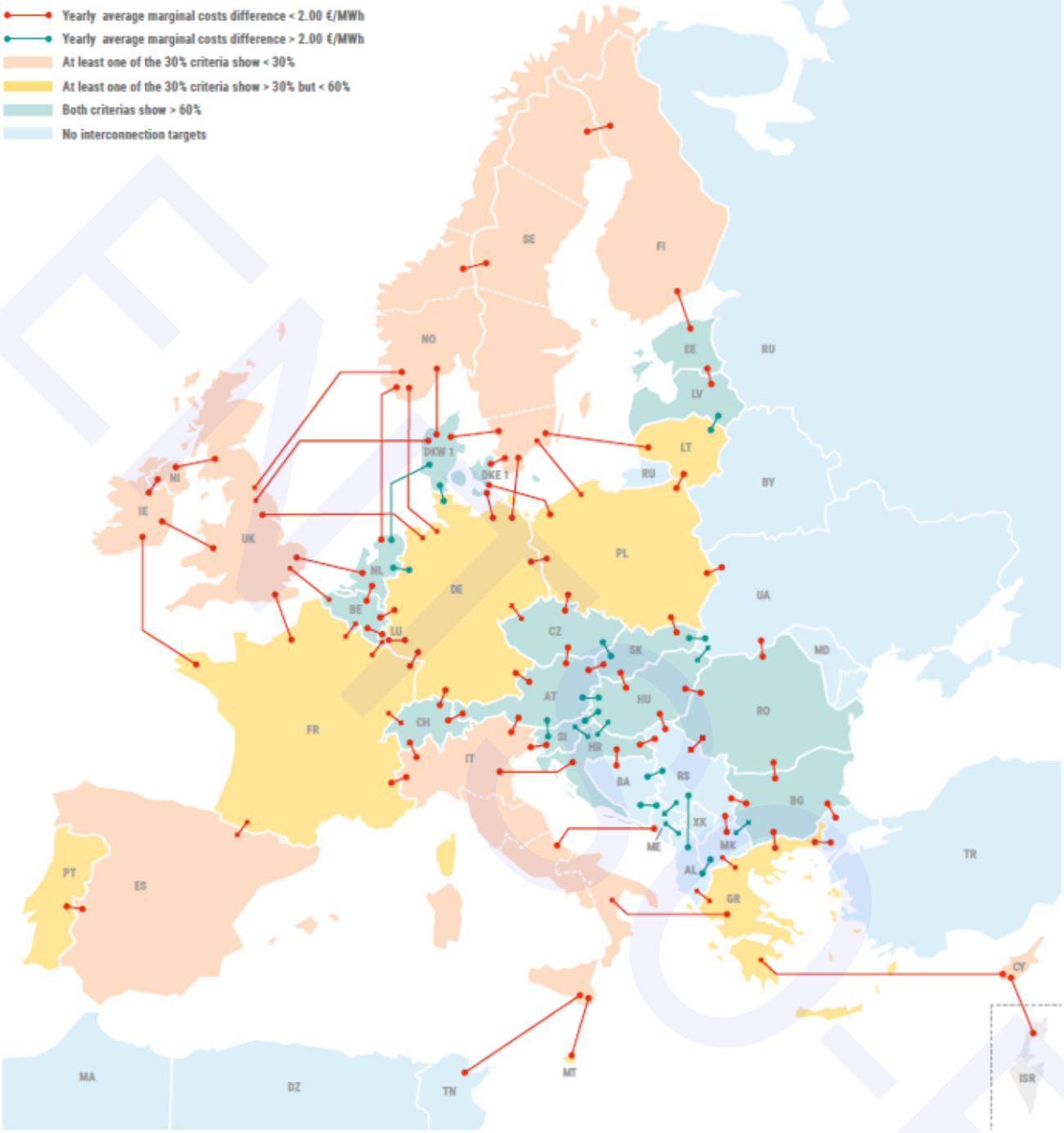
In 2017, the Interconnection Target Expert Group proposed alternative indicators to the 15% interconnection criteria for every country and electrified island with a new methodology developed collaboratively between the European Commission, ENTSO-E, ENTSOG, industry, universities and other experts. The 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.


ITEG indicators in 2030 (National Trends), if no grid development is made after 2020
Yearly average marginal costs difference < 2.00 €/MWh
Yearly average marginal costs difference > 2.00 €/MWh
At least one of the 30% criteria show < 30%
At least one of the 30% criteria show > 30% but < 60%
Both criterias show > 60%
No interconnection targets
SE
FI
NO
EE
RU
LV
LT
DKW 1
DKE 1
RU
BY
NI
IE
UK
PL
NL
DE
UA
BE
LU
CZ
SK
MD
AT
HU
RO
FR
CH
SI
HR
IT
BA
RS
BG
XK
ME
MK
TR
PT
ES
AL
GR
CY
MA
DZ
TN
MT
ISR


ITEG indicators in 2030 (Distributed Energy), if no grid development is made after 2020
Yearly average marginal costs difference < 2.00 €/MWh
Yearly average marginal costs difference > 2.00 €/MWh
At least one of the 30% criteria show < 30%
At least one of the 30% criteria show > 30% but < 60%
Both criterias show > 60%
No interconnection targets
SE
FI
NO
EE
RU
LV
LT
DKW 1
DKE 1
RU
BY
NI
IE
UK
PL
NL
DE
UA
BE
LU
CZ
SK
MD
AT
HU
RO
FR
CH
SI
HR
IT
BA
RS
BG
XK
ME
MK
AL
TR
PT
ES
GR
CY
MA
DZ
TN
MT
ISR

ITEG indicators in 2030 (Global Ambition), if no grid development is made after 2020



Project Assessment

Transfer capacity increase (National Trends 2025)

	Border	A B	B A
Transfer capacity increase (in MW)	Belgium - France	500	500

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	
Aubange-Moulaine: PSTs (AC line series compensation)	+	+	0	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

Residual social impact

Investment	Investment status	Distance (km)	Type of sensitivity

Project Costs

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

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
1281. Aubange-Moulaine: PSTs	20	5%	0.1
Total	20		0.1

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

1281 Considering project status, marginal uncertainties continue to exist regarding CAPEX estimations. These uncertainties are mainly related to potential cost add-ons/reductions that only become apparent closer to the realisation of the project.

ENTSOE