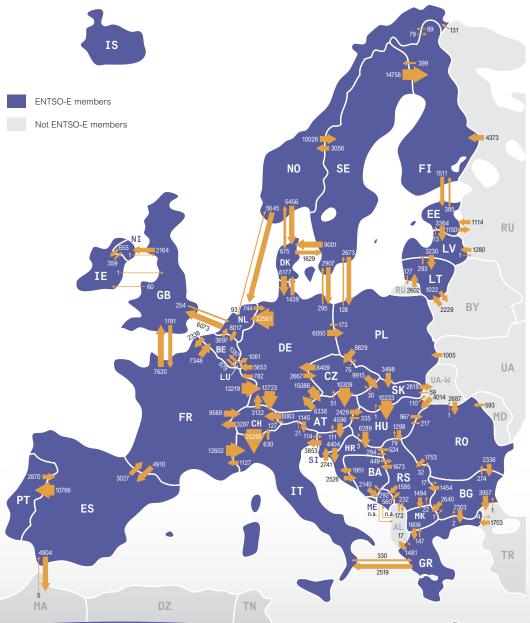




Physical energy flows



AT 25989 22622 3367 BA 4491 4540 -49 BE 16752 6914 9838 BG 2357 10628 -8271 CH 30985 31841 -856 CY — — CZ 11577 28708 -17131 DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414		Sum of in- side flows ¹	Sum of out- side flows ¹	Balance ²
BE 16752 6914 9838 BG 2357 10628 -8271 CH 30985 31841 -856 CY — — CZ 11577 28708 -17131 DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532	AT	25989	22 622	3367
BG 2357 10628 -8271 CH 30985 31841 -856 CY — — CZ 11577 28708 -17131 DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937	BA	4491	4 5 4 0	-49
CH 30 985 31 841 -856 CY — — — CZ 11577 28 708 -17131 DE 44 160 67 256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18 697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LV 4937 3245 1692 ME4 3447 852 n.a. MK	BE	16752	6914	9838
CY — — — CZ 11577 28708 -17131 DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI 3215	BG	2357	10628	-8271
CZ 11577 28708 -17131 DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI 32157	CH	30985	31 841	-856
DE 44160 67256 -23096 DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — IT 45414 2222 43192 LT 8060 1442 6619 LV 4937 3245 1692 ME4 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044	CY	_	_	_
DK 15896 10481 5415 EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME4 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044	CZ	11577	28708	-17 131
EE 2638 4899 -2261 ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME4 3447 852 n.a. MK 4281 1629 2652 NI 32157 14927 17230 NO 4044 21208 -17164	DE	44 160	67 256	-23096
ES 7785 18697 -10912 FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME4 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	DK	15896	10481	5415
FI 19595 1999 17596 FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME4 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	EE	2638	4899	-2261
FR 11752 55268 -43516 GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	ES	7785	18697	-10912
GB³ 13695 3669 10026 GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME⁴ 3447 852 n.a. MK 4281 1629 2652 NI⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	FI	19595	1 999	17596
GR 5959 4153 1806 HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	FR	11752	55 268	-43516
HR 13168 5564 7604 HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	GB ³	13695	3 6 6 9	10026
HU 16975 9000 7975 IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 LV 4937 3245 1692 MK 4281 1629 2652 NIS 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	GR	5959	4 153	1806
IE 715 360 355 IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	HR	13168	5 5 6 4	7604
IS — — — IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	HU	16975	9000	7975
IT 45414 2222 43192 LT 8060 1442 6619 LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NIs 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	IE	715	360	355
LT 8 060 1 442 6619 LU 6532 2 448 4 084 LV 4 937 3 245 1 692 ME ⁴ 3 447 852 n. a. MK 4 281 1 629 2 652 NI ⁵ 2 523 656 1 867 NL 32 157 1 4 927 1 7 230 NO 4 044 21 208 -17 164	IS	_	_	_
LU 6532 2448 4084 LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	IT	45414	2222	43 192
LV 4937 3245 1692 ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	LT	8060	1 442	6619
ME ⁴ 3447 852 n.a. MK 4281 1629 2652 NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	LU	6532	2448	4084
MK 4281 1629 2652 NI* 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	LV	4937	3 2 4 5	1692
NI ⁵ 2523 656 1867 NL 32157 14927 17230 NO 4044 21208 -17164	ME ⁴	3447		n.a.
NL 32157 14927 17230 NO 4044 21208 -17164	MK	4281	1629	2652
NO 4044 21208 -17164	NI ⁵	2523	656	
	NL	32 157	14927	
PL 9803 12644 -2841	NO	4044	21 208	-17 164
	PL	9803	12644	-2841
PT 10766 2870 7896	PT	10766		7896
RO 4553 4307 246	_	4553		
RS 6002 5358 644	RS	6002	5358	644
SE 12479 32395 -19916	SE	12479	32395	-19916
SI 7451 8368 -917				-917
SK 13473 13081 392	SK	13473	13081	392

Physical flow values in GWh

- Consolidated yearly values might differ from detailed flow data from the ENTSO-E database due to ex-post consolidation taking into account national statistical resources.
- ² Inside flows Outside flows
- ³ All data with the country code GB represents monthly statistical data as sum of England, Scotland and Wales.
- The reported exchange data are not complete; exchanges between ME-AL are missing.
- 5 All data with the country code NI represents the monthly statistical data of GB Northern Ireland.



ENTSO-E in figures – Electricity system data of member TSOs' countries

	Country		AT ³	BA	BE	BG	CH3,4	CY	CZ	DE ³	DK ³	EE	ES	FI	FR	GB⁵	GR	HR	HU	IE	IS	IT
	Nuclear thermal	TWh	0.0	0.0	38.5	14.7	24.3	0.0	28.6	94.6	0.0	0.0	58.5	22.1	404.9	66.1	0.0	0.0	14.8	0.0	0.0	0.0
	Fossil fuels	TWh	19.7	8.4	28.8	22.1	2.3	4.5	47.0	346.6	16.4	9.1	135.6	17.9	48.0	231.1	41.8	4.7	14.7	20.4	0.0	204.7
	Hydraulic generation	TWh	42.8	3.8	1.7	3.8	39.9	0.0	3.0	23.4	0.0	0.0	23.4	16.6	63.8	6.9	4.6	4.8	0.2	1.0	12.2	43.3
	Other renewable generation	TWh	0.0	0.0	7.7	1.3	1.4	0.2	2.6	106.2	12.5	1.3	65.9	10.4	24.7	23.3	4.2	0.4	2.2	4.1	4.9	36.7
Net generation ¹	- of which wind	TWh	0.0	0.0	2.9	1.1	0.1	0.2	0.4	46.0	10.2	0.4	48.5	0.5	14.9	12.6	3.2	0.3	0.7	4.0	0.0	13.1
	- of which solar	TWh	0.0	0.0	1.6	0.2	0.0	0.0	2.2	27.6	0.0	0.0	12.5	0.0	4.0	0.0	1.2	0.0	0.0	0.0	0.0	18.3
	- of which biomass	TWh	0.0	0.0	3.2	0.0	0.0	0.0	0.0	30.4	1.9	0.9	4.8	9.9	5.5	0.0	0.2	0.1	1.5	0.0	0.0	n.a.
	Non-identifiable generation	TWh	9.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
	Total generation	TWh	72.0	12.2	76.6	41.9	68.0	4.7	81.1	570.8	28.9	10.5	283.7	67.7	541.4	327.4	50.5	9.9	31.9	25.6	17.1	284.7
	Consumption	TWh	69.3	12.1	84.9	32.5	64.8	4.7	63.0	539.9	34.3	8.1	267.4	85.1	489.5	333.4	52.1	17.3	39.9	25.7	17.1	325.3
Consumption ¹	Variation (compared with 2011)	%	1.0	-0.5	-2.5	-2.3	0.5	-4.6	0.0	-0.8	-0.6	4.0	4.9	1.0	2.1	1.3	-1.6	-1.1	-0.6	-1.7	-0.2	-2.8
oonsumption	ENTSO-E Transmission network losses percentage consumption	%																				
	NGC nuclear	MW	0	0	5 9 2 6	2000	3 278	0	3800	12 048	0	0	7 582	2692	63 130	9726	0	0	1892	0	0	0
	NGC Fossil fuels	MW	7425	1506	8 3 8 5	6 888	388	1218	10 960	66 967	7 486	2303	48 389	9363	27808	58 324	9640	1788	6 853	6 132	52	73 824
	NGC Hydro power	MW	12919	1971	1422	3 161	13723	0	2216	9 209	10	4	19 285	3 172	25 388	3 889	3 231	2110	52	508	1 860	21 737
	NGC Renewable energy sources	MW	1 054	0	5 080	1713	508	147	2349	53 532	3 967	343	29 781	2418	12 354	5 111	2926	165	773	1678	661	23 147
Net generating	- of which wind	MW	1017	0	1348	677	42	147	263	28 254	3 950	266	22 497	287	7 449	5 111	1 457	165	324	1 663	0	6 959
capacity as of 31 December 2012 ²	- of which solar	MW	n.a.	0	2501	1 013	111	0	2086	22 306	17	n.a.	6390	0	3515	0	1 424	0	0	0	0	12918
// December 2012	- of which biomass	MW	n.a.	0	n.a.	23	n.a.	0	0	n.a.	n.a.	n.a.	894	2131	0	0	45	0	449	0	0	2 5 4 2
	NGC Other sources	MW	0	0	0	0	204	0	0	3 263	44	n.a.	0	44	0	804	90	0	0	272	0	0
	NGC Total	MW	21 398	3 477	20813	13762	18101	1 365	19 325	145 019	11 507	2650	105 037	17 689	128 680	77 854	15887	4063	9 5 7 0	8 590	2573	118 708
	Representativity of the values	%	100	100	100	99	100	100	100	93	100	100	100	100	100	89	100	100	100	100	100	100
	Country		LU ³	LV	ME ⁶	MK	NI ⁷	NL	NO	PL ⁸	PT	R0	RS	SE	SI	SK	ENTSO-E9					
	Nuclear thermal	TWh	0.0	0.0	0.0	0.0	0.0	3.8	0.0	0.0	0.0	10.5	0.0	61.2	5.2	14.5	862.3	.3				
	Fossil fuels	TWh	2.3	2.0	1.4	4.8	6.0	78.0	3.4	134.2	23.1	28.6	30.0	4.6	4.6	5.8	1555.7	¹ All values are calculat			lculated	to repres
			2.0	2.0	1.4	4.0	0.0	10.0		101.1					1.0							
	Hydraulic generation	TWh	1.2	3.7	1.4	1.1	0.0	0.0	142.9	2.4	6.4	12.2	9.9	77.7	3.7	4.3	563.0		100% of			lues
	Hydraulic generation Other renewable generation	TWh TWh											9.9							f the nat	ional va	
Net generation¹			1.2	3.7	1.2	1.1	0.0	0.0	142.9	2.4	6.4	12.2		77.7	3.7	4.3	563.0	2 /		f the nat s are ide	ional va entical v	vith the na
Net generation ¹	Other renewable generation	TWh	1.2 0.2	3.7 0.4	1.2	1.1	0.0 1.1	0.0 17.0	142.9 1.6	2.4 11.8	6.4 13.0	12.2	0.0	77.7 17.9	3.7 0.0	4.3 1.3	563.0 377.7	2 <i>j</i>	All value values a	f the nat s are idend nd their	ional va entical v represe	vith the nantativity
Net generation¹	Other renewable generation – of which wind	TWh TWh	1.2 0.2 0.1	3.7 0.4 0.1	1.2 0.0 0.0	1.1 0.0 0.0	0.0 1.1 1.0	0.0 17.0 5.0	142.9 1.6 1.6	2.4 11.8 4.4	6.4 13.0 10.0	12.2 3.0 2.7	0.0	77.7 17.9 7.1	3.7 0.0 0.0	4.3 1.3 0.0	563.0 377.7 191.7	2 / - - 3	All value values a NGC val	f the nat s are ide nd their lues as o	ional va entical v represe of 31 De	vith the na entativity ecember 2
Net generation ¹	Other renewable generation - of which wind - of which solar	TWh TWh TWh	1.2 0.2 0.1 0.0	3.7 0.4 0.1 0.0	1.2 0.0 0.0 0.0	1.1 0.0 0.0 0.0	0.0 1.1 1.0 0.0	0.0 17.0 5.0 n. a.	142.9 1.6 1.6 0.0	2.4 11.8 4.4 0.0	6.4 13.0 10.0 0.4	12.2 3.0 2.7 0.0	0.0 0.0 0.0	77.7 17.9 7.1 0.0	3.7 0.0 0.0 0.0	4.3 1.3 0.0 0.6	563.0 377.7 191.7 68.6	3	All value values a NGC val Calculati	f the nates are identified their lues as continues as con	ional va entical v represe of 31 De ed on the	vith the nativity ecember:
Net generation ¹	Other renewable generation - of which wind - of which solar - of which biomass	TWh TWh TWh	1.2 0.2 0.1 0.0 0.0	3.7 0.4 0.1 0.0 0.1	1.2 0.0 0.0 0.0 0.0	1.1 0.0 0.0 0.0 0.0	0.0 1.1 1.0 0.0 0.0	0.0 17.0 5.0 n. a. n. a.	142.9 1.6 1.6 0.0 0.0	2.4 11.8 4.4 0.0 7.4	6.4 13.0 10.0 0.4 2.6	12.2 3.0 2.7 0.0 0.2	0.0 0.0 0.0 0.0	77.7 17.9 7.1 0.0 10.8	3.7 0.0 0.0 0.0 0.0	4.3 1.3 0.0 0.6 0.0	563.0 377.7 191.7 68.6 79.6	2 / 3 / 4 (All value values a NGC val Calculati	the nates are identified their lues as continued their lues as continued their lues are differs from the second their lues are lu	entical vareprese of 31 De ed on the com the com	vith the na entativity
Net generation¹	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation	TWh TWh TWh TWh	1.2 0.2 0.1 0.0 0.0 0.0	3.7 0.4 0.1 0.0 0.1 0.0	1.2 0.0 0.0 0.0 0.0 0.0	1.1 0.0 0.0 0.0 0.0 0.0	0.0 1.1 1.0 0.0 0.0 0.0	0.0 17.0 5.0 n. a. n. a.	1.6 1.6 0.0 0.0 0.0	2.4 11.8 4.4 0.0 7.4 0.0	6.4 13.0 10.0 0.4 2.6 0.0	12.2 3.0 2.7 0.0 0.2 0.0	0.0 0.0 0.0 0.0 0.0	77.7 17.9 7.1 0.0 10.8 0.0	3.7 0.0 0.0 0.0 0.0 0.0	4.3 1.3 0.0 0.6 0.0 1.0	563.0 377.7 191.7 68.6 79.6	2 / 3 / 4 (All value values an NGC valiculation the form the	f the nat as are idend their dues as di ion base differs fro Swiss F	entical vareprese of 31 De ed on the om the of	with the na entativity ecember 2 e ENTSO official val Office of I
	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation Total generation	TWh TWh TWh TWh TWh TWh	1.2 0.2 0.1 0.0 0.0 0.0 3.6	3.7 0.4 0.1 0.0 0.1 0.0 6.0	1.2 0.0 0.0 0.0 0.0 0.0 2.6	1.1 0.0 0.0 0.0 0.0 0.0 5.8	0.0 1.1 1.0 0.0 0.0 0.0 7.1	0.0 17.0 5.0 n. a. n. a. 0.0 98.8	142.9 1.6 1.6 0.0 0.0 0.0 147.8	2.4 11.8 4.4 0.0 7.4 0.0 148.4	6.4 13.0 10.0 0.4 2.6 0.0 42.6	12.2 3.0 2.7 0.0 0.2 0.0 54.3	0.0 0.0 0.0 0.0 0.0 39.9	77.7 17.9 7.1 0.0 10.8 0.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8	563.0 377.7 191.7 68.6 79.6 11.7	3 4 (t f f 5)	All value values all NGC val Calculation the All data	f the nation of the nation of their dues as common based differs for Swiss F	entical vareprese of 31 December of the country	with the na entativity ecember 2 e ENTSO official val Office of I
	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation Total generation Consumption	TWh TWh TWh TWh TWh TWh TWh	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7	1.2 0.0 0.0 0.0 0.0 0.0 0.0 2.6 4.2	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0	0.0 17.0 5.0 n. a. n. a. 0.0 98.8 115.9	142.9 1.6 1.6 0.0 0.0 0.0 147.8	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1	12.2 3.0 2.7 0.0 0.2 0.0 54.3	0.0 0.0 0.0 0.0 0.0 39.9 39.7	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6 12.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8	563.0 377.7 191.7 68.6 79.6 11.7 3370.4	2 / 3 4 (All values and NGC values and Calculating the state of the All data of the sum of E	f the nation of the nation of their dues as common their dues as common their dues as common their section based differs from Swiss F with the nation of their section of their	entical vareprese of 31 De ed on the om the cederal (country hly statis, Scotlar	with the na entativity ecember 2 e ENTSO- official val Office of E e code GE stical data
	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses	TWh TWh TWh TWh TWh TWh TWh	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7	1.2 0.0 0.0 0.0 0.0 0.0 0.0 2.6 4.2	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0	0.0 17.0 5.0 n. a. n. a. 0.0 98.8 115.9	142.9 1.6 1.6 0.0 0.0 0.0 147.8	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1	12.2 3.0 2.7 0.0 0.2 0.0 54.3	0.0 0.0 0.0 0.0 0.0 39.9 39.7	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6 12.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0	2 / 3 4 (5 / 5 /	All value avalues aval	f the nation of the nation of their dues as common of their dues are their dues a	entical vareprese of 31 De ed on the om the c cederal (country hly statis , Scotlar and cons	with the nativity excember: e ENTSO official val Office of lace of l
	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses percentage consumption	TWh TWh TWh TWh TWh TWh TWh %	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7 6.2	1.2 0.0 0.0 0.0 0.0 0.0 2.6 4.2 n.a.	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0	0.0 17.0 5.0 n. a. n. a. 0.0 98.8 115.9	142.9 1.6 1.6 0.0 0.0 0.0 147.8 127.9	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1 -2.9	12.2 3.0 2.7 0.0 0.2 0.0 54.3 54.4 -0.9	0.0 0.0 0.0 0.0 0.0 39.9 39.7 -1.3	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6 12.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0 0.3	2 / 3 4 (5 / 5 /	All values and NGC values and Calculating the state of the All data of the sum of E	f the nation of the nation of their dues as common of their dues are their dues a	entical vareprese of 31 De ed on the om the c cederal (country hly statis , Scotlar and cons	with the na entativity ecember 2 e ENTSO official val Office of I r code GE stical data
	Other renewable generation - of which wind - of which solar - of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses percentage consumption NGC nuclear	TWh TWh TWh TWh TWh TWh TWh MW	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3 -4.4	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7 6.2	1.2 0.0 0.0 0.0 0.0 0.0 2.6 4.2 n.a.	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5 -5.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0	0.0 17.0 5.0 n. a. 0.0 98.8 115.9 -1.6	142.9 1.6 1.6 0.0 0.0 0.0 147.8 127.9 4.8	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1 -2.9	12.2 3.0 2.7 0.0 0.2 0.0 54.3 54.4 -0.9	0.0 0.0 0.0 0.0 0.0 39.9 39.7 -1.3	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0 2.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6 12.6 0.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8 0.2	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0 0.3 1.62	2 / 3 4 (t	All value avalues aval	f the nate of the	entical vareprese of 31 De ed on the community of the country hly statis, Scotlar and consulty country country country country country	with the na entativity ecember 2 e ENTSO- official val Office of E e code GE stical data and and We sumption
Consumption ¹	Other renewable generation of which wind of which solar of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses percentage consumption NGC nuclear NGC Fossil fuels	TWh TWh TWh TWh TWh TWh TWh MW	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3 -4.4	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7 6.2	1.2 0.0 0.0 0.0 0.0 0.0 2.6 4.2 n.a.	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5 -5.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0 1.3	0.0 17.0 5.0 n. a. n. a. 0.0 98.8 115.9 -1.6	142.9 1.6 1.6 0.0 0.0 0.0 147.8 127.9 4.8	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9 -0.6	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1 -2.9	12.2 3.0 2.7 0.0 0.2 0.0 54.3 54.4 -0.9	0.0 0.0 0.0 0.0 0.0 39.9 39.7 -1.3	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0 2.0	3.7 0.0 0.0 0.0 0.0 0.0 13.6 12.6 0.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8 0.2	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0 0.3 1.62 125.877 452.601	2 / 3 4 ((5 /) 5 /) 5 /	All value values an NGC val Calculation that the value of	f the nate of the	entical vareprese of 31 De ed on the community statis, Scotlar and consumption of the country the country statis, Scotlar and consumption on the country nonthly statis country nonthly s	with the na entativity ecember 2 e ENTSO official val Office of I v code GE stical data and and W sumption
Consumption ¹	Other renewable generation of which wind of which solar of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses percentage consumption NGC nuclear NGC Fossil fuels NGC Hydro power	TWh TWh TWh TWh TWh TWh MW MW	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3 -4.4	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7 6.2	1.2 0.0 0.0 0.0 0.0 0.0 2.6 4.2 n.a.	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5 -5.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0 1.3	0.0 17.0 5.0 n. a. n. a. 0.0 98.8 115.9 -1.6	142.9 1.6 1.6 0.0 0.0 0.0 147.8 127.9 4.8 0 1166 30164	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9 -0.6	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1 -2.9 0 8270 5656	12.2 3.0 2.7 0.0 0.2 0.0 54.3 54.4 -0.9	0.0 0.0 0.0 0.0 39.9 39.7 -1.3	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0 2.0 9363 4666 16203	3.7 0.0 0.0 0.0 0.0 13.6 12.6 0.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8 0.2	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0 0.3 1.62 125.877 452.601 197.767	2 / 3 3 4 ((All value avalues aval	f the nate of the	entical vareprese of 31 De ed on the community statis, Scotlar and consumption of the country the country statis, Scotlar and consumption on the country nonthly statis country nonthly s	with the na entativity ecember 2 e ENTSO- official val Office of E e code GE stical data and and We sumption
Net generation ¹ Consumption ¹ Net generating capacity as of 31 December 2012 ²	Other renewable generation of which wind of which solar of which biomass Non-identifiable generation Total generation Consumption Variation (compared with 2011) Transmission network losses percentage consumption NGC nuclear NGC Fossil fuels NGC Hydro power NGC Renewable energy sources of which wind	TWh TWh TWh TWh TWh TWh MW MW MW	1.2 0.2 0.1 0.0 0.0 0.0 3.6 6.3 -4.4	3.7 0.4 0.1 0.0 0.1 0.0 6.0 7.7 6.2 0 757 1556	1.2 0.0 0.0 0.0 0.0 2.6 4.2 n.a.	1.1 0.0 0.0 0.0 0.0 0.0 5.8 8.5 -5.5	0.0 1.1 1.0 0.0 0.0 0.0 7.1 7.0 1.3	0.0 17.0 5.0 n. a. 0.0 98.8 115.9 -1.6	142.9 1.6 1.6 0.0 0.0 147.8 127.9 4.8 0 1166 30164	2.4 11.8 4.4 0.0 7.4 0.0 148.4 144.9 -0.6 0 29.420 2.344 3.169	6.4 13.0 10.0 0.4 2.6 0.0 42.6 49.1 -2.9 0 8270 5656 4620	12.2 3.0 2.7 0.0 0.2 0.0 54.3 54.4 -0.9 1300 9.460 6.196 1.801	0.0 0.0 0.0 0.0 39.9 39.7 -1.3	77.7 17.9 7.1 0.0 10.8 0.0 161.6 142.0 2.0 9363 4666 16203 7151	3.7 0.0 0.0 0.0 0.0 13.6 12.6 0.6	4.3 1.3 0.0 0.6 0.0 1.0 26.8 26.8 0.2 1940 3190 2534 767	563.0 377.7 191.7 68.6 79.6 11.7 3370.4 3323.0 0.3 1.62 125877 452 601 197 767 169 925	2 / 3 4 (All value values an NGC validated values and NGC validated values and the value of the Net general of the NGC value of the NG	f the nates are identified as are identified as a continuous as a continuous as a continuous area area area area area area area are	entical vareprese of 31 De ed on the country hly statis, Scotlar and constitution of the country statis, Scotlar country statis, Scotlar country statis, Scotlar and constitution of the country statis of the country stati	with the na entativity ecember 2 e ENTSO- official val Office of E e code GE stical data and and We sumption

6986 26422 31780 34933 18546

4

MW

NGC Total

Representativity of the values

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- ith the national ntativity
- cember 2011
- ENTSO-E dafficial values Office of Energy
- code GB stical data as nd and Wales.
- sumption data
- code NI tatistical data
- tegory biomass includes energy from biomass co-firing in conventional thermal unit
- 9 Calculated sum of the ENTSO-E member TSOs' countries

n.a.

3 586 8 431 5724

951894

0

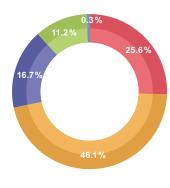
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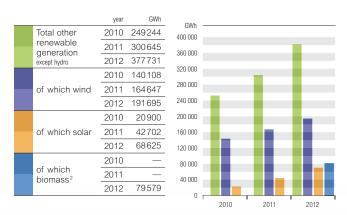
Generation

Generation mix in ENTSO-E member TSOs' countries¹

	GWh
Thermal nuclear	862327
Fossil fuels (lignite and hard coal, gas, oil, mixed fuels, peat)	1555711
Hydraulic generation (storage, run of river, pumped storage)	562977
Other renewable generation (wind, solar, biomass, geothermal, waste)	377731
Non-identifiable generation	11680

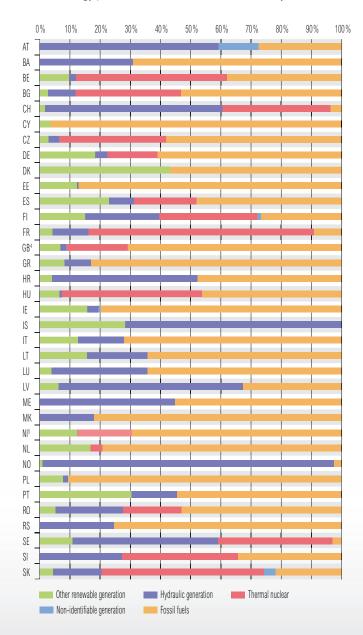


ENTSO-E other renewable generation except hydro in GWh1



- ¹ All values are calculated to represent 100% of the national values
- ² Data collection from year 2012 onwards
- ³ Share of energy produced based on the net generation of each ENTSO-E member TSOs' country as of the table ENTSO-E in figures on page 4–5.
- 4 All data with the country code GB represents monthly statistical data as sum of England, Scotland and Wales.
- ⁵ All data with the country code NI represents the monthly statistical data of GB Northern Ireland.

Share of energy produced of each member TSOs' country 2012 in %3



Reliable, Sustainable, Connected,

ENTSO-E represents 41 Transmission System Operators (TSOs) across 34 European countries and fulfils mandates under EC Regulation 714/2009 on cross-border electricity exchanges, fully applicable since 3 March 2011. ENTSO-E's overall objective is to promote the reliable operation, optimal management and sound technical evolution of the European electricity transmission system in order to ensure security of supply and to meet the needs of the European Internal Energy Market (IEM). Most notably ENTSO-E is mandated to publish EU-wide Ten-Year Network Development Plans as well as draft network codes – nine by 2014 to support the completion of the European IEM.

As of late April 2013, of the nine network codes planned to date three have received recommendations from Acer to the European Commission to be adopted. Once considered by the European Commission these codes (Capacity Allocation and Congestion Management, Requirements for Generators, and Demand Connection) must go through Comitology before being adopted as regulations. Two other codes have been delivered to Acer and are awaiting their opinion and recommendation whilst four others are still in draft. Visit www.entsoe.eu to see progress on Network codes, TYNDP and other ENTSO-E products and reports as well as ENTSO-E positions on TSO related topics.

Find out more about ENTSO-E data and information, which is available from ENTSO-E's website (www.entsoe.eu). Here we provide updates on our four main areas of activity: system operation, system development, market and research & development. Extensive market related data and information is available on our transparency platform www.entsoe.net with many data updated daily on congestion management, vertical load, balance management, transfer capacities and outages.

Contact

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Photo Cover: Landsnet



Grid information

Number of 220 kV and ≥ 330 kV circuits on cross-frontier transmission lines as of 31 December 2012 between ENTSO-E member TSOs' countries

	СН	cz	DE	DK	EE	FI	FR	GR	HR	HU	ΙE	IT	LU	LV	ME	MK	NI ^{2,4}	NO	NL	PL	РТ	RO	RS	SE	SI	SK	UA-	AL	ву	MA	MD	RU ¹	TR	UA
AT		2/2	_	_						2/2		1/-													1/2									
ВА									7/2						2/1								1/1											
BE							3/3						2/-						-/4															
		BG						-/1								-/ 1						-/4	-/1										-/2	
		СН	5/7				5/5					5/5																						
		CZ	-/4																	2/2						2/3								
		DE		2/3			2/4						8/-						-/6	2/2				-/1										
			DK															2/1						2/2										
			EE			-/ 1								-/2																		-/3		
			ES				2/2														3/5									-/2				
				FI ¹	-/1													1/-						1/4								-/3		
				FR								3/3																						
				GB ³			2/-				-/1						2/-		-/2															
									GR			-/1				-/2												-/1					-/1	
									HR	-/4													-/1		2/3									
220 k	V/≥3	330k\	/						HU													-/2	-/1			-/2	2/2							
													IE ²				2/-																	
													IT												1/2									
													LT	-/4															-/5			-/3		
														,	,	LV																-/1		
																ME							2/1					1/1						
																MK							2/1											
																NO			-/1					1/4								-/-		
																						PL		-/1		-/2			1/-					1/1
																						RO	-/1				-/1				-/1			-/1

ENTSO-E Overview circuit length in km

	Length of AC circuits	of which AC cable	Sum of DC cable
220 – 285 kV	142656	3648	
330 kV	4527	0	
380/400 kV	150438	1758	
750 kV	471	0	
Sum	298 092 km	5406 km	5368

RS

SK

Between FI-RU is no synchronous operation. One 400kV interconnection operate so that one or several Russian power units are connected to the Finnish system but isolated from the Russian system. Two 400kV interconnections connect the Finnish and Russian systems asynchronously through a back-to-back HVDC-link.

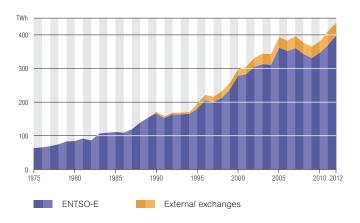
² Between IE and NI 275 kV instead 220 kV

³ All data with the country code GB represents monthly statistical data as sum of England, Scotland and Wales.

⁴ All data with the country code NI represents the monthly statistical data GB Northern Ireland.

Development of exchanges

Development of overall cross-border exchanges of ENTSO-E member TSOs' countries since 1975



- Reliable Baltic data is available since 1995
- There were no exchanges between Republic of Ireland and Northern Ireland before 1995
- External exchanges of the Nordic countries are reliable since 1990
- External exchanges include Albania, Belarus, Moldavia, Morocco, Russia, Turkey, Ukraine and Ukraine-West since 2009
- Sum of all cross-border exchanges 2011 and 2012 without exchange data between Montenegro and Albania

Overview electricity exchanges for the year 2011 and 2012

	All Exchanges	ENTSO-E	External
2011	411934GWh	370786 GWh	41 148 GWh
2012	436221 GWh	398428 GWh	37793GWh

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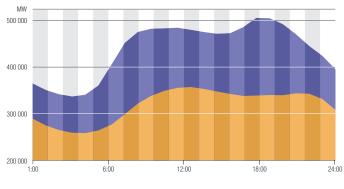
Highest and lowest hourly load value of each country 2012 in MW¹

	Lowest value date/time	value	Highest value date/time	value
AT	22.07./06:00	3995	07.02./12:00	10 040
ВА	03.06./06:00	833	10.02./19:00	2143
BE	29.07./07:00	6238	07.02./19:00	14 191
BG	02.05./04:00	2579	01.02./20:00	7 4 4 4
CH ²	01.08./08:00	2851	10.02./14:00	8305
CY	21.11./04:00	277	18.07./15:00	983
CZ	05.08./05:00	4140	07.02./14:00	10804
DE	26.12./04:00	32089	08.02./19:00	81841
DK	22.07./06:00	2085	06.02./18:00	6209
EE	25.06./04:00	482	06.02./10:00	1 564
ES	25.12./05:00	17 685	13.02./20:00	42813
FI	24.06./05:00	5463	03.02./18:00	14499
FR	05.08./07:00	30826	08.02./19:00	102 000
GB ³	01.07./07:00	20280	11.12./19:00	58541
GR	15.04./15:00	3015	16.07./14:00	9735
HR	27.05./06:00	1132	06.02./19:00	3193
HU	28.05./06:00	2607	13.12./17:00	5945
IE	05.08./08:00	1 648	10.12./19:00	4553
IS	10.01./21:00	1 383	17.12./11:00	2168
IT	26.12./05:00	20 975	10.07./12:00	54 098
LT	27.05./05:00	655	06.02./10:00	1 885
LU	25.12./05:00	357	12.12./19:00	1009
LV	03.06./05:00	384	19.12./16:00	1 380
ME	14.10./06:00	206	09.02./19:00	708
MK	15.10./05:00	546	09.02./15:00	1619
NI ⁴	01.07./07:00	519	12.12./19:00	1706
NL	22.07./07:00	7825	13.12./18:00	17734
NO	27.05./06:00	8 8 4 5	05.12./09:00	23443
PL	06.05./06:00	10179	06.02./18:00	23728
PT	25.12./09:00	3 3 3 3 5	13.02./21:00	8554
RO	04.06./05:00	3 9 6 9	01.02./18:00	8 6 2 7
RS	02.05./05:00	2414	08.02./19:00	7 5 6 5
SE	29.09./06:00	9175	13.12./17:00	26 229
SI	02.05./02:00	797	10.02./19:00	2099
SK	29.07./06:00	2243	07.02./18:00	4396
ENTSO-E ⁵	27.05./06:00	232125	08.02./19:00	555194

¹ All values are calculated to represent 100% of the national values

Consumption on the 3rd Wednesday 2012

ENTSO-E load diagram on the 3rd Wednesday of August and December 2012 1,2



Load curve on 19 December 2012²

with highest load: 505409MW with lowest load: 336819MW

Load curve on 15 August 2012²

with highest load: 357322MW

with lowest load: 258410 MW

Highest and lowest load of each country on 19 December 2012 in MW²

	Lowest value	Highest value		Lowest value	Highest value		Lowest value	Highest value
AT	6010	9378	FR	57560	77 632	MK	940	1346
ВА	1 130	1881	GB ³	31859	56 5 1 8	NI ⁴	722	1657
BE	8 4 4 2	12101	GR	4430	8 0 3 3	NL	9 5 2 3	17038
BG	4 174	6504	HR	1538	2712	NO	16012	20840
СН	7 158	9904	HU	3644	5 541	PL	14815	22396
CY	305	649	IE	2431	4 3 3 2	PT	4573	7387
CZ	6743	9159	IS	1979	2 150	RO	5819	8387
DE	49 209	75826	IT	27947	50 606	RS	4627	6295
DK	3 177	5741	LT	1050	1775	SE	16626	23311
EE	1013	1512	LU	488	831	SI	1294	1842
ES	22 578	36267	LV	790	1 380	SK	2867	3909
FI	11 007	13540	ME	360	542			

Calculated load values as sum of the ENTSO-E member TSOs' countries

² Lowest and highest physical hourly vertical load value of the Swiss transmission grid.

³ All data with the country code GB represents monthly statistical data as sum of England, Scotland and Wales.

⁴ All data with the country code NI represents the monthly statistical data of GB Northern Ireland.

⁵ Calculated as sum of the ENTSO-E member TSOs' monthly hourly load values

² All values are calculated to represent 100% of the national values

³ All data with the country code GB represents monthly statistical data as sum of England, Scotland

⁴ All data with the country code NI represents the monthly statistical data of GB Northern Ireland.

Members of ENTSO-E

AT	Austria	APG VUEN	APG-Austrian Power Grid AG Vorarlberger Übertragungsnetz GmbH
ВА	Bosnia-Herzegovina	NOS BiH	Nezavisni operator sustava u Bosni i Hercegovini
BE	Belgium	Elia	Elia System Operator SA
BG	Bulgaria	ESO	Electroenergien Sistemen Operator EAD
СН	Switzerland	swissgrid	swissgrid ag
CY	Cyprus	Cyprus TSO	Cyprus Transmission System Operator
cz	Czech Republic	ČEPS	ČEPS, a.s.
DE	Germany	TransnetBW TenneT GER Amprion 50Hertz	TransnetBW GmbH TenneT TSO GmbH Amprion GmbH 50Hertz Transmission GmbH
DK	Denmark	Energinet.dk IPC	Energinet.dk Independent Public Enterprice
EE	Estonia	Elering AS	Elering AS
ES	Spain	REE	Red Eléctrica de España S.A.
FI	Finland	Fingrid	Fingrid OyJ
FR	France	RTE	Réseau de Transport d'Electricité
GB	United Kingdom	National Grid SONI (NI) SHETL SPTransmission	National Grid Electricity Transmission plc System Operator for Northern Ireland Ltd Scottish Hydro Electric Transmission Limited Scottish Power Transmission plc
GR	Greece	IPTO SA	Independent Power Transmission Operator S.A.
HR	Croatia	HEP-OPS	HEP-Operator prijenosnog sustava d.o.o.
HU	Hungary	MAVIR ZRt.	MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság
IE	Ireland	EirGrid	EirGrid plc
IS	Iceland	Landsnet	Landsnet hf
IT	Italy	Terna	Terna – Rete Elettrica Nazionale SpA
LT	Lithuania	LITGRID AB	LITGRID AB
LU	Luxembourg	Creos Luxembourg	Creos Luxembourg S.A.
LV	Latvia	Augstsprieguma tīkls	AS Augstsprieguma tīkls
ME	Montenegro	CGES AD	Crnogorski elektroprenosni sistem AD
MK	FYROM	MEPSO	Macedonian Transmission System Operator AD
NL	The Netherlands	TenneT TSO	TenneT TSO B.V.
NO	Norway	Statnett	Statnett SF
PL	Poland	PSE	PSE S.A. (until January 2013 PSE Operator A.S.)
PT	Portugal	REN	Rede Eléctrica Nacional, S.A.
RO	Romania	Transelectrica	C.N. Transelectrica S.A.
RS	Serbia	EMS	JP Elektromreža Srbije
SE	Sweden	Svenska Kraftnät	Affärsverket Svenska Kraftnät
SI	Slovenia	ELES	Elektro Slovenija d.o.o.
SK	Slovak Republic	SEPS	Slovenska elektrizacna prenosova sustava, a.s.

