Project Sheet

Lienz (AT) - Veneto region (IT) 220 kV

Project type	transmission
Project id	375
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ENTSOE

Key Information

Cross Border Project
AC transmission line
Upgrade

Planned But Not Yet Permitting

Description

Reconstruction of the existing 220kV-interconnection line between Lienz and Veneto Region (IT). The project includes the adjustment of power regulation devices.

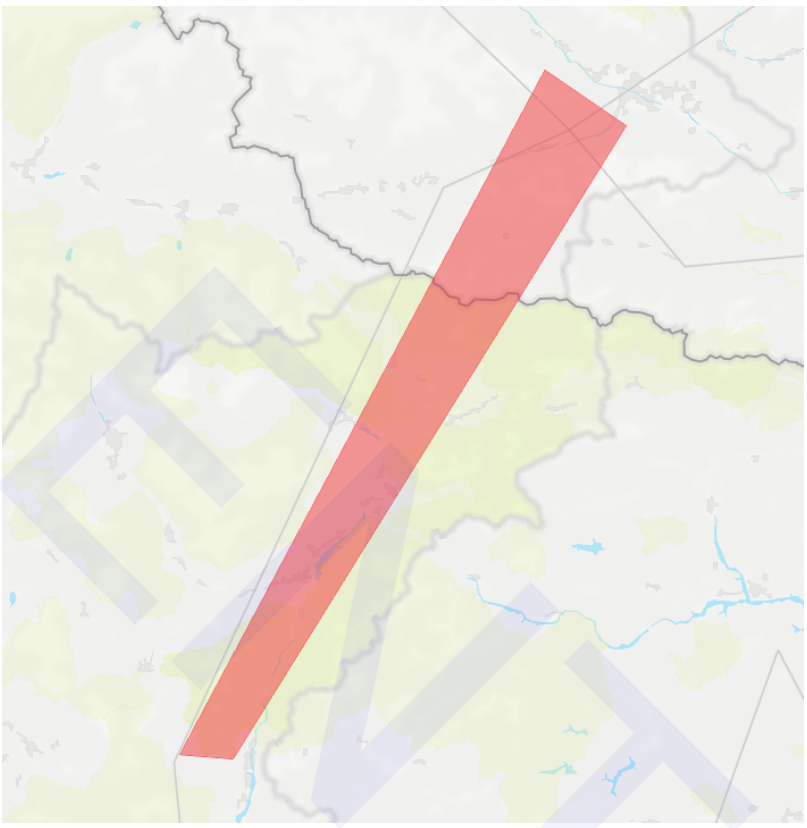
Due to an update of the list of cross-border projects interconnecting Italy with other Member States within 2020, the 2020 interconnection ratio of Italy has been updated accordingly (from previous value of 9% computed by ENTSO-E in TYNDP 2018 to roughly 8%). As the Interconnection level of 10% will not be reached by 2020, Italy is requested to investigate options of further interconnections.

Project promoters

Austrian Power Grid
TERNA

Countries

Austria
Italy



National development plan(s)

Avanzamento Piani di Sviluppo precedenti 2015/Pag.168, Italy

Additional information on the project

Italian Development Plan:

http://www.terna.it/it-it/sistemaelettrico/pianodisviluppodellarete/pianidisviluppo.aspx

Austrian: National development plan:

http://www.apg.at/en/netz/netzausbau/Netzentwicklungsplan

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): Reconstruction of the existing 220kV-interconnection line between Lienz and Veneto Region (IT)

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
AC transmission line	140	Lienz (AT)	Veneto region (IT)	Planned But Not Yet Permitting	2027	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.

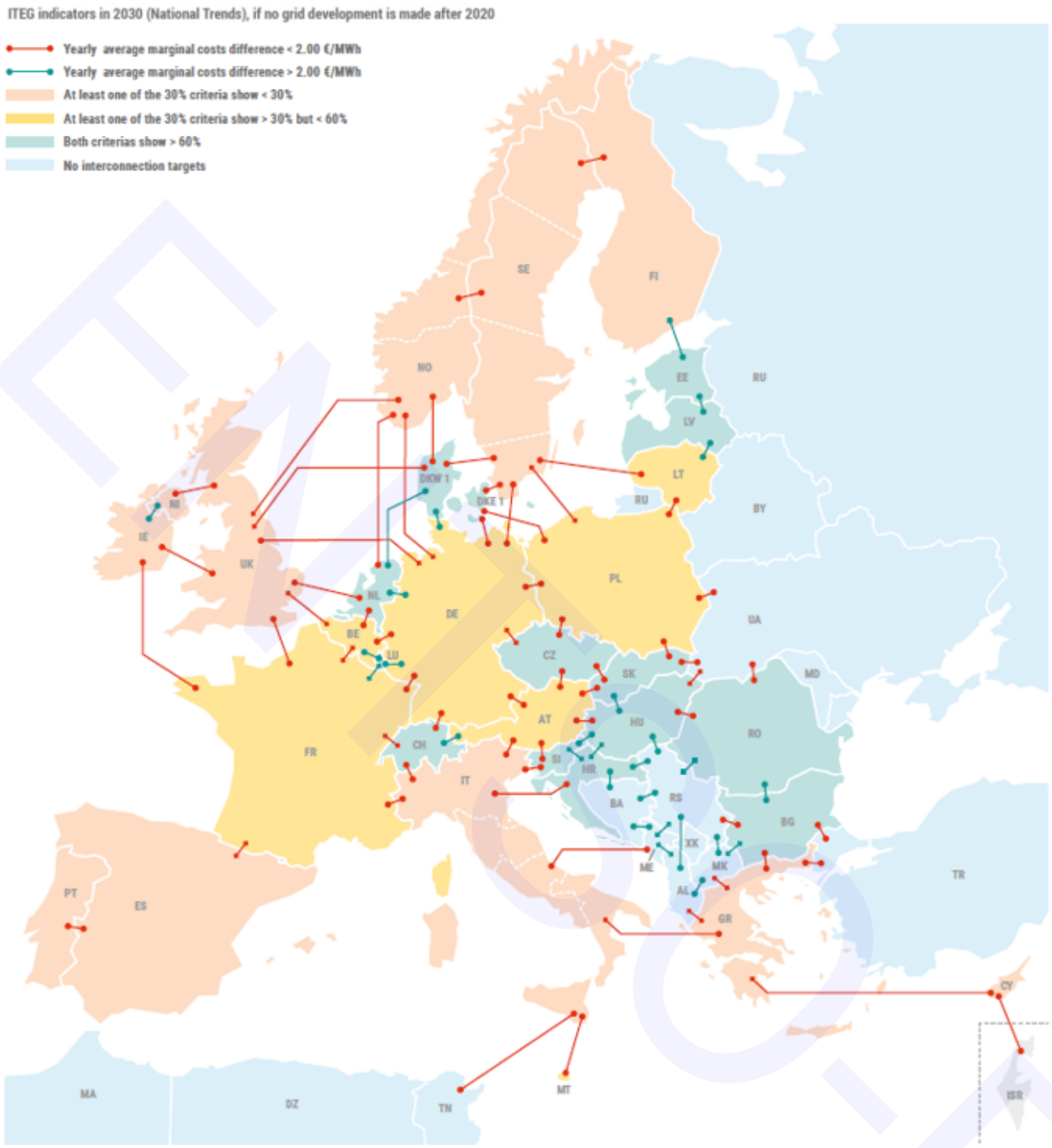
Need		How the project addresses each need (explanation provided by the project promoter(s))
	Infrastructure to reduce price differentials between EU and/or non-EU countries	This project contributes to lowering the price differentials between Italian market zones and Austria
	Infrastructure designed to enable cost-efficient grid connection of high volumes of RES and/or reduce RES curtailment	This project will improve the integration of italian RES generation
	Infrastructure to address system adequacy deficiencies and/or mitigate the risk of power failures.	This project will contribute to reduce system adequacy deficiencies by

Need		How the project addresses each need (explanation provided by the project promoter(s))
		increasing transmission capacity.
ITEG	Infrastructure to tackle a Need identified by one of the European ITEG indicators referring to the 15% interconnection target for 2030:1. 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%.	This project helps Italy to reach the 15% interconnection target by 2030.

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
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RS
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XK
ME
MK
AL
TR
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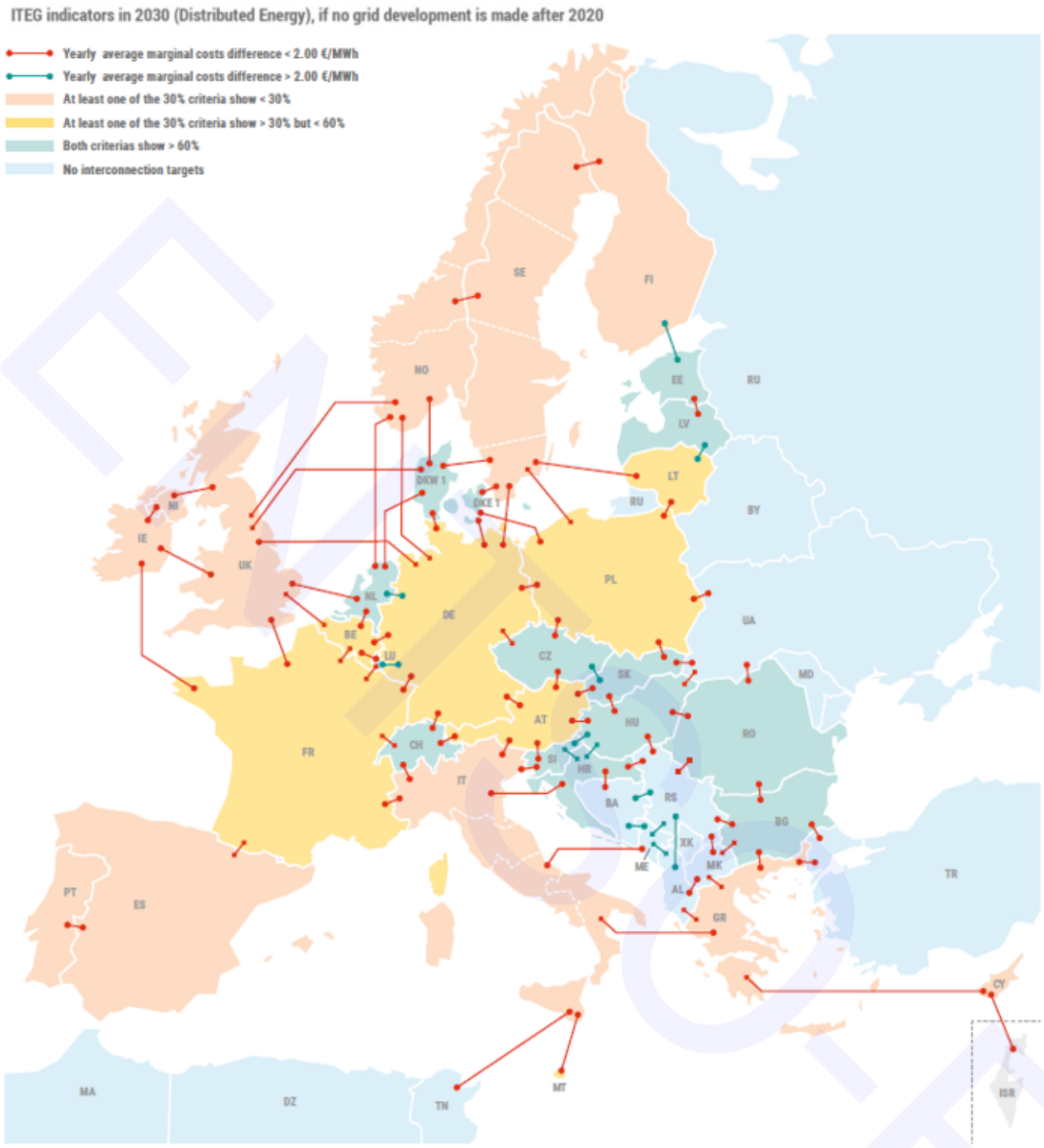
CY
MA
DZ
TN
MT
ISR


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
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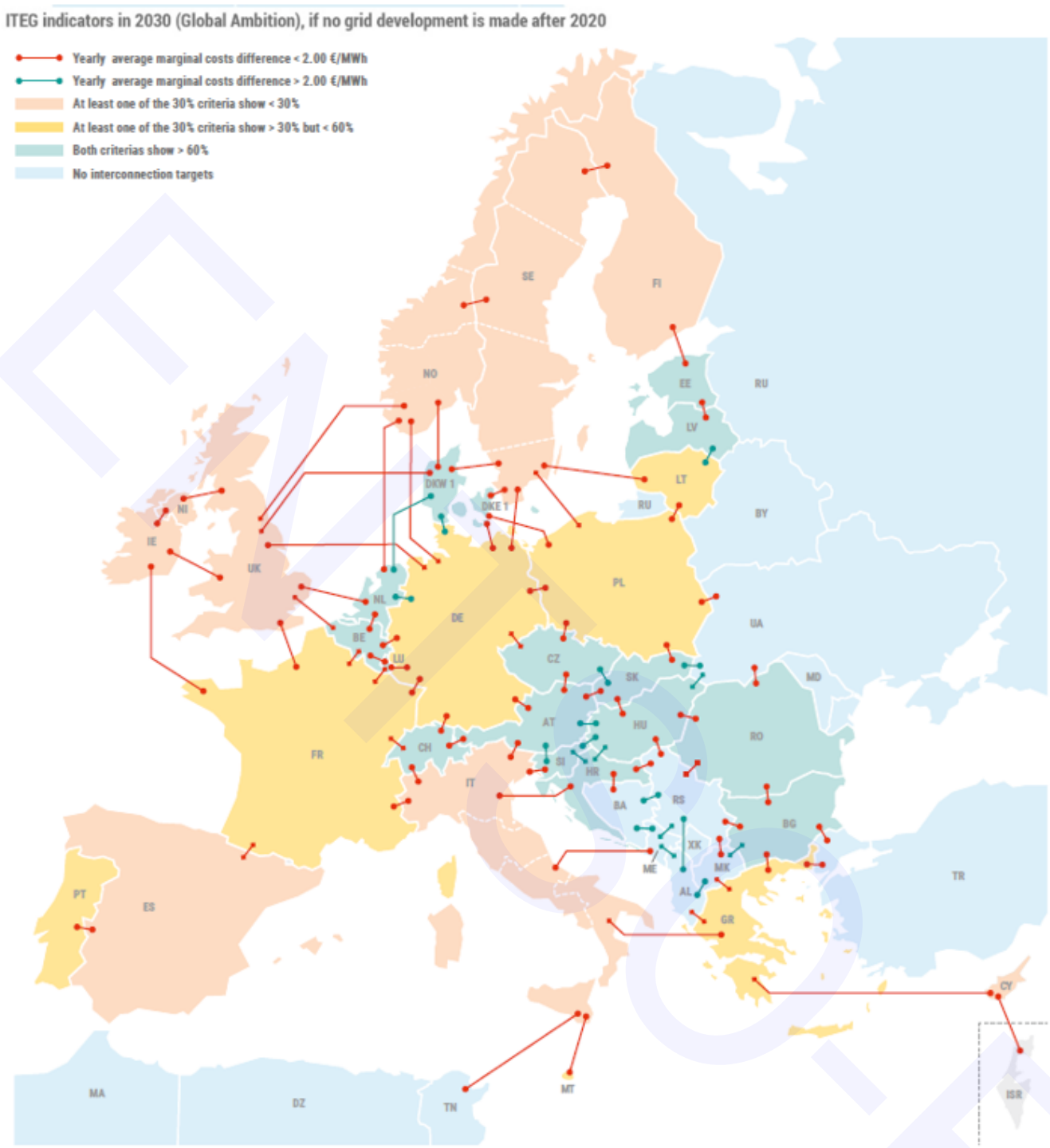
ITEG indicators in 2030 (Global Ambition), if no grid development is made after 2020
Yearly average marginal costs difference < 2.00 €/MWh
Yearly average marginal costs difference > 2.00 €/MWh
At least one of the 30% criteria show < 30%
At least one of the 30% criteria show > 30% but < 60%
Both criterias show > 60%
No interconnection targets
SE
FI
NO
EE
RU
LV
LT
RU
BY
DKW 1
DKE 1
NI
IE
UK
PL
UA
NL
DE
BE
LU
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DZ
TN
MT
ISR

Project Assessment

Transfer capacity increase (National Trends 2025)

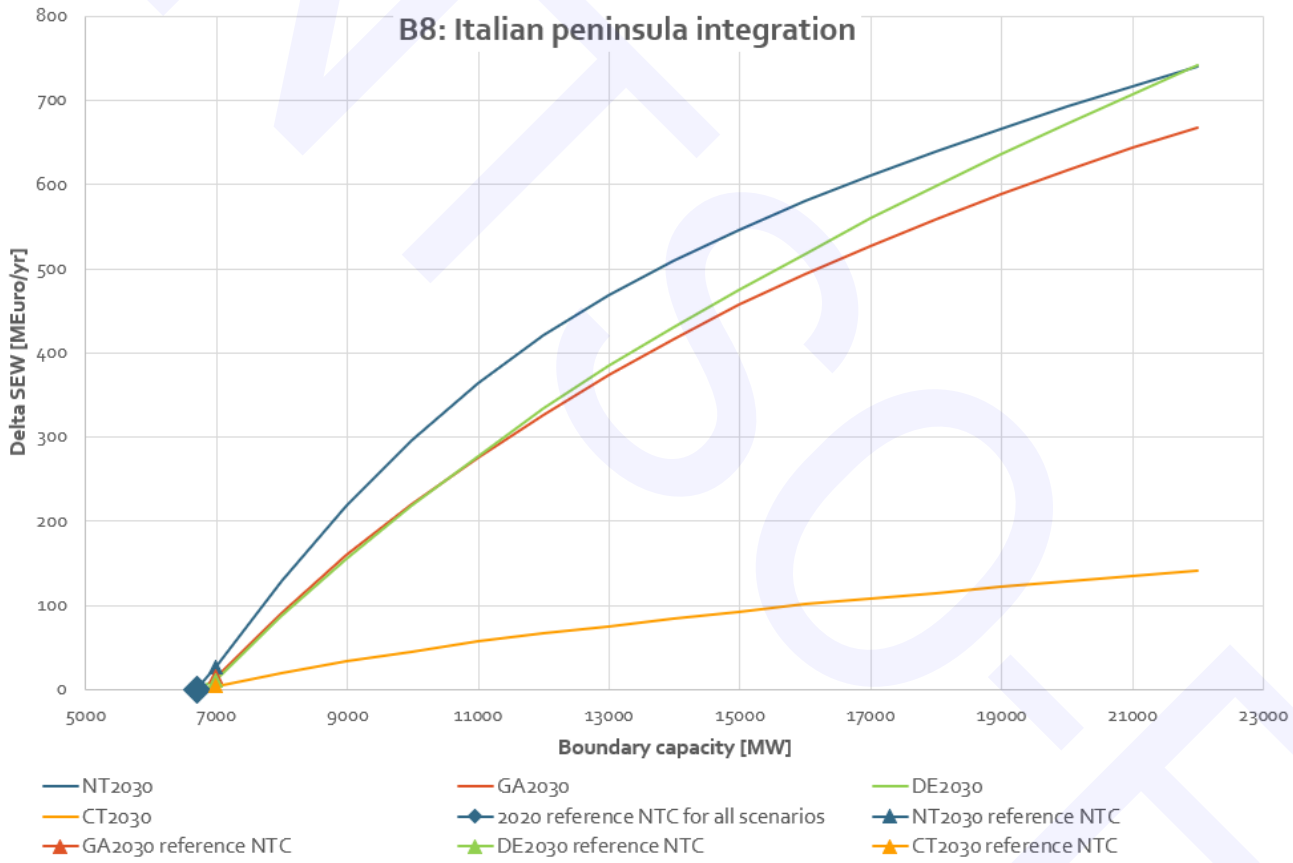
	Border	A B	B A
Transfer capacity increase (in MW)	Austria - Italy	500	500

Boundary capacity diagram

Network boundary the projects helps mitigate

Italian Peninsula integration

Boundary capacity diagram



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.

Central scenario: National Trends

National Trends is the central policy scenario of the TYNDP2020, designed to reflect EU member state's National Energy and Climate Plans (NECP), in line with the requirement to meet current European 2030 energy strategy targets.

			Comparison of the COP21 scenarios with NT2030 average result		
	NT2025	NT2030	DE2030 is < or > than NT2030	GA2030 is < or > than NT2030	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M € / year)	max average min	17 12 10	52 45 39	<	<	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	max average min	-4 -5 -6	-3 -10 -14	>	<	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting from RES integration	max average min	1 1 0	4 2 0	<	<	ENTSO-E assessment

Reduction of CO2 and GHG emissions

B4 Non-CO2 emissions (kg/year)

B4a Nitrogen oxides	average	548	4922	n/a	n/a	ENTSO-E assessment
B4b Ammonia	average	-27	114	n/a	n/a	ENTSO-E assessment
B4c Sulfur dioxide	average	968	5191	n/a	n/a	ENTSO-E assessment
B4d Particular matter 5	average	-110	-26117	n/a	n/a	ENTSO-E assessment
B4e Particulate		18	223	n/a	n/a	ENTSO-E

matter 10	average					assessment
B4f Non-methane volatile organic compounds	average	-150	-26417	n/a	n/a	ENTSO-E assessment
B2a Annual CO2 variation from market simulation (ktonnes / year)	max average min	276 219 163	492 365 98	<	>	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M € / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	-8 -17 -36	-12 -26 -59	>> >> >>	< < <<	ENTSO-E assessment
B2b Annual CO2 variation due to network losses (ktonnes / year)	average	134	178	n/a	n/a	ENTSO-E assessment
B2b_€ Annual Societal cost variation resulting from CO2 variation from network simulation monetised (M € / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	-5 -10 -23	-6 -13 -29	n/a	n/a	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	max average min	18 12 3	113 46 23	<	>	ENTSO-E assessment
B3a Connected RES (MW)	-			n/a	n/a	ENTSO-E assessment

Impact on grid losses

B5 Variation of network losses (GWh / year)	average	279	324	n/a	n/a	ENTSO-E assessment
B5_€ Variation of network losses monetised (M€ / year)	average	13	12	n/a	n/a	ENTSO-E assessment

Security of supply

B6 Annual reduction in Energy Not Served (MWh / year)	max average min		51	n/a	n/a	ENTSO-E assessment
B6_€ Annual Socio-Economic Welfare increase resulting from reduction in Energy Not Served monetised (M€ / year)	average	n/a	0.51	>	n/a	ENTSO-E assessment

Scenarios: Distributed Energy & Global Ambition

DE and GA are two scenarios created in line with the COP21 targets to understand the impact on infrastructure needs agains different pathways reducing EU-28 emissions to net-zero by 2050. For these two scenarios, projects were assessed with a subset of CBA parameters.

		DE2030	GA2030	

Increase in socio-economic welfare

B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	24	27	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	9	-18	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting	average	2	2	ENTSO-E assessment

from RES integration			

Reduction of CO2 and GHG emissions

B2a Annual CO2 variation from market simulation (ktonnes / year)		average	-161	508	ENTSO-E assessment
B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price	60€/ ton 100€/ ton 189€/ ton	1 8 22	-13 -33 -78	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)		average	44	55	ENTSO-E assessment
B3a Connected RES (MW)		-			ENTSO-E assessment

Benefits submitted by promoters based on scenarios other than the TYNDP2020 scenarios

	2025	2030	
B7 System Flexibility – Balancing Energy Exchange		++	Qualitative assessment by ENTSO-E, based on the study and values provided by the project promoter(s). ENTSO-E confirms the consistency of the proposed indicator with the CBA Guideline 3.0. About the computation of this indicator by the project promoter(s)

This indicator was computed based on Decentralised (DEC) , in a study performed by Terna in 2020. The promoter(s) stated that the submitted value was computed in accordance with the CBA Guideline and explained it as follows:

The indicator B7, adopted in Italian NDP, defines the cost variation for dispatching services, with reference to reduction of internal congestion and ancillary services

The promoter(s) certified that the values submitted and assessed in the study relate to countries located within the ENTSO-E perimeter only.

Non scenario-dependent indicator(s)

B8.0 Stability (Transient, Voltage and Frequency Stability)	Transient stability	Voltage stability	Frequency stability	
Lienz (AT) - Veneto region (IT) (New AC line)	++	++	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.

Sensitivity Study: Current Trends

'Current Trends' describes a future where the energy transition is slower than planned.

		CT2030	
Increase in socio-economic welfare			
B1 Annual Socio-Economic Welfare (SEW) increase (M€ / year)	average	8	ENTSO-E assessment
B1_CO2 Annual Socio-Economic Welfare increase resulting from CO2 emissions reduction	average	-2	ENTSO-E assessment
B1_RES Annual Socio-Economic Welfare increase resulting from RES integration	average	0	ENTSO-E assessment
Reduction of CO2 and GHG emissions			
B2a Annual CO2 variation from market simulation (ktonnes / year)	average	59	ENTSO-E assessment

B2a_€ Annual Societal cost variation resulting from CO2 variation from market simulation monetised (M€ / year)	CO2 price 60€/ ton 100€/ ton 189€/ ton	-2 -4 -9	ENTSO-E assessment

Integration of renewable energy sources

B3 Annual avoided curtailment (RES integration) (GWh / year)	average	5	ENTSO-E assessment
B3a Connected RES (MW)	-		ENTSO-E assessment

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

About B2 - CO2 emissions:

Results relative to CO2 emissions are strictly dependent on scenario assumptions (especially lifetime of lignite and coal power plants, that should be assessed from a perspective consistent with considered time horizons 2030 and 2040).

About B6 - Annual Socio-Economic Welfare increase resulting from reduction in Energy Not Served monetised):

In Italy a different parameter is used for the monetization of the Expected Energy Not Served (EENS) variation due to this project, because the current parameter used by ENTSOE in this project sheet (10 k€/MWh) is not compliant with National regulations in force in Italy n°627/2016 (“Minimum Requirements for the preparation of the Ten Year Development Plan of the National Transmission Network” according to which benefits related to reduction of EENS is monetized through a Value of Lost Load (VOLL) in a range between 20 k€/MWh and 40 k€/MWh.

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
Lienz (AT) - Veneto region (IT)	Planned But Not Yet Permitting	31	-

Note based on CBA Guideline 3.0: Given that the actual route of the project might not be defined due to the low degree of maturity of its investment(s), an environmental assessment is not yet available.

Residual social impact

Investment	Investment status	Distance (km)	Type of sensitivity
Lienz (AT) - Veneto region (IT)	Planned But Not Yet Permitting	3	-

Note based on CBA Guideline 3.0: Given that the actual route of the project might not be defined yet because of the low degree of maturity of its investment(s), a residual social impact assessment is not yet available.

Project Costs

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

	CAPEX (Meuro)	Uncertainty range (%)	OPEX
1555. Lienz (AT) - Veneto region (IT)	175	10	0.9
Total	175		0.9

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

1555 costs are currently under review