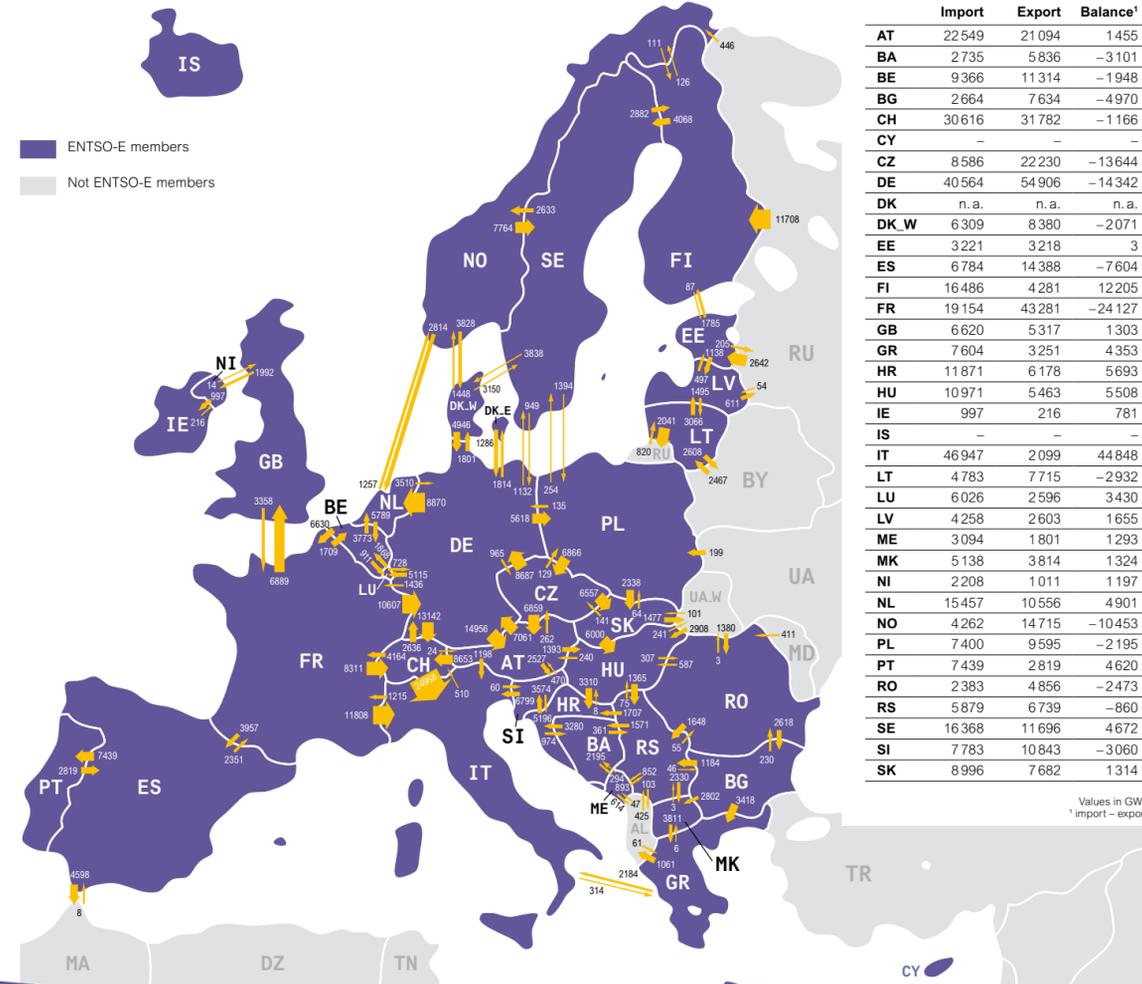


# Memo 2009

provisional values as of 30 April 2010

## Physical energy flows



	Import	Export	Balance <sup>1</sup>
AT	22 549	21 094	1 455
BA	2 735	5 836	-3 101
BE	9 366	11 314	-1 948
BG	2 664	7 634	-4 970
CH	30 616	31 782	-1 166
CY	-	-	-
CZ	8 586	22 230	-13 644
DE	40 564	54 906	-14 342
DK	n.a.	n.a.	n.a.
DK, W	6 309	8 380	-2 071
EE	3 221	3 218	3
ES	6 784	14 388	-7 604
FR	16 486	4 281	12 205
FI	19 154	43 281	-24 127
GB	6 620	5 317	1 303
GR	7 604	3 251	4 353
HR	11 871	6 178	5 693
HU	10 971	5 463	5 508
IE	997	216	781
IS	-	-	-
IT	46 947	2 099	44 848
LT	4 783	7 715	-2 932
LU	6 026	2 596	3 430
LV	4 258	2 603	1 655
ME	3 094	1 801	1 293
MK	5 138	3 814	1 324
NI	2 208	1 011	1 197
NL	15 457	10 556	4 901
NO	4 262	14 715	-10 453
PL	7 400	9 595	-2 195
PT	7 439	2 819	4 620
RO	2 383	4 856	-2 473
RS	5 879	6 739	-860
SE	16 368	11 696	4 672
SI	7 783	10 843	-3 060
SK	8 996	7 682	1 314

Values in GWh  
<sup>1</sup> import - export

## ENTSO-E in figures

Regional group	Continental Europe																								
	AT <sup>3</sup>	BA	BE <sup>4</sup>	BG	CH <sup>5</sup>	CZ	DE <sup>6</sup>	DK, W <sup>7</sup>	ES	FR	GR	HR	HU <sup>8</sup>	IT <sup>9</sup>	LU	ME <sup>7</sup>	MK	NL	PL <sup>11</sup>	PT	RO	RS	SI	SK	
<b>Net generation<sup>1</sup></b>																									
Nuclear thermal	TWh	0,0	0,0	45,0	14,3	26,1	25,7	128,0	0,0	50,4	390,0	0,0	0,0	15,5	0,0	0,0	0,0	4,0	0,0	0,0	10,8	0,0	5,5	13,1	
Fossil fuels	TWh	20,7	8,0	35,2	20,4	2,0	47,0	330,2	16,2	147,4	54,8	41,6	5,2	20,5	215,6	2,8	0,6	5,0	95,6	135,8	29,3	26,9	30,0	4,7	6,3
Hydraulic net production	TWh	38,6	6,0	1,7	3,9	37,1	3,0	21,5	0,0	28,7	61,8	5,6	6,8	0,0	51,1	0,8	2,1	1,2	0,0	2,9	8,7	15,5	11,1	4,3	4,7
Other renewable net production	TWh	0,0	0,0	6,4	0,0	1,2	0,4	68,7	6,6	43,7	12,2	2,3	0,1	0,0	11,8	0,2	0,0	0,0	8,3	1,3	9,5	0,0	0,0	0,0	0,4
Non-identifiable net production	TWh	9,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
<b>Total net generation</b>	<b>TWh</b>	<b>68,8</b>	<b>14,0</b>	<b>88,3</b>	<b>38,5</b>	<b>66,5</b>	<b>76,0</b>	<b>548,4</b>	<b>22,8</b>	<b>270,7</b>	<b>518,8</b>	<b>49,5</b>	<b>12,0</b>	<b>36,0</b>	<b>278,5</b>	<b>3,8</b>	<b>2,7</b>	<b>6,3</b>	<b>107,9</b>	<b>139,9</b>	<b>47,5</b>	<b>53,3</b>	<b>41,1</b>	<b>14,4</b>	<b>24,4</b>

<b>Consumption<sup>1</sup></b>	<b>TWh</b>	<b>65,6</b>	<b>11,0</b>	<b>84,6</b>	<b>32,6</b>	<b>63,0</b>	<b>61,6</b>	<b>526,9</b>	<b>20,6</b>	<b>258,9</b>	<b>486,4</b>	<b>53,5</b>	<b>17,5</b>	<b>41,5</b>	<b>317,6</b>	<b>6,2</b>	<b>1,2</b>	<b>7,8</b>	<b>112,9</b>	<b>136,8</b>	<b>51,4</b>	<b>50,6</b>	<b>41,6</b>	<b>11,3</b>	<b>25,4</b>
Variation (compared with 2008)	%	-4,0	-5,0	-6,3	-5,4	-2,2	-5,5	-5,4	-5,0	-4,4	-1,6	-5,0	-2,0	0,6	-6,4	-7,2	-72,9	-9,8	-6,1	-4,2	-1,6	-8,3	6,7	-10,6	-8,0

<b>Net generating capacity as of 31 December 2009<sup>2</sup></b>																									
NGC nuclear	MW	0	0	5 902	2 000	3 220	3 597	20 300	0	7 465	63 130	0	0	1 822	0	0	0	480	0	0	1 300	0	700	1 820	
NGC Fossil fuels	MW	6 344	1 957	8 590	6 523	355	10 647	71 300	5 063	42 918	26 158	8 284	1 810	6 154	75 400	498	210	907	22 902	29 728	7 834	8 773	5 115	1 315	2 742
NGC Hydro power	MW	11 653	2 064	1 413	2 993	13 464	2 180	10 400	9	19 044	25 341	3 200	2 086	50	21 375	1 128	660	503	37	2 327	4 984	5 904	2 846	879	2 478
NGC Renewable energy sources	MW	985	0	1 758	361	328	658	37 500	3 123	22 627	6 606	1 144	107	549	6 506	80	0	0	3 031	719	3 940	22	0	0	61
NGC Other sources	MW	0	0	0	0	212	n.a.	0	23	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>NGC Total</b>	<b>MW</b>	<b>19 182</b>	<b>4 021</b>	<b>17 663</b>	<b>11 877</b>	<b>17 579</b>	<b>17 082</b>	<b>139 500</b>	<b>8 218</b>	<b>92 102</b>	<b>120 235</b>	<b>12 628</b>	<b>4 003</b>	<b>8 575</b>	<b>103 281</b>	<b>1 706</b>	<b>870</b>	<b>1 410</b>	<b>26 450</b>	<b>32 774</b>	<b>16 758</b>	<b>15 998</b>	<b>7 961</b>	<b>2 894</b>	<b>7 101</b>
Representativity of the values	%	100	100	100	99	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	97	100	100	100	100

Regional group	Nordic				Baltic		CY	GB, IE, NI			Sum of ENTSO-E
	DK	FI	IS	NO	SE	EE		LT	LV	GB	

<b>Net generation<sup>1</sup></b>														
Nuclear thermal	TWh	0,0	22,6	0,0	0,0	50	0,0	10,0	0,0	0,0	65,0	0,0	0,0	875,8
Fossil fuels	TWh	27,7	24,6	0,0	3,6	4,8	7,1	2,2	1,6	0,2	244,4	22,1	7,0	1 631,0
Hydraulic net production	TWh	0,0	12,6	12,3	128,2	65,3	0,0	1,1	3,4	0,0	6,1	1,2	0,0	547,3
Other renewable net production	TWh	6,7	8,4	4,6	1,0	13,6	0,4	0,2	0,1	0,0	1,1	3,1	0,8	206,4
Non-identifiable net production	TWh	0,0	0,6	0,0	0,0	0,0	0,0	0,0	0,3	0,0	0,0	0,1	0,0	10,9
<b>Total net generation</b>	<b>TWh</b>	<b>34,4</b>	<b>68,7</b>	<b>16,8</b>	<b>132,8</b>	<b>133,7</b>	<b>7,5</b>	<b>13,5</b>	<b>5,4</b>	<b>0,2</b>	<b>316,6</b>	<b>26,6</b>	<b>7,8</b>	<b>3 271,3</b>

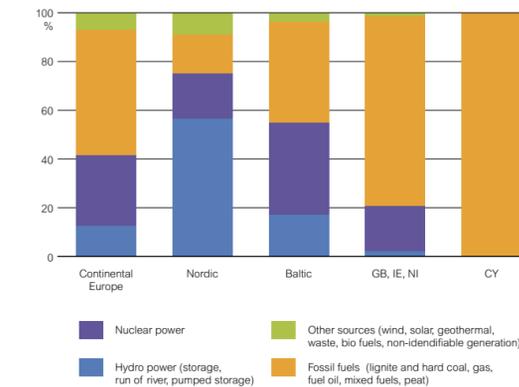
<b>Consumption<sup>1</sup></b>	<b>TWh</b>	<b>34,0</b>	<b>80,8</b>	<b>16,3</b>	<b>121,6</b>	<b>138,5</b>	<b>7,1</b>	<b>9,6</b>	<b>7,2</b>	<b>0,1</b>	<b>314,6</b>	<b>26,2</b>	<b>8,8</b>	<b>3 230,8</b>
Variation (compared with 2008)	%	-4,2	-7,4	-2,2	-5,6	-3,9	-4,4	-9,3	-7,3	2,8	-6,0	n.a.	n.a.	n.a.

<b>Net generating capacity as of 31 December 2009<sup>2</sup></b>														
NGC nuclear	MW	0	2 646	0	0	9 354	0	1 183	0	0	13 920	0	0	138 839
NGC Fossil fuels	MW	9 159	8 815	120	900	5 502	2 252	2 539	867	1 349	58 454	5 461	2 286	444 168
NGC Hydro power	MW	9	3 074	1 882	29 617	16 203	4	850	1 543	0	4 681	512	0	195 584
NGC Renewable energy sources	MW	4 151	2 054	575	442	4 661	167	89	41	0	1 519	1 260	304	101 245
NGC Other sources	MW	44	85	0	0	0	0	62	0	0	0	186	0	637
<b>NGC Total</b>	<b>MW</b>	<b>13 363</b>	<b>16 674</b>	<b>2 577</b>	<b>30 959</b>	<b>35 720</b>	<b>2 423</b>	<b>4 723</b>	<b>2 451</b>	<b>1 349</b>	<b>78 574</b>	<b>7 419</b>	<b>2 590</b>	<b>880 473</b>
Representativity of the values	%	100	100	100	100	100	100	96	100	100	100	100	100	100

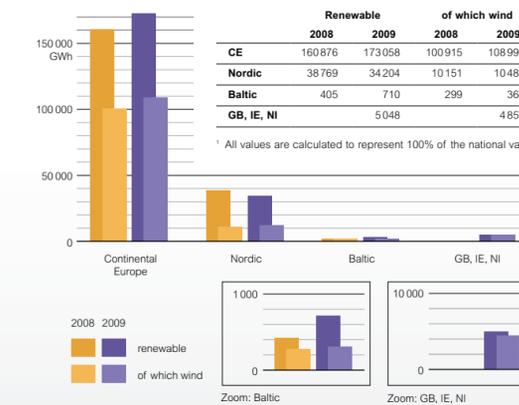
<sup>1</sup> All values are calculated to represent 100% of the national values.  
<sup>2</sup> All values are identical with the national values and their representativity.  
<sup>3</sup> Official NGC values from E-Control as of 31 December 2006.  
<sup>4</sup> The installed NGC fossil fuel power stations burning a mixture of fossil fuels and renewable energy sources totaled 1654 MW. Only 1387 MW of this capacity is attributed to fossil fuel.  
<sup>5</sup> Calculation based on the ENTSO-E database differs from the official values from the Swiss Federal Office of Energy.  
<sup>6</sup> Common / public supply.  
<sup>7</sup> NGC values as of 31 December 2008.  
<sup>8</sup> DK, W represents the Western part of Denmark synchronously interconnected with ENTSO-E (Jutland and Funen).  
<sup>9</sup> NGC Renewable includes equivalent capacity of biomass co-firing.  
<sup>10</sup> NGC data are provisional.  
<sup>11</sup> Operational data; NGC fossil fuel and renewable energy from co-firing (biomass combustion in lignite/hard coal power stations) is classified as energy from fossil fuels installations.

## Generation

### Generation mix

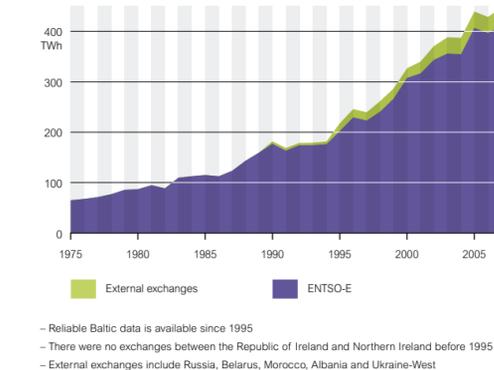


### Renewable generation except hydro in GWh<sup>1</sup>



## Development of exchanges

### Development of overall cross-border exchanges of ENTSO-E members since 1975



- Reliable Baltic data is available since 1995  
 - There were no exchanges between the Republic of Ireland and Northern Ireland before 1995  
 - External exchanges include Russia, Belarus, Morocco, Albania and Ukraine-West

### Overview of overall electricity exchanges for 2009 in TWh

	All exchanges	External exchanges
<b>ENTSO-E</b>	375,7	37,2
<b>RG Continental Europe</b>	38 769	34 204
<b>RG Nordic</b>	51,7	21,9
<b>RG Baltic</b>	19,5	11,4
<b>GB, IE, NI</b>	11,5	3,6

**External exchanges:**  
 - ENTSO-E countries with AL, BY, MA, MD, RU, TN, UA, UA\_W  
 - Continental Europe countries with AL, BY, GB, MA, MD, NO, SE, TN, UA, UA\_W  
 - Nordic countries with DE, EE, NL, PL, RU  
 - Baltic countries with BY, FI, RU  
 - GB with FR

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## Reliable. Sustainable. Connected.

ENTSO-E is the European Network of Transmission System Operators for Electricity, with 42 members across 34 European countries. Established on 19 December 2008, ENTSO-E has become fully operational in July 2009, ahead of the official schedule of the Third Energy Package.

ENTSO-E's legal raison d'être is Regulation (EC) 714/2009 on cross-border electricity exchanges. This Regulation assigns new tasks to ENTSO-E, such as the drafting of network codes that can become binding to system users; as well as EU-wide ten-year network development plans. Thus, ENTSO-E pursues primarily three objectives:

- ensuring the secure and reliable operation of the European power transmission system;
- facilitating a secure integration of new generation sources, particularly growing amounts of renewable energy and thus contributing to the achievement of the EU's 20-20-20 goals;
- enhancing the integration of the internal electricity market through standardized market integration and transparency frameworks that facilitate competitive and truly integrated markets.

This Memo represents a short extract from a wide range of data and information, which is available from ENTSO-E's website ([www.entsoe.eu](http://www.entsoe.eu)) on its three main areas of activity: system operation, system development and market. In order to access our comprehensive market-related data base and market information, please also visit our transparency platform [www.entsoe.net](http://www.entsoe.net).

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