Project Sheet

HVDC CentraLink

Project type	transmission
Project id	1057
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Created on	Feb 11, 2021 5:19:10 PM

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Key Information

Internal Project
DC transmission line
New

Under Consideration

Description

2GW HVDC Connection from northern Germany (North Sea area) to Baden-Württemberg (Großgartach area). A rapid increase of the installed RES capacities in the northern areas o Germany has already by far exceeded the local load expectations and created an additional demand for transmission capacities. The RES based Generation mostly located in the northern regions of Germany has to be connected with the load centers situated in the southern parts of the country. The relevance, as well as, the sustainability of this concept project is directly correlated with the further increase of the installed RES capacities in the northern Germany. As such the idea complies to the vision of North-South-Interconnectors created and pursued by EC.

Project promoters

TRANSNET-BW

Countries

Germany

National development plan(s)

This project is not included in the German National development plan (NEP) 2019.

Additional information on the project

Project sheet backlog

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

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Project Description & Context

Project Investments

Main investment(s): New HVDC line to integrate the additional wind power capacity in the northern Germany in order to supply it to the load centers and storage units in the southern parts of the country.

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
DC transmission line	700	Schleswig Holstein area	Baden-Württemberg area	Under Consideration	2035	New Investment	

Is the project in the reference grid?

No

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.

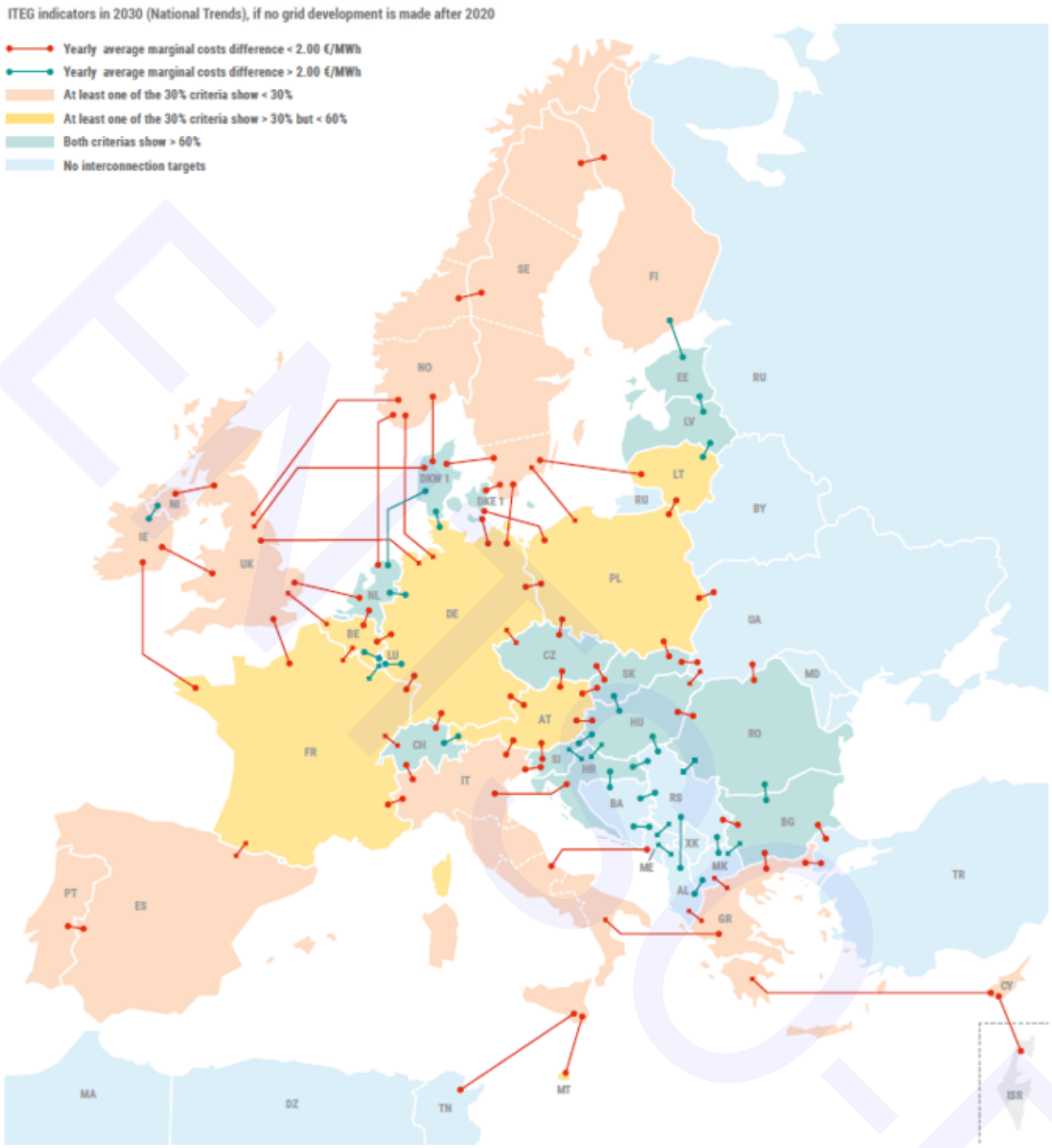
Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructure to improve system flexibility and stability e.g. improve system or local ramp rate, improve transient stability or RoCoF to meet system Needs.	The new HVDC transmission link enable a power transmission over long distances with lower losses and contribute to the improving of voltage stability and security of supply in the German power system.
	Infrastructure to facilitate and accommodate future scenarios, cross-border flows or loop flows.	The further expansion of RES capacities in Germany, especially offshore wind, leads in critical grid situations to the overloads of internal grid elements. The project will create an efficient targeted connection between RES in northern Germany and load centres in southern Germany, which prevents potential bottlenecks in transmission routes.
	Infrastructure designed to	The HVDC transmission link will directly connect

Need		How the project addresses each need (explanation provided by the project promoter(s))
	enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	regions with high amount of RES and load centres in southern Germany, which enables a further integration of RES. This project will also contribute to energy transport from south to north in case when there is high solar radiation and little wind.

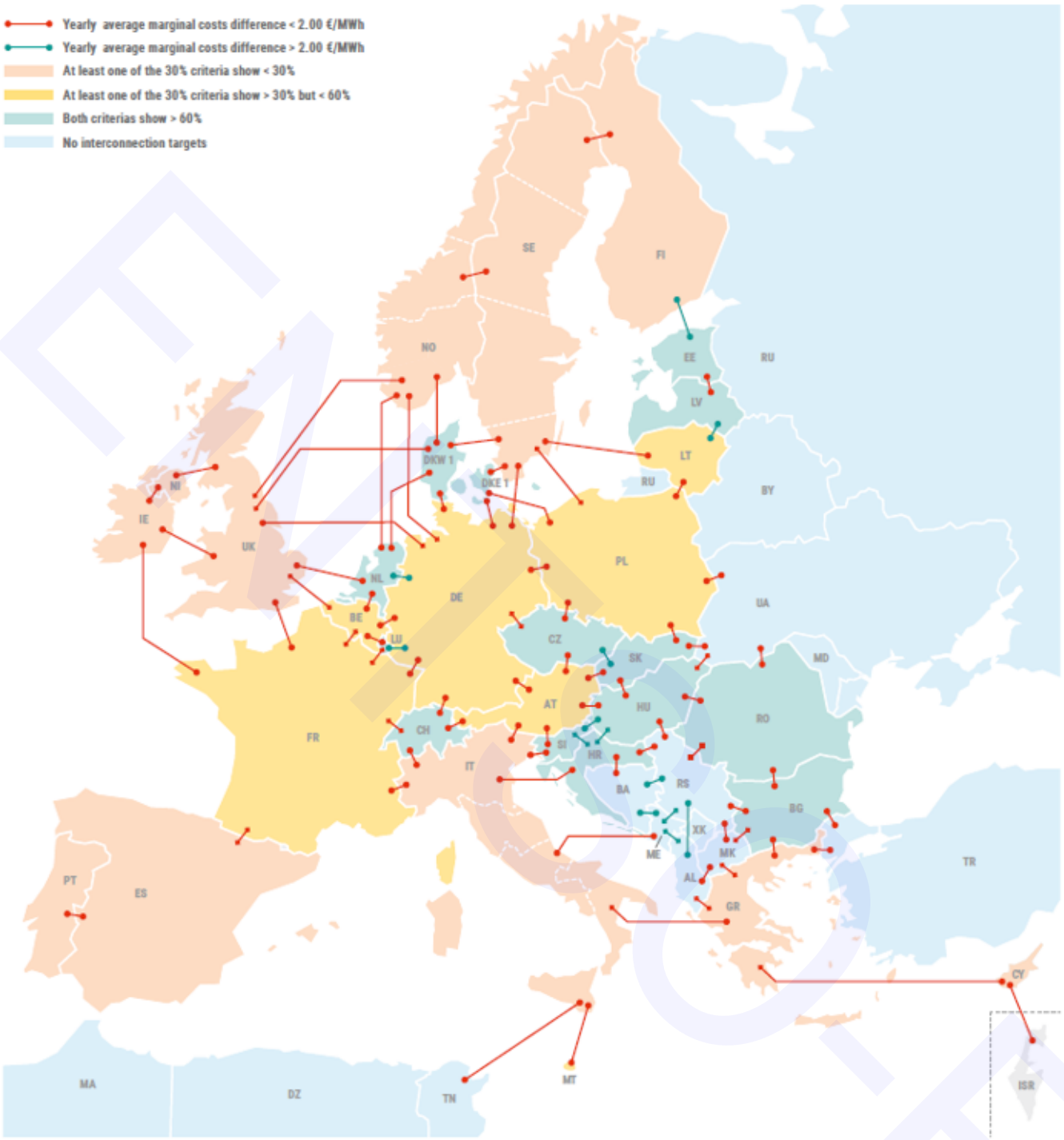
Interconnection targets

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%

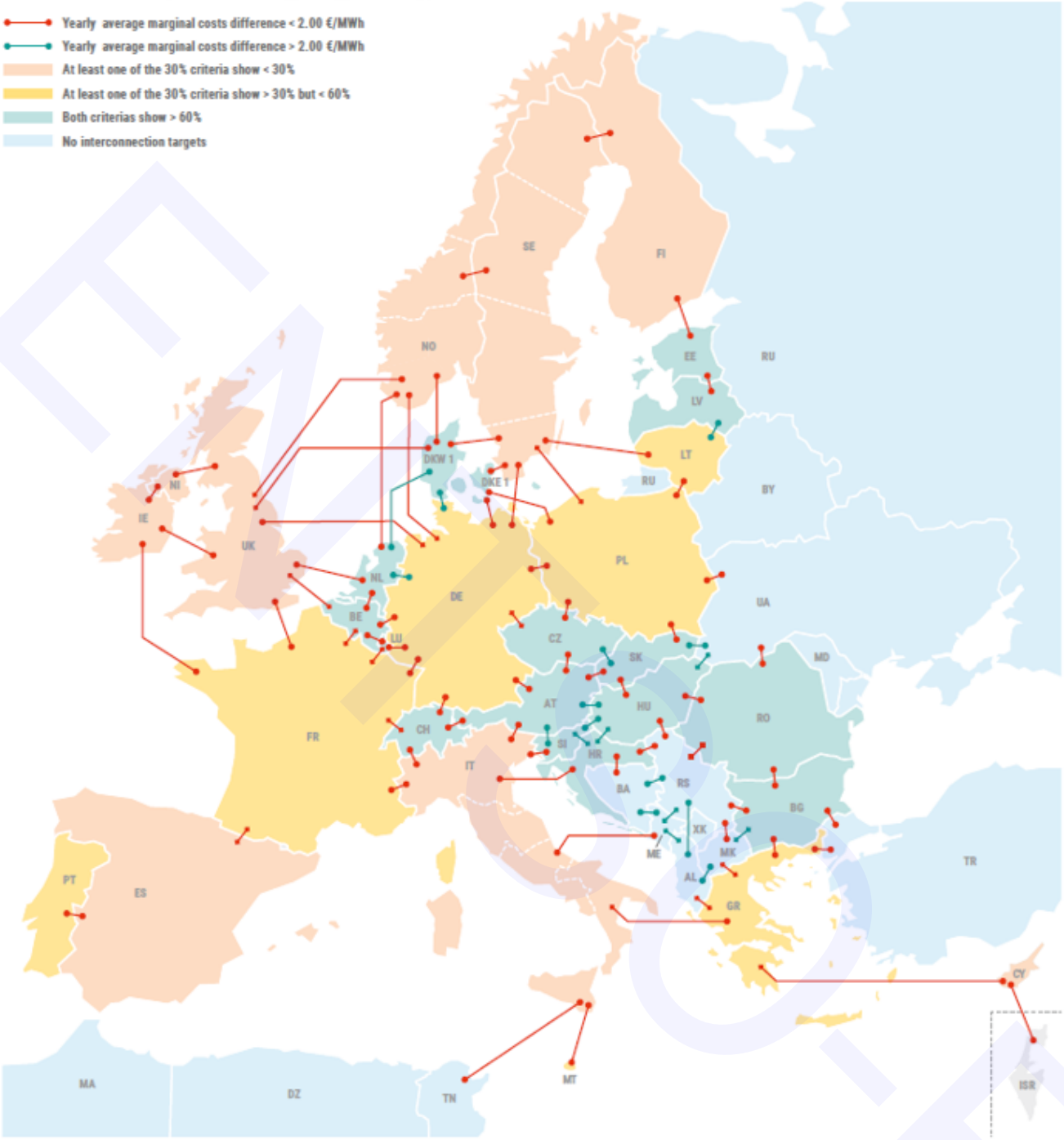
The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.


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
AL
TR
PT
ES
GR
CY
MA
DZ
TN
MT
ISR

ITEG indicators in 2030 (Distributed Energy), if no grid development is made after 2020



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)	Internal (Germany)	2000	2000

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.

This project is currently under consideration. Due to the early planning phase and expected commissioning date after 2035, 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 projects commissioning after 2035.

Residual impact

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

Project Costs

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

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
1722. HVDC Line C3	5600	±20%	44.8
Total	5600		44.8

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

1722 Uncertainty range is needed due to uncertainties in material costs, permitting issues and possibility of routing deviations in such early planning stage. The estimated CAPEX value provided bases on considerations within “investment measures“ according to sec. 23 of the German Incentive Regulation Ordinance (Anreizregulierungsverordnung, ARegV). Possible deviations might exceed the 20% threshold indicated above, at which, BNetzA requires the submission of a change-request for the respective investment measure, are possible due to, inter alia, low maturity, new technologies, cable/OHL ratio, tendering results and other unforeseen circumstances.