Project Sheet

HVDC Interconnector DE-CH

Project type	transmission
Project id	1058
Created by	Lea Dehaudt
Created on	Feb 11, 2021 5:19:38 PM

Index

Key Information 3
Description 3
Project Description & Context 4
Project Investments 4
System Needs addressed by the project 4
Interconnection targets 5
Project Assessment 9
Transfer capacity increase (National Trends 2025) 9
CBA results 9
Residual impact 9
Project Costs 9

ENTSO-E

Key Information

Cross Border Project
DC transmission line
New

Under Consideration

Description

This concept project concerns an extension of German HVDC lines towards Switzerland via an additional HVDC link. It pursues an ultimate goal to realise a new HVDC N-S corridor connecting the load / generation capacities in the North Sea area with the ones installed in the Mediterranean sea region.

Project promoters

SWISSGRID
TRANSNET-BW

Countries

Switzerland
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

Project Description & Context

Project Investments

Main investment(s): The concept of extending German HVDC-Lines towards Switzerland and Italy offers a further potential to realize a new N-S HVDC corridor. Large developments of variable wind and photovoltaic power, coal and nuclear phaseout, mainly gas-based thermal generation, and the pump storage potentials in the Alps are the main drivers of power system evolution that will challenge the future transmission system in central southern Europe.

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		Wendlingen (DE)	Mettlen (CH)	Under Consideration	2040	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.

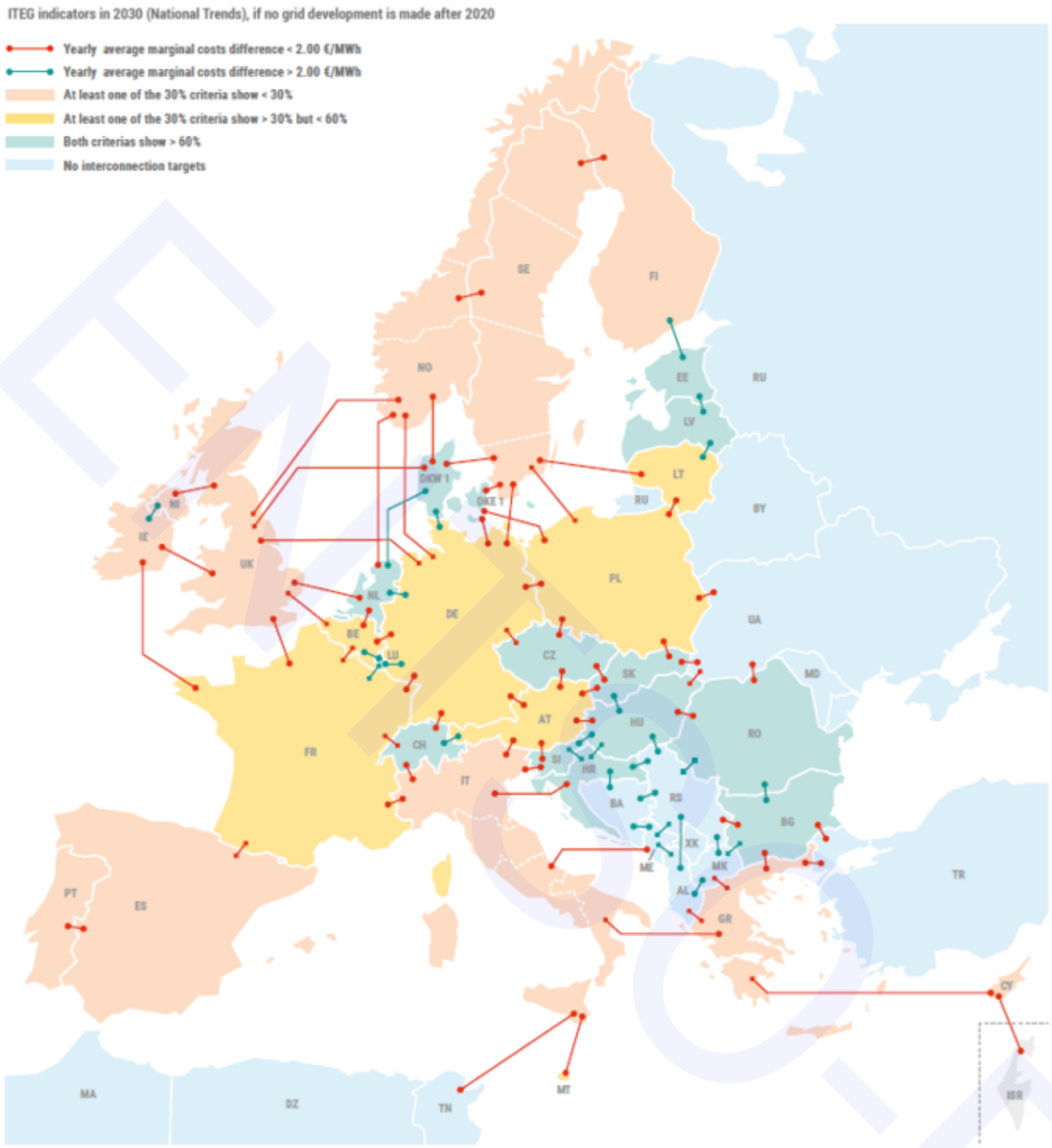
Need		How the project addresses each need (explanation provided by the project promoter(s))
€	Infrastructure to reduce price differentials between EU and/or non-EU countries	This project increases the degree of interconnectivity between the Germany and Switzerland and possibility of higher market exchanges, which lead to higher price convergence.
	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 full controllability of the HVDC link between Germany and Switzerland will contribute to the voltage stability and security of supply, which can significantly increase the flexibility of power systems in both countries.

Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructure designed to enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	The further expansion of RES capacities in Germany, especially offshore wind leads to increasing RES-curtailment in the coming decades. By increasing the transmission capacity between Germany and Switzerland, the alternative HVDC measure allows a higher export in hours of high RES infeed.

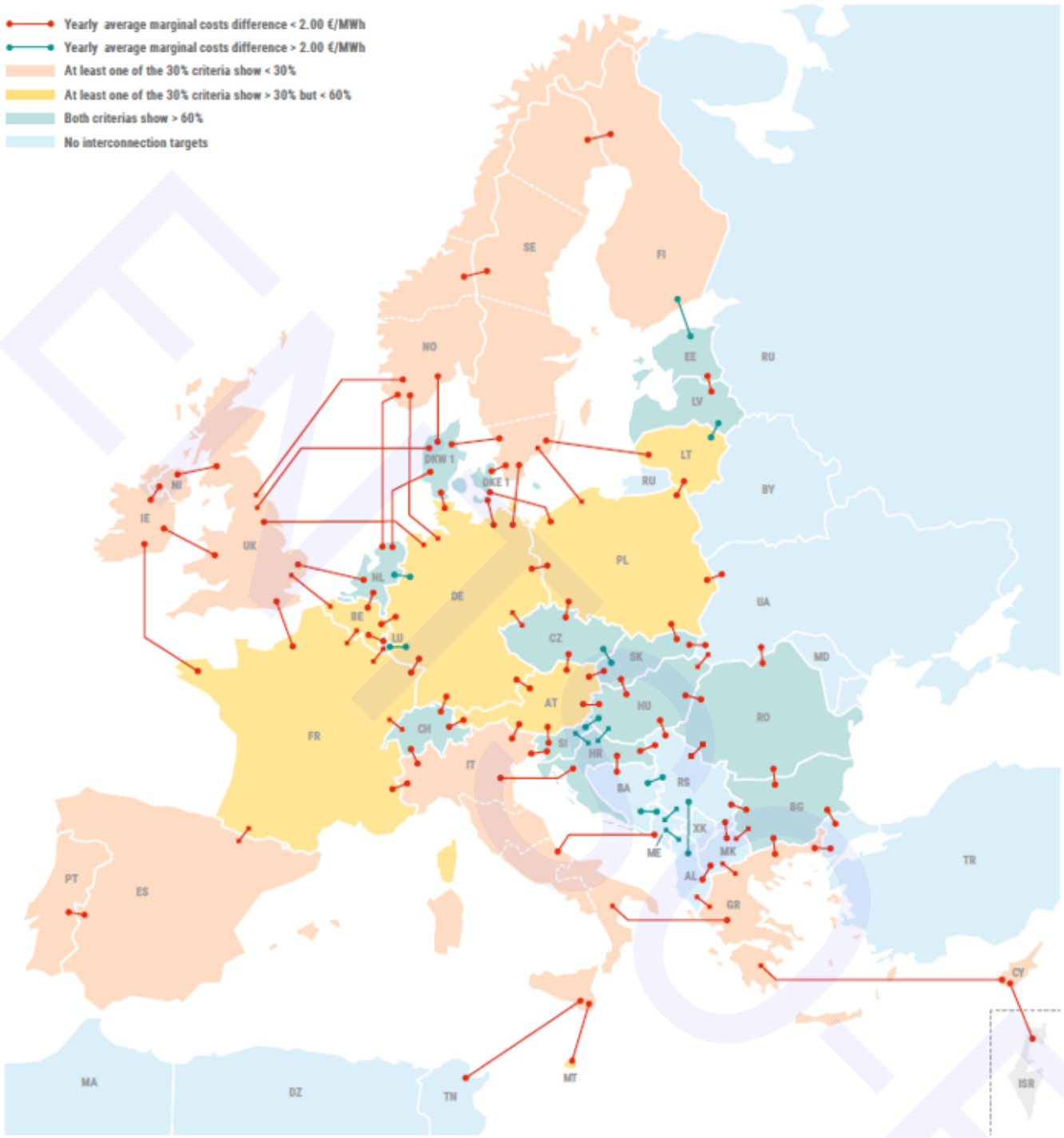
Interconnection targets

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%

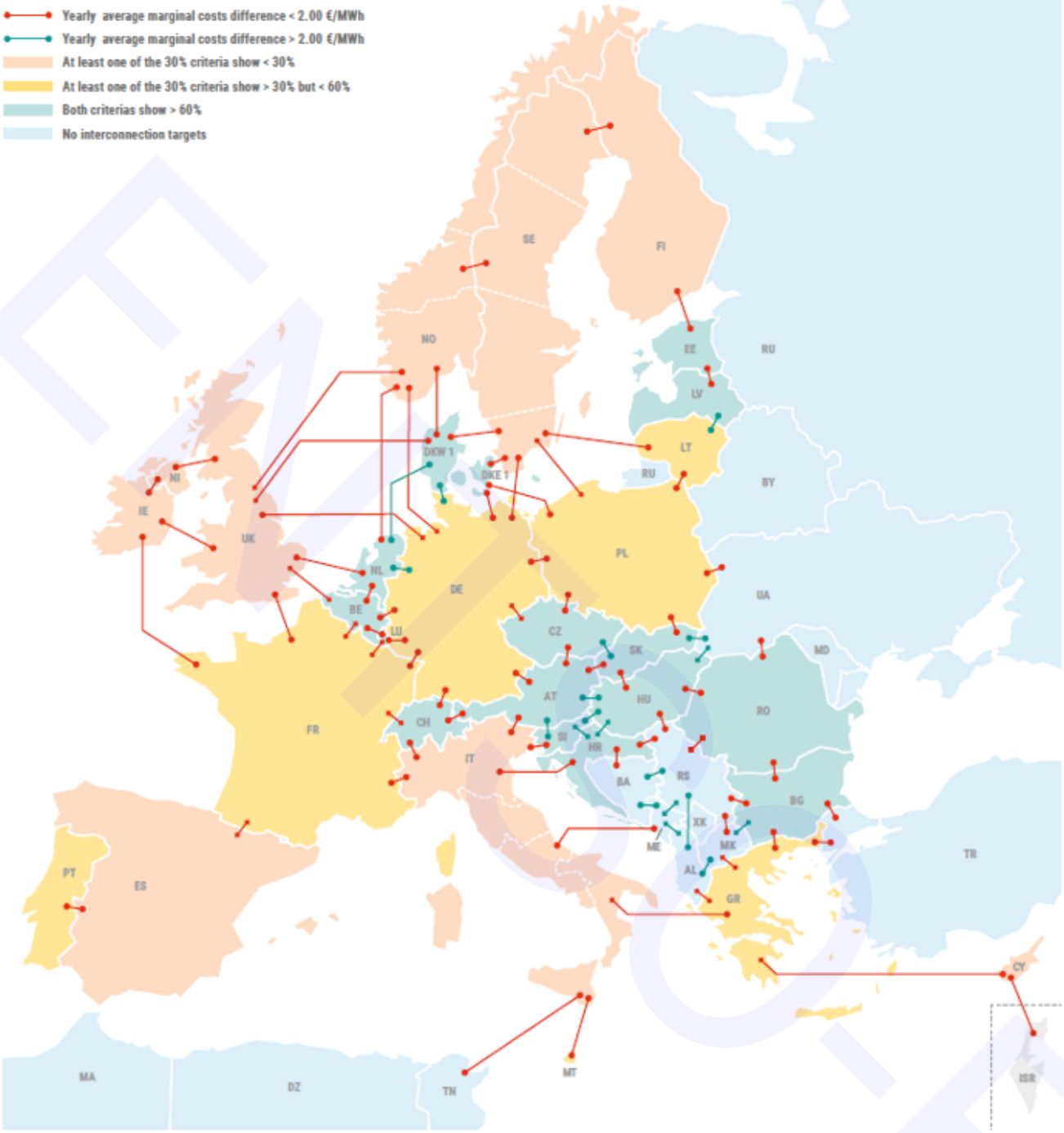
The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.


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)	Switzerland - Germany	1000	1000

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 projects commissioning after 2035.

Comments on the CBA results by the project promoter(s)

This project is currently under consideration. Due to the early planning phase and expected commissioning date after 2035, this project has not been assessed in the 2030 scenarios of the TYNDP 2020.

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
1726. HVDC Line DE-CH	2500	±20%	20
Total	2500		20

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

1726 The estimated CAPEX value provided bases on considerations within “investment measures“ accord-ing 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 circum-stances.