Interconnected Network of ENTSO-E 2019

(as of 31.12.2018)

0 50 100 200 300 400 km

Scale: 1 : 4 000 000

Lines and cables

Different voltages (colours):
- 750 kV transmission line
- 500 kV transmission line
- 380-400 kV transmission line
- 330-345 kV transmission line
- 220-275 kV transmission line
- 110-150 kV transmission line
- DC-line

Different lines (for all voltages) under operation
- 1 circuit
- Double circuit
- Multiple circuit with 1 circuit mounted
- >= 3 circuits

Additional information for all lines and voltages
- Under construction (dashed)
- Planned, not under construction lines and cables
- Currently used voltage
- Temporary voltage
- Numerical as explained below

Other elements

- Connection line
- Substation
- Phase shifter
- Converter station
- Substation/Converter back-to-back
- Substation(s) & Power plant(s)

Power plants

Symbols for under operation and under construction
- Biogas
- Biomass
- Coal derived gas/Lignite
- Coal derived gas
- Fossil fuel
- Fossil gas
- Fossil oil
- Geothermal
- Hard coal
- Hydro run of river
- Hydro mixed pump storage
- Hydro pure pump storage
- Hydro pure storage
- Hydro run of river and pondage
- Fuels in Mix
- Nuclear
- Oil shale
- Other fossil fuel
- Other (not listed)
- Peat
- Solar photovoltaic
- Solar thermic
- Waste
- Waste (non renewable)
- Waste (renewable)
- Wind farm

The map is a comprehensive illustration of the interconnected networks. It shows existing elements and those under construction (power plants, converters, substations and high-voltage cables/lines with lowers assigned for voltages of ≥ 220 kV and/or cross-border significance) in operation as well as projects of common interest (PCI) and projects of mutual interest (PMI). Some lines cross national frontiers and are operated by TSOs. If the operation voltage differs from that indicated by the colour, the voltage is indicated numerically. Where more than one circuit exists, this is indicated by the number of lines. Where no number is indicated, the number of circuits and the voltage at the first stage of construction (depending on the design of towers), the numerals in brackets indicate the number of circuits and the voltage at the present stage of construction.

1 (x380 / x220) 15 (x380 / 2x220 / 1x220) 31 4x380 (3x380 / 2x220)
2 (x380 / 2x220) 16 (x380 / 2x220 / 2x220) 32 (x380 / 3x220)
3 (x380 / 3x220) 17 (x380 / 2x220 / 3x220) 33 4x380 (3x380 / 3x220)
4 (x380 / 4x220) 18 (x380 / 2x220 / 1x220 / 1x220) 34 (x380 / 4x220)
5 (x380 / 5x220) 19 (x380 / 2x220 / 2x220 / 1x220) 35 4x380 (3x380)
6 (x380 / 6x220) 20 (x380 / 2x220 / 3x220 / 1x220) 36 4x380 (3x380 / 1x220)
7 (x380 / 2x220 / 2x220) 21 (x380 / 2x220 / 2x220 / 2x220) 37 4x380 (3x380 / 2x220)
8 (x380 / 2x220 / 3x220) 22 (x380 / 2x220 / 3x220 / 2x220) 38 4x380 (3x380 / 3x220)
9 (x380 / 3x220 / 3x220) 23 (x380 / 3x220 / 3x220 / 2x220) 39 4x380 (3x380 / 4x220)
10 (x380 / 4x220 / 4x220) 24 (x380 / 4x220 / 4x220 / 2x220) 40 4x220

NGC threshold in MW

All existing power plants and those under construction with NGC (Net Generating Capacity) equal or higher than the values indicated in the following table are displayed on the map even if they are not connected to the high-voltage network. CHP (Combined Heat and Power) plants are displayed even if their NGC is lower than the threshold mentioned in the table. The table below indicates the visibility of CHP by country.

Country	Non-renew.	Renew.	CHPs included	Country	Non-renew.	Renew.	CHPs included
Albania	100	50	yes	Ireland	100	50	n.a.
Austria	100	50	yes	Italy	100	50	n.a.
Belgium	100	50	yes	Latvia	100	50	n.a.
Bosnia & Herzegovina	100	50	yes	Lithuania	100	50	n.a.
Bulgaria	100	50	yes	Luxembourg	100	50	n.a.
Croatia	100	50	yes	Montenegro	100	50	n.a.
Cyprus	100	50	n.a.	Netherlands	100	50	no
Czech Republic	100	50	yes	Norway	100	50	no
Denmark	100	50	yes	Poland	100	50	yes
Estonia	100	50	yes	Portugal	100	50	yes
Finland	100	50	yes	Romania	100	50	yes
France	100	50	yes	Serbia	100	50	yes
FYROM	100	50	yes	Slovakia	100	50	yes
GB (England & Wales)	100	50	yes	Slovenia	100	50	yes
GB (Northern Ireland)	100	50	yes	Spain & Canaries	100	50	yes
GB (Scotland Grid)	100	50	yes	Sweden	100	50	yes
GB (Scotland Islands)	100	50	yes	Switzerland	100	50	yes
Germany	200	100	yes	Sweden	100	50	n.a.
Greece	100	50	yes	Turkey*	100	50	n.a.
Hungary	100	50	yes				

Power systems

ENTSO-E members* | Other power systems

*ENTSO-E as an ENTSO-E observer member

Source of information

ENTSO-E members and observer members	entsoe European Network of Transmission System Operators for Electricity
Med-TSO members	medtso Mediterranean Transmission System Operators
Russia	System Operators of the UPS of Russia
Ukraine	UKRENERGO National Power Company

Information compiled under the responsibility of the ENTSO-E Data Expert Group.

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