Project Sheet

Reactive compensation for project 197

Project type	transmission
Project id	1061
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Key Information

Internal Project
Reactive compensation device
New

Under Consideration

Description

Reactive compensation in substations to increase the transfer capacity from North to South Finland: installation of STATCOM(s), SVC(s) and/or shunt compensation. This investment was previously included within project 197 but has been set aside to abide with the CBA Guideline clustering rules.

Project promoters

FINGRID

Countries

Finland

National development plan(s)

Kantaverkon kehittämissuunnitelma 2019-2030 (currently in Finnish, will be available in English later), Finland, 2019, codes: FG-NS-5P1 and FG-NS-PECOMP

Additional information on the project

The project consist of 400 kV overhead line, series compensation of the line and substation extensions at the terminal substations.

Fingrid has published a national development plan in 2019. The investment plan presents a detailed look of the projects. The plan is available in Finnish:

https://www.fingrid.fi/globalassets/dokumentit/fi/kantaverkko/kantaverkon-kehittaminen/kantaverkon_kehittamissuunnitelma-2019-2030.pdf

Information on the Metsälinja -overhead line can be found here:
https://www.fingrid.fi/kantaverkko/suunnittelu-ja-rakentaminen/voimajohdot/metsalinja_rakentaminen/

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): Reactive compensation in substations to increase the transfer capacity from North to South Finland: installation of STATCOM(s), SVC(s) and/or shunt compensation.

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
Reactive compensation device				Under Consideration	2022		

Reason for investment clustering

n/a

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.

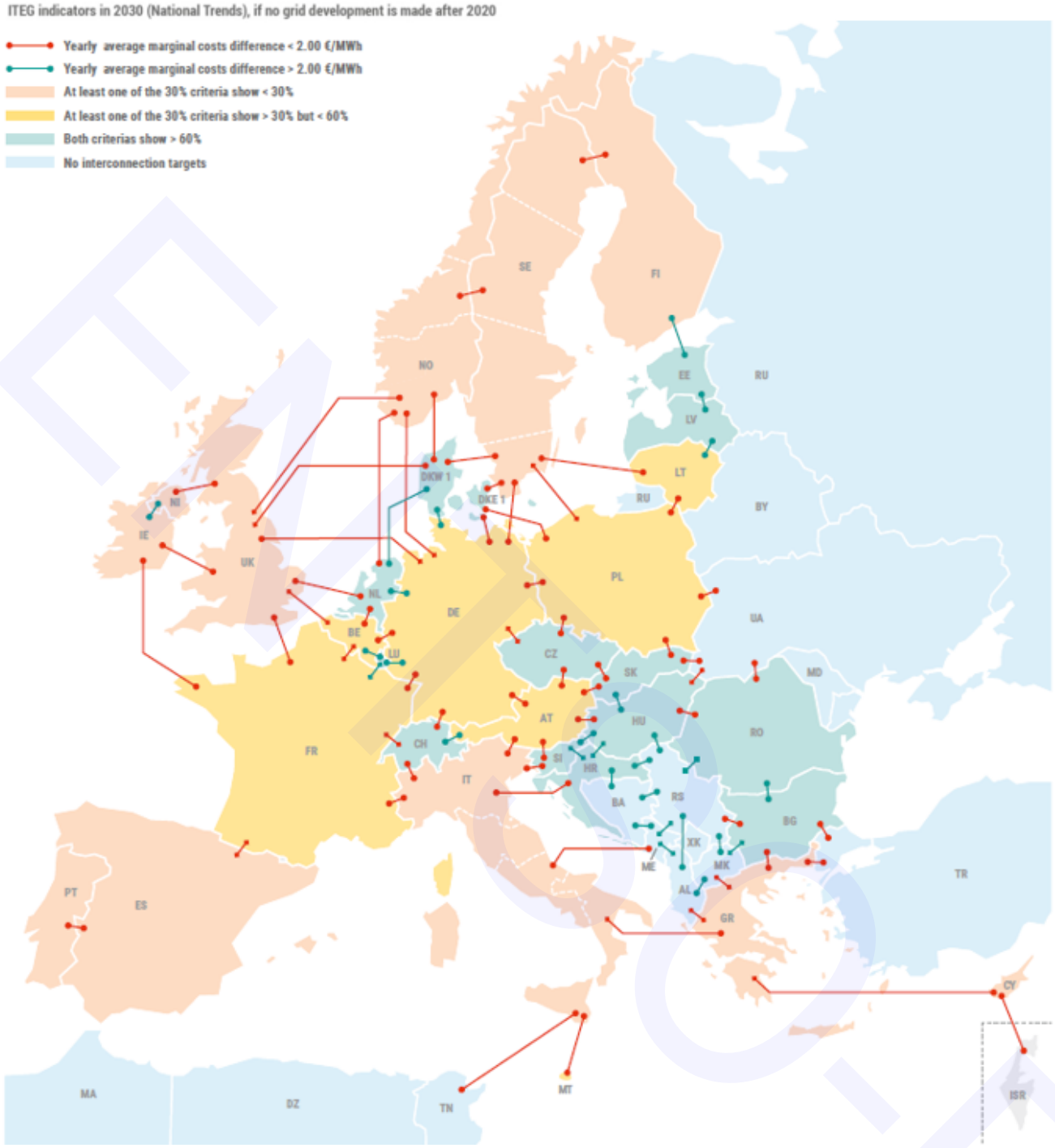
Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructrure improving voltage stability by offering reactive power controllability of converters by system operator(s)	
	Infrastructure to reduce price differentials between EU and/or non-EU countries	
	Infrastructure to improve system flexibility and stability e.g. improve system or local ramp rate, improve transient stability or RoCoF to meet system	

Need		How the project addresses each need (explanation provided by the project promoter(s))
	Needs.	
	Infrastructure designed to enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	

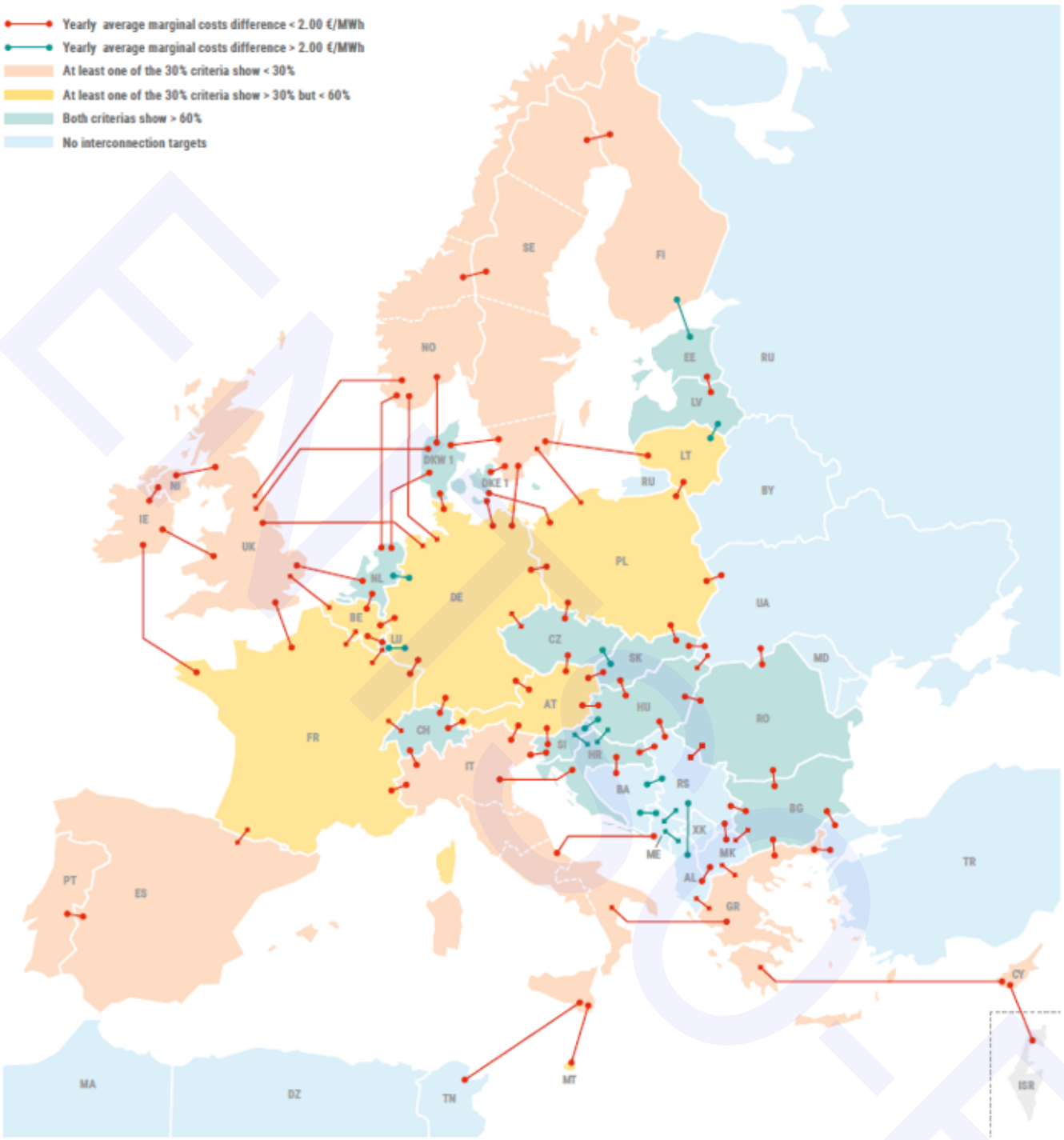
Interconnection targets

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%

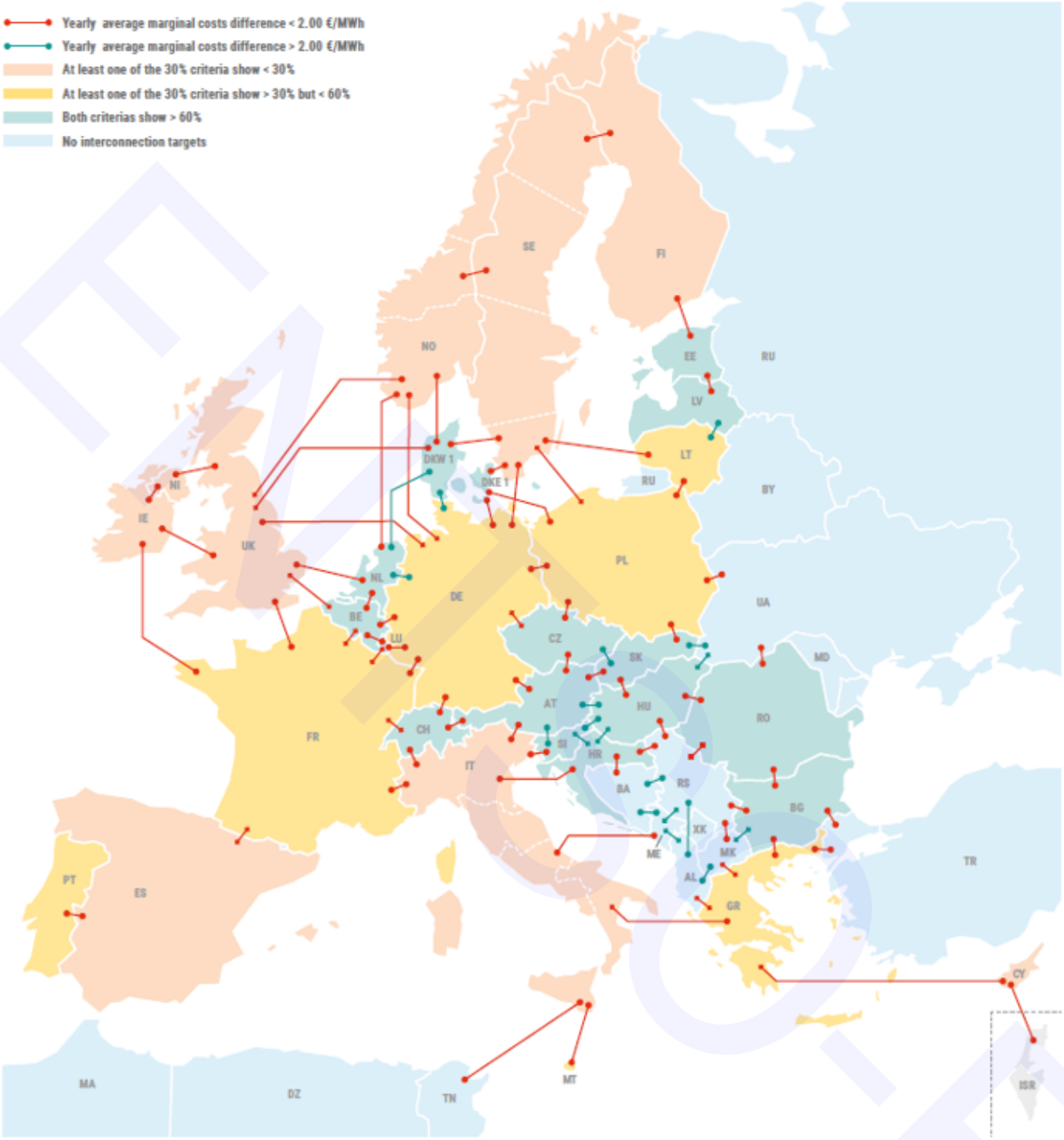
The following maps show the ITEG methodology applied to the TYNDP 2030 scenarios, with the 2020 grid.


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

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.

Because this project is a supporting element of project 197, it does not have separate CBA results.

Non scenario-dependent indicator(s)

B8.0 Stability (Transient, Voltage and Frequency Stability)	Transient stability	Voltage stability	Frequency stability	
Reactive compensation (STATCOM)	+	++	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).

Project Costs

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

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
1729. Reactive compensation	20	+/- 100%	0.1
Total	20		0.1

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

1729