System Adequacy Retrospect 2007

union for the co-ordination of transmission of electricity

UCTE

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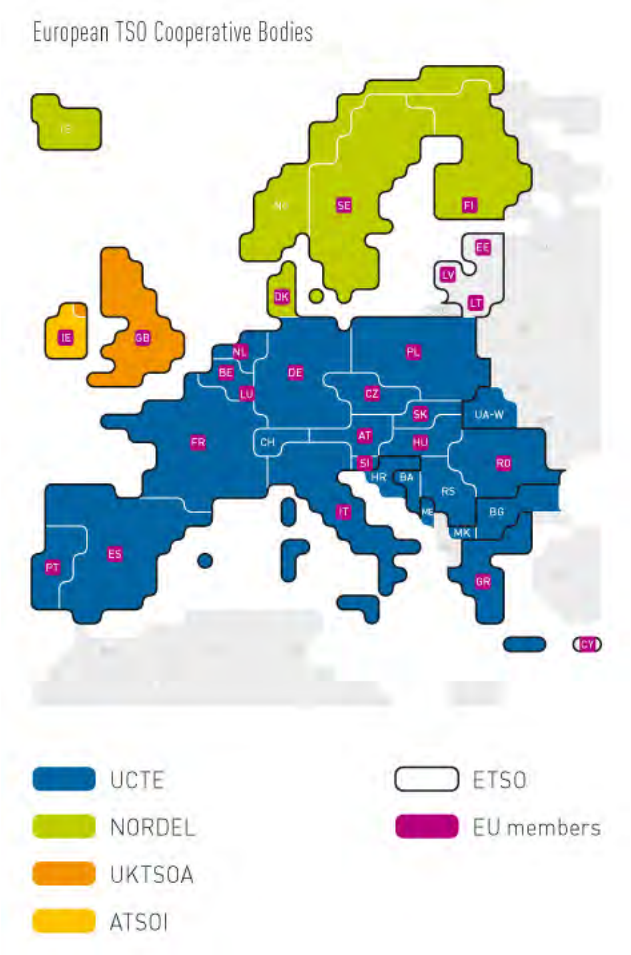
Introduction to the UCTE

The "Union for the Co-ordination of Transmission of Electricity" (UCTE) is the association of transmission system operators in continental Europe, providing a reliable market base by efficient and secure electric "power highways".

50 years of joint activities laid the basis for a leading position in the world which the UCTE holds with respect to the quality of synchronous operation of interconnected power systems. Through the networks of the UCTE, about 450 million people are supplied with electric energy; annual electricity consumption totals approx. 2500 TWh.



Map 1 European TSO Cooperative Bodies

Optimal Co-operation Requires Joint Action

Close co-operation of member companies is imperative to make the best possible use of benefits offered by interconnected operation. For this reason, the UCTE has developed a number of rules and recommendations that constitute the basis for the smooth operation of the power system.

Only the consistent maintenance of the high demands on quality will permit to set standards in terms of security and reliability in the future as well as in the past.

The UCTE – Security of Electric Power Supply and Promotion of Competition

From the very outset of liberalization in the European electricity markets, the UCTE has intensively pursued the development of schemes for the promotion of competition in the electricity sector. The aim is to support the electricity market without accepting restrictions in the security of supply.

The liberalization of electricity markets cannot be implemented without a transparent and non-discriminatory opening up of electric networks.

The UCTE sets the prerequisites that enable a compromise to be ensured between competition and security of supply.

EXECUTIVE SUMMARY

Executive Summary

Aims and Methodology

This UCTE System Adequacy Retrospect 2007 report aims at providing stakeholders in the European electrical Market with an overview of:

- Generation, demand and their adequacy in the UCTE Power System in the year 2007 with a focus on the power balance and margins, and the generation mix;
- The state and the evolution of the UCTE Transmission Grid with a focus on the congestion on interconnection tie-lines and their possible influence on system security.

This retrospect analysis is part of the monitoring process performed by UCTE members as an input to the forecast analysis of system adequacy. UCTE published its latest forecast report in January 2008. *UCTE System Adequacy Forecast 2008-2020* is available at: http://www.ucte.org/publications/systemadequacy/. All the data used in this report are downloadable on the UCTE website on the same page.

Energy Balance

The following table gives an overview of the energy balance of the UCTE grid in the last 5 years up to 2007.

Annual Energy	2003 TWh	2004 TWh	2005 TWh	2006 TWh	2007 TWh	2006 to 2007 TWh	2006 to 2007 %
Hydro Power Generation	312.5	321.3	294.8	311.7	298.7	-13.0	-4.2
Nuclear Power Generation	788.1	797.4	791.4	801.1	759.3	-41.7	-5.2
Fossil Fuel Power Generation	1271.1	1296.4	1349.6	1363.5	1406.4	42.9	3.1
Renewable Energy Sources Generation (exclud. hydro power)	54.8	76.5	94.2	114.3	139.4	25.2	22.0
Not Clearly Identified Sources Generation	27.0	9.4	8.5	3.7	3.5	-0.2	-4.9
Total Generation	**2453.5**	**2501.0**	**2538.5**	**2594.2**	**2607.3**	**13.1**	**0.5**
Physical Exchanges Balance (I-E)	-13.5	-11.5	-1.8	-13.6	-5.6	8.0	-58.7
Pumped Storage	44.7	43.8	46.8	44.9	41.6	-3.3	-7.3
Consumption	**2395.3**	**2445.7**	**2489.9**	**2535.8**	**2560.1**	**24.3**	**1.0**

Demand

The annual electricity consumption in 2007 is 1.0% higher than in 2006 and reaches 2560 TWh. Like in 2006, the highest growth rates of the electrical consumption have been experienced in the eastern and south-western parts of continental Europe. The annual electrical consumption actually decreased in Austria, Belgium[1], Montenegro, the Netherlands and Switzerland.

[1] The Belgian figures are provisional values. The generation of some very small generator units may not be included.

Generation

In 2007, the total generation on the UCTE grid was just above 2607 TWh almost equal to 2006. 0.5% is the lowest growth rate in 4 years as previous values were between 1.5% and 2%. It reflects the overall mild temperature observed in 2007, which almost balance the impact of the economic growth.

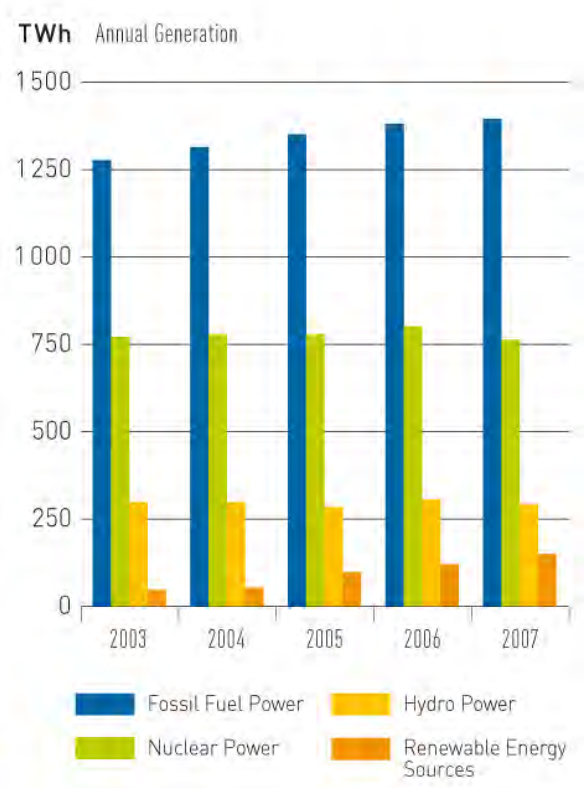


Fig. 1 UCTE Annual Generation Retrospect per Primary Energy

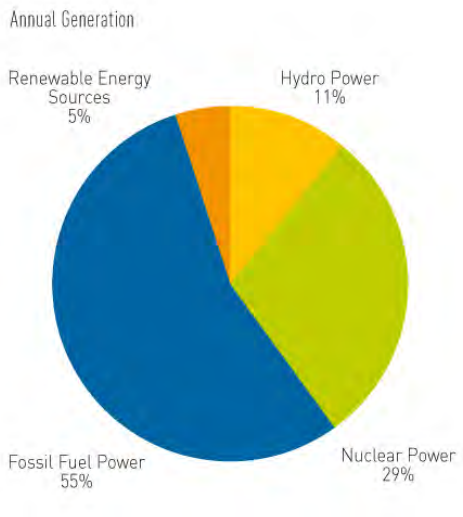


Fig. 2 UCTE Generation Mix in 2007

In 2007, fossil fuel generation increased the most, namely by 43 TWh. This is related to the decrease of nuclear power generation by 42 TWh. Among the fossil fuel generation on the UCTE grid, gas generation had the highest growth rate in 2007 with 6.6% and made up almost 30% of the total fossil fuel generation (16% of the total generation). Hard coal is the second most used fossil fuel and counted for 27% (respectively 15% of the total generation) and lignite is the third most used fossil fuel and counted for 26% (respectively14% of the total generation). Oil generation dropped of 17.7% in 2007.

The second most remarkable change is related to renewable energy sources (RES) generation which increased by 25 TWh and counted for 5% of the total generation on the UCTE grid. In 2007, about 140 TWh have been produced with renewable energy sources, excluding hydro. In 2007, almost 70% of the UCTE

RES generation (excluding hydro) has been generated in Germany and Spain. Wind power generation counted for 60% of the RES generation on the UCTE grid.

International Flows

The volume of internal exchanges within the UCTE grid is almost stable with 676 TWh in 2007, representing a bit more than 26% of the UCTE consumption. This situation has been rather stable since 2005. The external energy balance have been below 0.6 % of the internal consumption during the last 5 years.

Power Balance

National power data are collected for a monthly reference point, namely third Wednesday of each month at 11:00. The following table gives an overview of the power balance of the UCTE grid in the last 5 years.

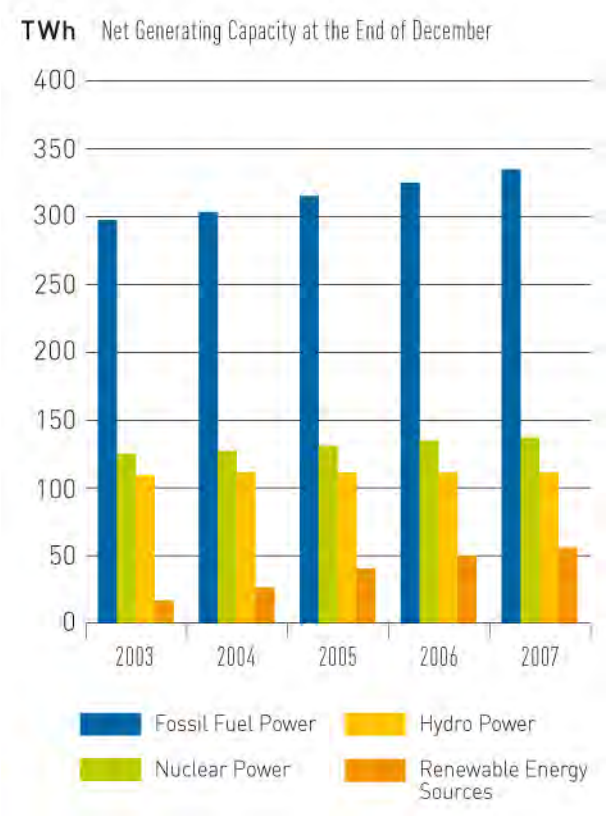
Power values at the end of December	2003 GW	2004 GW	2005 GW	2006 GW	2007 GW	2006 to 2007 GW	2006 to 2007 %
Net Generating Capacity	569.1	593.2	611.3	625.1	639.7	14.6	2.3
Reliably Available Capacity	414.2	431.6	440.3	455.2	470.0	14.8	3.3
Load at Reference Time	348.2	360.6	369.5	368.1	384.0	15.9	4.3
Remaining Capacity w/o Exchanges	**66.0**	**70.6**	**70.8**	**87.0**	**86.0**	**-1.0**	**-1.2**
Physical Exchanges Balance (I-E)	1.6	3.4	8.2	2.4	3.0	0.6	24.5

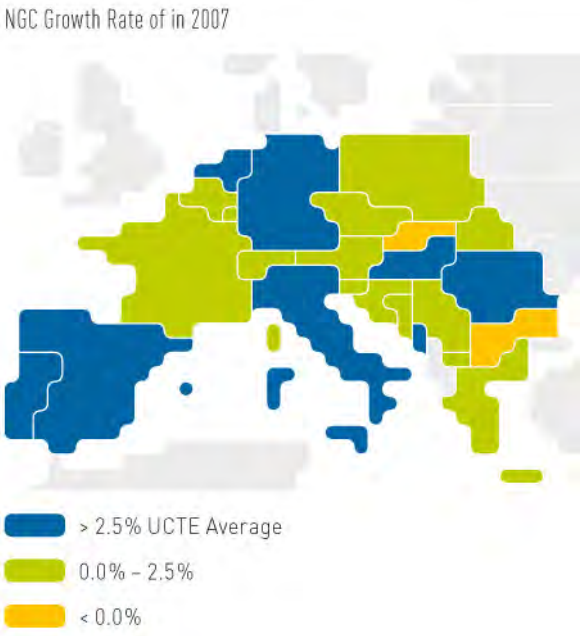
Load

The low values of load early 2007 reflects the mild temperature at that time. In summer, load values continue to increase. This is partly due to the development of air conditioning facilities. The highest load values in November and December is partly due to a cold wave throughout Europe at that time.

Generating Capacity

The total net generating capacity on the UCTE grid has been continuously increasing and went above 640 GW at the end of 2007 with an annual growth rate of +2.5% in 2007, similar to the one observed in 2006.





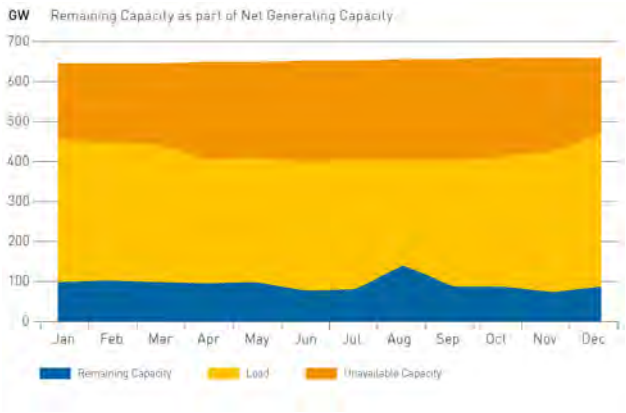
The generating capacity of renewable energy sources (RES) had the highest growth rate in 2007, namely almost 16%. Note that growth rates of 30% and more were observed in the previous 3 years. 43 GW of the 59 GW of additional RES generating capacity was wind power capacity.

The fossil fuel generating capacity increased by the second highest growth rate, namely 2.8% in 2007. The fossil fuel generating capacity remained stable in 2006. However, the current growth rate is almost equal to its 4-year average value. The generating capacity mix at the end of 2007 remains similar to the mix observed in previous years, the fossil fuel generating capacity still counts for approximately 52% of the total generating capacity.

Net Generating Capacity increased all over the UCTE grid with the remarkable exceptions of Bulgaria and Slovakia where the net generating capacity decrease respectively by 9.6% and by 7.6%. In these two countries a nuclear power plant has been decommissioned according to the agreement for the adhesion to the European Union. The highest growth rates have been in Spain with 8.2%, Montenegro with 5.9% and Italy with 4.7%.

Generation Adequacy

Remaining Capacity (RC) is the part of Net Generating Capacity left on the system to cover any unexpected load variation and unplanned outages at reference point. Remaining Capacity (RC) on a power system is the difference between Reliably Available Capacity and Load.



In 2007, Remaining Capacity had its minimum value in November with 71.5 GW of Net Generating Capacity reliably available on top of the Load. It reflects the cold temperature at the end of November 2007 that resulted in an unexpected high load.

This minimal value has been quite stable since 2004 with an historical minimum of 67.6 GW in July 2004.

Remaining Margin (RM) on a power system is the difference between Remaining Capacity and Margin Against monthly Peak Load. Remaining Margin is the part of Net Generating Capacity left on the system to cover any unexpected load variation and unplanned outages over the month.

The lowest value of the Remaining Margin was observed in November due to cold temperatures in the second half of the month which increased load much more than expected. The level of the minimum Remaining Margin in 2007 was 5.3% of the Net Generating Capacity, close to the 6-year average value of 5.7%. The high level of the minimum Remaining Margin in 2006, namely 7.6%, was exceptional and due to mild temperatures all year long.

In conclusion, there was certainly enough generating capacity available in 2007 to cover the demand with the usual level a security. The actual pace of development in generation facilities balances the continuing growth of load and peak demand.

Transmission Adequacy

The analysis of the commercial or contractual congestions on cross-border lines shows that the eastern part of UCTE in Central Europe was still the main area of congestion. Notably, interconnection lines around Hungary have been used at their maximum capacities almost 100% of the time in 2007.

One additional interconnection line between Former Yugoslavian Republic of Macedonia and Greece ahs been achieved in 2007. New or upgraded components led to an increase cross-border capacity from France to Belgium and between Portugal and Spain.

1 METHODOLOGY SUMMARY

1 Methodology Summary

1.1 Introduction

The data and the methodology for system adequacy analysis used by UCTE in its System Adequacy Retrospect (SAR) reports are described in details in the UCTE System Adequacy Methodology document downloadable on the UCTE web site[2].

System adequacy of a power system is the ability of a power system to supply the load in all the steady states in which the power system may exist considering standards conditions. System adequacy is analysed through generation adequacy and transmission adequacy.

Abbreviation	Flag	Country	National Correspondent Company
AT		Austria	VERBUND APG
BA		Bosnia-Herzegovina	ISO BiH
BE		Belgium	Elia
BG		Bulgaria	ESO EAD
CH		Switzerland	swissgrid
CZ		Czech Republic	CEPS
DE		Germany	VDN
ES		Spain	REE
FR		France	RTE
GR		Greece	HTSO/DESMIE
HR		Croatia	HEP-OPS
HU		Hungary	MAVIR ZRt.
IT		Italy	Terna S.p.A.
LU		Luxembourg	CEGEDEL Net S.A.
ME		Montenegro	EPCG
MK		Former Yugoslav Republic of Macedonia	MEPSO
NL		Netherlands	TENNET
PL		Poland	PSE-Operator S.A.
PT		Portugal	REN
RO		Romania	Transelectrica
RS		Serbia	JP EMS
SI		Slovenia	ELES
SK		Slovak Republic	SEPS
UA-W		Ukraine West	Ukrenergo

Tab. 1 System Adequacy Geographical Perimeter

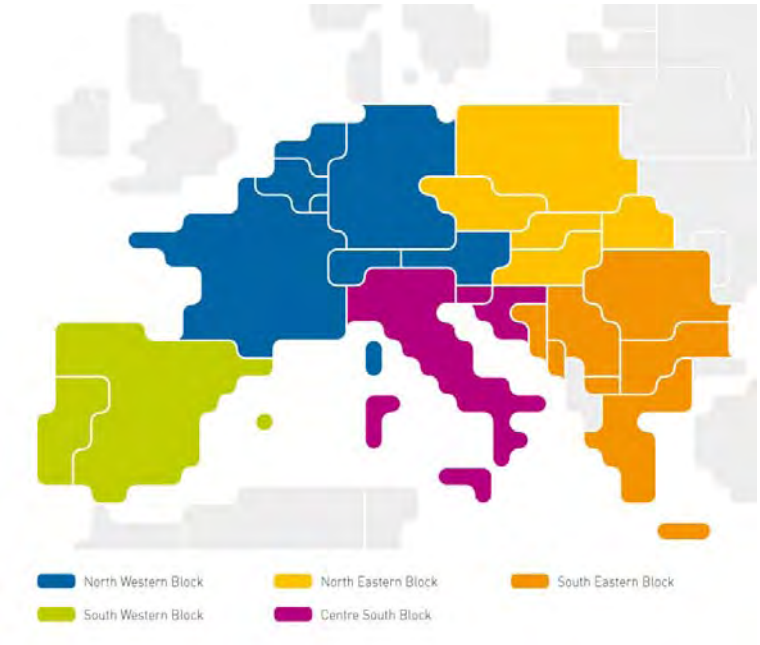
[2] http://www.ucte.org/_library/systemadequacy/saf/UCTE_System_Adequacy_Methodology.pdf

Every national correspondent is in charge of collecting data aggregated for the whole country.

The perimeter of the system adequacy analysis performed by UCTE is made of all the countries of the UCTE members minus the Denmark West associated member Energynet.dk and plus the Ukraine West TSO Ukrenergo. The differences between the UCTE perimeter and the actual geographical perimeter of the System Adequacy analysis are small enough to extend its results to the actual UCTE perimeter.

National power data are collected for a single monthly reference point, namely third Wednesday of each month at 11:00.

Compared to previous retrospect reports, some regional blocks have been slightly updated to match with the most interconnected systems, as shown in Map 2:



- South Western block is made of Portugal and Spain.
- North Western[3] block is made of Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.
- North Eastern block is made of Czech Republic, Hungary, Poland, Slovak Republic and Ukraine-West.
- South Eastern[4] block is made of Bosnia-Herzegovina, Bulgaria, FYROM, Greece, Montenegro5, Romania and Republic of Serbia.
- Centre South[6] block is made of Croatia, Italy and Slovenia.

Map 2 Regional Blocks for Adequacy Analysis

[3] In previous edition, Main-UCTE block was used and was made of countries in the North Western Block plus Bosnia-Herzegovina, Croatia and Slovenia.

[4] Bosnia-Herzegovina has joined the South Eastern block. Romania and Bulgaria used to be considered as a separate block.

[5] Following its independency on June 3rd 2006, data regarding Montenegro and Republic of Serbia are not aggregated anymore. Distinct historical data are available form 2006 only.

[6] Italy used to be considered as an independent block.

1.2 Definitions

Generation adequacy of a power system is an assessment of the ability of the generation on the power system to match the consumption on the power system.

Generation adequacy is made at three levels: individual countries, 5 regional blocks and the whole UCTE. The analysis at regional level completes the overall UCTE-wide picture by taking account of major limitations in power flows within the whole synchronous area.

A UCTE SAR report is published by the middle of every year (Y) with a retrospect of the year before the publishing date (Y-1).

Power data collected for each country are synchronous at each reference point (date and time power data are collected for) and can thus be aggregated. In order to compare the evolutions of the results, similar reference points are specified for each month and from one report to another.

Load on a power system is the net (excluding consumption of power plants' auxiliaries, but including network losses) consumption corresponding to the hourly average active power absorbed by all installations connected to the transmission or distribution grid, excluding the pumps of the pumped-storage stations.

Net Generating Capacity (NGC) of a power station is the maximum electrical net active power it can produce continuously throughout a long period of operation in normal conditions. NGC of a country is the sum of the individual NGC of all power stations connected to either the transmission grid or to the distribution grid.

Unavailable Capacity is the part of NGC that is not reliably available to power plant operators due to limitations of the output power of power plants. It consists of the Non-Usable Capacity, Maintenance and Overhauls, Outages and System Services Reserve.

Reliably Available Capacity (RAC) on a power system is the difference between NGC and Unavailable Capacity.

Remaining Capacity (RC) on a power system is the difference between RAC and Load.

Margin Against Peak Load (MaPL) is the difference between Load at the reference point and the peak load over the period the reference point is representative of. SAR MaPL is monthly and is called Margin Against Monthly Peak Load (MaMPL).

Remaining Margin (RM) on a power system is the difference between RC and MaPL. In SAR reports, RM is calculated with MaMPL and with or without Exchanges.

All the above definitions are illustrated in Fig. 3.

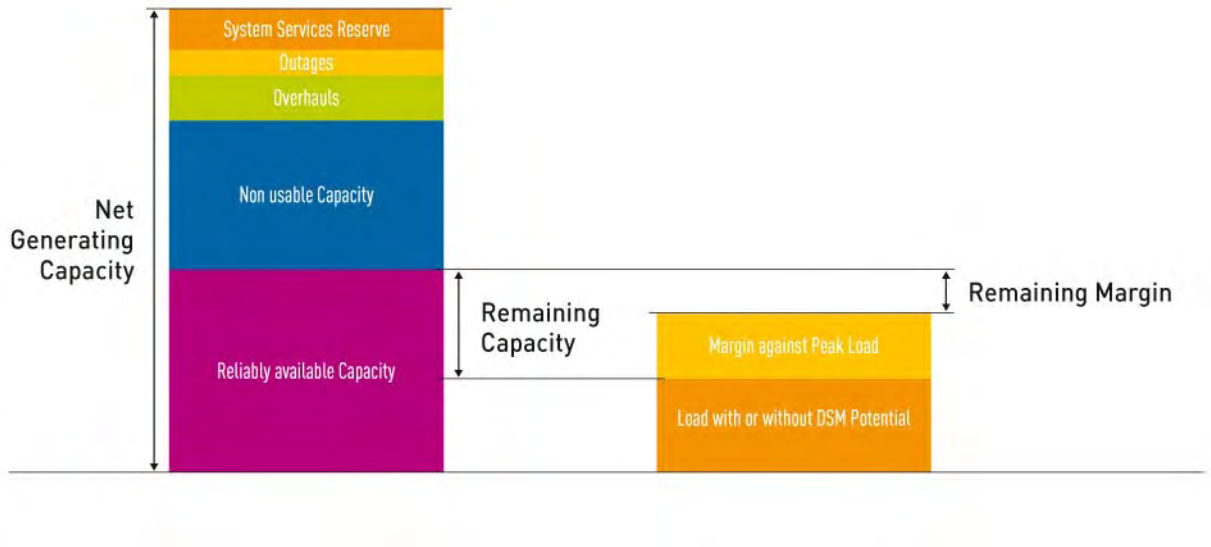


Fig. 3 Generation Adequacy Analysis

1.3 Assessment

1.3.1 Generation Adequacy

Generation adequacy retrospect on power system is assessed at the reference points through the Remaining Capacity value.

When Remaining Capacity without Exchanges is positive, it means that the power system had enough internal generating capacity left to cover its Load; when negative, it means that the power system had to cover its Load with the help of imports.

As long as all individual Remaining Capacities with Exchanges are positive, it means that the power balance was achieved throughout UCTE.

The comparison of the Remaining Capacity to an indicative level of 5% of the Net Generating Capacity is a good indicator of the evolution of generation adequacy.

Considering Remaining Margin definition introduced in Chapter 1.2, the generation adequacy retrospect assessment is then monthly extended.

When Remaining Margin without Exchanges is positive, it means that the power system had enough internal generating capacity left to cover its load at any time of the month.

When Remaining Margin without Exchanges is negative, it means that the power system might have to rely on imports to cover its monthly peak load.

The evolution of the annual minimum Remaining Margin throughout the years is a good indicator of the true evolution of the generation adequacy.

1.3.2 Transmission Adequacy

Transmission adequacy retrospect analysis looks at the constraints on internal and interconnection lines with a direct impact on the Exchanges. Transmission adequacy is therefore retrospectively analysed regarding 3 aspects: The main developments and upgrades on the UCTE network during the year with emphasis on commissioned lines or transmission devices with a significant impact on the interconnections and on congestions, the main disturbances which have affected the transmission lines and the congestions observed on the interconnection lines.

Regarding Congestions Retrospect Analysis[7], it is considered that there was a congestion on an interconnection border when access have not be granted to all the actors who requested it, i.e. when market players were eager to buy more capacity than on sale. Therefore, congestions in the frame of SAR report are not necessary physical congestions but should be called commercial or contractual congestions. Their causes are to be found not only in the limited technical capacity of the interconnection lines, but also in the allocation mechanisms of the NTC which were applied.

In order to qualify precisely the congestion, the occurrence of congestion for each border and on each direction is classified according to the season and the hour of the day.

More, for each border and on each direction, congestions are rated with an annual severity index. This index is the annual frequency of any congestion, expressed as a percentage. It is the ratio of the total time duration of all the congested periods during the analysed year by whole year duration.

[7] This methodology is currently under revision by UCTE

2 ENERGY BALANCE AND PEAK DEMAND

2 Energy Balance and Peak Demand

In addition to the figures reported in this Chapter, extra figures are in Appendix 2.

2.1 UCTE Energy Balance Summary

Annual Energy	2003 TWh	2004 TWh	2005 TWh	2006 TWh	2007 TWh	2006 to 2007 TWh	2006 to 2007 %
Hydro Power Generation	312.5	321.3	294.8	311.7	298.7	-13.0	-4.2
Nuclear Power Generation	788.1	797.4	791.4	801.1	759.3	-41.7	-5.2
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Renewable Energy Sources Generation (exclud. hydro power)	54.8	76.5	94.2	114.3	139.4	25.2	22.0
Not Clearly Identified Sources Generation	27.0	9.4	8.5	3.7	3.5	-0.2	-4.9
Total Generation	**2453.5**	**2501.0**	**2538.5**	**2594.2**	**2607.3**	**13.1**	**0.5**
Physical Exchanges Balance (I-E)	-13.5	-11.5	-1.8	-13.6	-5.6	8.0	-58.7
Pumped Storage	44.7	43.8	46.8	44.9	41.6	-3.3	-7.3
Consumption	**2395.3**	**2445.7**	**2489.9**	**2535.8**	**2560.1**	**24.3**	**1.0**

Tab. 2 UCTE Energy Balance Retrospect

The above table is the summary of the energy figures on the UCTE electrical grid in 2007. This figures are detailed in the following chapters.

2.2 Demand

2.2.1 Electricity Consumption

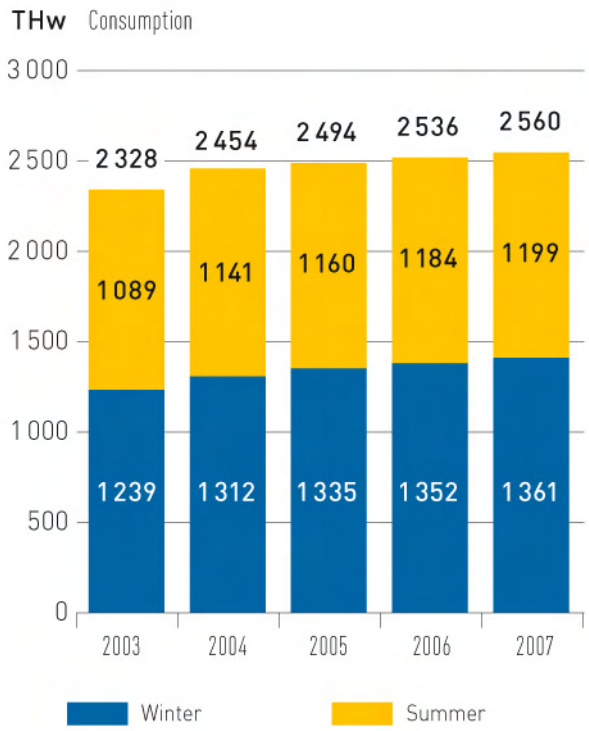


Fig. 4 UCTE Consumption Retrospect

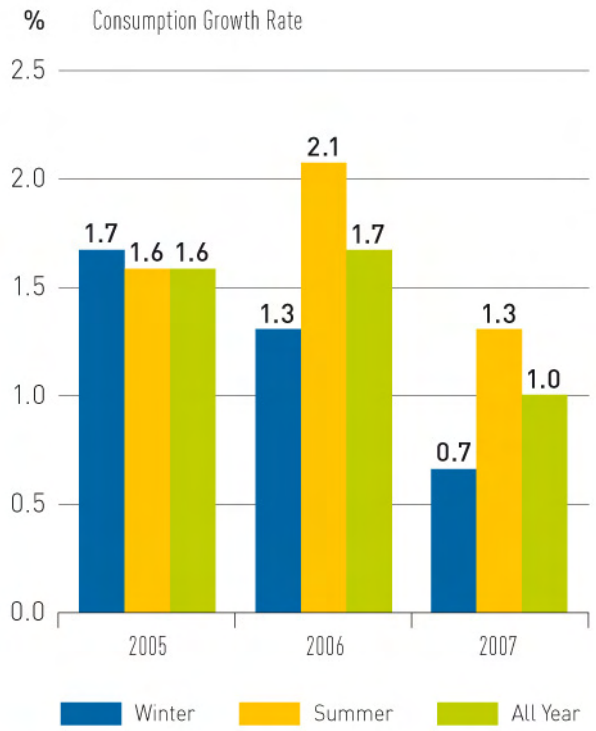
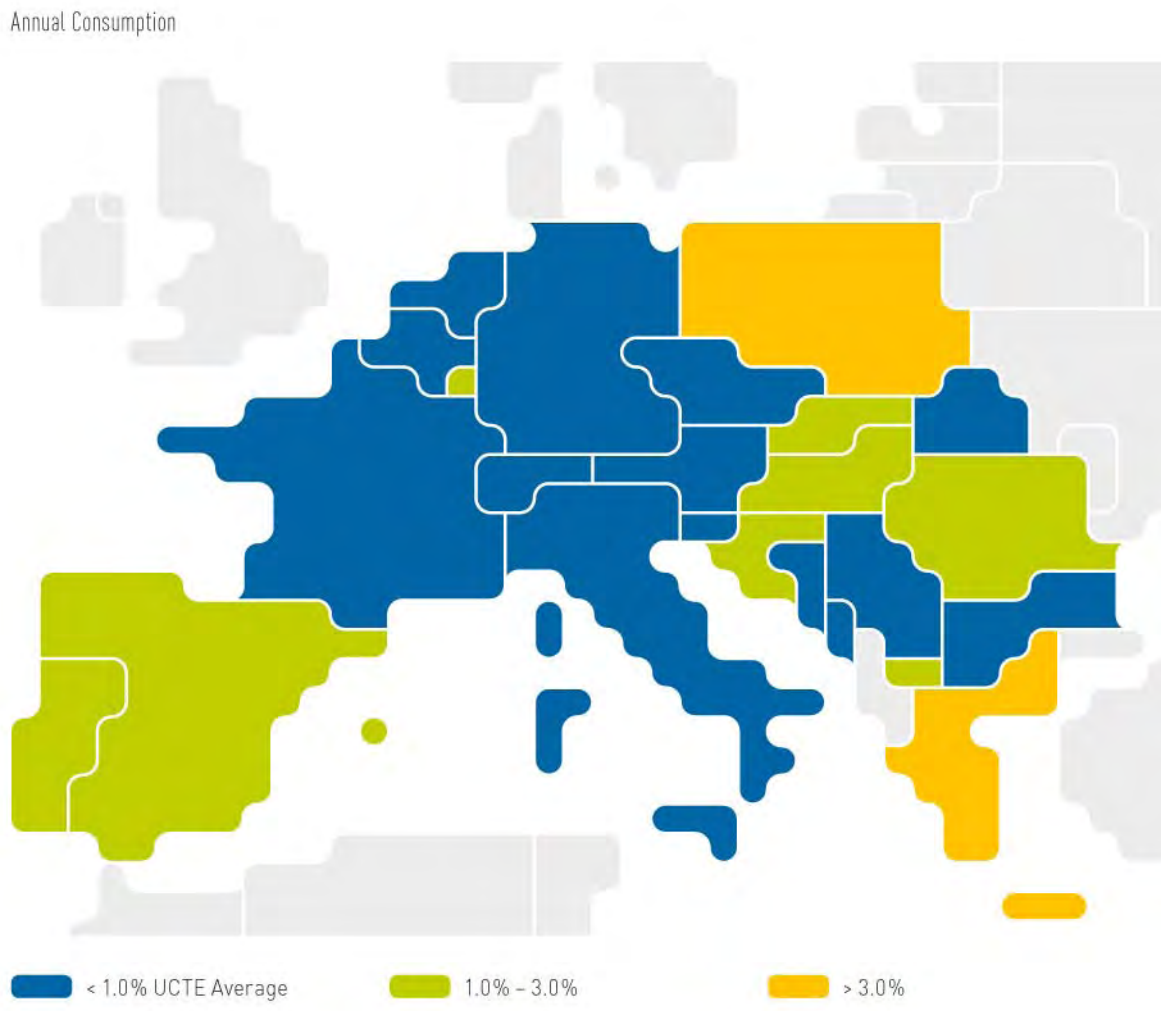


Fig. 5 UCTE Consumption Growth Rate Retrospect

Winter and summer respectively refer to the winter quarters (Q1Q4) and summer quarters (Q2Q3) of the same calendar year.

The annual electricity consumption in 2007 was 1.0% higher than in 2006 and had the magnitude of 2560 TWh. The summer growth rate is 1.3%, while the winter growth rate was only 0.7%. These growth rates are low compared to the previous years and especially 2006. It reflects the mild average temperatures in summer and winter 2007.

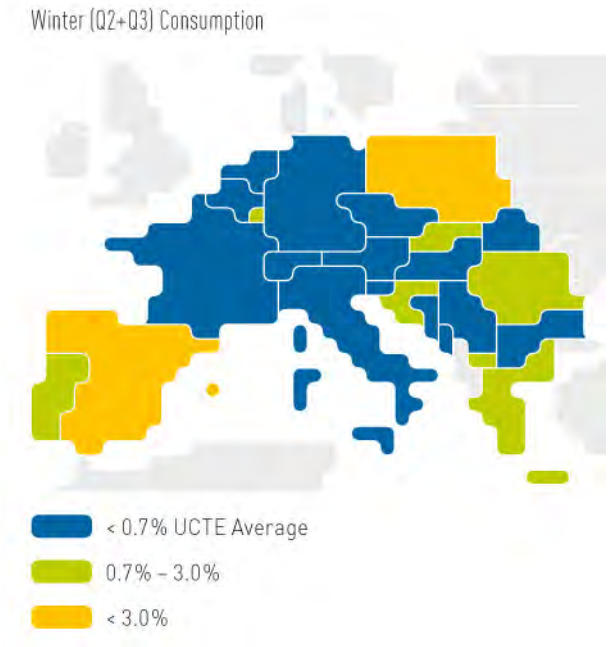


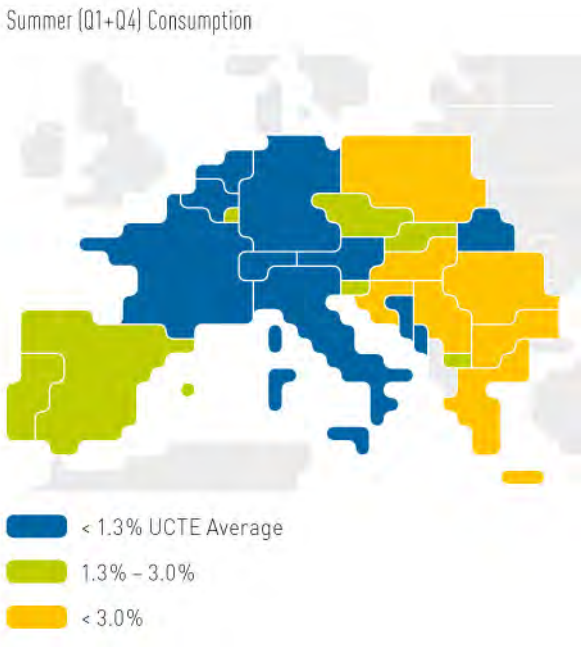
Map 3 Electricity Consumption Growth Rate in 2007

Map 3 shows that, like in 2006, the highest growth rates of the electrical consumption have been experienced in the eastern and south-western parts of continental Europe.

The highest growth rate was experienced in Poland with 4.2%. The growth rates were high in winter as well as in summer. The second highest growth rate was observed in Greece with 3.1%, where most of the growth happened in summer with a growth rate of 5.6% (0.7% in winter) due to very high temperatures.

The annual electrical consumption actually decreased in Austria, Belgium, Montenegro, the Netherlands and Switzerland.





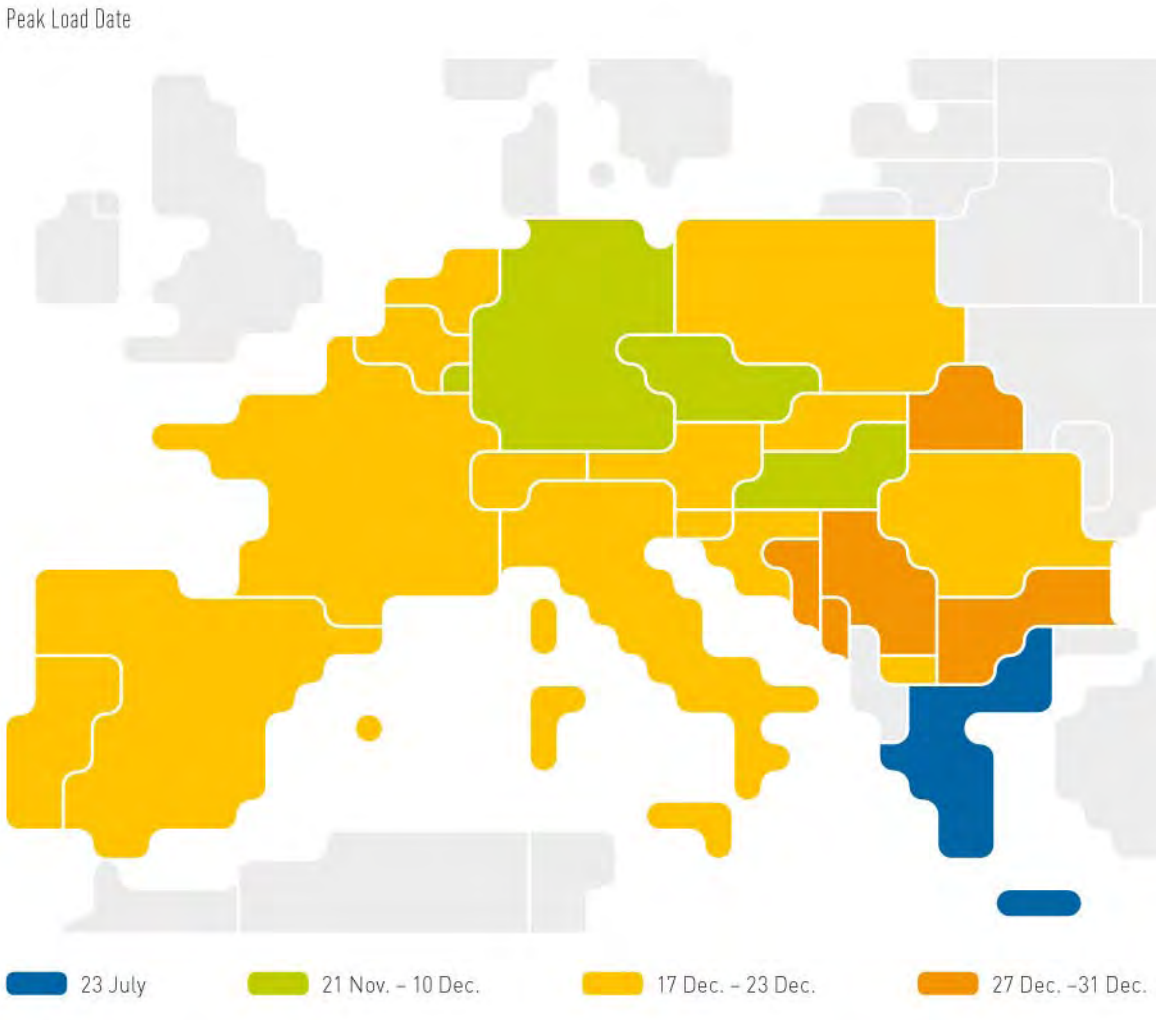
Map 4 **Winter Consumption Growth Rate in 2007**

Map 5 **Summer Consumption Growth Rate in 2007**

As shown in Map 4, the highest growth rate of the winter consumption was established in Spain with 3.9% followed by Poland with 3.2%. Map 5 shows that the highest growth of summer consumption was in the eastern part of UCTE and especially in Bulgarian with 5.6%, Greece 5.5% and Poland 5.3%.

2.2.2 Peak Loads

Peak load is not an hourly average value but the maximum metered value.



Map 6 Peak Load Period in 2007

With the exception of Greece, all the national peak loads in 2007 were met late 2007. More specific, in the second half of December 2007 the national peak load was observed in 18 out of the 24 countries when a cold wave was all over Europe.

Here below are some details on each national peak load.

	Peak Load 2007							Historical Peak Load					
	Day		Time	Daily Average °C	Deviation to Normal °C	MW	Compare to 2006 %	Day		Year	Deviation to Normal °C	MW	
AT	Mon	17 Dec	17:30	-2.0	-3.0	9 438	-0.5	Wed	25 Jan	2006	-8.0	9 481	
BA	Mon	31 Dec	18:00	-	-	2 078	**2.9**	**Mon**	**31 Dec**	**2007**	**-**	**2 078**	
BE	Mon	17 Dec	18:00	-2.6	-6.8	14 205	**2.1**	**Mon**	**17 Dec**	**2007**	**-6.8**	**14 205**	
BG	Mon	31 Dec	18:00	-1.4	-1.3	6 888	-0.6	Mon	12 Dec	1988	-1.7	8 332	
CH	Wed	19 Dec	18:15	0.0	0.0	9 953	-2.6	Wed	15 Feb	2006	-6.5	10 218	
CZ	Thu	29 Nov	17:00	-2.3	-5.8	10 174	-3.0	Wed	25 Jan	2006	-9.1	10 485	
DE	Mon	3 Dec	18:00	6.5	4.5	78 500	**0.9**	Tue	10 Dec	2002	-8.1	79 700	
ES	Mon	17 Dec	20:00	6.3	-2.7	44 876	**6.5**	Thu	27 Jan	2005	-6.7	43 378	
FR	Mon	17 Dec	19:00	-0.8	-6.0	88 960	**3.1**	**Mon**	**17 Dec**	**2007**	**-6.0**	**88 960**	
GR	Mon	23 Jul	13:00	37.0	5.0	10 414	**5.3**	**Mon**	**23 Jul**	**2007**	**5.0**	**10 414**	
HR	Mon	17 Dec	18:00	1.0	-4.0	3 098	**2.0**	**Mon**	**17 Dec**	**2007**	**-4.0**	**3 098**	
HU	Thu	29 Nov	17:00	-3.0	-5.7	6 180	**1.7**	**Thu**	**29 Nov**	**2007**	**-5.7**	**6 180**	
IT	Tue	18 Dec	17:00	4.4	2.3	56 822	**2.2**	**Tue**	**18 Dec**	**2007**	**2.3**	**56 822**	
LU	Mon	10 Dec	18:00	4.9	3.2	1 061	**2.5**	**Mon**	**10 Dec**	**2007**	**3.2**	**1 061**	
ME	Sun	23 Dec	18:00	-1.0	-7.5	744	-2.0	Thu	26 Jan	2006	-7.0	759	
MK	Sun	23 Dec	19:00	-6.0	-	1 664	**6.3**	**Sun**	**23 Dec**	**2007**	**-**	**1 664**	
NL	Thu	20 Dec	17:00	10.1	7.3	15 863	-3.8	Tue	21 Dec	2004	-6.3	17 334	
PL	Tue	18 Dec	17:00	-0.4	-0.7	22 729	**0.2**	Wed	21 Dec	1988	-	24 685	(*)
PT	Tue	18 Dec	19:45	10.3	-1.6	9 099	**3.4**	**Tue**	**18 Dec**	**2007**	**-1.6**	**9 099**	
RO	Wed	19 Dec	17:00	-3.5	-4.3	8 681	**6.5**	-	Nov	1989	-	10 248	
RS	Mon	31 Dec	18:00	-4.7	5.8	7 305	**-**	-	-	-	-	-	
SI	Wed	19 Dec	19:00	-2.0	-3.0	2 087	-1.1	Thu	26 Jan	2006	1.0	2 110	
SK	Wed	19 Dec	18:00	-2.7	0.3	4 418	-0.1	Tue	12 Dec	1989	-	4 471	
UA-W	Thu	27 Dec	17:00	-4.9	3.6	1 025	-0.3	Wed	25 Jan	2006	7.8	1 028	

(*) Note that the Polish historical peak load is a gross value.

Tab. 3 Peak Load in 2007 and Historical Peak Load

The national peak load reported in 2007 exceeded that of 2006 in 15 countries out of 24. More a new national historical peak load has been reached in 2007 in most of these countries with the exception of Poland, Romania, Spain and Germany.

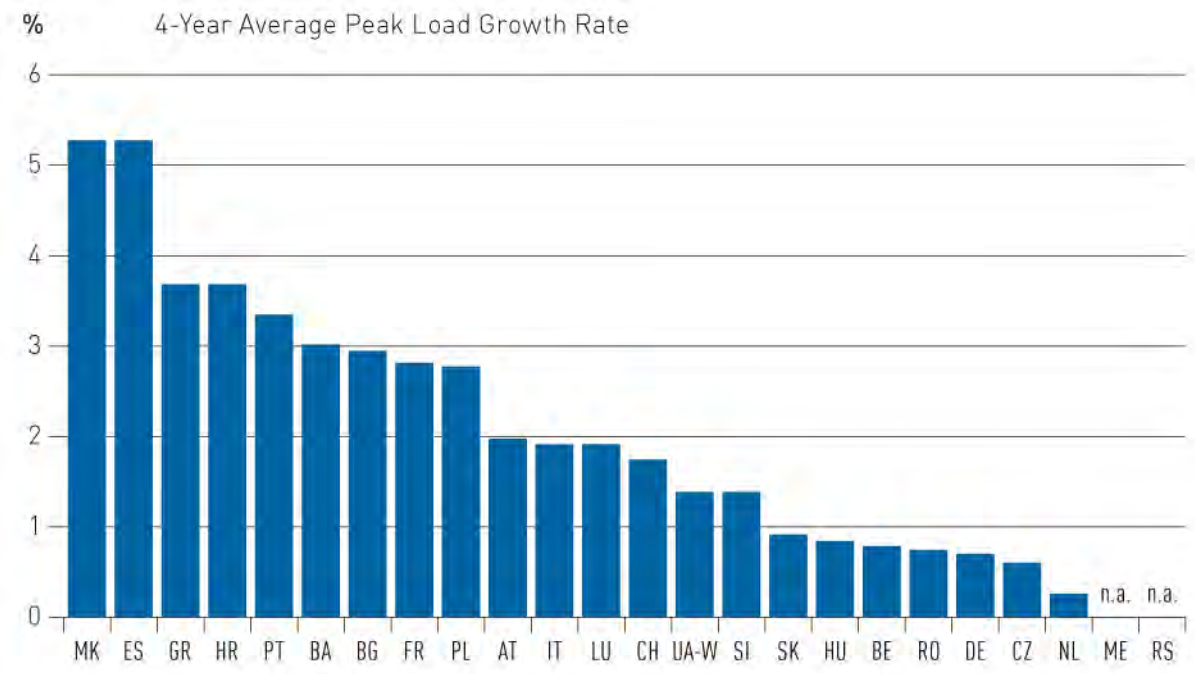


Fig. 6 4-Year Average Peak Load Growth Rate

The 4-year average growth rate of the national peak load goes from 5.4% in the Former Yugoslavian Republic of Macedonia and Spain, down to 0.2% in the Netherlands. Note that the average growth rate of the national peak load is 2.2 % all over UCTE is higher than the average growth rate of the consumption with 0.9% as shown in Chapter 2.2.1.

2.2.3 National Comments on Demand

National data demand is in Appendix 2.

AT Austria

The consumption growth from 2006 to 2007 amounted 0,7%. So it was lower than the expected 2%.

The main reason were the very warm climate conditions especially in the first quarter 2007 (e.g. in January the temperature was up to 7°C higher than the long term average). Therefore the consumption in the first quarter was 4% lower then in the last year.

Concerning the consumption in the SAR 2006 the values were based on the consumption in the public grid and a (estimated) representativity factor. For the retrospect 2007 the total consumption was used (representativity = 100%). Finally the total consumption 2007 was just very little higher than 2006.

BA Bosnia-Herzegovina

Consumption stayed approximately on the same level as in 2006.

BE Belgium

During the first semester of 2007, the average temperature was higher than the decennial monthly average temperature (1998-2007). The highest deviation from the decennial monthly average temperature was measured in April 2007, namely 3.8°C higher than the decennial average temperature for that month. The average temperature in the second semester of 2007 was lower than the decennial average temperature for those months.

BG Bulgaria

The annual consumption in 2007 increased by 1.4 %. The normalised values (to normal weather conditions) show that the increase can be treated as 2.2 %.

The loads in the period January – March were lower than those in the same period of 2006 because the average temperatures in the period were with 4.8 °C higher (extremely warm winter).

Consumption of pumps increased by 16 % in 2007 mainly because of the most frequent use of pumped storage plant Chaira in peak hours for generation.

CH Switzerland

The peak load in 2006 as of 10218 MW was extremely high and out of normal range. The deviation to the normal temperature was -6.5°C. Therefore, it was quite probable that the peak load in 2007 will be lower. It reached only 9953 MW which is however higher that the peak load in 2005 (9783 MW).

CZ Czech Republic

Thanks to very warm winter months from January to April the consumption increased slightly (e.g. only about 0.7 % per year). But in other months of the year 2007 the consumption increased significantly (within the range of 1.1 % in June and 6.2 % in October).

DE Germany

The temperatures of the whole year were comparable to last year's. In general, it was warmer than in the long-term average. So, there was no significant variation in electricity consumption.

FR France

The growth of the consumption of the end customers connected to the RTE network comes from the extractions of the energy sector's main customers whose increase in 2007 comes after the decrease recorded the previous year.

The drop of the consumption of the end customers connected to the distribution networks, following the contrasted weather conditions between 2006 and 2007, compensates the increasing trend of their extractions.

The national consumption adjusted for climatic contingencies reached 480.8 TWh in 2007, 2.2 % higher than in 2006 ; excluding main customers of the energy sector, it grew by 1.6 %.

Source:

http://www.rte-france.com/htm/an/mediatheque/telecharge/electrical_energy_in_france_2007.pdf

2007 was marked by a relatively warm first trimester, a cool summer, and some very cold periods in November and December. Overall, these deviations from the seasonal norm resulted in consumption 0.5 TWh lower than would normally have been expected. The contrast is important with 2006, when the climatic contingencies had provoked an increase of the consumption (8.1 TWh).

A new demand record was set at 6.58pm on Monday 17 December 2007, with a peak of 88,960 MW. The previous record of 86,280 MW, which dated from January 2006, was topped for four days running. At that point in time, France was importing a net total of approximately 1,600 MW from neighbouring countries, less than 2% of recorded demand.

The consumption of pumps rose by 3.0 % and reached its higher annual value recorded (7.7 TWh).

GR Greece

The consumption presented an increase of 3.1%. The increase in consumption was very high in summer due to high temperatures.

On 23.7.2007 the annual peak load was recorded. The mean hourly value recorded by our energy meters was 10414 MW. The instant value recorded by our SCADA SYSTEM was 10610 MW. The increase of the load compared to the peak of the previous year was 5.3%. The temperature in Athens at peak hour was 43°C.

It is estimated that a total load of 500MW was interrupted on peak hour, due to decrease of irrigations and to voluntary load reduction by HV customers.

Pumps were in operation during the night when the load was low. Expensive hydro energy was saved by consuming cheaper electrical energy produced by lignite.

HR Croatia

Increase of whole year consumption was 2,6%, which is lower increase rate than the one observed last year (2,9%). Reason was wormer year.

Consumption growth in summer semester was somewhat higher (3,5%) than in winter semester (1,8%).

Use of pumped storage was higher than in the year 2006 (approximately 31% higher), which enabled more flexible and more economical operation of Croatian power system.

HU Hungary

Gross peak Load was 6602 MW.

IT Italy

On summer period very high temperatures recorded with consequent increase of the demand. On last part of the July the country reached his historical seasonal peak of the load.

On last part of the year a very cold wave affected the country with temperatures, especially in the southern areas, below the average values producing a sensible increasing of the demand.

On 2007, the national power grid recorded a new all-time peak load with 56.822 MW (December 18th at 17:00, up by 2,2%).

The use of pumped storage has signed a sensible decrease of 12,8% with respect the 2006 mainly caused by a low hydro conditions during the year.

LU Luxembourg

The peak-load growing in 2007 was about 2,5% for the public grid with a energy consumption increase of 2,2%. The growing of the electrical consumption in Luxembourg (public grid and industrial grid) was 0,9%

The historical peak load for the country (1061MW) was registered in 2007 on December 10th. The historical peak load in the public grid (735,3 MW) was on November 29th and was covered by 110 MW of production in the public grid.

NL The Netherlands

The growth of the consumption in 2007 was less than the growth in the last years.

There's no pumped storage in the Netherlands.

PL Poland

The growth of the consumption is observed at the level of 4,2% in spite of mild weather conditions in 2007 in comparison to year 2006 (very strong winter and unexpected hot summer). Polish TSO is still registering the bigger increase of consumption during the summer period (5,3%) than the winter period (3,2%).

Comparing to the year 2006 the increase of the hourly average load values amounts 2,9% (450 MW) and is at the forecasted level.

Peak load gross value is 24456 MW to compare with historical peak load (historical peak load, before the economic changes in Poland in early nineties, is given as a gross value only).

Please note, that following the definition to SAR Report, the value given above is hourly average value of load (as in the monthly statistics on the UCTE web site). The real peak load took place at 16:30 and amounted 22893 MW (24611 MW gross value).

What is important, the average temperature during the day when last year peak load happened was -18,4°C. So, the forecasted growth of the peak load presented in the SAF 2007-2020 Report was confirmed, in spite of the mild winter in 2007.

The decrease of the energy used for pumping was caused by the fact that since X.2006 Polish TSO has had the intervention reserves in pumped-storage hydropower stations at his full disposal and there was no the commercial use of them.

PT Portugal

The consumption grew at the lowest rate since 2002, 1.8%. With correction of the effect of temperature and working days this value grows to 2.4%.

RO Romania

The consumption of the first three months was lower than the same interval consumption belonging to the previous years.

The consumption had high values in May-December interval, reaching higher values during the summer months.

Due to the mild winter 2006-2007, the yearly peak load has been reached in December 2007. The peak load reached in December 2007 is the greatest one, since we have the historic peak load. No load reduction was necessarily.

RS Republic of Serbia

Average temperature for December 2007 was 1,06 °C, what is near average temperature in last 20 years for December. December 31st was coldest day in 2007 and beside over New Years Eve, one of the most popular holidays in Serbia. Due to fact that Serbia had constantly import for winter period and all available plants was on network this day pasted without trouble.

SI Slovenia

Peak load in 2007 is lower than in 2006 due to shut down of one electrolyse process in aluminium factory Talum at the end of November 2007. The Peak load values include system losses. No load reduction or any other Load Management was carried out at peak load in 2007.

SK Slovak Republic

Higher net consumption (1,4 %) caused due to decrease of auxiliary consumption.

2.3 Generation

The generation is the net electrical energy injected in the grid. The consumption of the auxiliaries of the power plants is deducted from the gross generation.

2.3.1 UCTE Overview

Annual Generation	2003 TWh	2004 TWh	2005 TWh	2006 TWh	2007 TWh	2006 to 2007 TWh	2006 to 2007 %
Hydro Power	311.3	321.8	294.8	*311.7*	*298.7*	-13.0	-4.2
Nuclear Power	788.1	797.4	791.4	*801.1*	*759.3*	-41.8	-5.2
Fossil Fuel Power	1271.1	1296.4	1349.6	*1363.5*	*1404.3*	40.8	3.0
Renewable Energy Sources	54.8	76.5	94.2	*114.3*	*138.3*	24.1	21.1
Not Clearly Identified Sources	27.0	9.4	8.5	*3.7*	*6.7*	3.0	82.4
Total Generation	**2452**	**2501**	**2538**	**2594**	**2607**	**13.1**	**0.5**

Tab. 4 UCTE Annual Generation Retrospect

In 2007, the total generation on the UCTE grid was just above 2600 TWh, almost equal to 2006. An increase by 0.5% is the lowest growth rate in 4 years as previous values were between 1.5% and 2%. It reflects the overall mild average temperature observed in 2007, which almost balanced the impact of the economic growth.

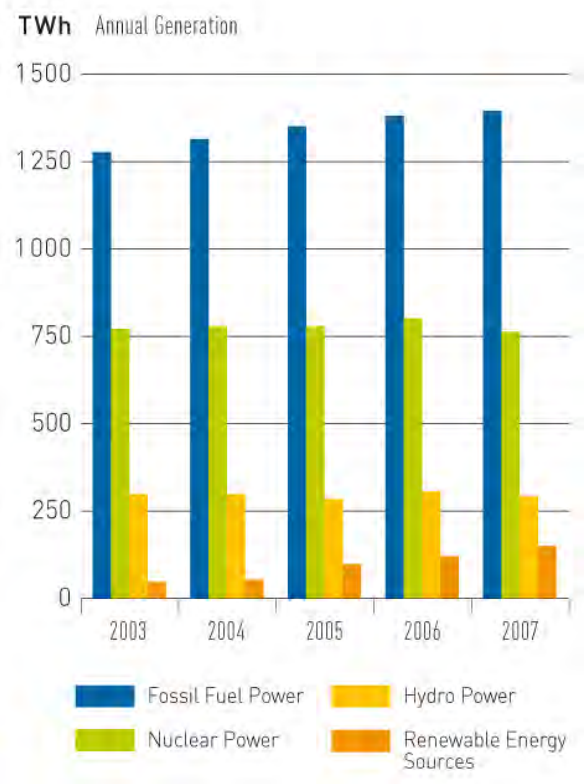


Fig. 7 UCTE Annual Generation Retrospect per Primary Energy

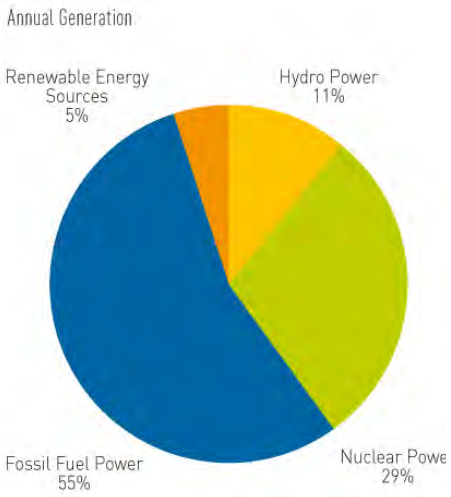


Fig. 8 UCTE Generation Mix in 2007

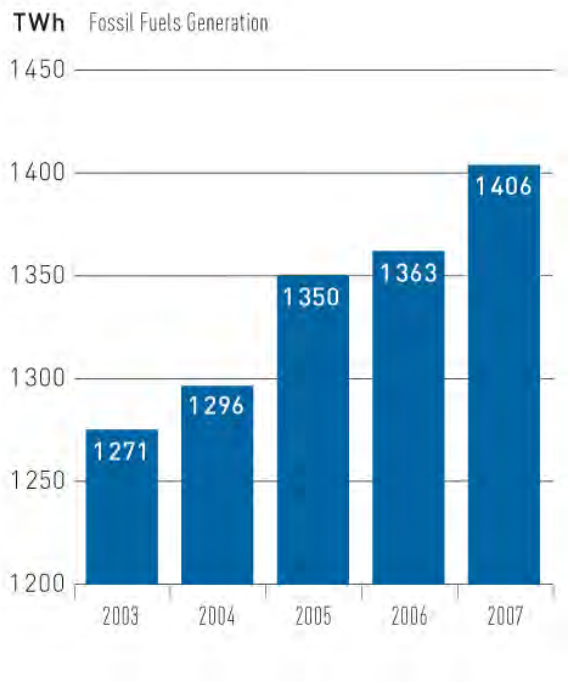
In 2007, the highest increase was for the fossil fuel generation with 43 TWh, this is related to the decrease of nuclear power generation by 42 TWh. It partly reflects the low availability of nuclear plants in France and that fossil fuel power generation has replaced part of the nuclear power generation in Germany.

The second most remarkable change is related to Renewable Energy Sources generation which increased by 25 TWh and counted for 5% of the total generation on the UCTE grid.

More details on generation per primary energy are in Chapters 2.3.1.1 to 2.3.1.4.

National Comments are in Chapter 2.3.2.

2.3.1.1 Fossil Fuels



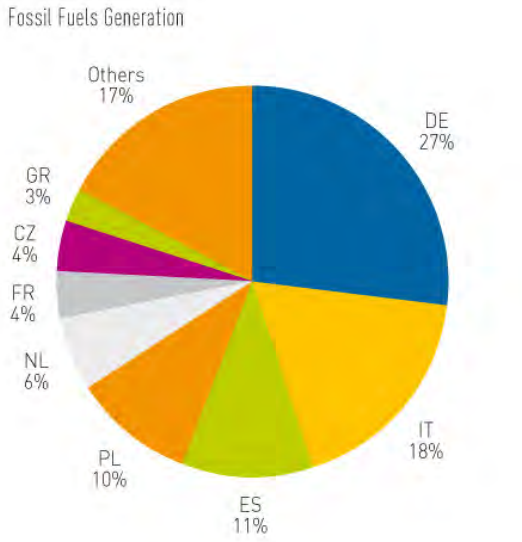


Fig. 9 UCTE Fossil Fuel Generation Retrospect

Fig. 10 National Shares in UCTE Fossil Fuel Generation in 2007

Fig. 9 shows that fossil fuel generation keeps on increasing on the UCTE grid and exceeded 1400 TWh in 2007.Almost 70% of the UCTE fossil fuel generation was generated in Germany, Italy, Spain and Poland, as shown in Fig. 10.

Annual Generation	2006 TWh	2007 TWh	2006 to 2007 TWh	2006 to 2007 %
Gas	382.2	407.6	25.4	6.6
Hard Coal	367.5	384.5	16.9	4.6
Lignite	358.4	367.7	9.2	2.6
Non Attributable Sources	147.8	157.3	9.5	6.4
Oil	63.9	52.6	-11.3	-17.7
Mixed Fuels	43.6	36.8	-6.9	-15.8
Fossil Fuel Power	**1 363.5**	**1 406.4**	**42.9**	**3.1**

Tab. 5 UCTE Fossil Fuel Generation Evolution

Tab. 5 shows that, among the fossil fuel generation on the UCTE grid, gas generation had the highest growth rate in 2007 with 6.6% and made up almost 30% of the total fossil fuel generation (16% of the total generation).

Then, hard coal counted for 27% of the fossil fuel generation (respectively 15% of the total generation) and lignite counted for 26% of the fossil fuel generation (respectively14% of the total generation).

Oil generation dropped almost 18% in 2007.

Note that a significant part of the Non Attributable power plants in the SAR 2006 report are now identified as hard coal power plants.

Note that the mix of fuels burnt by the plants in the Mixed fuels category may differ from the UCTE fossil fuel generation mix in Fig. 11.

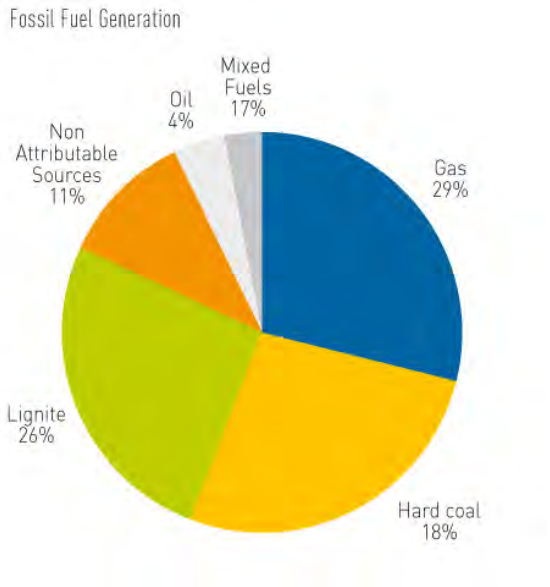


Fig. 11 UCTE Fossil Fuel Generation Mix in 2007

2.3.1.2 Renewable Energy Sources

The renewable energy sources (RES) in this report does not include generation from hydro power units. The generation from hydro power units are given separately but can only be considered as renewable energy sources if it involves natural inflows.

Note that wind power generation figures are collected by UCTE since 2005.

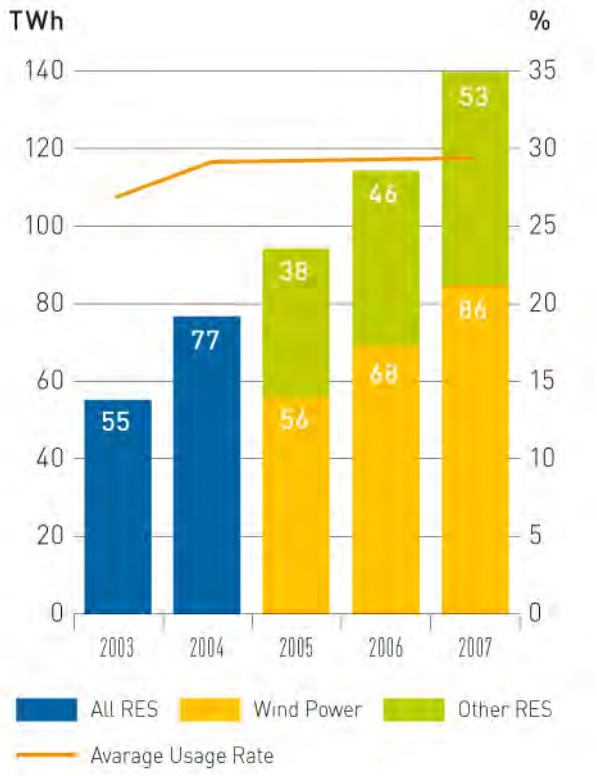


Fig. 12 UCTE RES Generation and Average Usage Rate

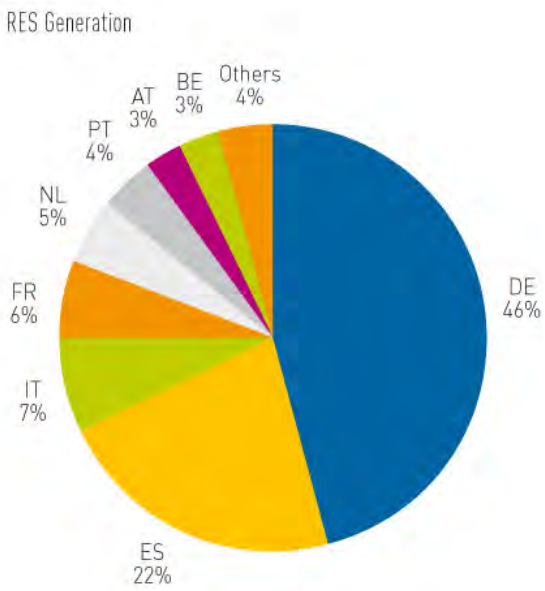


Fig. 13 National Shares in UCTE RES Generation in 2007

In 2007, about 140 TWh were produced with renewable energy sources, excluding hydro. In 2007, almost 70% of the UCTE RES generation (excluding hydro) was generated in Germany and Spain, counting respectively for 46% of the total RES generation and 22% of the total RES generation. These later values are similar to the ones observed in 2006.

The average usage rate of a generating capacity is estimated as the ratio of the actual annual generation by the theoretical annual maximum generation. The theoretical annual maximum generation is obtained by multiplying the annual average generation capacity with the number of hours in a year. This average usage rate should not be confused with the available power at a particular moment used for generation adequacy assessment which is lower due to the high volatility of the power of RES generating capacity.

As shown in Fig. 12, the average usage rate of the RES generating capacity on the UCTE grid has been estimated to around 29% for the last 4 years.

Wind power, which represent more than 70% of the total RES capacity, counted for 62% of the RES generation on the UCTE grid in 2007 as displayed in Fig. 12.

The national average usage rates of wind power capacity are in Fig. 14.

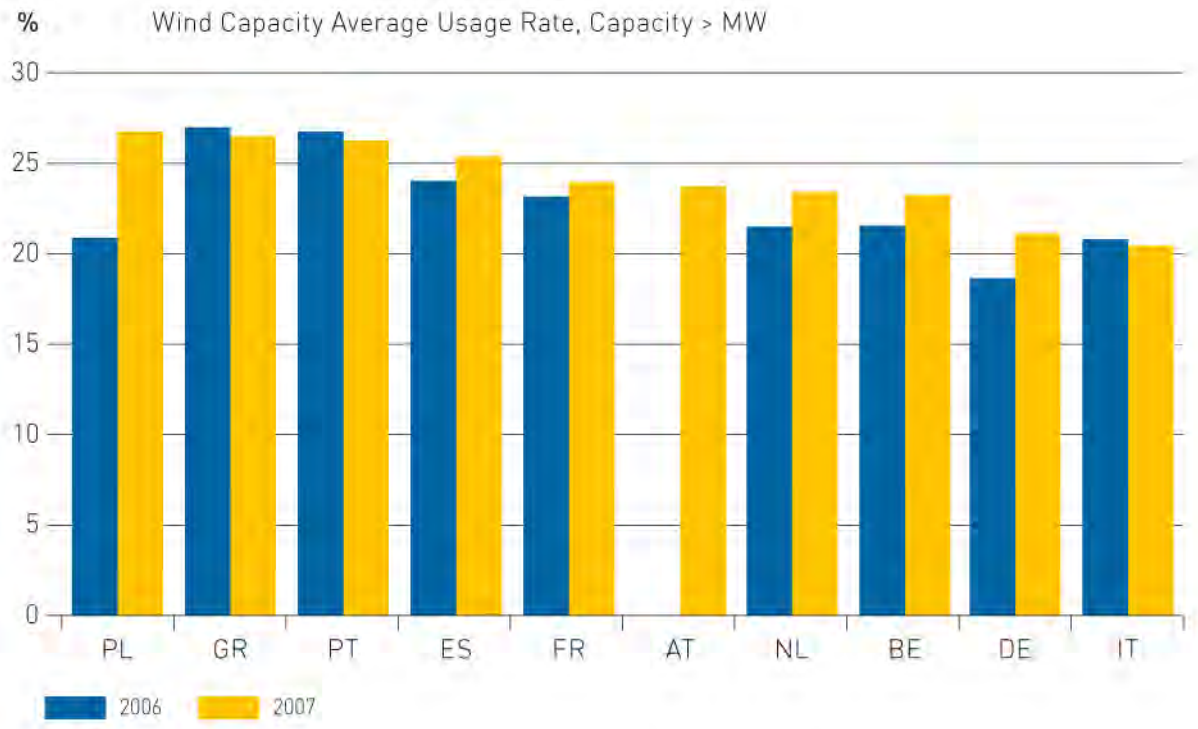


Fig. 14 Wind Capacity Average Usage Rate

The national usage rates of wind are only considered relevant for countries with a significant wind capacity (>200 MW). Fig. 12 only provides information for countries that meet this criterion. In 2007, the UCTE average usage rate of wind power capacity was 23%, like in 2006. National usage rates of wind in 2007 went from 27% in Poland down to 21% in Italy.

Note that the part of the hydro power with natural inflows (not pumping) can also be considered as a renewable energy source. However, this type of generation is not included in the above reported figures.

2.3.1.3 Nuclear Power

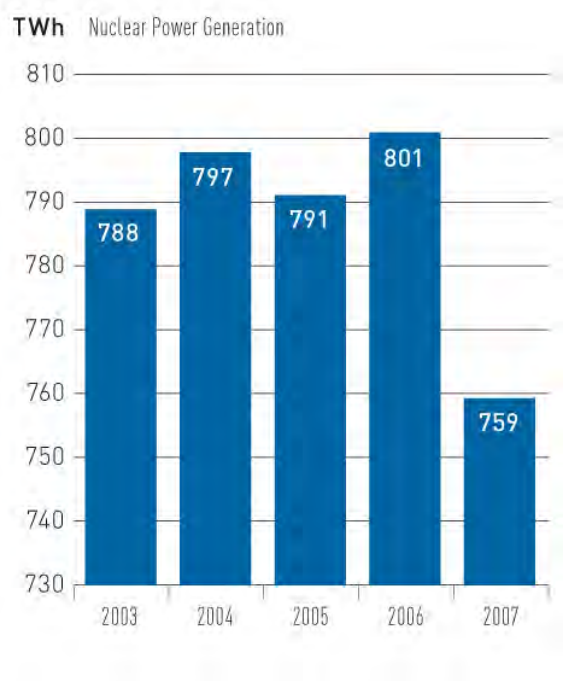


Fig. 15 UCTE Nuclear Power Generation Retrospect

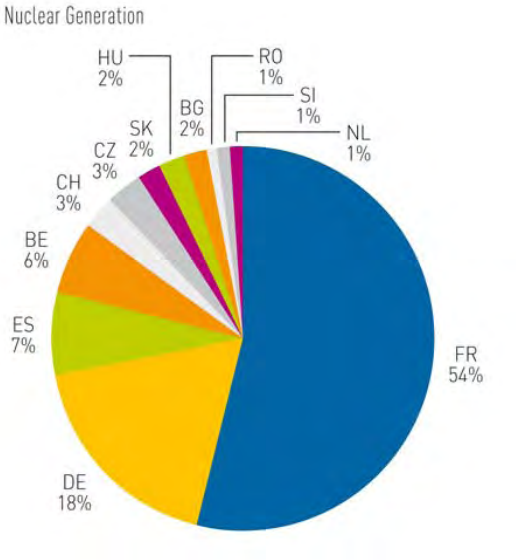


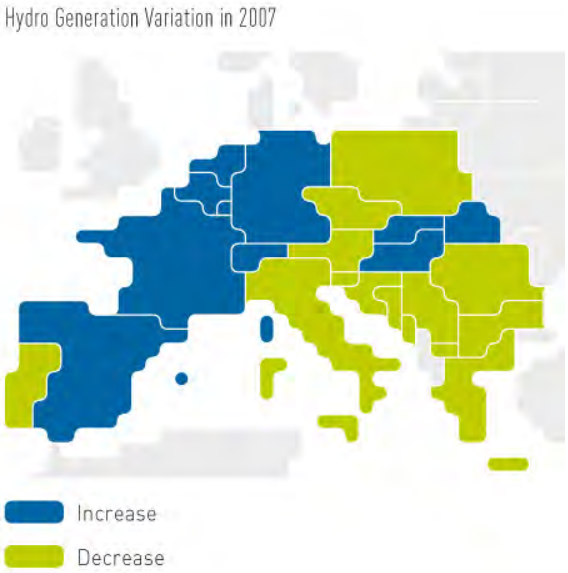
Fig. 16 National Shares in UCTE Nuclear Power Generation in 2007

As shown in Fig. 15, the UCTE nuclear power generation wa lower in 2007 than in the previous 4 years. The total nuclear power generation was approximately 760 TWh. The decrease is mainly linked to situation of the 2 biggest contributors to the UCTE nuclear power generation (see

Fig. 16). Nuclear power generation in Germany (25 TWh less than in 2006) was partly replaced by fossil fuel generation due to authorization issues and in France a lower availability of nuclear power plants mainly at the end of 2007 resulted in a lower nuclear power generation, with 10 TWh less than in 2006 (see national comments in Chapter 2.3.2).

2.3.1.4 Hydro Power

Fig. 17 UCTE Hydro Power Generation Retrospect



Map 7 Hydro Generation Variation in 2007

As displayed in Fig. 17, the overall UCTE hydro generation decreased in 2007 down to 295 TWh similar to its level in 2005.

Map 7 shows that while hydro power generation increased in the North-West of UCTE, with the noticeable exception of Portugal, it decreased in the South-East, with the exception of Hungary, Slovakia and Ukraine-West.

2.3.2 National Comments on Generation

Fig. 18 Generation Mix in 2007

National data on generation are in Appendix 2.

AT Austria

For the last retrospect the final data for the fossil fuel generation were not available in detail for the questionnaire. The non-assignable values were put into the "not clearly identifiable" (this value decreased).

There were no significant changes. The difference to the values from last year is caused by a data-update.

BA Bosnia-Herzegovina

The hydro production has decreased -46%, as the year has been much dryer than 2006.

The generation of fossil fuel power stations has increased by about 4%, compared to the previous year.

BE Belgium

The national net generation was 3.6% higher in 2007 as compared to 2006. This increase in net generation was observed for all fuel categories. However, the renewable energy sources generation increased with the highest percentage compared to 2006, namely 6.6%.

BG Bulgaria

The hydro generation in 2007 was less than the generation in 2006 because of low water inflows almost throughout the whole year.

The nuclear power generation in 2007 was less then 2006 because of the shutting down of 880 MW in NPP Kozlodui.

To compensate the decrease of hydro and nuclear generation, the fossil fuel power generation increased by 16.4 % in 2007.

No data available for the currently installed 9 MW of wind power.

CZ Czech Republic

The amount of energy produced by the nuclear power stations was approximately the same as in 2006. It is more than 30 % of energy produced in Czech Republic.

Significant increasing of the fossil fuel power generation of about 8.2 % was observed in 2007.

The renewable sources production rose up about 170 %. But the share of renewable energy production is still quite negligible: in total 292 GWh only.

Hydro power generation was without significant changes.

DE Germany

Electricity generation from nuclear energy decreased by 16 % as compared to the preceding year. Three nuclear power stations could not be committed, which was party attributable to authorization reasons. The share of nuclear generation in total electricity generation decreased from 27 to 22%.

Throughout the year 2007, generation from renewable energy sources (water, wind, biomass, refuse and photovoltaic) amounted to 87 TWh (gross value). This meant an increase of 21% as compared to the previous year and a share of approximately 14% in total electricity generation in Germany. Hence, the target value of 12.5 % set by the EU that is to be achieved by the year 2010 has already been realized or even exceeded in Germany. With somewhat more than 45%, wind power has the largest share in renewables-based electricity generation. Biomass (including refuse) with more than 27% is ranking second, followed by water with almost 24% and photovoltaic with somewhat more than 3%.

FR France

The hydro-electric generation rose by 3.6% compared with 2006 in spite of less favourable water conditions. The amount of hydro-electric energy generated in 2007 is higher than in 2006, and much higher than in 2005, but it remains low compared to the annual amounts generated since 1991.

Nuclear generation fell by 2.3% due to the unavailability of some units at the end of the year.

The fossil fuel power stations generation rose by 2.2 %. Its role is to achieve balance between demand and generation.

The volume of wind generation rose by 79.4 % compared with 2006, and reached 4.0 TWh, in line with the increase of the installed capacity connected to the grid. Generation from renewable sources but hydro but wind rose by 15.5 % in 2007, it accounted for 3.9 TWh.

GR Greece

The overhauls of the hydro power units usually take place in low load periods. The level of hydro production depends on the water reserves. In 2007 the hydro conditions were not favourable, so the hydro production was low. The hydro management aimed at keeping the hydro reserves so as to be available in high load periods.

In 2007 the production from fossil fuel sources was increased in comparison with the one in 2006. The total fossil fuel production represents the 90.7% of the total electricity production. The contribution of the different fuels are: lignite 65.3%, oil 7%, natural gas 27.7%.

Slight increase in production from renewables.

HR Croatia

Hydro power generation was lower 28.2% than last year.

Half production of Nuclear Power Krsko (2714 GWh) we received via tie lines like exchange.

Fossil fuel power generation was somewhat higher (41%) then last year.

IT Italy

The hydro production marked a sensible decreasing with respect the 2006 (-10,1%). A good part of the year has been marked with a low hydro conditions with a historical minimum on May with respect to its multi-year average value.

Fossil Fuels: The production signed an increase of 1,4% with respect the 2006.

Renewable Energy Sources (other than hydro): The total production has signed an increase of 15,3% with respect the 2006, especially sensible for the wind source (40,7%).

NL The Netherlands

Fossil Fuel Power Generation: The given share is derived from data of our National Statistics Organisation. TenneT isn't informed with specific information such as fuelling, performance and constraints.

The generation by renewable sources went down with 50% for the reason that subsidies for additional burning of biomass in conventional units were lowered. The wind power generation however raised with 25% in comparison with the year before.

PL Poland

Referring to the SAR 2006 Report the decrease of the production energy in Hydro Power Stations has been still observing. In 2006 the main reason of this fall was the general overhaul in main Pumped Storage Power Station in Poland. In 2007 it was caused by the fact that since X.2006 Polish TSO has had the intervention reserves in pumped-storage hydropower stations at his full disposal and there was no the commercial use of them.

The decrease of the Fossil Fuel Generation was caused by the decrease of the exchanges (in export direction).

Referring to the increase of the net generating capacity of Renewable Sources (especially wind) one can observe the growth of the energy production in year 2007. But the share in total wind generation in Poland amounted 0,4% and is still negligible.

PT Portugal

The wind generation maintains high increasing rates, about 40%, reaching 8% of the national consumption.

In 2007 the hydro inflows were much reduced (76% of the average values).

RO Romania

Hydro power generation represents 28% of the 2007 power generation and it is with 3% lower than that of 2006 due to the 2007 less rainy summer.

In August 2007 the 2nd nuclear power unit (655MW) was commissioned, that lead to a 4% increasing of nuclear power generation percentage in 2007 in comparison with 2006. The nuclear power generation percentage in 2007 was 13%.

The fossil fuel power generation percentage in 2007 is 59%.

In 2007 were put in operation six small wind power farms (total 5MW).

RS Republic of Serbia

Hydro power production has increased according to last year due to better weather conditions.

Number of unplanned delay decreased owing to major overhauls made during 2006.

SI Slovenia

Lower hydro production in 2007 due to low rainfall in the summer.

Due to turbine parts replacement on scheduled maintenance in march 2006 the power of NPP Krško was increased to 696 MW, hence the production in 2007 is higher than in 2006.

SK Slovak Republic

Hydro Power Generation: There was an increase of generation (2,5 %) in 2007. Increase of generation occurred in the first and fourth quarter of the year, while in the rest of the year there was lower production than in 2006.

Shutdown of one nuclear unit (440 MW) in Jaslovske Bohunice at the end of 2006 had impact on generation of nuclear power plants. There was decrease of generation -14,7 %.

Increase of generation of fossil fuel power plants is because of statistical reasons. Not clearly identifiable production was mostly put into fossil fuel power plants production in 2007. Otherwise there would not have been any increase.

Part of not clearly identifiable sources was identified as RES and therefore from statistical point of view we can see substantial increase of RES production. But this identified production already existed in 2006.

In 2007 not clearly energy sources generation was zero. All production was identified and divided into other kinds of production.

2.4 Exchanges

Exchanges are the import and export physical flows on every interconnection lines[8] of a power system. Exchange Balance is the difference between import and export physical flows.

Physical flows are metered at the exact border or at a virtual metering point estimated from the actual one.

[8] Figures may differ with the ones reported by UCTE for statistic purposes which exclude distribution lines.

2.4.1 Energy Flows

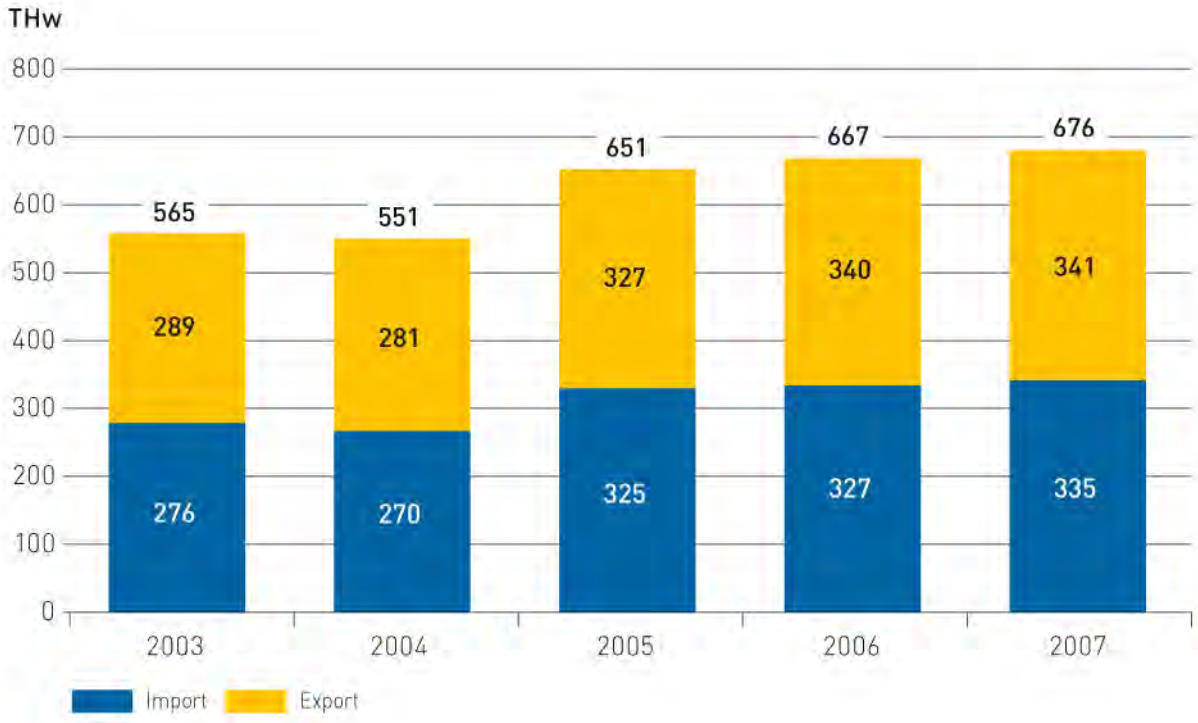
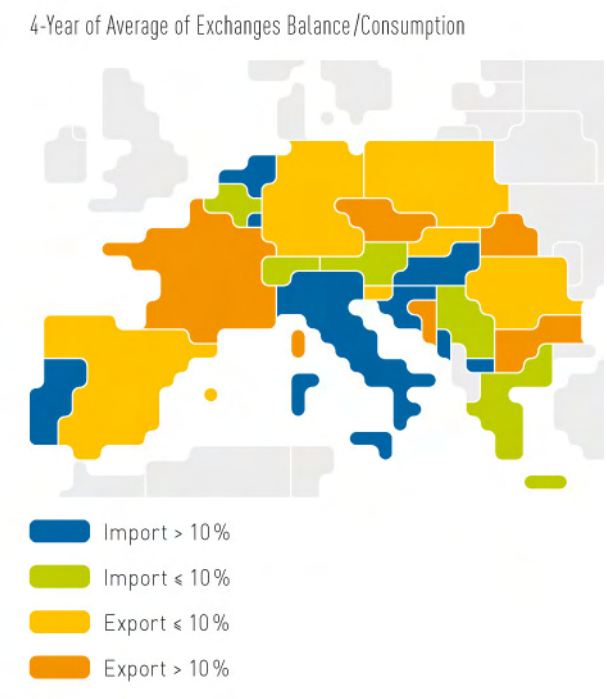


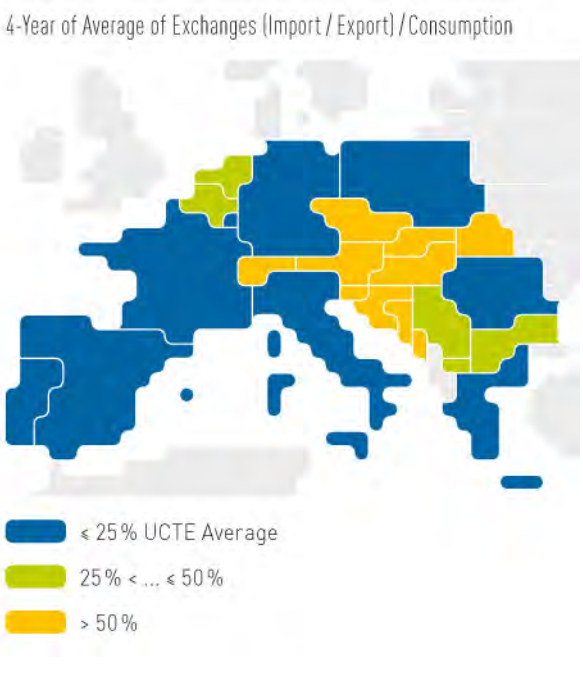
Fig. 19 UCTE Exchanges Energy Retrospect

The volume of internal exchanges within the UCTE grid is almost stable with 676 TWh in 2007, representing a bit more than 26% of the UCTE consumption. This situation has been rather stable since 2005.

The UCTE grid is almost balance with an external Exchange Balance of 5.6 TWh (export) in 2007, compared to 2560 TWh of consumption. The external energy balance have been below 0.6% of the internal consumption during the last 5 years.



Map 8 **4-Year Average Imports minus Exports Energies as part of Consumption**



Map 9 **4-Year Average Imports plus Exports Energies as part of Consumption**

As shown in Map 8, the countries with an exporting Exchange Balance are distributed over the UCTE grid. The countries relying the most on imports for their energy balance are Luxembourg, Montenegro and Croatia.

Map 9 illustrates the usage of the interconnection lines through imports or exports. Note that one country might have a small balance of exchanges but a strong usage of its interconnection.

The next Fig. 20 gives a short overview of the national Exchange Balance throughout the last 4 years.

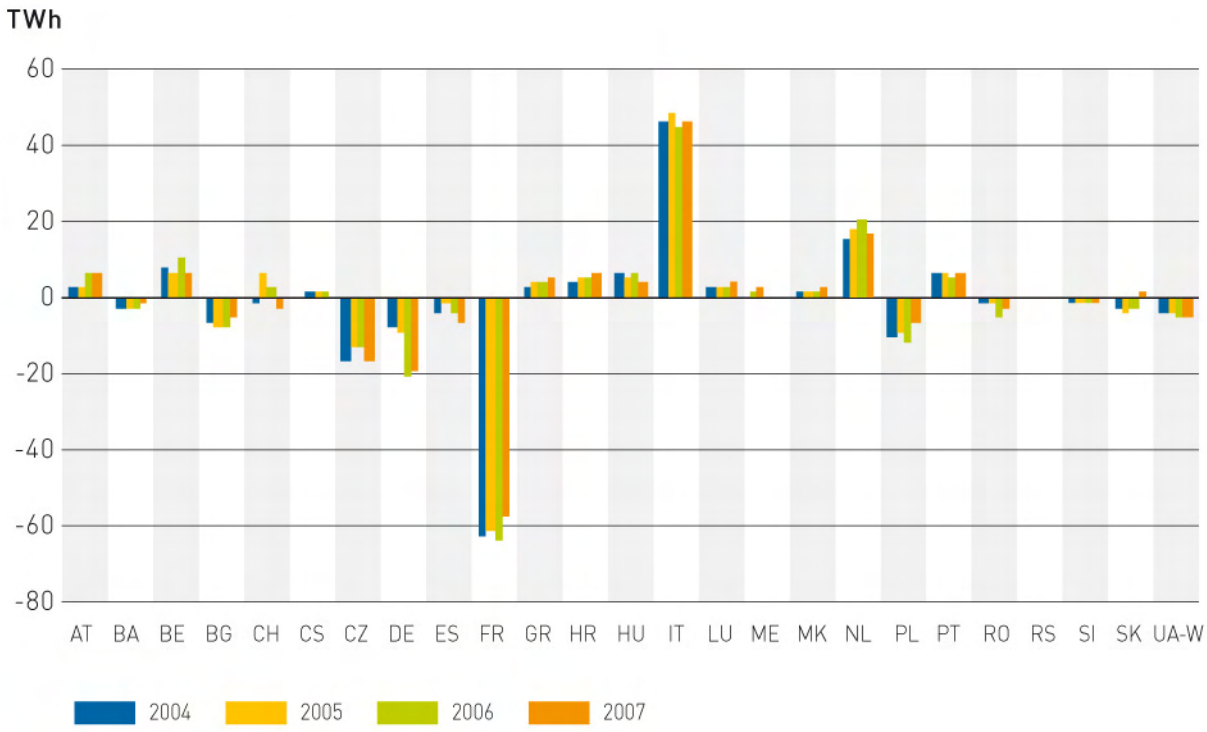


Fig. 20 Exchange Balance Retrospect

More analysis on the role of the interconnection lines in adequacy is in Chapter 4.

2.4.2 National Comments on Exchanges

National data on physical exchanges energies in Appendix 2.

AT Austria

In 2007 the structure of import/export characteristics (monthly energy values) has changed significant. Generally the import/export balance results in an import in winter and in an export in summer. Obviously because of the low market price there were also high imports during summer months (substitution of thermal power plants).

BA Bosnia-Herzegovina

In 2007, the physical imports increased by 14,3 % as compared to 2006. The export to neighbouring countries decreased by -27 %. The reason for that may have been unfavourable water conditions.

BE Belgium

The physical imports decreased by 16.3% in 2007 compared to 2006 and the physical exports went slightly up by 3.9%. The exchange balance (physical imports – physical exports) significantly decreased with 33.5% in 2007 compared to 2006.

The national physical exchanges include the exchanges with France that do not transit on UCTE lines.

BG Bulgaria

The exchange balance for the last 7 years is as follows:

2000: -4559 GWh

2001: -6924 GWh

2002: -6295 GWh

2003: -5502 GWh

2004: -5884 GWh

2005: -7580 GWh

2006: -7743 GWh

2007: -4534 GWh

The decrease of export in 2007 is -41.4 %, due to the limited export capabilities after shutting down 880 MW in NPP Kozlodui.

CZ Czech Republic

Significant increasing of export of about 28% was observed in 2007. The final export balance of the Czech Republic was higher than 16.1 TWh. The export balance of the transmission system was even higher than 16.6 TWh. There was also the significant transit flow of about 8 TWh from North to South in 2007.

DE Germany

In 2007, electrical energy imports from other countries totalling 44.3 TWh had a share of almost 7% in the electricity output of overall supply in Germany. As compared to the preceding year, it decreased by 1.9 TWh or 4%, respectively. A distinct reduction was particularly observed for imports from Austria (-23% or –1.3 TWh) and the Czech Republic (-22% or -2.7 TWh). A considerable increase was recorded for imports from Denmark (33% or 1.9 TWh) and Sweden (23% or 0.3 TWh). The strong decrease of imports from these countries during the past year was partly offset. More favourable hydro conditions in Scandinavia in 2007 as against 2006 might have made a contribution to this development.

Measured against the physical energy flows across national frontiers, France had the largest share in total German imports (37% or 16.4 TWh). A large part of these physical flows is likely to be transits flowing from France through Germany and Switzerland to Italy. In spite of a decrease of 22%, German imports from the Czech Republic amounted to 21%. The shares of Denmark and Austria totalled 18% and 10%, respectively.

As compared to the preceding year, exports from Germany to neighbouring countries decreased as well by 4% to 63.4 TWh. The highest decrease in percent was recorded for exports to Denmark (-63% or 2.5 TWh) and Sweden (-50% or 1.0 TWh). So exports to these Scandinavian countries show exactly the opposite trend as compared to imports. With 29% the Netherlands have the largest share in total German exports

despite a decrease of physical flows from Germany to the Netherlands of 19% or 4.3 TWh. Austria is ranking second (25%), followed by Switzerland (24%).

FR France

The physical exchanges have resulted in an export balance for almost every hourly values of the year except for about 500 hourly values spread over 43 days.

The physical exchanges have resulted in an export balance for every day of the year except for 18 days, compared to 13 days in 2006.

The balance of physical exchanges fell by 10.3 %. Imports were important in November and December due to the weather conditions.

GR Greece

There was a slight increase in imports compare to 2006.

In 2007 the exchange balance was positive as for the import direction. The bulk of electrical energy was imported from the north. In 2007 the exchanges between Greece and Italy took place mainly in import direction.

HR Croatia

Difference between physical imports and exports (6.4 TWh) was high than last year (30%). That mean high import for Croatian power system.

Less export (46%) than last year and high thermal production substituted les hydro production.

IT Italy

In comparison with the previous year the export signed a remarkable increase (63,9%). The export instead increase totally only by 4,2%. The net imports-exports balance for the year 2007 marked a total increase of 2,1%.

Cause an increase of the price on the electricity market last part of the year has been marked with a low import exchange.

LU Luxembourg

Luxembourg still remains a net importer of electricity. The line capacity is sufficient to cover the whole consumption without national generation and contracts are defined accordingly. National generation in the public grid reached 12,8% in 2007 and is 2,5% higher than in the year 2006.

MK Former Yugoslavian Republic of Macedonia

Macedonia is a country which imports energy. According to the yearly and weekly contracts with traders, the balance between demand and supply is satisfied.

NL The Netherlands

Contrary to what was expected, the DC-cable to Norway "NorNed" was not taken into service in 2007.

The volumes of imports were 15,3% lower than in 2006.

The export volumes went down with 5% in comparison with 2006.

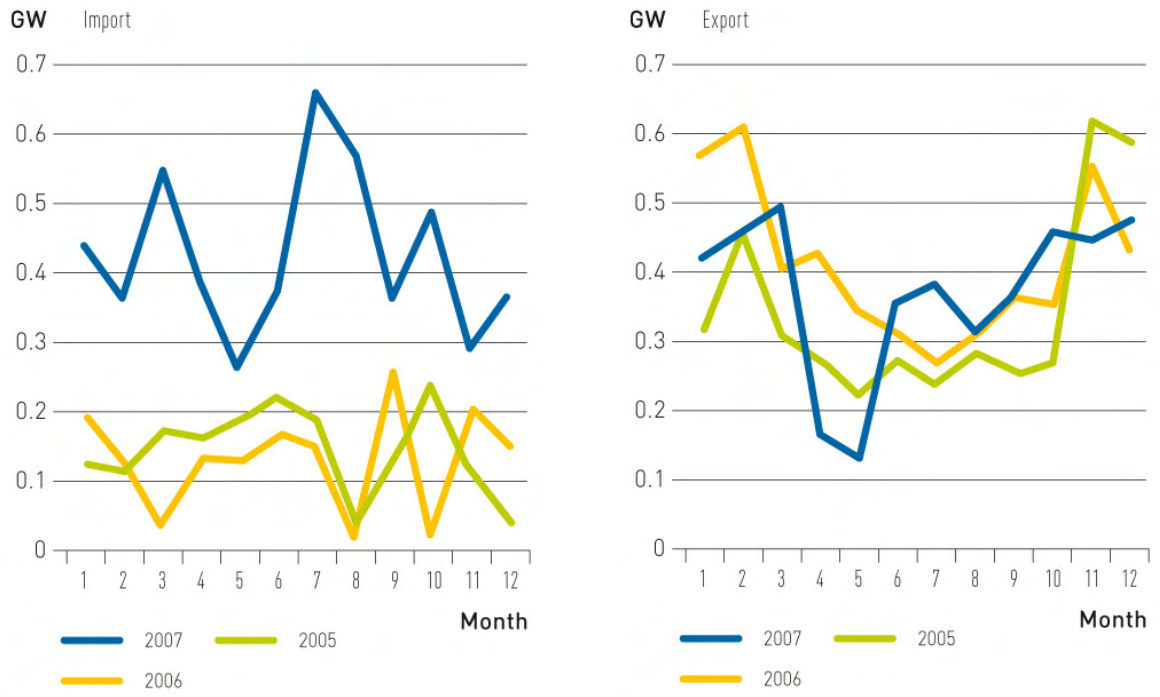
PL Poland

The big decrease of the physical energy exchanges (-51%) is observed as the result of the decrease of the physical export (-17%) and the increase of the physical import (62%). The main reason of the decrease of the physical export was the tight power balance in Polish power system, especially during the summer months: July, August. The increase of the physical import was caused, among other things, by trade exchanges on commercial DC-link PL-SE.

PT Portugal

In 2007 the imports were the highest ever verified. The net imports represented 15% of the national consumption.

Romania



The work fulfilment in 2006 of several 400kV substation near the North Romanian border, led to higher import capacity values for 2007.

On every summer season the export capacity decreased due to the limitations occurred as a result of both the maintenance network schedule and the admissible current values that are lower than the winter ones.

In 2007 the import was with 60% higher than that of 2006 due to a complete network topology in North part of Romania.

In 2007 the export was with 3.4% lower than that of 2006.

SK Slovak Republic

In 2007 the power system of Slovakia after eight years of exporting electricity became importing power system. The change of situation was caused mainly due to shutdown of nuclear unit (440 MW) in Jaslovske Bohunice at the end of 2006. With the exception of February and March, import of electricity was recorded over the whole year.

The import covered 6,3 % of yearly electricity consumption.

UA-W Ukraine-West

From April till September – to 550MW, other month of the year – 500MW.

3 POWER BALANCE

3 Power Balance

National power data are collected for a monthly reference point, namely third Wednesday at 11:00.

In addition to the figures reported in this Chapter, extra figures are in Appendix 3.

3.1 UCTE Power Balance Summary

Power values at the end of December	2003 GW	2004 GW	2005 GW	2006 GW	2007 GW	2006 to 2007 GW	2006 to 2007 %
Net Generating Capacity	569.1	593.2	611.3	625.1	639.7	14.6	2.3
Reliably Available Capacity	414.2	431.6	440.3	455.2	470.0	14.8	3.3
Load at Reference Time	348.2	360.6	369.5	368.1	384.0	15.9	4.3
Remaining Capacity w/o Exchanges	**66.0**	**70.6**	**70.8**	**87.0**	**86.0**	**-1.0**	**-1.2**
Physical Exchanges Balance (I-E)	1.6	3.4	8.2	2.4	3.0	0.6	24.5

Tab. 6 UCTE Power Balance Summary Retrospect

3.2 Load

Load on a power system is the net consumption corresponding to the hourly average active power absorbed by all installations connected to the transmission grid or to the distribution grid, excluding the pumps of the pumped-storage stations. "Net" means that the consumption of power plants' auxiliaries is cut from the gross Load, but network losses are included in it.

Load is based on hourly average of the actual metering.

Activated Load Management is reflected in the actual Load metering. Load Management is therefore not used in the generation adequacy retrospect assessment and no value is collected.

3.2.1 UCTE Overview

Load	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	359.6	349.4	351.4	317.7	318.2	329.5	332.6	269.0	321.4	329.6	358.8	384.0
2006	369.5	365.4	352.4	317.4	310.1	324.8	325.5	274.3	314.4	325.2	334.8	368.1
2005	361.6	359.9	328.8	322.6	310.1	313.8	315.5	276.6	309.4	324.1	342.6	369.5
2004	348.1	343.1	314.6	309.1	299.4	304.6	312.7	279.7	310.2	320.5	342.0	360.6

Tab. 7 UCTE Load at Reference Time Retrospect

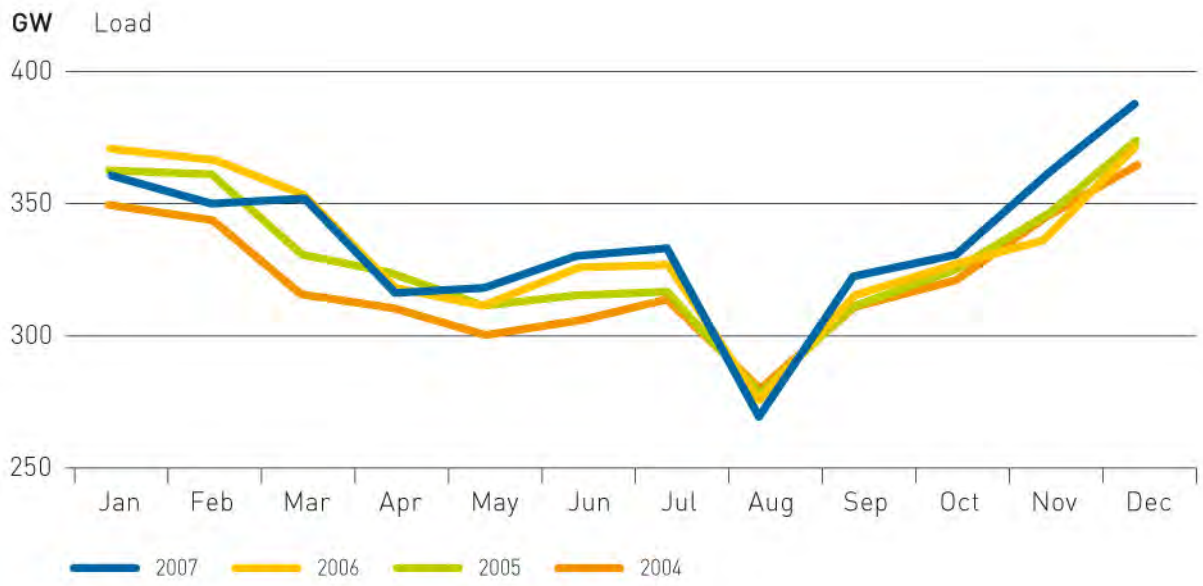


Fig. 21 UCTE Load at Reference Time Retrospect

The low values of load early 2007 reflects the mild temperature at that time.

In summer, load values continue to increase. This is partly due to the development of air conditioning facilities.

In 2007, load at the reference point in August is the lowest value in years. Note that the 3rd Wednesday of August 2007 was August 15th, which is a public holiday day in some countries , namely Assumption.

The highest load values in years in November and December are partly due to a cold wave throughout Europe at the related reference points.

3.2.2 National Comments on Load

National data on Load at reference time are in Appendix 3.

BE Belgium

The monthly peak load used for the Belgian assessment is the maximum value of the real measurements and estimates of a particular month and not the maximum value of the hourly average values of real measurements and estimates that are entered on the UCTE web pages.

The load on the third Wednesday of August 2007 is very low because this particular day, more specifically the 15th of August 2007, is a public holiday in Belgium, namely Assumption.

Several load-shedding contracts with industrial customers are in force. The estimated contribution is 240 MW. These contracts are part of the system services reserve.

BG Bulgaria

The loads in the period January – March were lower than those in the same period of 2006 because the average temperatures in the period were with 4.8 C' higher (extremely warm winter).

CZ Czech Republic

Thanks to warm winter we did not observe any significant changes on Load.

GR Greece

The Load presented a significant increase in summer due to the high temperatures and the use of air conditioning.

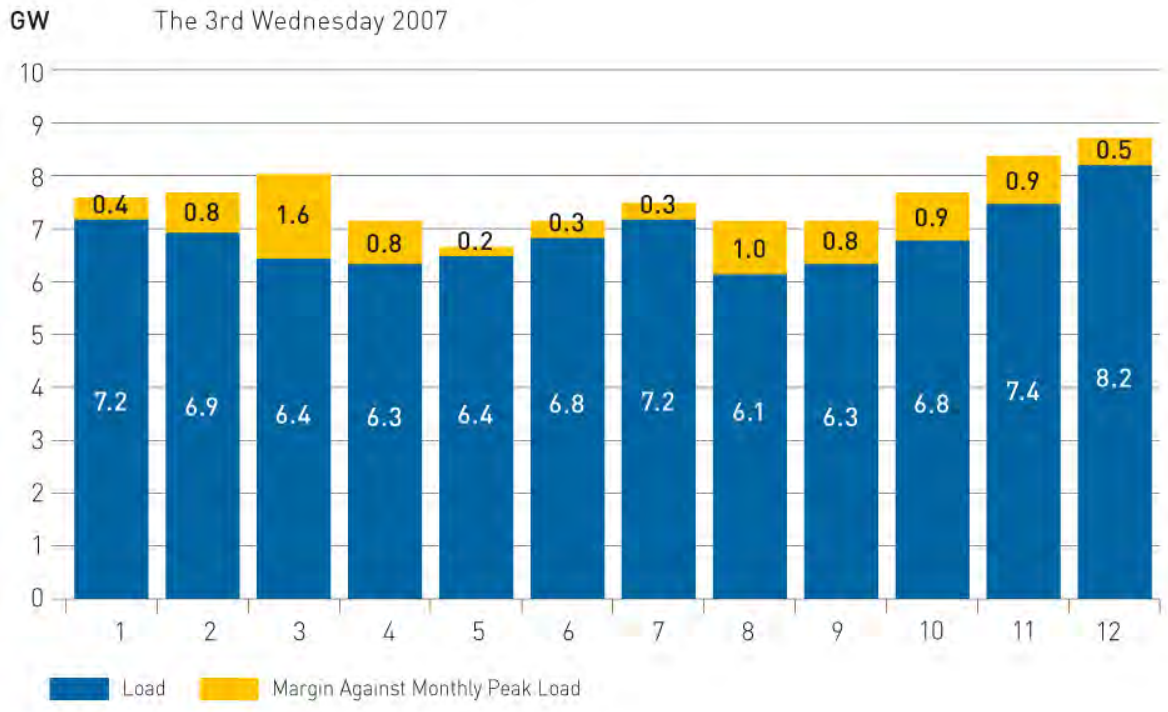
MK Former Yugoslavian Republic of Macedonia

The value of load depends of the consumption of the households, so when the temperature is very low, we have very high value of consumption and according to this the hourly load is big.

PL Poland

Comparing to the year 2006 the increase of the hourly average load values amounts 2,9% (450 MW) and is at the forecasted level.

RO Romania



The monthly load values of June-August interval were very close to the monthly load values of January-February interval due to both a low demand level during the mild winter and a high demand during the dry summer.

SK Slovak Republic

Due to warm winter at the beginning of the year the load was during first quarter 2007 lower (cca -4,0 %) than in 2006. After that there was no significant change of the load until September when the load increased (4,2 %) till the middle of October. The end of the year (from the middle of November) the increased load (4,0 %) occurred again. 4 % is approximately 150 MW.

3.3 Generating Capacity

Generating capacity reported in this document is Net Generating Capacity (NGC). Net Generating Capacity of a power station is the maximum electrical net active power it can produce continuously throughout a long period of operation in normal conditions. "Net" means that the load of the auxiliaries necessary to operate the power plant is deducted from the gross installed capacity.

3.3.1 UCTE Overview

Here in Tab. 8 is the evolution of the Net Generating Capacity in total and by primary energy.

End of December	2003 GW	2004 GW	2005 GW	2006 GW	2007 GW	2006 to 2007 GW	2006 to 2007 %
Hydro Power	129.4	132.2	134.7	135.5	135.4	0.0	0.0
Nuclear Power	112.8	113.3	112.7	112.6	112.1	-0.5	-0.5
Fossil Fuel Power	294.8	303.4	322.6	324.7	333.8	9.1	2.8
Renewable Energy Sources	21.8	27.7	39.9	50.0	57.8	7.8	15.6
Non Clearly Identifiable Energy Sources	1.9	1.7	1.4	1.9	1.2	-0.7	-34.9
Total Generating Capacity	**560.7**	**578.4**	**611.3**	**624.7**	**640.4**	**15.6**	**2.5**

Tab. 8 UCTE Net Generating Capacity Retrospect per Primary Energy

The total generating capacity on the UCTE grid has been continuously increasing and went above 640 GW at the end of 2007 with an annual growth rate of 2.5% in 2007, similar to the one observed in 2006.

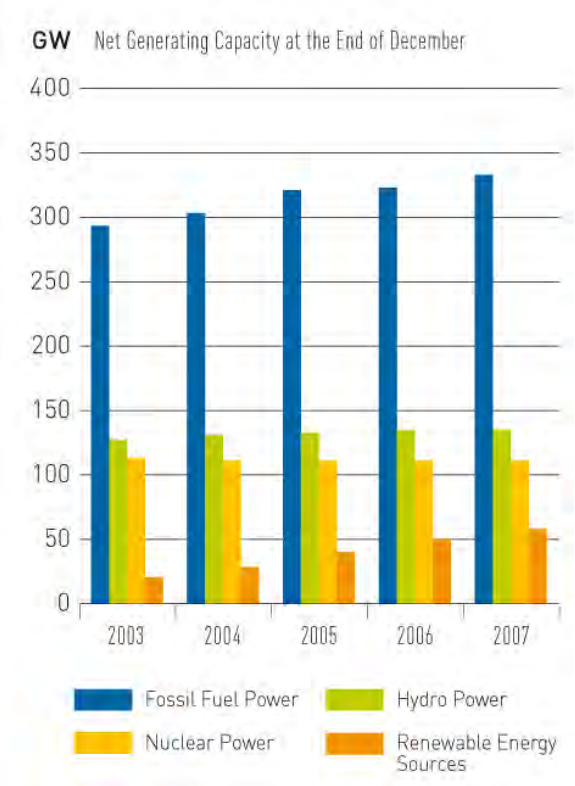
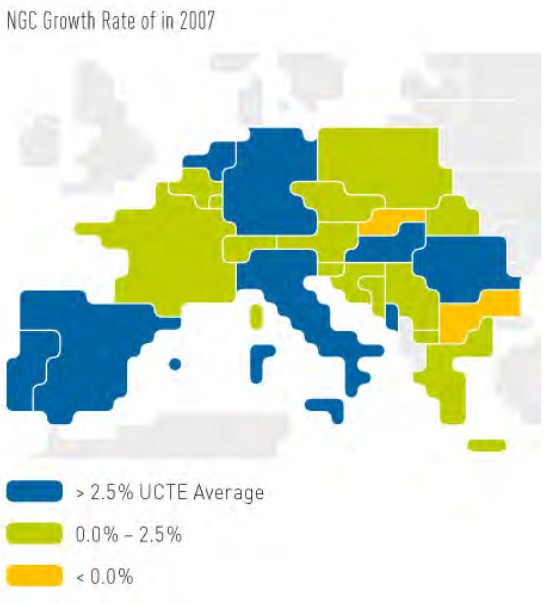


Fig. 22 UCTE Net Generating Capacity Retrospect per Primary Energy



Map 10 Net Generating Capacity Growth Rate in 2007

Tab. 8 shows that the most increasing type of generating capacity on the UCTE grid is made of renewable energy sources (RES) power plants with a growth rate of almost 16% in 2007. Note that growth rates of 30% and more were observed in the previous 3 years. 43 GW of the 59 GW of additional RES generating capacity was wind power capacity.

The fossil fuel generating capacity increased by the second highest growth rate, namely 2.8% in 2007. The fossil fuel generating capacity remained stable in 2006. However, the current growth rate is almost equal to its 4-year average value. The generating capacity mix at the end of 2007 remains similar to the mix observed in previous years, the fossil fuel generating capacity still counts for approximately 52% of the total generating capacity as shown in Fig. 22.

As shown in

Map 10, Net Generating Capacity increased all over the UCTE grid with the remarkable exceptions of Bulgaria and Slovakia where the net generating capacity decrease respectively by 9.6% and by 7.6%. In these two countries a nuclear power plant has been decommissioned according to the agreement for the adhesion to the European Union.

The highest growth rates have been in Spain with 8.2%, Montenegro with 5.9% and Italy with 4.7%.

3.3.1.1 Fossil Fuels

Here below is the evolution of the breakdown of the fossil fuel generating capacity per fossil fuel type. These figures have been collected since 2006.

End of December	2006 GW	2007 GW	2006 to 2007 GW	2006 to 2007 %
Lignite	61.5	61.5	-0.1	-0.1
Hard Coal	77.7	77.1	-0.7	-0.8
Gas	84.2	92.7	8.5	10.1
Oil	35.4	35.8	0.5	1.3
Mixed Fuels	32.2	32.5	0.2	0.7
Non Attributable Sources	33.6	34.3	0.6	1.9
Fossil Fuel Power	**324.7**	**333.8**	**9.1**	**2.8**

Tab. 9 UCTE Fossil Fuel Generating Capacity per Fuel Type

The increase of the fossil fuel generating capacity on the UCTE grid is mainly due to the commissioning of gas power plants, namely 10% increase in gas generating capacity in 2007 (see Tab. 9).

Fig. 23 shows that gas generating capacity became the first type of fossil fuel capacity installed on the UCTE grid, counting for approximately 28% of it at the end of 2007.

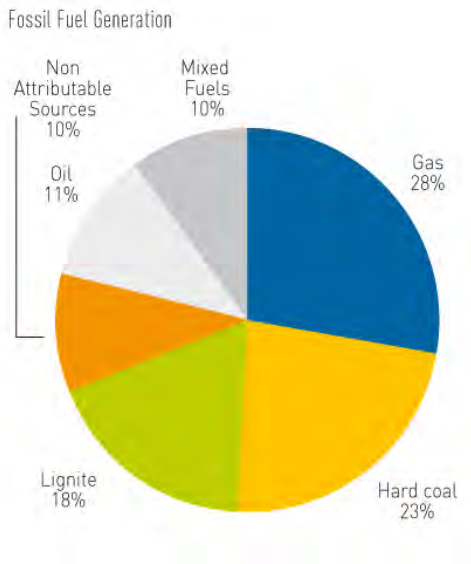
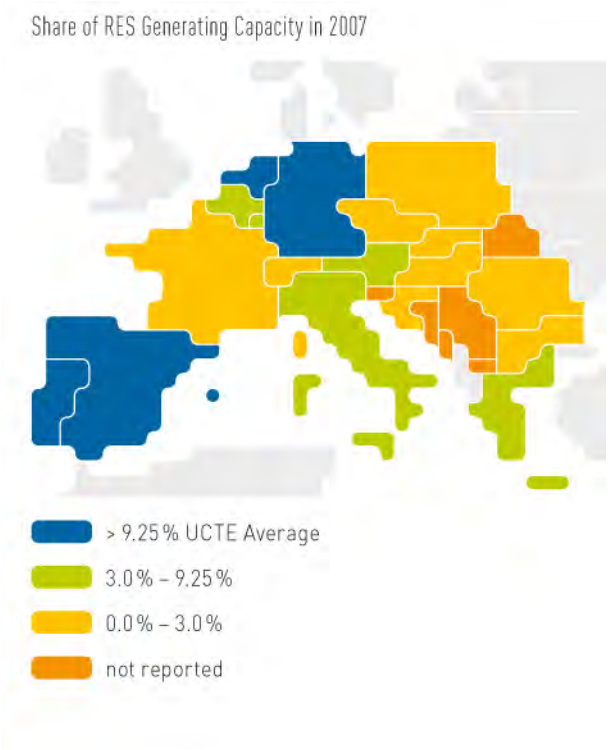


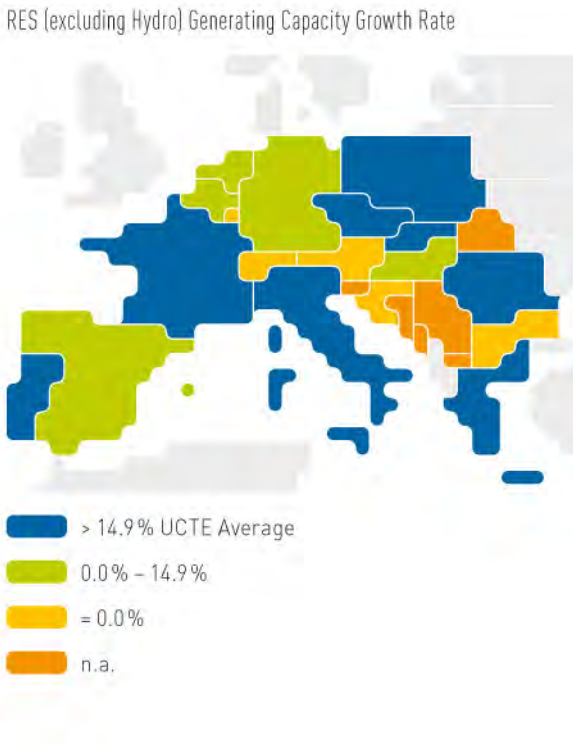
Fig. 23 UCTE Fossil Fuel Generating Capacity Mix at the end of 2007

3.3.1.2 Renewable Energy Sources

Here below are details on the evolutions of renewable energy sources (RES) capacity on the UCTE grid excluding hydro capacity.



Map 11 **Share of RES (other than Hydro) in Generating Capacity at the end of 2007**



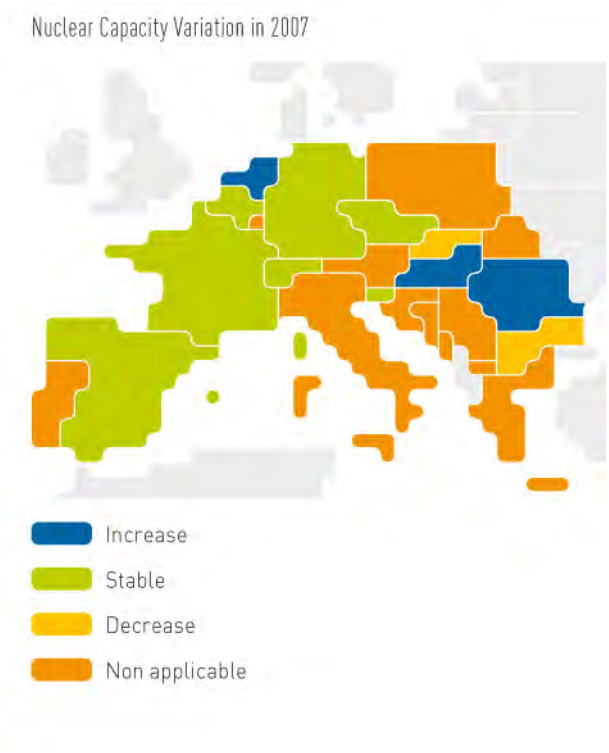
Map 12 **RES (other than Hydro) Capacity Growth Rate in 2007**

Map 11 shows that the most important share of RES in the national generating capacity at the end of 2007 are in Germany with more than 20%, the Netherlands with 18%, Portugal with 17% and Spain with 16%.

The RES generating capacity significantly increased in all UCTE countries except in Austria, Bulgaria, Croatia and Switzerland where it remained stable see Map 12.

Note that no RES generating capacity was reported in Slovenia, Serbia; Montenegro, FYROM and Ukraine-West.

3.3.1.3 Nuclear Power



In 2007, the UCTE nuclear power generating capacity was almost stable at about 112 GW.

A single 650 MW unit was commissioned in Romania, while refurbishments in the Netherlands and Hungary resulted in an additional capacity of 150 MW.

In the meantime, one 440 MW unit in Slovakia and two 440 MW units in Bulgaria were decommissioned according to the agreements on the EU membership.

Details on national evolutions are in Chapter 3.3.2.

Map 13 Nuclear Power Generating Capacity Evolution in 2007

3.3.1.4 Hydro Power

UCTE hydro power generating capacity was stable in 2007 at about 135 GW. The exception is Montenegro where capacity rose by 7.7% in December 2007.

3.3.2 National Comments on Generating Capacity

Fig. 24 Net Generating Capacity at the End of 2007

National data on Net Generating Capacity are in Appendix 3.

BA Bosnia-Herzegovina

There are no major power plants which have been commissioned or shutdown in 2007.

BE Belgium

In 2007 there were no shutdowns or commissionings of major power plant in Belgium.

The Elia grid is limited to a voltage level of 30 kV or higher. Fossil-fuel power stations connected to a voltage below 30 kV are classified as non-attributable fossil-fuel power stations.

In some cases fossil fuel power stations burn a mixture of fossil fuels and renewable energy sources. The installed generation capacity of this type of units is allocated to the different fuels proportionally to the importance of each energy source in the used fuel combination. In 2007, the installed generation capacity of this type of units totalled 2020 MW. An application of the above explained allocation rule resulted in the following spilt-up: 1874 MW of fossil fuel power stations and 146 MW of installed generating capacity of renewable energy sources.

BG Bulgaria

On January 1st 2007, 880 MW were shut down in Nuclear power station Kozlodui This was required by the European Commission during the negotiations for accepting Bulgaria as new member of EU. This was done although the units still have the resource to operate reliably at least 5 years more.

CH Switzerland

The data on net generating capacity as of 31.12.2007 will be available only end of May 2008. However, no significant evolution is expected.

CZ Czech Republic

Net Generating Capacity without significant changes.

DE Germany

Some generating capacity of regional and municipal companies which is not known in detail has been assigned to the category "non attributable".

ES Spain

Commissioning				Shutdown			
Name of power station	NGC (GW)	Type	Date	Name of power station	NGC (GW)	Type	Date
Castejón 3	0.409	CC	10/09/2007	Algeciras 1	0.211	FG	1/08/2007
Castellón 4	0.782	CC	5/12/2007	Algeciras 2	0.524	FG	1/08/2007
Escatrón 3	0.787	CC	4/10/2007	Soto de Ribera 1	0.065	HC	1/12/2007
Escatrón Peaker	0.193	CC	11/06/2007				
Plana de Vent 1	0.397	CC	20/03/2007				
Plana de Vent 2	0.394	CC	25/04/2007				
Puentes Gª Rodríguez	0.774	CC	31/07/2007				
Sagunto 1	0.390	CC	21/03/2007				
Sagunto 2	0.381	CC	22/05/2007				

Sagunto 3	0.397	CC	24/07/2007				

FR France

In 2007 there was a drop in the generating capacity connected to the RTE network by 215 MW (mainly due to conventional thermal production) in spite of the connection of an open cycle gas turbine, two gas turbines (180 MW in total) and three units running on biomass (45 MW).

Further development of wind generation took place on the distribution networks, with an increase of about 700 MW of installed capacity.

Commissioning				Shutdown			
Name of power station	**NGC (GW)**	**Type**	**Date**	**Name of power station**	**NGC (GW)**	**Type**	**Date**
Arrighi	0.130	Fossil fuel power station, Oil	November 2007	Albi	0.250	Fossil fuel power station, Hard Coal	January 2007
La Chapelle	0.032	Fossil fuel power station, Gas	March 2007	Belfort	0.028	Fossil fuel power station, Oil	December 2007
Stournemil	0.021	Renewable energy source, biomass	February 2007				

GR Greece

New commissionings concerned only renewable power plants.

MEGALOPOLI H/Z was a temporary contracted unit of 60 MW commissioned in the South in order to meet the consumption in summer.

Commissioning				Shutdown			
Name of power station	**NGC (GW)**	**Type**	**Date**	**Name of power station**	**NGC (GW)**	**Type**	**Date**
MEGALOPOLI H/Z	0.06	Fossil fuel	5.2007	MEGALOPOLI H/Z	0.06	Fossil fuel	10.2007

HU Hungary

Commissioning				Shutdown			
Name of power station	NGC (GW)	Type	Date	Name of power station	NGC (GW)	Type	Date
NYKCE Nyíregyháza	0.047	CCGT	30.06.2007	Kaba Eastern Sugar	0.012	ST	04.01.2007
Miskolc Heating Plant KCE	0.039	CCGT	01.12.2007				
North-Buda	0.050	GT	29.12.2007				

The output capacity of the four units in Paks Nuclear Power Plant is being increased. The aim is to reach total net capacity of about 1860 MW by the end of 2009.

IT Italy

At the end of 2007 the total generation capacity installed is 93.566 MW with an increase respect to the previous year of 4,6%.

Commissioning				Shutdown			
Name of power station	NGC (GW)	Type	Date	Name of power station	NGC (GW)	Type	Date
Mese	80	Hydro	June				
SIED Calcinere	45	Hydro	September				
Termini Imerese	288	Fossil Fuel cc	April				
Calenia	170	Fossil Fuel cc	April				
Vado Ligure	300	Fossil Fuel cc	April				
Sieri Crichi	646	Fossil Fuel cc	May				
Turbigo Edipower	319	Fossil Fuel cc	May				
Acea Electrabel	300	Fossil Fuel cc	June				
Turbigo Edipower	689	Fossil Fuel cc	July				
Acea Leini	160	Fossil Fuel cc	June				
EON Livorno	896	Fossil Fuel cc	September				
Rizziconi Energia	300	Fossil Fuel cc	November				

Monte Narbone	96	Wind	January				
S. Ninfa	32	Wind	January				
Lecce Tre	36	Wind	April				
Aerofonte	72	Wind	March				
Eolico Marco Aurelio	44	Wind	October				
Eolico Serra Pelata	58	Wind	December				
Piano di Corda	46	Wind	December				
Tempio Pausania	70	Wind	December				

LU Luxembourg

No significant evolution in net generating capacity.

ME Montenegro

During the 2007 there was no commissioning or decommissioning of power plants in Montenegro.

MK Former Yugoslavian Republic of Macedonia

There are no major plants which have been commissioned or shutdown in 2006.

NL The Netherlands

Hydro in the Netherlands is a very low amount, the given value is an estimation, no specific information available.

After a large revision the maximum capacity nuclear power plant was upgraded.

PL Poland

No power plants have been commissioned and shutdown in 2007.

One can observe the increase of net generating capacity of wind capacity during the year 2007 at the level of 100%, but total wind generation capacity in Poland amounts 0,9% of total NGC and is still negligible.

PT Portugal

In 2007 there was no commissioning of new large hydro or thermal power stations. The increase in installed capacity results mainly from new wind power stations totalizing about 400 MW.

Commissioning				Shutdown			
Name of power station	**NGC (GW)**	**Type**	**Date**	**Name of power station**	**NGC (GW)**	**Type**	**Date**
Penamacor	0.070	Wind	October				

Gardunha	0.056	Wind	November				

RO Romania

The values for the Net Generating Capacity are declared by the producers at the beginning of each year.

The TPP Iasi 1 unit (0,022 GW) was shutdown due to exceeded time life.

In August 2007 the 2nd nuclear power unit (655MW) was commissioned.

Commissioning				Shutdown			
Name of power station	**NGC (GW)**	**Type**	**Date**	**Name of power station**	**NGC (GW)**	**Type**	**Date**
Timisoara Sud	0.010	Termo	November 2007	Iasi 1	0.022	Termo	December 2007
Fughiu	2x0.005	Hydro	May & October 2007				
U2 Cernavoda	0.650	Nuclear	August 2007				
Bacau Sud II	0.013	Termo	October 2007				
Portile de Fier I (refurbishment from 175 MW to 194.4 MW)	0.194	Hydro	March 2007				

RS Republic of Serbia

Net generation capacity in 2007 compared with years 2006 stayed the same. There wasn't commissioned nor decommissioned of power stations.

SI Slovenia

No commissioning or shutdown in 2007.

SK Slovak Republic

At the end of 2006, the power system of Slovakia lost significant source of generation. One nuclear unit (440 MW) in Jaslovske Bohunice was shutdown due to the obligation of fulfilment, which the Slovak Republic adopted in the process of access negotiations in EU. Another four units in the thermal conventional power plant Vojany were shutdown due to environmental constraints. A new combine cycle gas power plant (82 MW) was commissioned in the middle of 2007.

Commissioning				Shutdown			
Name of power station	NGC (GW)	Type	Date	Name of power station	NGC (GW)	Type	Date
Slovintegra LEVICE	0,082	Combined cycle gas	23.7.2007	JAVYS B1	0,440	Nuclear	31.12.2006
				Vojany I, unit 3	0,110	Thermal Conventional	31.12.2006
				Vojany I, unit 4	0,110	Thermal Conventional	31.12.2006
				Vojany II, unit 5	0,095	Thermal Conventional	31.12.2006
				Vojany II, unit 6	0,095	Thermal Conventional	31.12.2006

Not clearly identifiable energy sources in 2006 were divided and mostly moved into fossil fuel power plants. A small part of them was moved into renewable energy sources.Unavailable Capacity

3.3.3 UCTE Overview

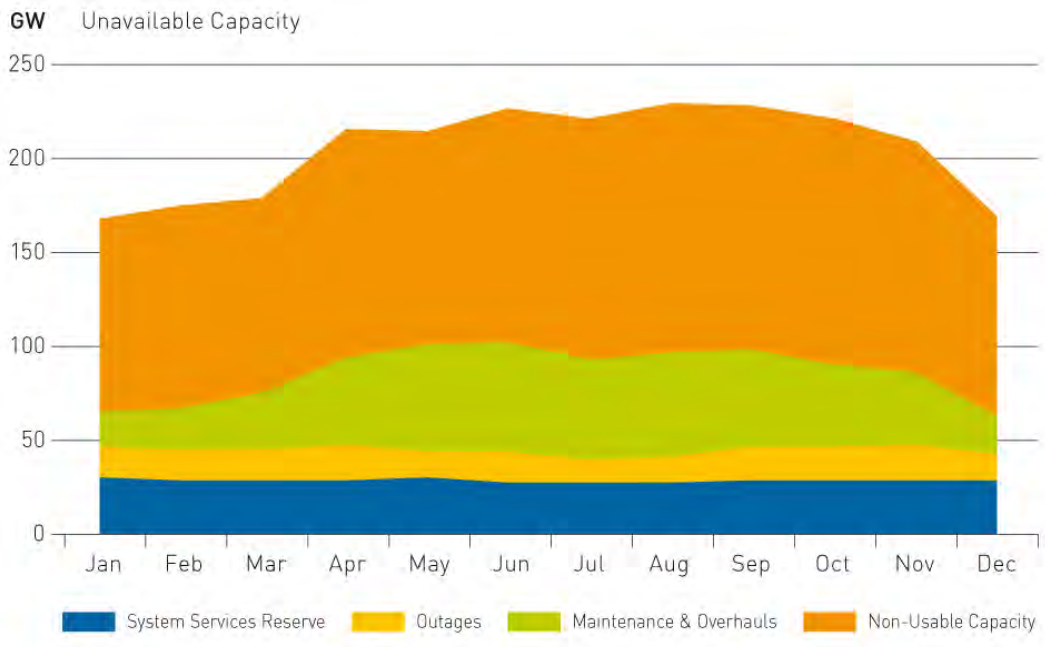


Fig. 25 UCTE Unavailable Capacity in 2007

Unavailable Capacity is the part of Net Generating Capacity that is not reliably available to power plant operators due to limitations of the output power of power plants. It consists of the Non-Usable Capacity, System Services Reserve, Maintenance and Overhauls and Outages.

The specifications of these subcategories are available in the system adequacy methodology description on the UCTE web site[9]. More details on these subcategories are in the next Chapters.

Unavailable Capacity	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	168.5	175.1	179.4	215.6	214.9	226.7	221.1	228.9	228.3	220.8	208.5	169.8
2006	161.2	168.9	181.6	200.5	212.8	209.7	222.7	223.8	217.8	204.0	186.3	169.9
2005	162.8	164.6	191.7	206.2	216.7	216.7	217.8	223.5	213.0	199.6	183.7	171.0
2004	159.0	165.5	186.9	198.3	209.3	205.6	206.4	217.7	202.3	189.5	176.1	162.0

Tab. 10 UCTE Unavailable Capacity Retrospect

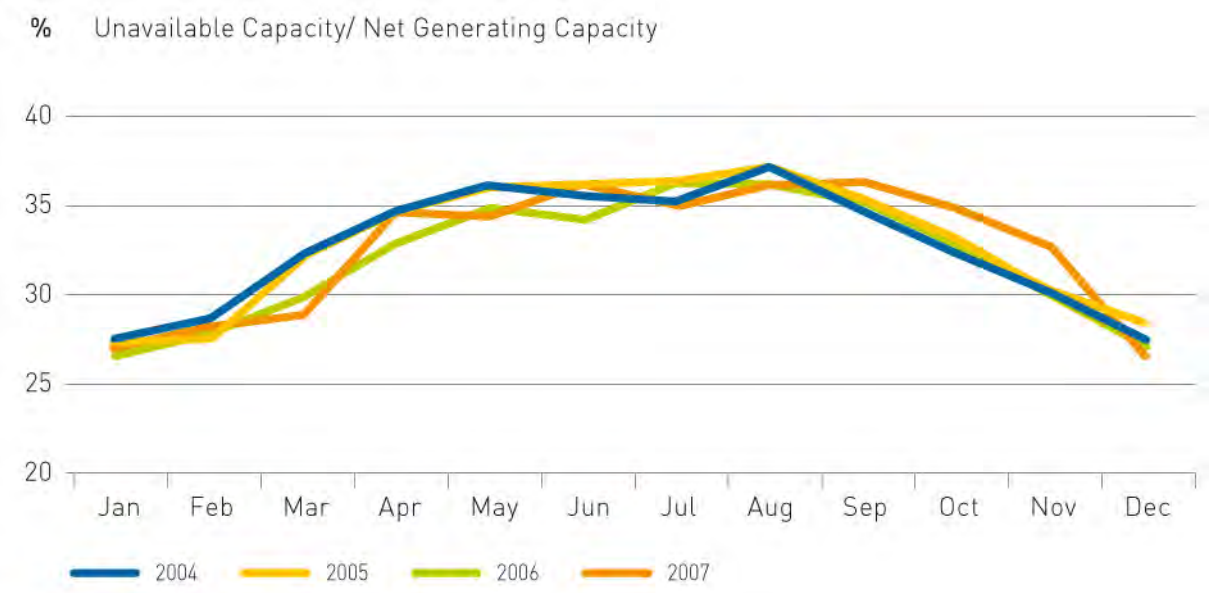


Fig. 26 UCTE Unavailable Capacity Retrospect as part of Net Generating Capacity

In Autumn 2007, more generating capacity was unavailable than in the last 3 years. It was mostly due to an higher number of power plants in Maintenance & Overhauls as shown in Chapter 3.3.3.3.

3.3.3.1 Non-Usable Capacity

Non-Usable capacity is the part of the generating capacity which cannot be used due to temporary limitations including mothballed, environmental constraints, network constraints, etc.

[9] http://www.ucte.org/_library/systemadequacy/saf/UCTE_System_Adequacy_Methodology.pdf

Non Usable	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	103.4	108.4	104.5	120.7	114.1	124.5	128.6	131.6	129.6	130.0	121.9	107.0
2006	106.2	105.3	104.4	112.8	111.9	118.3	132.5	125.6	125.1	116.6	113.2	107.8
2005	106.7	100.7	114.3	113.6	112.4	120.8	120.9	126.0	119.1	118.9	112.3	110.0
2004	100.7	101.4	106.6	108.6	109.0	112.8	117.0	119.8	114.4	106.4	107.6	109.7

Tab. 11 UCTE Non Usable Capacity Retrospect

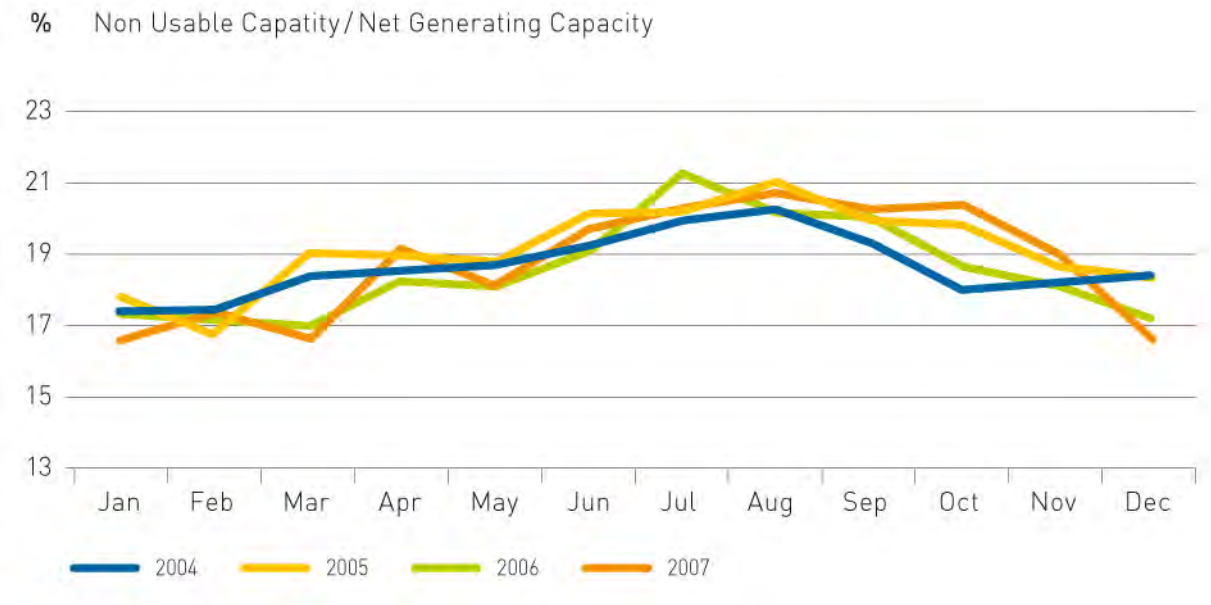


Fig. 27 UCTE Non Usable Capacity Retrospect as part of Net Generation Capacity

3.3.3.2 System Services Reserve

System Services Reserve is the part of the net generating capacity[10] required to compensate for real-time unbalances or to control the voltage, the frequency, etc. and which falls under the responsibility of TSOs to maintain system security.

Services System Reserve	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	29.1	28.9	28.2	28.7	29.1	27.0	27.0	26.9	27.9	27.9	28.8	28.8
2006	29.9	29.9	27.7	30.4	27.4	26.4	27.4	29.8	28.8	30.1	30.2	29.3
2005	32.0	29.9	32.6	30.0	28.8	25.7	29.5	29.4	27.7	28.3	27.6	27.0
2004	31.5	28.3	29.1	28.2	27.0	27.0	26.6	29.3	26.2	29.3	31.0	28.7

Tab. 12 UCTE System Services Reserve Capacity Retrospect

[10] Load reduction measures contributing to system services are excluded of System Services Reserve

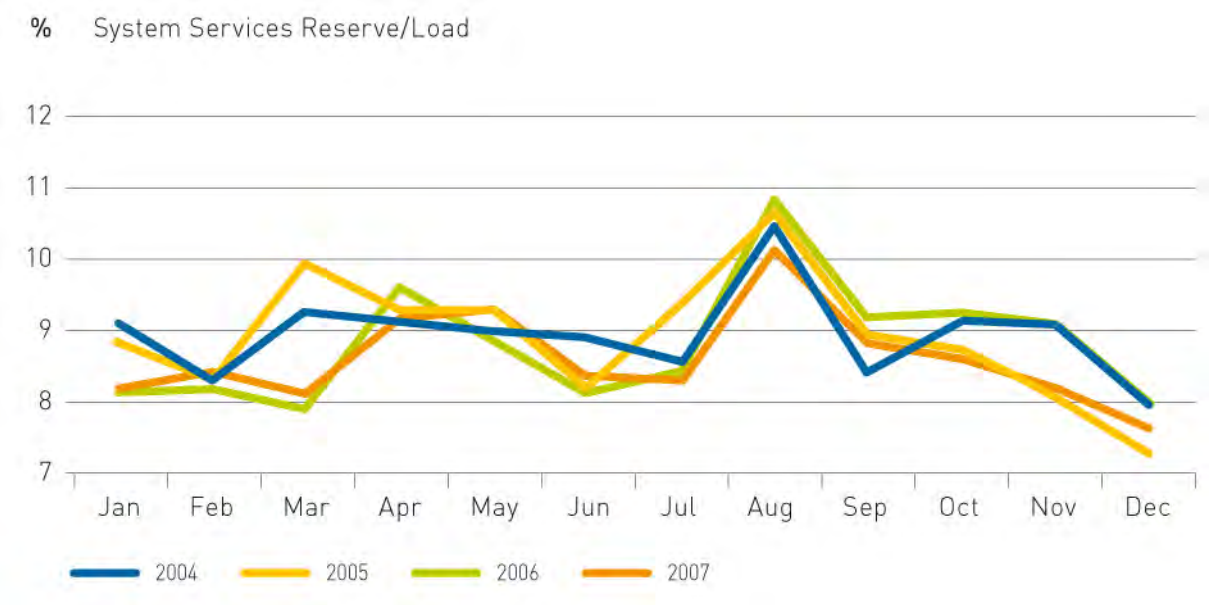


Fig. 28 UCTE System Services Reserve Retrospect as part of Load

System Services Reserve is defined by UCTE but sized according to national rules related to the specific volatilities of generation and demand. UCTE System Services Reserve is therefore not highly correlated to Load.

3.3.3.3 Maintenance and Overhauls

Maintenance and Overhauls aggregates scheduled and organised unavailability of generating capacity for regular inspection and maintenance, including recharging of fuel elements in nuclear power plants.

Overhauls	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	18.7	22.2	30.1	47.4	56.9	58.2	52.2	55.7	52.8	45.0	39.0	20.0
2006	10.4	15.7	30.3	39.0	56.6	47.8	45.8	50.8	48.4	40.3	28.5	13.7
2005	12.2	17.2	29.8	48.3	56.2	51.7	42.9	44.6	47.0	33.7	25.8	11.8
2004	11.6	18.5	31.9	45.8	56.5	52.8	47.6	51.7	41.5	36.6	25.2	7.9

Tab. 13 UCTE Maintenance & Overhauls Capacity Retrospect

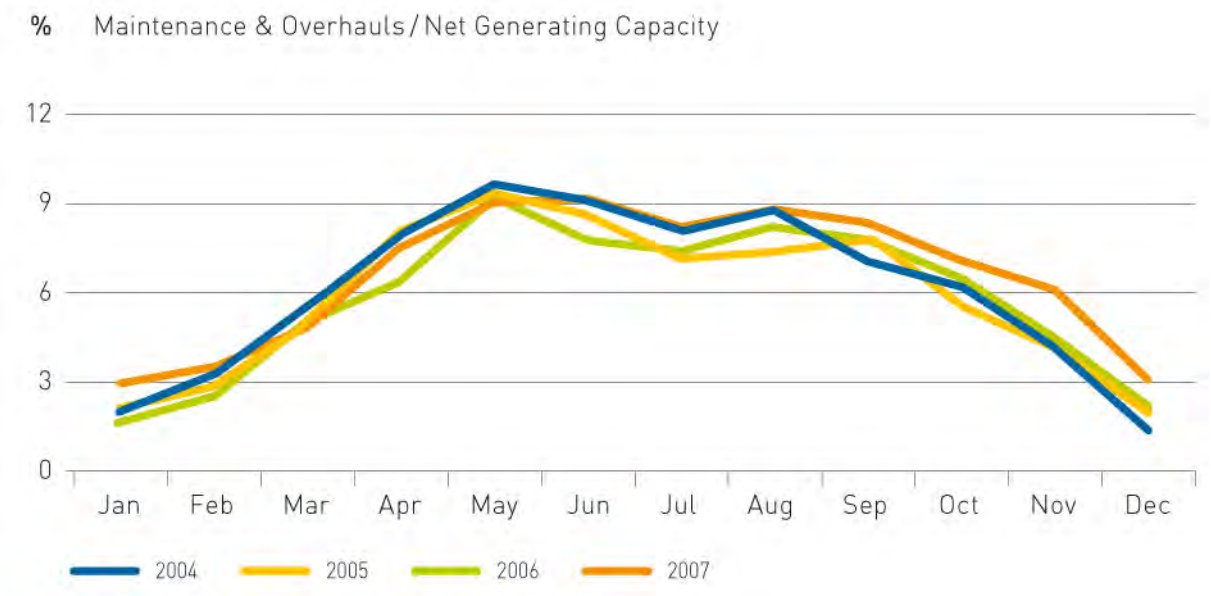


Fig. 29 UCTE Maintenance & Overhauls Retrospect as part of Net Generating Capacity

In 2007, the maximum amount of maintenance & overhauls capacity was in June with about 58 GW or 9% of the Net Generating Capacity. The maximum amount of maintenance and overhauls used to be in May in the previous 3 years.

Note that, from September on, a higher proportion of generating capacity was in maintenance & overhauls compared to the previous 3 years. This was partly due to the nuclear power plants in France.

3.3.3.4 Outages

Outages aggregates the forced unavailability of generating capacity, i.e. not scheduled and not included in Maintenance and Overhauls.

Outages	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	16.9	15.2	16.3	18.4	14.3	16.6	12.8	14.4	17.6	17.5	18.4	13.5
2006	14.7	18.0	19.2	18.3	16.8	17.2	17.0	17.6	15.4	17.0	14.3	19.2
2005	11.9	16.9	15.1	14.3	19.3	18.6	24.5	23.4	19.3	18.7	18.0	22.3
2004	15.2	17.2	19.2	15.7	16.8	13.1	15.2	16.9	20.2	17.1	12.4	15.8

Tab. 14 UCTE Outages Capacity Retrospect

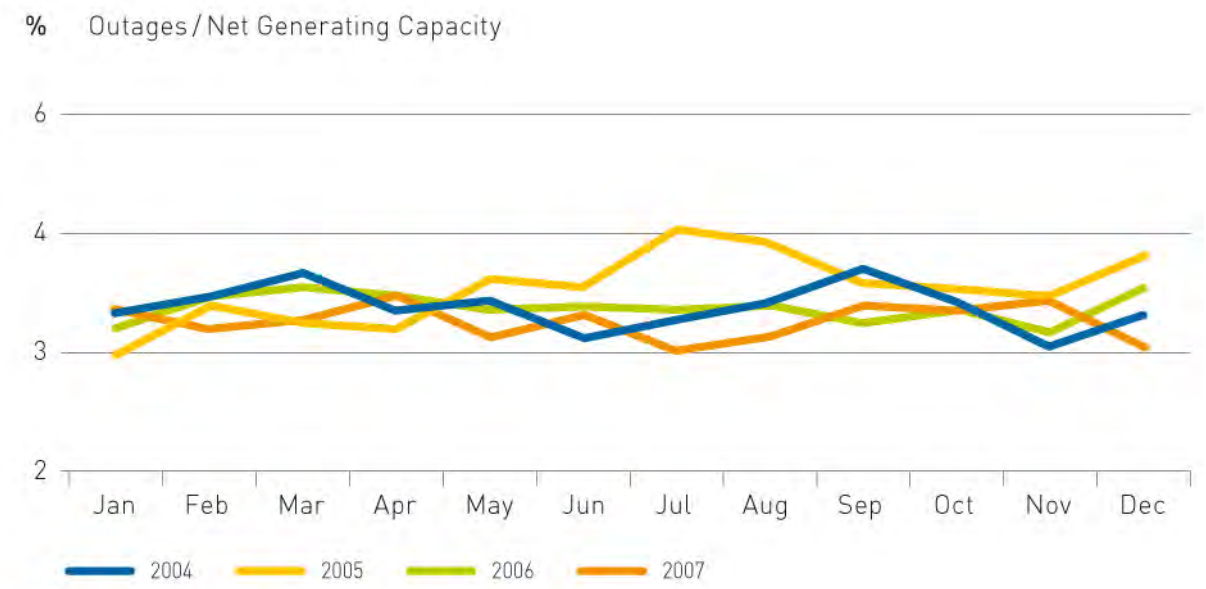


Fig. 30 UCTE Outages Retrospect as part of Net Generating Capacity

The level of Outages for UCTE has been very similar during the last 4 year with the exception of summer 2005 and its dramatic temperatures.

3.3.4 National Comments on Unavailable Capacity

More national data on Unavailable Capacity are in Appendix 3.

AT Austria

No details available.

BA Bosnia-Herzegovina

Unavailable capacity have no significant differences respect to the previous year. A sensible increase has been observed in the period from March till May.

BE Belgium

The system services reserve consists of 94 MW primary reserve, 797 MW minutes reserve and 373 MW other reserves. Only 557 MW (137 MW secondary reserve and 420 MW tertiary reserve) of the minutes reserve is considered. The remaining 240 MW of the minutes reserve are load shedding contracts with industrial customers. This type of reserve in not included in the UCTE definition of system services reserve.

The 373 MW 'Other reserves' is contractually imposed by Elia on the generator with the biggest unit, but does not fall under the operational responsibility of Elia. The origin of the imposition, although it is

stipulated in the ARP contract is the Grid Code : every ARP is responsible for his own balance. This reserve is included because it is a part of the system services reserve as determined by the UCTE rules.

BG Bulgaria

The unavailable capacity throughout the year is in the range between 3.4 and 5.0 GW, which is 32% and 47% of the net generating capacity respectively.

CH Switzerland

The main reasons for unavailable capacity are the following:

- in winter the output of storage hydro and (mixed) pump storage hydro power plants as well as that of nuclear power plants can be constrained by ice. At the same time the output of run-of-river hydro power plants is minimal because of lack of water.
- in summer the output of run-of-river hydro power plants is significantly higher, but there is seldom enough water to engage the maximal installed capacity of the generators.
- renewable energy sources (other then hydro) are very weakly represented in Switzerland (only 0.3 GW) and are considered as unavailable all the time.

DE Germany

A large part of the generating capacity of wind-energy plants needs to be considered as "non-usable" or "unavailable" capacity owing to the stochastic nature of wind energy availability.

The German TSOs do not collect detailed information on these items. As a result of legal unbundling, the German transmission system operators do not receive detailed data on these power balance items from power plant operators. The data have partly been determined on the basis of estimations made prior to the liberalisation of the German electricity market.

FR France

The availability of the nuclear power plants have been remarkably low at the end of the year 2007 compare to the previous years due to maintenance works.

GR Greece

The overhauls were extended in spring and autumn in order to make the units reliably available in summer and winter which are the heavy load periods.

The performed outages were in accordance with the forecasts.

IT Italy

For thermal power plants the unavailability is to be mainly attributed to unplanned average unavailability of plants, for long outages and repowering project. For the wind power plant, because the production depends on a primary source, highly discontinuous , the unavailable capacity is usually very high.

LU Luxembourg

Non-usable capacity consists of temporary lack of wind (especially in the second half of May and in June) and limitation of water.

The overhaul of the major thermal plant, scheduled for March, was performed from April 14th to May 2th. Some frequent other shut down took place between June 20th and September 30th but it was in operation during reference time.

ME Montenegro

During the spring and summer capital remount of the major TPP is done. Due to this works, significant percentage of the local production capacities was not available during this period, but firm import contracts, as well as the availability of other capacities had enabled normal functioning of the system.

The Netherlands

There were no cooling water restrictions in 2007.

Volume of the overhaul schedule 2006 74710 Mwweeks.

Volume of the overhaul schedule 2007 80744 Mwweeks.

PL Poland

High level of Unavailable Capacity during the summer is caused by:

- technological limitation of production in combined heat and power plants (non-usable),
- restrictions due to cooling water temperature in some of thermal power plants (non-usable),
- limitations due to transmission network congestion during high temperature (non-usable),
- the fact, that major maintenances and overhauls are being made in summer seasons (maintenance and overhauls),
- higher level of forced outages during high temperature (outages) .

Moreover one can observe the growth of unavailable capacity in 4th quarter in comparison with 1st quarter (winter season) as the result of:

- the limitations due to environmental constrains based on national / EU regulations,
- the extension of the planned overhauls in fossil fuel power stations,
- the limitations due to tight coal stocks caused by problems with current delivery of coal.

RO Romania

The unavailable capacity reasons were relied mainly to temporary limitations such as:

- low water flow during January-February interval, due to the cold season;
- low water flow during the June-August interval, due to extreme weather conditions without rainfalls combined with high temperature values;

- low heat demand during the April-October interval, concerning the combined heat and power units;

RS Republic of Serbia

On territory of Kosovo 311MW is not-usable, what is 3,7% net generation capacity.

Overhauls, because of better weather conditions, are always characteristic for spring and summer period. In autumn and winter only long-time overhauls are operated or maintenances if whether conditions allowed it.

Average yearly value for outages is about 240MW, what is generally for Serbia.

System services reserve includes secondary and tertiary control, respectively 150MW and 450MW that means that 600MW is secure for the system.

SI Slovenia

Due to unavailable records for nuclear and fossil fuel power stations non-usable capacity presents only hydro power stations. Usually there are no or minimal limitations for nuclear and fossil fuel power stations because of environment restrictions. No limitations due to network congestions occurred.

3.4 Reliably Available Capacity

	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
Net Generating Capacity	**624.0**	**624.7**	**626.2**	**627.9**	**630.0**	**631.2**	**633.1**	**634.8**	**636.1**	**637.7**	**638.7**	**639.7**
Non-Usable Capacity	103.4	108.4	104.5	120.7	114.1	124.5	128.6	131.6	129.6	130.0	121.9	107.0
System services Reserve	29.5	29.3	28.6	29.1	29.6	27.4	27.5	27.3	28.3	28.3	29.2	29.2
Maintenance & Overhauls	18.7	22.2	30.1	47.4	56.9	58.2	52.2	55.7	52.8	45.0	39.0	20.0
Outages	16.9	15.2	16.3	18.4	14.3	16.6	12.8	14.4	17.6	17.5	18.4	13.5
Unavailable Capacity	168.5	175.1	179.4	215.6	214.9	226.7	221.1	228.9	228.3	220.8	208.5	169.8
Reliable Available Capacity	**455.5**	**449.6**	**446.8**	**412.4**	**415.1**	**404.4**	**412.0**	**405.8**	**407.8**	**416.9**	**430.2**	**470.0**

Tab. 15 UCTE Reliably Available Capacity in 2007

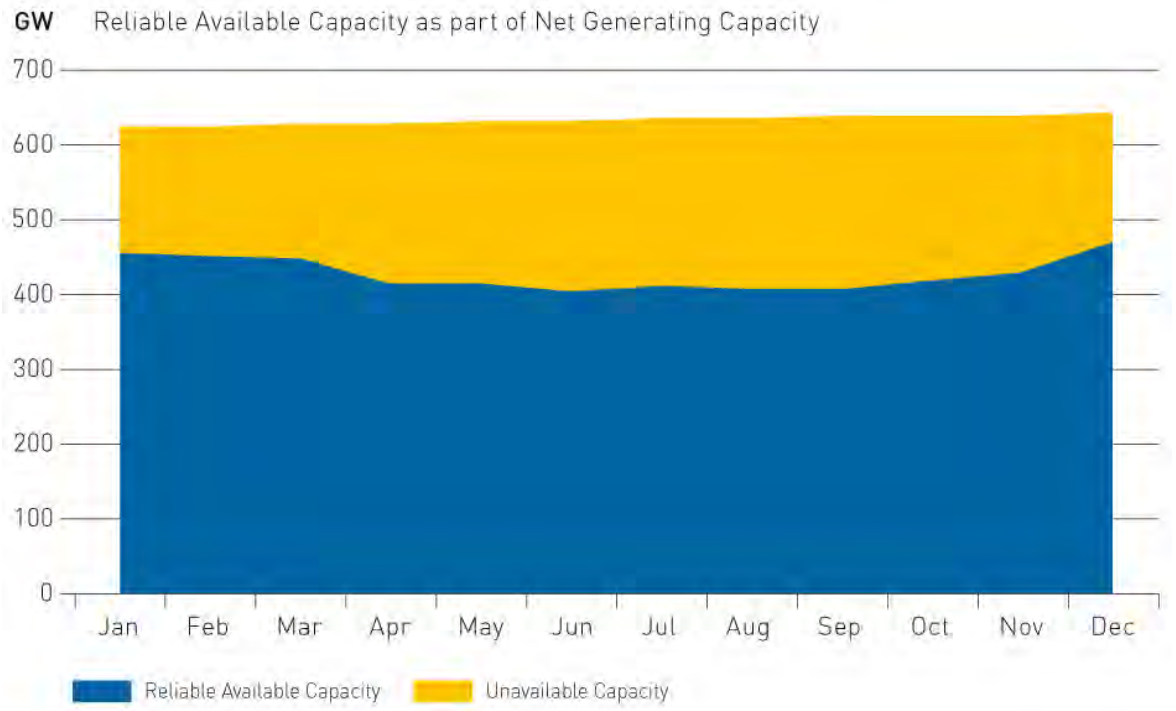


Fig. 31 UCTE Reliably Available Capacity in 2007 as part of Net Generating Capacity

Reliably Available Capacity (RAC) of a power system is the difference between Net Generating Capacity and Unavailable Capacity.

Reliably Available Capacity is the part of Net Generating Capacity actually available to cover the load at a reference point.

In 2007, the Reliably Available Capacity on the UCTE grid had its minimum value in May with more than 404 GW, see Tab. 16.

RAC	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	455.5	449.6	446.8	412.4	415.1	404.4	412.0	405.8	407.8	416.9	430.2	470.0
2006	450.1	444.0	432.8	414.8	403.0	407.9	397.6	397.5	404.3	419.0	437.6	455.2
2005	434.7	434.7	408.1	394.7	384.8	385.7	384.8	381.1	393.7	408.9	426.0	440.3
2004	419.4	413.6	393.4	383.7	373.8	378.4	380.3	371.3	387.4	401.5	416.0	431.2

Tab. 16 UCTE Reliably Available Capacity Retrospect

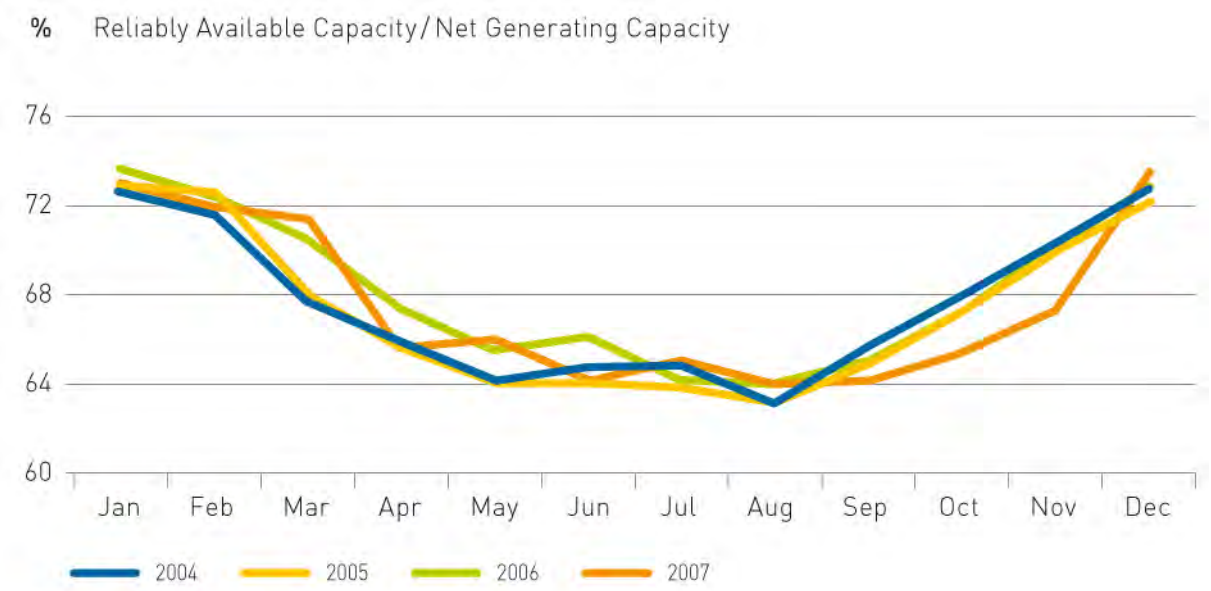


Fig. 32 UCTE Reliably Available Capacity Retrospect as part of Net Generating Capacity

As shown in Fig. 32, the minimum UCTE Reliably Available Capacity expressed as a percentage of the Net Generating Capacity was quite stable compared with 2006 , namely 64%. At the end of 2007, Reliably Available Capacity was low as a percentage of the Net Generating Capacity, partly due to the low availability of nuclear power plants in France.

3.5 Generating Adequacy

3.5.1 Remaining Capacity

Remaining Capacity (RC) is the part of Net Generating Capacity left on the system to cover any unexpected load variation and unplanned outages at a Reference Point. Remaining Capacity (RC) on a power system is the difference between Reliably Available Capacity and Load.

The Remaining Capacity is not fully available to power plant operators as part of it is also necessary to system operators for security reasons. Remaining Capacity should not be confused with the Surplus of available capacity defined by UCTE in its statistical data[11] and which does not include operational margin left to the system operators.

[11] http://www.ucte.org/services/statisticalterms/capacity/

3.5.1.1 UCTE Overview

	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
NGC	624.0	624.7	626.2	627.9	630.0	631.2	633.1	634.8	636.1	637.7	638.7	639.7
RAC	455.5	449.6	446.8	412.4	415.1	404.4	412.0	405.8	407.8	416.9	430.2	470.0
Load	359.6	349.4	351.4	317.7	318.2	329.5	332.6	269.0	321.4	329.6	358.8	384.0
RC w/o X	**95.9**	**100.2**	**95.4**	**94.6**	**96.9**	**75.0**	**79.4**	**136.8**	**86.5**	**87.3**	**71.5**	**86.0**
RC/NGC (%)	15.4	16.0	15.2	15.1	15.4	11.9	12.5	21.6	13.6	13.7	11.2	13.4

Tab. 17 UCTE Remaining Capacity in 2007

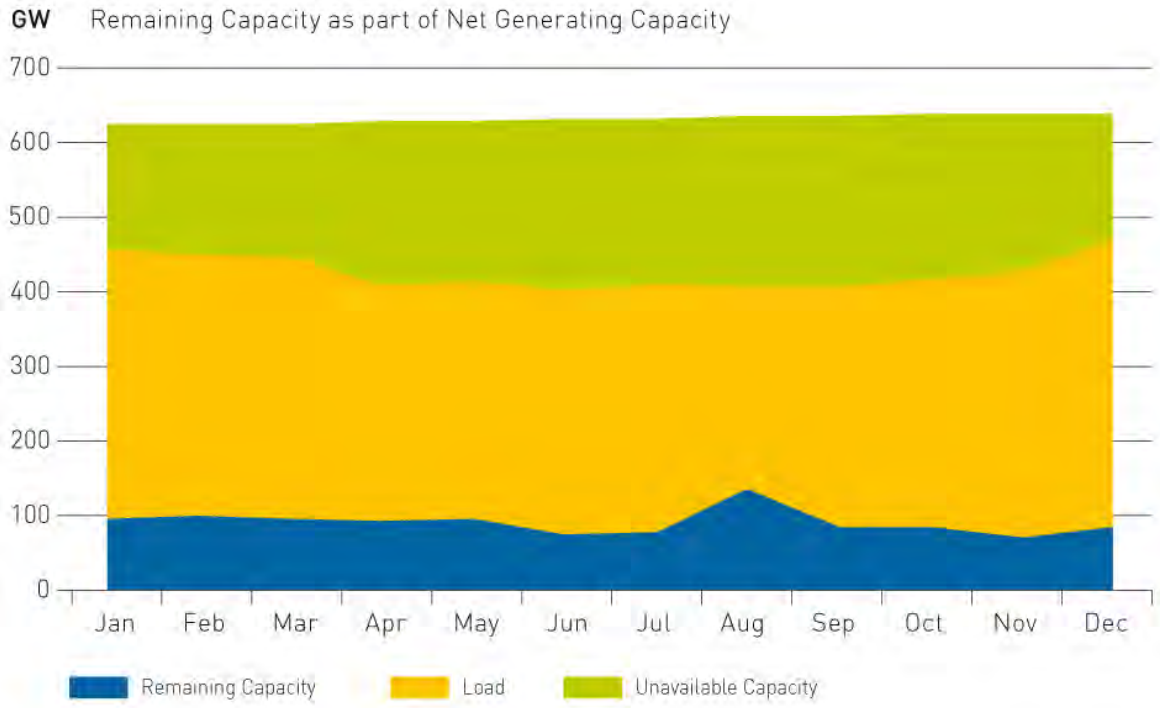


Fig. 33 UCTE Remaining Capacity in 2007 as part of Net Generating Capacity

Fig. 33 shows that UCTE Remaining Capacity was positive at all Reference Points. It means that the UCTE power system had enough internal generating capacity available to cover its Load at all Reference Times.

In 2007, Remaining Capacity had its minimum value in November with 71.5 GW of Net Generating Capacity. This minimum value reflects the cold end of November 2007 resulting in a higher than expected load.

This minimal value was quite stable from 2004 on as shown in Tab. 17 with an historical low value of 67.6 GW in July 2004.

This minimal value has been quite stable from 2004 as shown in Tab. 18 with an historical low value of 67.6 GW in July 2004.

RC w/o X	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
2007	95.9	100.2	95.4	94.6	96.9	75.0	79.4	136.8	86.5	87.3	71.5	86.0
2006	80.6	78.7	80.4	97.4	92.9	83.1	72.1	123.2	89.9	93.8	102.7	87.0
2005	73.1	74.7	79.2	72.1	74.7	71.9	69.3	104.5	84.3	84.8	83.4	70.8
2004	71.2	70.5	78.9	74.6	74.4	73.8	67.6	91.6	77.2	80.9	74.0	70.6

Tab. 18 UCTE Remaining Capacity Retrospect

As shown in

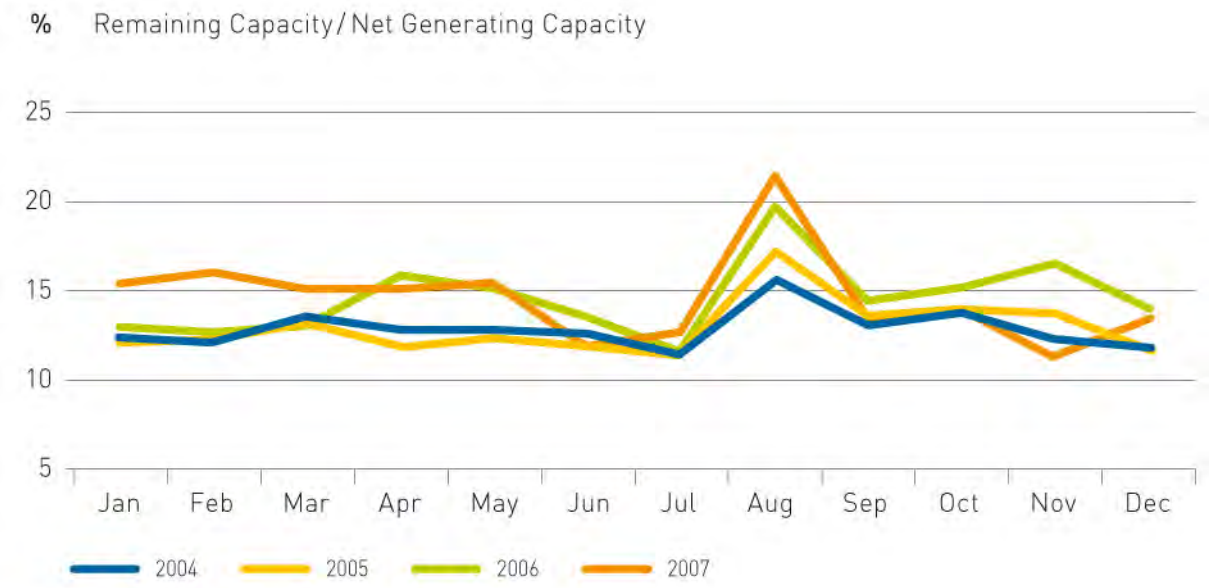


Fig. 34, Remaining Capacity in July 2007 is quite high compare to the previous 3 years with almost 12.5% of the Net Generating Capacity instead of 11.5%. It reflects the mild temperatures of July 2007.

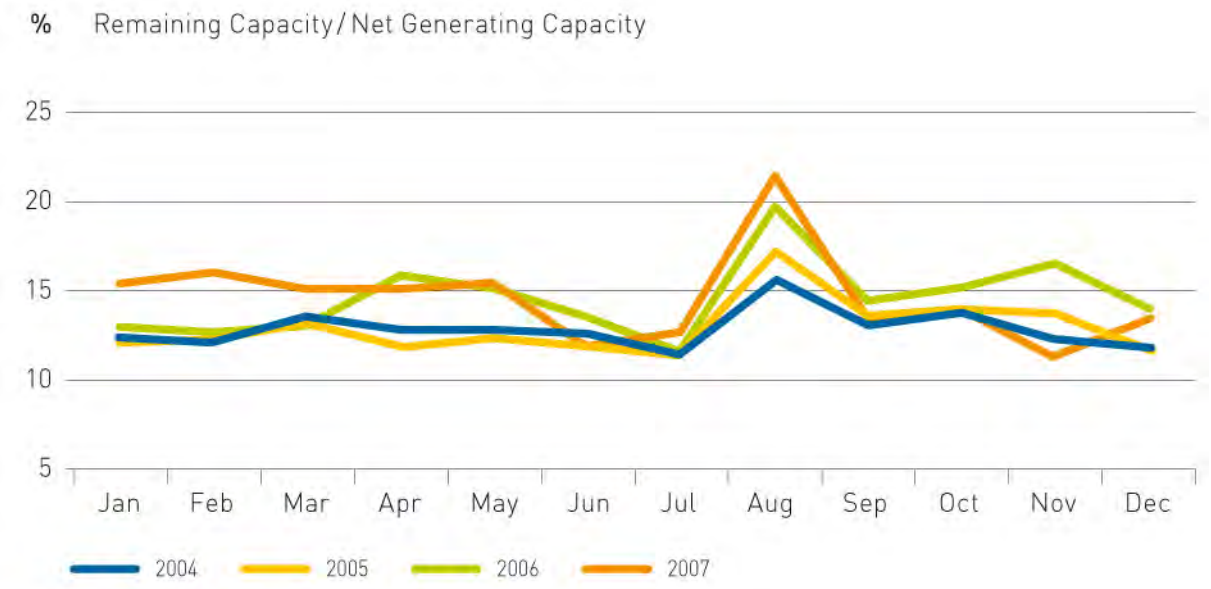
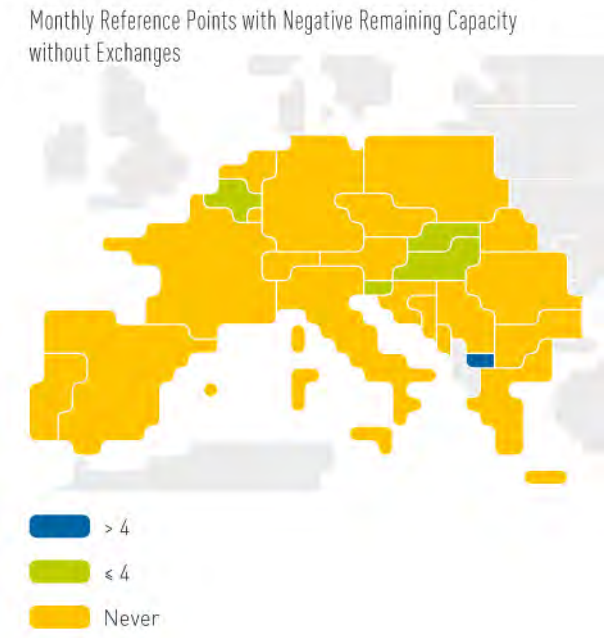
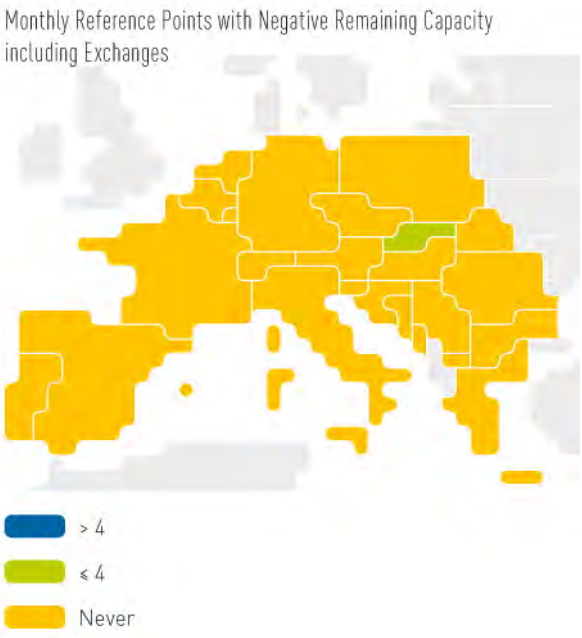


Fig. 34 UCTE Remaining Capacity as part of the Net Generating Capacity

3.5.1.2 National Assessment



Map 14 Number of Monthly Reference Points with Negative Remaining Capacity without Exchanges in 2007



Map 15 Number of Monthly Reference Points with Negative Remaining Capacity including Exchanges in 2007

As seen in Map 14 and Map 15, the adequacy assessment of the national power systems is better when taking into account the Exchanges through the interconnection lines, which help some grids to keep their Remaining Capacity high enough to ensure generation adequacy at all Reference Points.

In 2007, as shown Tab. 19,.Remaining Capacity including Exchanges (Remaining Capacity plus Exchange Balance) had a single atypical value on a national basis. It was in Slovakia at the Reference Point of November and it was due to remarkably high Unavailable Capacity.

RCincX / NGC	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Sep %	Oct %	Nov %	Dec %
AT	49.7	40.7	33.6	26.3	30.8	24.7	22.2	32.8	24.8	34.9	27.5	26.9
BA	43.9	39.0	36.6	31.7	36.6	43.9	41.5	39.0	39.0	36.6	26.8	34.1
BE	10.8	11.1	12.7	12.3	11.4	10.5	16.2	25.8	17.2	9.2	8.5	8.7
BG	16.4	16.1	18.2	4.7	16.5	4.0	5.4	11.8	7.2	3.2	6.9	2.3
CH	20.0	14.9	17.1	30.9	18.3	12.6	10.9	18.3	15.4	14.9	20.0	4.0
CZ	8.0	6.7	6.1	5.5	6.7	10.4	11.7	7.3	5.5	6.7	5.5	5.5
DE	10.3	12.1	9.6	8.9	11.4	9.5	13.6	15.7	8.5	10.0	9.2	12.4
ES	22.7	20.1	23.7	21.5	22.1	17.4	18.4	26.8	19.8	18.0	13.2	21.7
FR	6.6	6.9	5.6	4.8	6.5	2.2	4.9	6.6	1.0	3.5	3.9	6.0
GR	15.2	21.1	26.1	15.2	10.9	12.5	13.3	32.3	21.5	25.0	12.6	15.1
HR	44.2	56.6	48.4	54.8	52.6	48.6	43.6	57.3	51.5	37.0	40.8	41.2
HU	13.1	15.4	9.7	12.3	9.8	9.0	5.2	12.9	11.7	17.6	8.9	7.5
IT	18.6	21.2	19.5	19.9	18.4	19.7	22.5	30.6	19.0	18.5	16.8	17.3
LU	68.9	63.1	62.4	58.1	70.5	63.1	57.7	96.6	65.3	67.6	56.0	62.6
ME	77.6	75.1	59.6	71.2	36.1	74.9	48.7	62.7	66.7	80.6	74.8	70.0
MK	19.0	8.8	11.4	15.9	43.3	25.5	24.3	42.4	31.0	26.6	16.4	19.3
NL	22.2	29.5	29.4	37.2	38.5	38.8	36.1	42.7	39.2	30.3	24.9	25.4
PL	19.2	15.5	15.3	12.7	9.9	0.5	1.0	6.0	4.3	4.6	3.3	6.4
PT	12.5	25.7	37.7	32.4	24.0	29.0	23.6	43.2	31.3	25.2	18.4	12.0
RO	17.5	22.5	31.0	26.1	20.6	10.1	13.8	22.0	22.5	16.5	18.5	19.7
RS	18.0	26.3	17.4	20.6	11.9	13.8	11.4	18.9	12.4	18.5	17.1	11.9
SI	7.0	9.5	18.8	9.3	9.2	8.8	10.5	18.2	16.3	10.3	10.0	11.8
SK	4.6	7.8	8.5	6.4	3.9	10.0	12.4	7.7	4.9	4.4	**- 0.2**	6.2
UA-W	8.5	9.5	4.0	13.2	14.2	5.5	7.7	0.6	10.7	1.5	4.6	8.6
UCTE	**15.9**	**16.7**	**16.4**	**15.5**	**15.6**	**13.1**	**14.8**	**20.4**	**13.8**	**13.7**	**11.9**	**13.7**

Tab. 19 Remaining Capacity including Exchanges as part of Net Generating Capacity in 2007

3.5.1.3 National Comments on Remaining Capacity

BE Belgium

From February to August 2007 the remaining capacity without exchanges at the reference time was higher than 5% of the net generation capacity. However, in October and November 2007, the remaining capacity without exchanges at the reference time was insufficient to reach an adequacy between generation and consumption in Belgium without having to rely on import. In the remaining months, the remaining capacity without exchanges at the reference time was lower than 5% of the net generation capacity. Nevertheless, when taking into account the import balance, the remaining capacity was higher than 5% of the net generation capacity for all months. As a consequence, the interconnection capacity was crucial to maintain system adequacy for the year 2007.

BG Bulgaria

The remaining capacity throughout the year is in the range between 0.8 and 2.2 GW.

CZ Czech Republic

The values for Remaining Capacity were higher than 2000 MW all over the year 2007. This made heavy export possible.

GR Greece

The remaining capacity without exchanges was low in summer (heavy load period). Imported electrical energy covered the peaks of the load. Contracted units are temporarily commissioned every summer to face the high peaks.

HU Hungary

Overhauls and outages caused temporary shortages in June and July. They were covered by import.

IT Italy

Because a new power plants put in service, a major availability of operational reserve has allowed a better coverage of the national demand over the year.

NL The Netherlands

The given remaining capacity is of limited significance, because exact values of outages are not available.

PL Poland

In the eighties Polish power system registered power balance problems in winter seasons only. Climatic disturbance as well as high economic growth and higher use of cooling devices, especially air-conditioning, caused, that since summer 2006 operational and power balance problems took place during the summer period too. On 3rd Wednesday of July 2007 remaining capacity in Poland amounted 400 MW only.

PT Portugal

The remaining capacity maintained comfortable levels, falling below 10% only in January.

RO Romania

In 2007 remaining capacity values were between 10.72% and 29.56% of generating capacity.

The lowest value was reached in June.

In spite of the summer bad weather condition there were adequate capacities belonging to Romanian producers in order to meet both the higher consumption and export requests. The commissioning of the NPP Cernavoda second unit in August and a rainfall season starting with September had a positive effect concerning the available capacities in order to meet the consumption request.

RS Republic of Serbia

Economy and standard of life are improved in last few years what bring about higher electrical demands. Generation systems are maximally used and additional needs in winter period are compensated with import from neighboring countries what provides safety work of the electrical system.

SK Slovak Republic

Due to lower Reliable available capacity caused by higher Unavailable capacity (mainly due to higher overhauls and maintenance in some generation units) is the Remaining capacity during the year 2007 the lowest. Some influence also has decommissioning of NPP Jaslovske Bohunice.

3.5.2 Remaining Margin

3.5.2.1 UCTE Overview

Remaining Margin (RM) on a power system is the difference between Remaining Capacity and Margin Against Peak Load. Remaining Margin is the part of Net Generating Capacity left on the system to cover any unexpected load variation and unplanned outages over the analysed period the Margin Against Peak Load is representative of.

As reference points in the System Adequacy Retrospect are monthly, the related Margin Against Peak Load must be monthly too and is called Margin Against Monthly Peak Load (MaMPL). It is calculated as the difference between the actual monthly peak load metering and the Load at the reference point.

RM w/o Exchanges	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
Reliably Available Capacity	**455.5**	**449.6**	**446.8**	**412.4**	**415.1**	**404.4**	**412.0**	**405.8**	**407.8**	**416.9**	**430.2**	**470.0**
Non Usable Capacity	103.4	108.4	104.5	120.7	114.1	124.5	128.6	131.6	129.6	130.0	121.9	107.0
Overhauls	18.7	22.2	30.1	47.4	56.9	58.2	52.2	55.7	52.8	45.0	39.0	20.0
Outages	16.9	15.2	16.3	18.4	14.3	16.6	12.8	14.4	17.6	17.5	18.4	13.5
System Services Reserves	29.5	29.3	28.6	29.1	29.6	27.4	27.5	27.3	28.3	28.3	29.2	29.2
Load	**359.6**	**349.4**	**351.4**	**317.7**	**318.2**	**329.5**	**332.6**	**269.0**	**321.4**	**329.6**	**358.8**	**384.0**
Remaining Capacity	95.9	100.2	95.4	94.6	96.9	75.0	79.4	136.8	86.5	87.3	71.5	86.0
Margin Against Monthly PL	40.7	32.9	19.4	31.7	18.3	15.3	15.2	68.2	24.8	35.1	37.4	31.7
Remaining Margin	**55.2**	**67.2**	**76.1**	**62.9**	**78.6**	**59.7**	**64.2**	**68.7**	**61.6**	**52.2**	**34.1**	**54.3**
Net Generating Capacity	624.0	624.7	626.2	627.9	630.0	631.2	633.1	634.8	636.1	637.7	638.7	639.7
RC / NGC (%)	15.4	16.0	15.2	15.1	15.4	11.9	12.5	21.6	13.6	13.7	11.2	13.4
RM / NGC (%)	8.8	10.8	12.1	10.0	12.5	9.5	10.1	10.8	9.7	8.2	5.3	8.5

Tab. 20 UCTE Remaining Margin in 2007

As shown in Tab. 20, UCTE Remaining Margin was positive for all month in 2007, it means that the UCTE power system had enough internal generating capacity left to cover its load at any time of the month.

Fig. 35, reveals that UCTE Remaining Capacity in 2007 was also above the indicative level of 5% of the Net Generating Capacity used within UCTE to forecast generation adequacy like in the latest System Adequacy Forecast 2007-2020 report[12].

[12] http://www.ucte.org/_library/systemadequacy/saf/UCTE_SAF_2008-2020.pdf

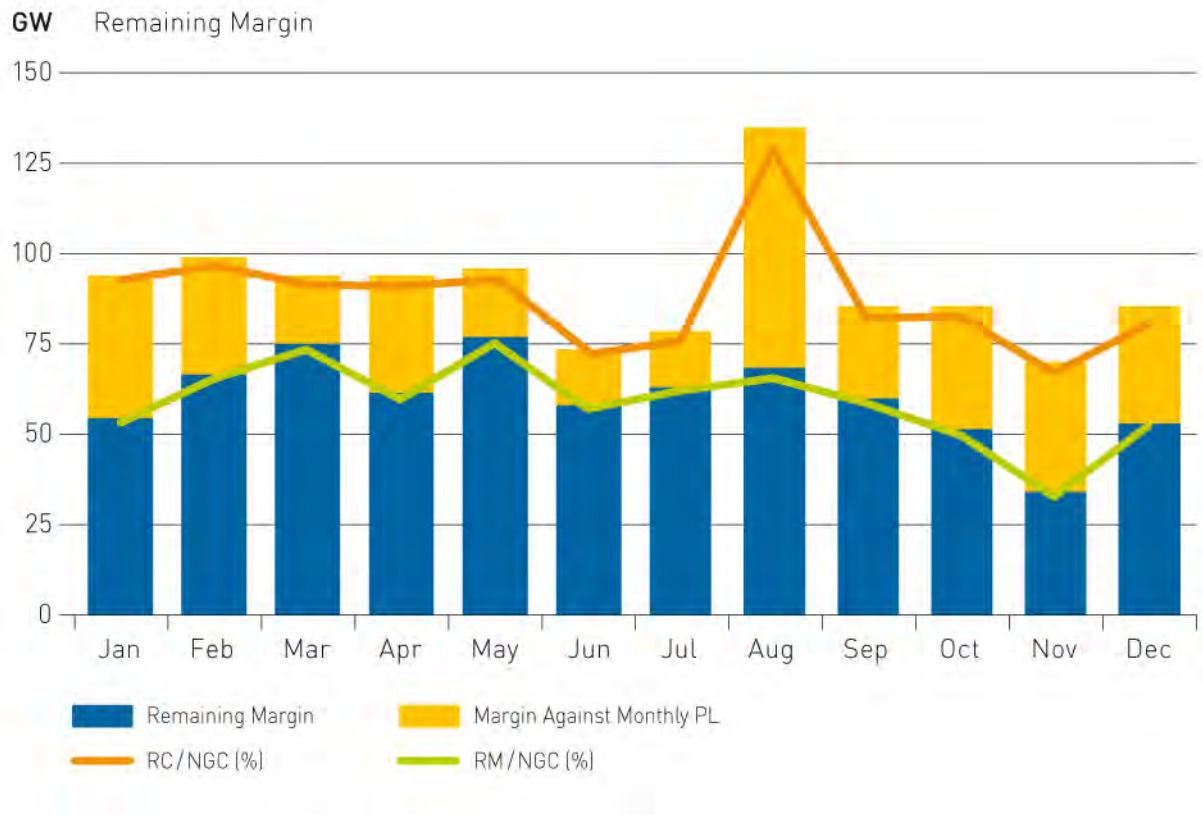


Fig. 35 UCTE Remaining Margin in 2007

As mentioned in Chapter 3.2, the reference point (3rd Wednesday 11:00) for August 2007 is August 15th: a public holiday in many countries. Therefore, in several countries, the load at reference time for August 2007 was remarkably low, hence the related Margin against the Monthly Peak Load was unusually high (see Fig. 35).

The lowest value of the Remaining Margin was observed in November due to unusually cold temperature in the second half of the month which increased Load much more than expected.

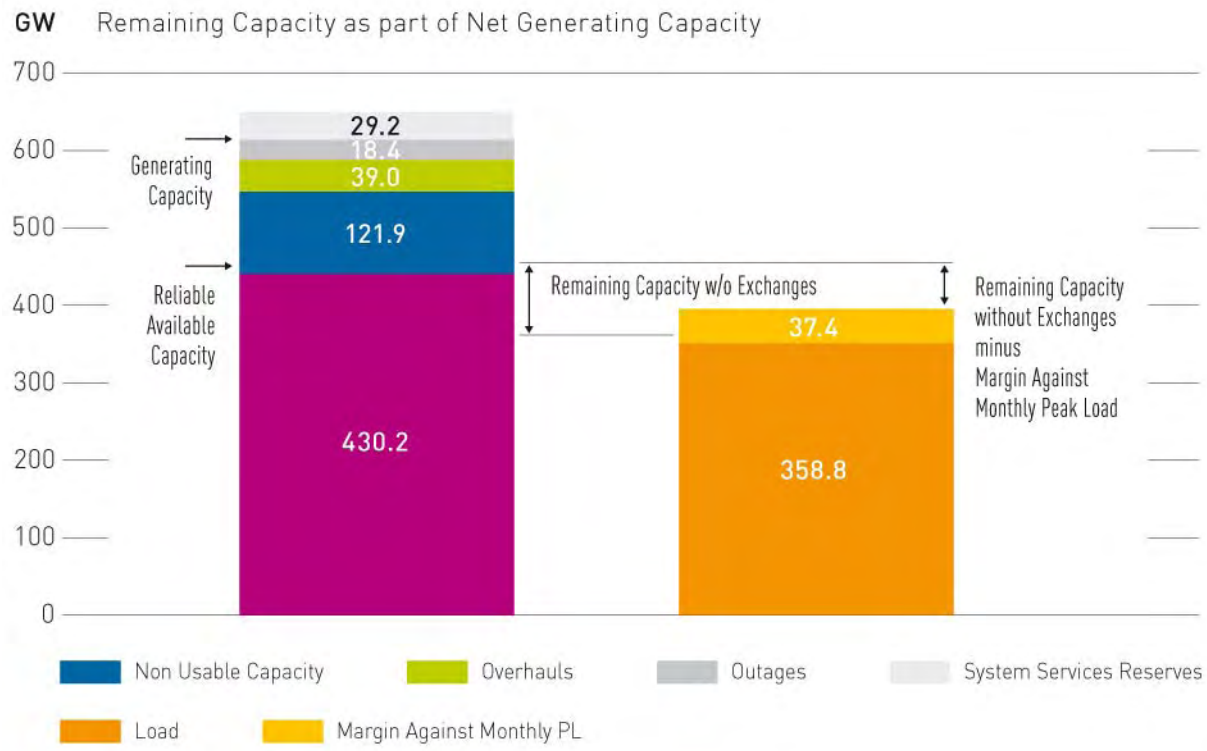


Fig. 36 UCTE Generation Adequacy at Minimum Remaining Margin in 2007

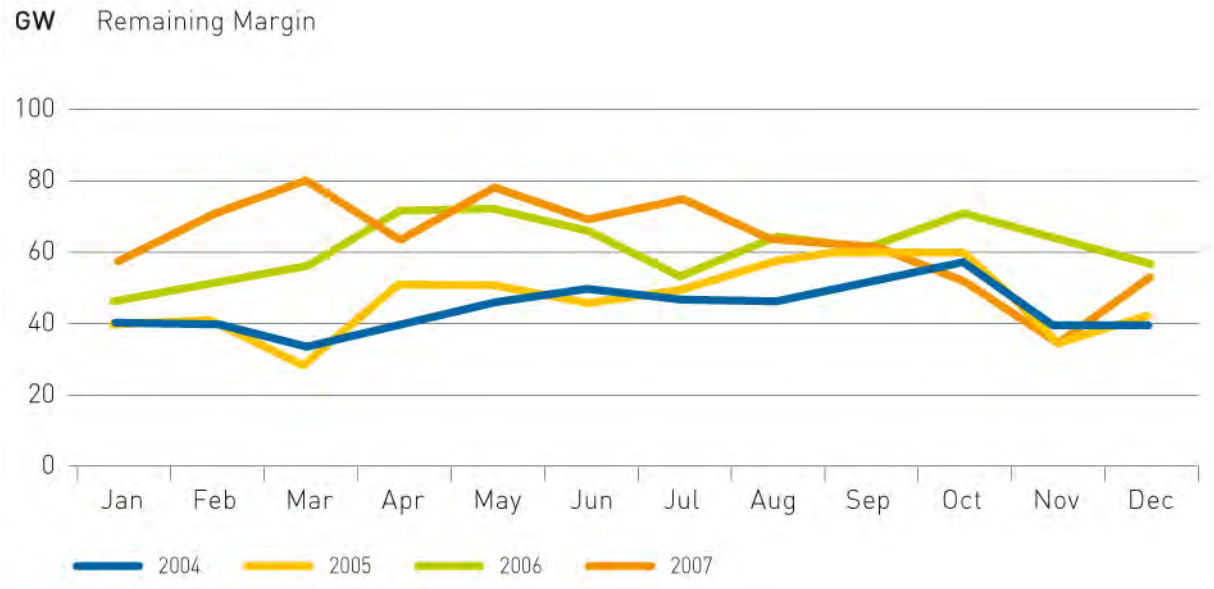


Fig. 37 UCTE Remaining Margin Retrospect

Fig. 38 UCTE Minimum Remaining Margin as part of Net Generating Capacity Retrospect

The level of the minimum Remaining Margin in 2007 was close to the usual level with 5.3% of the Net Generating Capacity. The high level of 2006 was exceptional due to very mild temperature all year long.

3.5.2.2 Regional Assessment

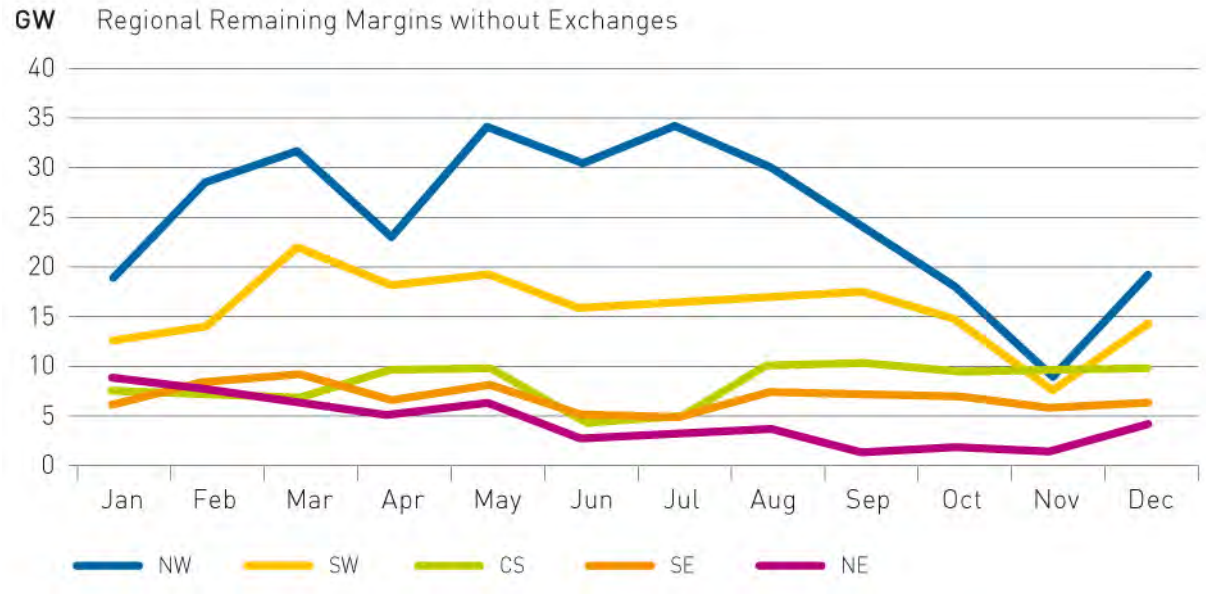


Fig. 39 Regional Remaining Margin in 2007

Regional Remaining Margin was positive for all months.

The minimum Remaining Margin was in November for the whole UCTE and so was it for North-Western, South Western and North-Eastern blocks whereas Central-South and South-Eastern blocks had their minimum regional Remaining Margin in July and June respectively.

4 INTERCONNECTION TRANSMISSION ADEQUACY

4 Interconnection Transmission Adequacy

Transmission adequacy retrospect analysis look at the constraints on internal and interconnection lines with a direct impact on the Exchanges.

Transmission adequacy is therefore retrospectively analysed regarding 3 aspects:

- The main developments and upgrades on the UCTE network during the year with emphasis on commissioned lines or transmission devices with a significant impact on the interconnections and on congestions by increasing the NTC, by reducing or increasing constraints, by decreasing congestion costs, ...)
- The congestions observed on the interconnection lines as and their criticality estimated by both countries on interconnection, according to a common index.

4.1 Main Grid Developments

BE Belgium

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
Monceau – Thy-le-Château	150kV	31/5/2007	Single circuit, ~21 km, AC cable	
Keerken – Lokeren Vijgenstraat	150kV	1/12/2007	Single circuit, ~0.5 km, AC line	
Trivière – Ville-sur-Haine	150kV	28/9/2007	Double circuit upgrade, ~5 km, AC line	
Gouy	150/10kV	31/10/2007	40 MVA Transformator	

Monceau	220/150kV	31/5/2007	400 MVA Transformator	The double circuit upgrade from 150kV to 220kV of the line Jamiolle-Monceau (commissioned in January 2006) together with the installation of a phase shifter in Monceau increases the simultaneous import capacity of Belgium. Consequently, the NTC-value from France to Belgium will increase by 300 MW for a reference grid situation in summer (indicative non-binding figures).
Slijkens	150/11kV	1/6/2007	50 MVA Transformator	
Romsée	220/15kV	8/6/2007	50 MVA Transformator	
Mol	150/15 kV	28/8/2007	50 MVA Transformator	

DE Germany

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
Transformer Wustermark	380/220 kV		400 MVA	no impact

FR France

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
Chaffard Grande Il 1 & 2	400	October		

13 new substations connected to the RTE network, including 1 at 400 kV (Montagny-les-Lanches), 6 at 225 kV (Lagafière, Richier, Savigny, Suisse, Terres-Noires, Trith-Saint-Léger), and 6 at 63 kV.

At 400 kV, 203 km of new or refurbished circuits (combined with 93 km of removed installations and various modifications) including :

- As part of the work to strengthen the electrical connection between Lyon and Chambéry, the overhead lines at 400kV Le Chaffard – Grande Ile 1 and 2;
- The 400 kV line St Avold – Vigy, first section of the new double circuit line between Marlenheim (near to Strasbourg) and Vigy (near to Metz).

At 225 kV, 90 km of new or refurbished circuits (combined with 128 km of removed installations and various modifications) including :

- The overhead interconnection line Chooz-Monceau in replacement of the ancient line Chooz – Jamiolle, after the commissioning of a phase-shifting transformer in Belgium at the substation of Monceau in order to facilitate the exchange of electrical energy between France and Belgium.

Source: http://www.rte-france.com/htm/an/mediatheque/telecharge/electrical_energy_in_france_2007.pdf

GR Greece

Decommissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
OHL 150KV S/S Meliti-Bitola	150	24/6/2007		Upgrade to 400KV

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
OHL 150KV S/S Didymotiho –Hamitabat (Turkey)	150	6/8/2007		New tie-line for temporary connection of a power plant in Turkey on island operation.

IT Italy

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
Matera – S. Sofia	380		Single line 220,3 Km	
Leyni - AceaElectrabel	380		Single line 6,1 km	

Colunga – Bussolengo	220		Single line 151,7 Km	
Colunga – Benedetto Berceto	220		Single line 28,8 km	
Benedetto Berceto - Caselina	220		Single line 61,3 km	
150/132 kV lines	150/132		A total of 159,9 Km	

Capacitor banks, for a total capacity of 760 MVAr, were installed in HV substations.

New transformers, for a total capacity of 3.730 MVA, have been installed.

MK Former Yugoslavian Republic of Macedonia

Line or Equipment Name	Voltage (kV)	Date	Main Characteristics	Comments on Impact on Interconnection Capacity
Bitola-Meliti	400kV	06.2007		Interconnection capacity between Macedonia and Greece (MEPSO and HTSO)

PT Portugal

Commissioning				
Line or Equipment Name	**Voltage (kV)**	**Date**	**Main Characteristics**	**Comments on Impact on Interconnection Capacity**
Batalha-Pego	400	January 18	New 400 kV line, 65.9 km long.	Facilitates flows along Tejo axis where there exists a 400 kV interconnection between Falagueira (Portugal) and Cedillo (Spain)
Recarei-Paraimo and Paraimo-Batalha	400	April 21	Opening of Recarei-Batalha 400 kV line at Paraimo new substation (85.3 km plus 101.5 km minus 186.8 km).	This reinforcement is associated with the following one.

Bodiosa substation autotransformation Bodiosa-Paraimo	400/220 400 (220)	July 27	New 400/220 kV, 450 MVA, autotransformation. New 400 kV line, temporarily used at 220 kV, 60.6 km long.	Closing of a new axis between Douro river area and the coast. Facilitates flows through Douro International 220 kV interconnections. These reinforcements are associated with the previous one
Alqueva substation; Alqueva-Ferreira do Alentejo, Alqueva-Brovales and Central Alqueva-Alqueva 400 kV lines	400 400	December 12	Alqueva-Ferreira do Alentejo – 64.1 km; Alqueva-Brovales – 39.9 km (just to border); Central Alqueva-Alqueva – 1.2 km.	Construction of new Alqueva substation nearby Alqueva power plant, eliminating the previous 'T' connection of this power plant. Improves Alqueva-Brovales interconnection reliability.
Castelo Branco substation	220/150	August 16	New 220/150 kV, 250 MVA, autotransformer.	Closing of a new axis in interior facilitating flows from Douro International and Tejo areas. Facilitates flows through Douro International 220 kV interconnections.

4.2 Cross Border Congestions

There was a congestion[13] on an interconnection border when access have not be granted to all the actors who requested it, i.e. when market players were eager to buy more capacity than on sale.

Therefore, congestions in the frame of System Adequacy Retrospect report are not necessary physical congestions but should be called commercial or contractual congestions.

Their causes are to be found not only in the limited technical capacity of the interconnection lines, but also in the allocation mechanisms of the Net Transfer Capacity which were applied.

In order to qualify precisely the congestion, the table below is been used to classify the occurrence of congestion for each border and on each direction, according to the season and the hour of the day.

Season	Hours
Never (**N**)	Never (**N**)

[13] This methodology is currently under revision by UCTE

Spring (**Sp**)	Varying (**V**)
Autumn (**Au**)	Peak hours (**P**)
Summer (**Su**)	Night hours (**Ni**)
Winter (**W**)	Day hours (**D**)
All year (**AY**)	All day (**A**)

Tab. 21 Interconnection Congestion Occurrence Classification

Methods for congestion management in each country are also specified.

More, for each border and on each direction, congestions are rated with an annual severity index. This index is the annual frequency of any congestion, expressed as a percentage. It is the ratio of the total time duration of all the congested periods during the analysed year by whole year duration.

Severity indexes are represented on a map with arrows described in the table bellow.

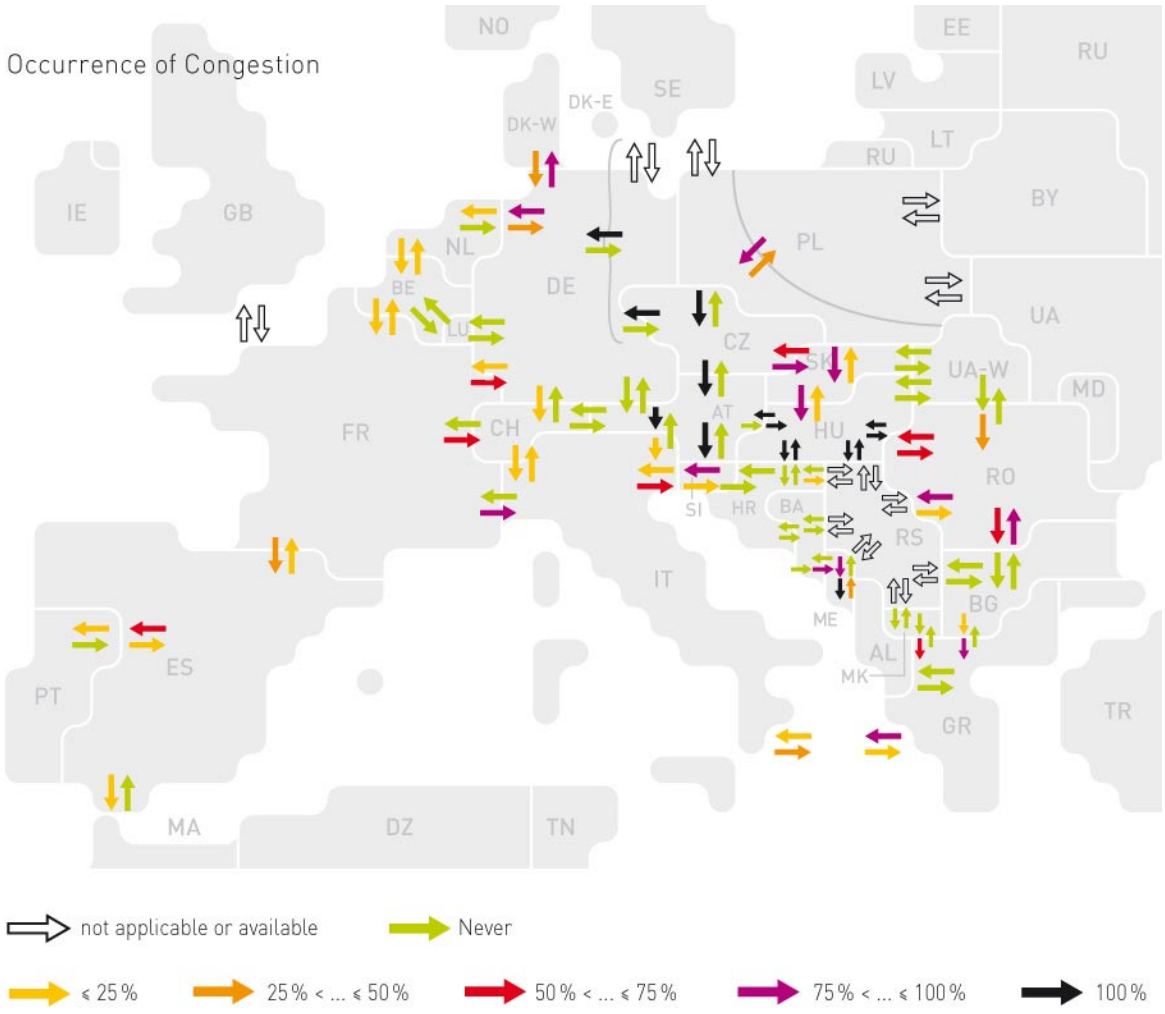
Severity Index	Arrow's colour	Annual Frequency of Occurrence
n.a.	White	n.a.
0	Green	0%
1	Yellow	1-25%
2	Orange	26-50%
3	Red	51-75%
4	Purple	76%-99%
5	Black	100%

Tab. 22 Interconnection Congestion Severity Index Representation

Severity indexes in the same direction may differ one both sides of a border means that maximum capacity allocation is more often reached on one side. Various reasons may explain this: existence of physical congestion on the internal network of the TSO may be one, as well as capacity allocation process which may differ. Next chapter provides national comments concerning these issues.

According to this rather "commercial" definition of congestion, it is also possible to observe congestion simultaneously in both directions. When the maximum amount of capacity to be allocated is fully fixed ex-ante in both directions and there is neither export capacity nor import capacity left on sale, for instance. This is why the total of severity indexes in both directions may exceed 100% in some cases.

4.2.1 UCTE Overview



Map 16 UCTE Cross Border Congestion Map

In order to simplify the map, arrows have been merged when they have the same colour on each side of the oriented border.

4.2.2 North Western Block

North Western[14] block is made of Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.

[14] In previous edition, Main-UCTE block was used and was made of countries in the North Western Block plus Bosnia-Herzegovina, Croatia and Slovenia.

AT Austria

From	To	Severity	Season	Hour	Remarks
AT	CZ	0			
CZ	AT	5	AY		
AT	IT	5	AY		
IT	AT	0			NTC 220MW
AT	SI	5	AY		
SI	AT	0			
AR	HU	0			
HU	AT	5	AY		
AT	CH	0			
CH	AT	0			

Interconn.	Capacity	Allocation method	Comment
A>CZ	600MW Base 50 MW some month	Explicit Auction (yearly, monthly, daily)	www.auction-office.at www.ceps.cz Y,M Allocation by A D Allocation by CZ
CZ>A	150MW Base; 150MW Peak	Explicit Auction (yearly, monthly, daily)	www.auction-office.at www.ceps.cz Y,M Allocation by A D Allocation by CZ
A>I	Capacity according to pentalateral agreement on the Italian northern interconnection	Explicit Auction (yearly, monthly, daily)	Allocation by A
I>A	110 MW, except line disconnection	Explicit Auction (monthly, daily)	Allocation by I
APG>SLO	225MW Base; 100MW Peak	Splitting of capacity till 11/07 Explicit Auction (yearly, monthly, daily)	Only share of A till 12/07 than Allocation by A
SLO>APG	225MW Base; 100MW Peak	Splitting of capacity	Only share of A

		till 11/07 Explicit Auction (yearly, monthly, daily)	till 12/07 than Allocation by SLO
APG>H	100MW Base in some month 50MW base additional capacity	Explicit Auction (yearly, monthly, daily)	Allocation by A Allocation by H
H>APG	100MW Base, 100MW Peak	Explicit Auction (yearly, monthly, daily)	Allocation by A Allocation by H
APG> CH	155 – 180 MW Base 0 – 200 MW additional daily capacity	Explicit Auction (monthly, daily	Allocation by A Allocation by CH
CH>APG	600 MW Base	Explicit Auction (monthly, daily	Allocation by A Allocation by CH

Auction: The allocation of the capacity is organized by an auction office

Splitting of capacity: Each country (TSO) is responsible for 50% of the available capacity. The allocation of each share takes place according to the national laws.

Splitting of direction: Each country is responsible for a single direction.

Base: 01.01.2004 00:00h – 31.12.2004 24:00h

Peak: 02.01.2004 – 31.12.2004 Monday to Friday daily 08:00h – 20:00, excepting Austrian holidays

BE Belgium

From	To	Severity	Season	Hour	Remarks
NL	BE	1	AY	A	6.1% of the time there was congestion on the NL-BE border.
NL	BE	1	Au	A	During autumn (22nd of September until 21st of December), 19.1% of the time there was congestion on the NL-BE border.
BE	NL	1	AY	A	21.4% of the time there was congestion on the BE-NL border.
BE	NL	1	Sp	A	During spring (22nd of March until 21st of June), 42.5% of the time there was

					congestion on the BE-NL border.
FR	BE	1	AY	A	7.1% of the time there was congestion on the FR-BE border.
FR	BE	1	Su	A	During summer (22nd of June until 21st of September), 16.5% of the time there was congestion on the FR-BE border.
BE	FR	1	N	A	3.5% of the time there was congestion on the BE-FR border.
LU	BE	0	N	A	
BE	LU	0	N	A	

CH Switzerland

From	To	Severity	Season	Hour	Remarks
CH	IT	1	AY	P	
IT	CH	0	N	N	
CH	DE	0	N	N	
DE	CH	2	W	Ni	
CH	FR	0	N	N	
FR	CH	2	W	Ni	
CH	AT	0	N	N	
AT	CH	2	W	Ni	

DE Germany

From	To	Severity	Season	Hour	Remarks
CZ/PL	DE	5	AY	A	Data relate only to the German side or to the transmission system of Vattenfall Europe Transmission GmbH (VE-T)
DE	CZ/PL	0	N	N	Data relate only to the German side or to the transmission system of VE-T
DK (East)	DE	(*)	(*)	(*)	(*)Congestion management of the KONTEK submarine cable between the transmission systems of the Danish Energinet.dk and VE-T is carried out on the basis of a market-coupling (MC) procedure through the Power Exchange (NordPool Spot AS). The direction, severity and frequency of occurrence of congestion result from the varying market-price situations and cannot be represented

					by the TSO in the requested manner. Moreover, it has to be pointed out that the principle of market coupling is based upon systematic management of demand for network access or transmission capacity through the Power Exchange, i.e. that the available capacity is called for at the most. Against this background, the following interpretation would also be possible: Network access can be granted to the extent required if this procedure is applied; consequently, there does not occur any congestion according to the definition given at the top of this Chapter. In so far, depending on the perspective, it would be possible to indicate totally different data in the Table as to "„Severity / Season / Hours".
DE	DK (East)	(*)	(*)	(*)	See remark above.
DE	DK (West)	5	AY	A	Result of auctions
DK (West)	DE	5	AY	A	Result of auctions
DE	CH	2	AY	A	Auction through EnBW TSO
CH	DE	0	N	N	Auction through EnBW TSO
DE	FR	1	AY	V	Auction through RWE TSO
FR	DE	3	AY	V	Auction through RTE
DE	AT	0	N	N	No congestion in 2007
AT	DE	0	N	N	No congestion in 2007
DE	CZ	0	AY	A	Result of auctions
CZ	DE	5	AY	A	Result of auctions
DE	NL	5	AY	A	Result of auctions
NL	DE	5	AY	A	Result of auctions

The increasing congestion in terms of energy imports and exports to/from Poland by the transmission system operator PSE-Operator S.A. (PSE-O) has an effect on the transmission capacity at the network border D/PL. The total transmission capacity existing at the network border to Poland and the Czech Republic from the perspective of Vattenfall Europe Transmission GmbH (VE-T) is thus no longer available,

or only to a very limited extent, at the Polish border. As a result, there is an increasing shift of demand and auctions concerning the overall capacity (D/PL/CZ) towards the network border D/CZ.

FR France

From	To	Severity	Season	Hour	Remarks
FR	BE	1	AY	V	
BE	FR	1	AY	V	
FR	DE	3	AY	V	
DE	FR	1	AY	V	
FR	CH	3	AY	A	
CH	FR	0	AY	A	
FR	IT	4	AY	A	
IT	FR	0	AY	A	
FR	ES	2	AY	V	
ES	FR	1	AY	V	

LU Luxembourg

From	To	Severity	Season	Hour	Remarks
LU	DE	0	N	N	Radial operation of the grid
DE	LU	0	N	N	Radial operation of the grid
LU	BE	0	N	N	Radial operation of the grid
BE	LU	0	N	N	Radial operation of the grid

NL The Netherlands

From	To	Severity	Season	Hour	Remarks
NL	BE	1	AY	A	
BE	NL	1	AY	A	In relation to

					France-Belgium border
NL	DE	0	N	N	
DE	NL	1	Au,W	V	Due to high transits from wind generation NTC-values were reduced for 12% of hours

There are no notorious bottlenecks on the Dutch cross-border lines themselves, but sometimes imports from Belgium/France or transports from France towards Germany should be restricted in operational planning because of expected high loads on the France/Belgium cross-border lines.

In autumn and winter months there are extensive flows over the Dutch grid in relation to high wind power generation in the Northern part of Germany These transit flows cause that on some hours TenneT is obliged to reduce the import capacity on the German border to guarantee network security. This procedure was used in nearby 12% of the time in 2007.

4.2.3 North Eastern Block

North Eastern[15] block is made of Czech Republic, Hungary, Poland, Slovak Republic and Ukraine-West.

CZ Czech Republic

From	To	Severity	Season	Hour	Remarks
CZ	DE	5	AY	A	50-100 % real using – all days
DE	CZ	0	N	N	10-20 % real using – some days
CZ	AT	5	AY	A	50-100 % real using – all days
AT	CZ	0	N	N	10-50 % real using – some days ----
CZ	PL	0	N	N	10-20 % real

[15] North Eastern block used to be named CENTREL.

					using – some days
PL	CZ	5	AY	D	20-100 % real using – day hours only
CZ	SK	5	AY	V	80-100 % real using – all days
SK	CZ	3	AY	V	30-60 % real using all days

HU Hungary

From	To	Severity	Season	Hour	Remarks
SK	HU	5	AY	V	
HU	SK	4	AY	V	
HR	HU	5	AY	V	
HU	HR	5	AY	V	
UA-W	HU	0	0	0	
HU	UA-W	-	-	-	
RO	HU	4	AY	V	
HU	RO	5	AY	V	
RS	HU	5	AY	V	
HU	RS	5	AY	V	
AT	HU	5	AY	V	
HU	AT	5	AY	V	

PL Poland

From	To	Severity	Season	Hour	Remarks
PL	DE/CZ/SK	4	AY	V	*
DE/CZ/SK	PL	2	AY	V	*
PL	SE	**			Commercial DC link
SE	PL	**			Commercial DC link

PL	UA	**			Radial Connection
UA	PL	**			Radial Connection
PL	BY	**			Line has switched off since 2004
BY	PL	**			Line has switched off since 2004

* in 2007 as in the previous years PSE-Operator managed congestion on all synchronous international tie lines (to D, CZ, and SK) together and thus the description of congestion situation is given for this whole profile.

** Not applicable - no auctions for this profile.

Data in the table concerns daily auctions congestions.

Moreover in the export direction there were also capacities for monthly auctions offered, in the import direction there were also capacities for yearly auctions offered. All offered capacities were sold.

SK Slovak Republic

From	To	Severity	Season	Hour	Remarks
SK	HU	5	W,Sp,Su	A	
SK	HU	4	Au	A	
HU	SK	1	AY	A	
SK	CZ	1	Su,Au	A	
SK	CZ	2	Sp,W	A	
CZ	SK	4	AY	A	
UA-W	SK	1	Su,Au,W	A	
UA-W	SK	0	Sp	A	
SK	UA-W	0	W	A	
SK	UA-W	1	Sp,Su,Au	A	
SK	PL	0	AY	D	
SK	PL	3	Su	Ni	
SK	PL	0	Sp,Au,W	Ni	

PL	SK	5	Au,W	D	
PL	SK	4	Sp,Su	D	
PL	SK	3	Ay	Ni	

4.2.4 South Eastern Block

South Eastern[16] block is made of Bosnia-Herzegovina, Bulgaria, FYROM, Greece, Montenegro, Romania and Republic of Serbia.

BA Bosnia-Herzegovina

From	To	Severity	Season	Hour	Remarks
BA	HR	0	N	N	
HR	BA	0	N	N	
BA	RS	0	N	N	
RS	BA	0	N	N	
BA	ME	0	N	N	
ME	BA	0	N	N	

BG Bulgaria

From	To	Severity	Season	Hour	Remarks
BG	GR	2	Su	0	During the maintenance of 400 kV line in Serbia

No internal congestion were observed

GR Greece

From	To	Severity	Season	Hour	Remarks
GR	AL	0	N	N	
GR	BG	0	N	N	
GR	MK	0	N	N	
GR	IT	4	AY	A	Limited availability for commercial use for system adequacy reasons
AL	GR	0	N	N	

[16] Bosnia-Herzegovina has joined the South Eastern block. Romania and Bulgaria used to be considered as a separate block.

BG	GR	4	AY	A	
MK	GR	3	AY	A	
IT	GR	2	AY	Ni	Imports from Italy during the non peak hours and the weekends due to market prices .

The different results in respect with neighbouring countries are mainly due to the market mechanism applied to auctions for capacity allocation at the interconnections. For each border separately, first an NTC value is agreed between the HTSO and the corresponding neighbouring TSO and then auctions for capacity allocation on the interconnections take place. Concerning the capacity allocation in the northern Interconnections, auctions take place as for the import direction to Greece. Particularly, for the Interconnection Bulgaria - Greece the auctions take place for the half of the NTC value by the HTSO while for the other half by the Bulgarian TSO . The NTC value for interconnection between Greece – FYROM is limited due to the topology of the network. There is a physical constraint which results in a commercial constraint because access cannot be granted to all participants. Greece is responsible for the capacity allocation for this interconnection.

The auctions for capacity allocation at the interconnection between Italy and Greece take place by the HTSO as for the direction GR→IT and by TERNA as for the direction IT→GR. The NTC value in the direction GR→IT is limited in heavy load periods for Generation Adequacy Reasons in order to secure the SoS. The low NTC value results in commercial congestion.

No internal congestions.

ME Montenegro

From	To	Severity	Season	Hour	Remarks
RS	ME	4	Su	A	
ME	RS		N		
BA	ME	4	Su	A	
ME	BA		N		
ME	AL	5	Su, W	A	
ME	AL	2	Sp, Au	A	
AL	ME		N		

Due to network maintenance and Montenegrin structure of production, main network congestions appear during the summer period. During the summer of 2007 congestion on borders with Serbia and with Bosnia and Herzegovina were present on import directions during the whole day for almost 80% of the time.

On the export direction towards Albania congestion was present for all the time (5) during the summer and winter season, but also during the rest of the year with lower severity (2).

RO Romania

From	To	Severity	Season	Hour	Remarks
HU	RO	3	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
RO	HU	3	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
BG	RO	4	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
RO	BG	3	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
RS	RO	1	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
RO	RS	4	AY	A	Transelectrica: Yearly and monthly allocation of 50% NTC
UA-W	RO	2	AY	A	NTC matching between Transelectrica auction results and WPS Ukraine priority list.
RO	UA-W	0	AY	A	NTC matching between Transelectrica auction results and WPS Ukraine priority list.

4.2.5 Central South Block

Centre South[17] block is made of Croatia, Italy and Slovenia.

HR Croatia

From	To	Severity	Season	Hour	Remarks
HR	RS	5	Su	D	maintenance

Tia line no. 371.1.1 (HL 400 kV ERNESTINOVO - S.MITROVICA) was in maintenance in September during day hours between 08:00 – 16:00 h in days: 03.09.2007., 05.09. - 07.09.2007. NTC in this periods were zero for border between Serbia and Croatia.

IT Italy

From	To	Severity	Season	Hour	Remarks
FR	IT	2	AY	A	
IT	FR	3	AY	D	

[17] Italy used to be considered as a separate block.

CH	IT	1	Au	D	
IT	CH	2	Au	D	
AT	IT	2	W	A	
IT	AT	0	AY	A	
SI	IT	1	AY	D	
IT	SI	3	AY	A	
GR	IT	2	AY	A	
IT	GR	1	Sp	A	

FR Border: N-1 criterion not satisfied when the limit of the export goes over or when some internal lines are switched-off for critical conditions.

CH-SI-GR Border: An automatic switching-off of the one of internal line involved in these exchange areas reduce automatically the internal production and prevents the overload with consequent risk of failure.

SI Slovenia

From	To	Severity	Season	Hour	Remarks
IT	SI	1	SU	A	allocation by auctions
SI	IT	4	AY	A	allocation by auctions
AT	SI	4	AY	A	allocation by auctions
SI	AT	1	AY	V	allocation by auctions
HR	SI	1	AY	V	allocation by auctions
SI	HR	0	N	N	allocation by auctions

A-SI border: a period of higher prices occurred in summer 2007

The congestion on internal network sometimes occurs on the corridor Podlog-Beričevo. The congestion is caused by high power flows from AT and HR to IT over SI network. To fulfil N-1 criterion NTC is reduced in compliance with penta-lateral procedure.

4.2.6 South Western Block

South Western block is made of Portugal and Spain.

ES Spain

From	To	Severity	Season	Hour	Remarks
FR	ES	2	W	D	
FR	ES	3	W	P	

FR	ES	2	W	Ni	
FR	ES	1	Au	A	
FR	ES	2	Sp	D	
FR	ES	2	Sp	P	
FR	ES	3	Sp	Ni	
FR	ES	2	Su	D	
FR	ES	2	Su	P	
FR	ES	3	Su	Ni	
MA	ES	0	AY	A	
PT	ES	1	W	D	
PT	ES	0	W	P	
PT	ES	0	W	Ni	
PT	ES	0	Au	A	
PT	ES	0	Sp	A	
PT	ES	0	Su	A	
ES	FR	1	W	A	
ES	FR	2	Au	D	
ES	FR	2	Au	P	
ES	FR	1	Au	Ni	
ES	FR	1	Sp	D	
ES	FR	1	Sp	P	
ES	FR	0	Sp	Ni	
ES	FR	1	Su	D	
ES	FR	1	Su	P	
ES	FR	0	Su	Ni	
ES	MA	1	W	D	
ES	MA	2	W	P	
ES	MA	0	W	Ni	
ES	MA	1	Au	A	
ES	MA	1	Sp	D	

ES	MA	0	Sp	P	
ES	MA	0	Sp	Ni	
ES	MA	1	Su	A	
ES	PT	1	W	D	
ES	PT	1	W	P	
ES	PT	2	W	Ni	
ES	PT	4	Au	D	
ES	PT	3	Au	P	
ES	PT	4	Au	Ni	
ES	PT	3	Sp	D	
ES	PT	2	Sp	P	
ES	PT	3	Sp	Ni	
ES	PT	3	Su	D	
ES	PT	3	Su	P	
ES	PT	4	Su	Ni	

PT Portugal

From	To	Severity	Season	Hour	Remarks
ES	PT	2	W Sp	A	
ES	PT	3	Su Au	A	
PT	ES	1	W	P	

5 MARKET DEVELOPMENTS

5 Market Developments

BA Bosnia-Herzegovina

Situation with market opening:

- all customers, except households, as of January 1, 2008 have possibility to be eligible,
- from January 1, 2015 market will be open 100%.

Until end of 2007, only one customer use possibility to be eligible. Their yearly consumption cca 1200 GWh.

BE Belgium

On 15 May 2007 Elia and RTE started a joint intra-day allocation mechanism at the France-Belgium interconnection and launched on both sides the related nomination procedures. These mechanisms have as objective to allow market participants to correct within the same day their day-ahead position, with a complementary import and/or export, in case of unforeseen physical changes or for new economical arbitrage.

This new facility will, amongst others, enable:

- a better flexibility for the balance responsible parties to face unforeseen changes,
- an optimized use of the available capacity.

The new allocation mechanism allows explicit intra-day allocations of capacity on the France-Belgium interconnection, in both directions of the interconnection, at several moments during the day (the so-called gates). These allocations are performed by RTE, as "Joint Operator", in the name of both TSOs, according to an iterative prorata mechanism.

The intra-day nomination procedures allow the participant to nominate an intra-day import and/or export:

- within the limit of the allocated capacity,
- between France and Belgium in one direction or the other,
- at a given gate.

The participant who asks and gets capacity is also the party who will nominate it on both sides of the interconnection, to Elia and RTE. In accordance with the « Use it or lose it » principle, the capacity that is not nominated within the gate deadlines will be lost without compensation and made available for the next gate. The allocated intra-day capacity is free for the participants.

Elia and TenneT are planning a similar intra-day mechanism at the border between Belgium and the Netherlands. The target date is June 2008.

BG Bulgaria

97 Market Players were active on the open market in 2007, among them 7 Independent Producers, 64 Eligible Customers, 1 public supplier - NEK and 25 traders. The total energy supplied under bilateral contracts in 2007 is 3633069 MWh.

Step by step the model shall be developed further and a complex market incorporating a spot "day-ahead market" for short-term deals with electricity and ancillary services will be put in place.

CH Switzerland

On 16 of February 2007 the Swiss Department of Environment, Transport, Energy and Communications (DETEC) published the results of a long run study "Energy perspectives 2035" which was realized in a cooperation of numerous participants from science, economics and administration. This study shows development tendencies concerning the Swiss energy supply and analyses 4 scenarios. It serves as a basis for the Swiss energy strategy.

By decision of the Swiss Federal Council the new Electricity Supply Law, which was adopted on the 23 of March 2007, came into force on the 1 of January 2008. The only exceptions are the Article 13, sections 1 and 2, concerning the free choice of supplier for eligible bulk consumers (annual consumption > 100 MWh), and the Paragraph 2 of the Annex related to the production cost based compensation for the electricity production from renewable energy sources (excluding conventional hydro power). The regulation specifying the stipulations of the Law will come into force on the 1 of April 2008 so as to allow early registration of installations for renewable production (eligible are all installation constructed after the 1 of January 2006). Finally, the whole Law will be implemented on the 1 of January 2009. In the meantime the market players including swissgrid as the Swiss TSO will prepare the processes and procedures needed for the functioning of the free market. Small consumers (annual consumption < 100 MWh) will be allowed for free competition after a transitory period of 5 years (unless this provision is rejected in a referendum).

Already on the 15 of July 2007 the Swiss Federal Council inaugurated the Electricity Commission (ElCom) as the new independent Swiss regulatory authority for electricity (ElCom) under the chairmanship of the former member of the Council of States, Mr Carlo Schmid-Sutter. ElCom has 7 members. In accordance with the stipulations of the new Electricity Supply Law ElCom will monitor the liberalization of the Swiss electricity market. Coming into effect of the Law on the 1 of January 2008 enables ElCom to check future increase of electricity tariffs as well as possible unjustified tariff increases which took place immediately before the Law came into force. ElCom is not only empowered to propose tariffs reductions but to mandate them too.

On the 8 of November 2007 in Brussels negotiations between Switzerland and the EU started, which should lead to a bilateral agreement between Switzerland and EU on rules and regulations related to power transit (utilisation of the transmission network, transmission tariffs and congestion management), cross-border electricity market access and trading of green electricity (mutual recognition of green electricity certificates). With the adoption of the Electricity Supply Law in 2007 Switzerland has already

accepted generals principles in accordance with the EU regulations in electricity sector. This is an important contribution to facilitate the negotiations. The EU delegation is led by Mr Fabrizio Barbaso, alternate director of TG TREN. The president of the Swiss delegation is Mr Walter Steinmann, director of the Swiss Federal Office for Energy. The next meeting will be held in February 2008 in Switzerland.

In December 2007 a market-based, transparent and non-discriminatory capacity allocation process in form of yearly and monthly explicit auctions was implemented on the Swiss/Italian border. On the 1 of January 2008 explicit auctions for daily capacity were added. On the Swiss/Austrian and Swiss/German borders such auctions already exist (introduction of first processes in December 2005).

CZ Czech Republic

In 2006, ČEPS initiated changes of computation methodology of the price of the deviation which is provided by the Electricity Market Operator. These changes which consist above all of a progressive growth of the settlement price of the deviation have demonstrable influence on the development of the amount of the system power deviation in 2007. Statistical data of the system deviation shows considerable amelioration comparing to 2005 and 2006 which enabled ensuring standard reliability of the system service "Real time keeping of the power balance" with lower requirements of the reserve power than in 2006.

DE Germany

For the German electricity industry, the year 2007 was mainly characterized by political discussions and political decisions in terms of climate change. Since the decisions taken by the European Council on 8/9 March 2007, it is the declared intention of the EU to grant high priority to climate protection and to make it a decisive driving force for the further development of the electricity industry. Thus, two EU-driven fundamental energy industry restructuring processes extending over several decades overlap: climate protection and liberalization.

With the adoption of the decree on connection of power stations to the grid as of 26 June 2007, of the incentive regulation decree as of 29 October 2007 and the publication of the 3rd legislative package by the European Commission on 19 September 2007, liberalization took closer shape. Though essential aspects of the 3rd package are still subject to intense controversies in Brussels, concerning for instance ownership unbundling for electricity transmission system operators and operators of gas pipeline grids with the alternatives of Independent System Operators or tightened-up regulation according to a third option preferred by eight Member States, including Germany and France. The concrete implementation of incentive regulation gives rise to investment uncertainties for network operators which are difficult to cope with. Altogether, the basic model of the liberalized electricity market has meanwhile been clearly positioned throughout Europe, wholesale electricity trading is booming and improved solutions for cross-border retail trading in electricity for domestic customers are beginning to show.

In contrast to the above, the restructuring of the European energy industry extending over several decades with a view to continuously decreasing CO2 emissions is likely to give rise to large uncertainties in the foreseeable future. The EU Council decision determined three targets to be achieved by 2020: 20 % decrease in CO2 emissions, 20% share of renewable energies, and 20 % rise in energy efficiency, and thus

defined clear-cut objectives for the medium term. But even those medium-term and, even more, long-term targets strongly depend on the worldwide climate discussion. Concerning the details of implementation, many years of uncertainties, e.g. in terms of the CO2 price and the best way of renewable energies' market integration, seem to be hardly avoidable. This will not contribute to making decisions on investments in power stations easier. However, investments in the development of the transmission and distribution networks are urgently required in many places for the integration of renewable energies. Delays attributable to local opposition cause network operators and politicians great concern as they require ever more frequently a difficult balancing between the security of network operation and the fullest possible utilization of CO2-free wind energy.

FR France

On the interconnections with Belgium, Germany, Italy and Spain, in conjunction with the other European system operators, RTE set up a secondary market for electric interconnection capacities in 2007.

The secondary capacity market enables players to transfer the capacities they have acquired at annual/monthly auctions to other players, or to ask RTE to make capacities available for sale once more, subject to specific conditions.

This new instrument completes the range of explicit auction mechanisms introduced in 2006 to allocate interconnection capacities on all France's borders (except the Swiss border), and the trilateral market coupling operation between the French, Belgian and Dutch power exchanges that was launched on 21 November 2006.

The revenues obtained are paid into a specific fund and used to finance three objectives set down by EU Regulation 1228/2003: guaranteeing exchange capacities made available at auction despite contingencies, strengthening interconnections, and lowering the tariff charged for accessing the transmission network, if the revenues from that tariff cannot be employed completely for the other two objectives.

After all the corporate sites on July 1st 2004, every residential site is free to choose its electricity supplier from July 1st 2007, hence completing the opening of the electricity supply market in compliance with the French laws and European Directives.

HU Hungary

The new Hungarian Electricity Act and its executive order were accepted in 2007, allowing the full market opening on 1 January 2008.

LU Luxembourg

A new energy law has been voted on August 1st replacing the existing law July 27th 2000 that confirms with all the EU directives. It also aims for reorganizing the complete electricity sector in Luxembourg*

MK Former Yugoslavian Republic of Macedonia

New market rules are prepared, and they are waiting for the approval of the Regulatory Commission, according to the changes in the Energy Law, which are adopted by the Government.

NL The Netherlands

A proposal of the Minister of Economic Affairs to split up all networks from Energy Trading Companies was proved by the Parliament. Part of the deal is also to bring all the HV networks ≥110 kV under the accountability of TenneT-TSO, in order to better the manageability of the electricity transport infrastructure. This includes also the merging of the regional control centres into one national centre, to be new-built nearby the actual one, so that it can serve also as a back-up.

Also was decided by the Minister of Economic Affairs that all renewable generation and CHP-units should be connected to the grid without withdrawal, even when transport capacity is insufficient, when new lines can't be realised on due time. The Minister ordered that a system of congestion management should be implemented by TenneT TSO a.s.a.p., to overcome the temporal lack of transporting capacity in some parts of the grid.

The Trilateral market-coupling of the electricity exchanges in the Netherlands (APX), France (Powernext) and Belgium (Belpex), launched at the end of 2006, showed to be very successful as the Electricity prices on the Powernext, Belpex and APX day-ahead market were equal for more then 60 % of the time. Also increased significantly the daily allotted cross border capacity at the Dutch - Belgian border and the Belgian -French border, as this capacity is sold implicit since the implementation. Coupling creates an integrated electricity market in Central Western Europe and is really a step forward towards the integration of the North-West European Electricity market.

With that in mind, an declaration of intention with two German TSOs was signed, to expand the market-coupling to their areas in 2008.

PL Poland

- According to the Polish Energy Law Act, from July 1st, 2007 the electricity market is open for the household customers and all customers are eligible for changing electricity supplier. Also from July 1st, 2007 the Distribution System Operators have been legally unbundled. In 2007 the works concerning modification of law on termination of national long-term supply contracts in Poland finished and were approved by the European Commission. The termination of long-term contracts will take place in the first half of 2008.
- During 2007 the coordinated auction procedure for cross-border capacities started in 2006 continued on the basis of multilaterally agreed rules and in accordance with the EU legislation. In auction processes TSOs allocated yearly, monthly and daily available transmission capacity on profiles between PSE-Operator S.A., CEPS a.s., SEPS a.s., VET GmbH and E.ON Netz GmbH. The regional cooperation of eight TSOs from Central East Europe Region was further developed in respect to

congestion management and works on Flow Based Capacity Allocation methodology were continued in 2007.

- Year 2007 was marked by successful completion of ownership unbundling process of Polish TSO. This process was performed in 2 steps. The first step completed at the beginning of 2007covered the company 100 % ownership transfer from the parent company to the Ministry of the State Treasury. The second step finished at the end of 2007 dealt with transmission assets ownership transfer from previous parent company (at present the biggest Polish energy group – PGE SA) to PSE-Operator S.A. In result Polish TSO met in 2007 the requirements of ownership unbundling as defined in 3rd EC Package launched on 19 September 2007.

PT Portugal

On the 1st of July the Iberian market – MIBEL came into full operation with two negotiating poles, a spot market platform in Madrid – OMIE and a derivatives platform in Lisbon – OMIP.

RO Romania

Since 2005, Transelectrica is responsible for operating and performing monitoring activity for balancing market, ancillary services market and transfer capacity allocation market. During 2007, the markets developed as transparency and competition, even if the degree of competition is not yet considered satisfactory.

Transelectrica has developed its own systems of collecting, recording, processing and disseminating the information resulting from the centralised markets operation, aiming to increase the consistency of conclusions drawn from the markets monitoring activities. The relevant information for the markets participants, according with the Romanian Commercial Code, are published on the Transelectrica's dedicated websites.

In 2007 was launched the 2nd phase of the project for improving the balancing market informatic platform in which all the markets operated by Transelectrica will be integrated, this being a great advantage both for markets operating and monitoring activities.

Balancing Market

In 2007 the market share of Balancing Market was of 5.92 % from the total consumption, with 1.23 % less than the value registered in 2006. There were 3.49 TWh traded on the balancing market (with an average power of 399 MWh/h), from which the energy used for congestion management represented 0.3 TWh (with an average power of 34.79 MWh/h).

The energy traded for congestion management in 2007 was with 0.25 TWh bigger than in 2006, with an average power increased with almost 85 %. This big amount of energy for congestion management was caused either by bad weather conditions followed by some transmission lines tripping (during the winter) or by the extremely high consumption during the summer which togheter with a reduced generation in some areas of our power system led to congestions.

The number of balancing responsible parties (BRPs) has increased during 2007, reaching a maximum of 95 BRPs in October.

The analysis of market structure / concentration indicators (Herfindahl – Hirschman Index, S1 - market share of the largest market participant (%)) shows that the market is still highly concentrated and competition level reduced, even if there is an improvement towards last year.

Ancillary Services Market

In 2007 reserves were ensured both through regulated contracts and monthly auctions. Like in 2006, the number of participants is reduced leading to a highly concentrated market with a reduced competition level, especially for the secondary and fast tertiary reserves.

The very hot summer of 2007 has caused extremely high values of the internal consumption and very low hydro flows with severe consequences on the availability of reserves. For solving this problem, it started to operate the reserves capacity market beginning with August the 1st, 2007. The scope of this market is to ensure the quick recovery of the reserves, whenever they are extremely reduced due to variant reasons. Only one participant has contracted reserve on the reserve capacity market in November and December 2007.

Transfer Capacity Allocation Market

On the transfer capacity allocation market we perform yearly and monthly auctions for import / export on each border for 50% of the total NTC. The results of 2007 show an increase of the participants' number and an improvement of competition on every border, even if the results are not yet satisfactory.

x x x

During 2007, the market developed as transparency and competition. The new electricity law as also the national strategy, both adopted this year were boosting trade centralization, allowing to provide transparency, liquidity, monitoring.

The evaluation of the results of 2007 confirms expectations regarding the positive trend of the interest for the centralized markets during the entire year. The volume of traded electricity and of the related market share increased due to the growing number of participants (including the new comers in Romanian wholesale market) and the volume of their bids for all the products offered by the centralized markets.

By the end of the year there were indications on increased interest of the active players on European markets to involve in trading on the centralized markets operated by OPCOM. Correlated with the interest expressed by the neighboring countries stakeholders towards similar markets development, these inputs confirm the correctness of political decisions as also of the regulatory ones determining the emergence of the spot market as early as the beginning of liberalization and the present pattern of it (since 2005) and the launching of the other centralized markets (2005, 2007).

Day-Ahead Market

The Day-Ahead Market, along with the other products, makes up viable and exemplary reference within the framework of the last Athens Forum meetings, which represents a favorable premise for the endeavor towards the market enlargement through cooperation with the countries adherent to the regional treaty.

In 2007 there were 5.1 TWh traded, so increasing the traded volume since the launch of the new platform (June 30th, 2005) to 10.9 TWh. These 5.1 TWh represent on average 576 MWh/h, almost 23% more than the 2006 average. Related to the consumption, the volume of transactions in 2007 represents a share of 9.40%, 21% more than for 2006 (7.74%), while the growth from 2005 to 2006 was of 15%. The traded volume reflects the consumption's extent, the size of the wholesale market and of its competitive segment.

The average price was of 47.89 euro/MWh.

The increase of the volume is due to the participants' interest (75 participants have traded in 2007, the average number of daily active participants was 52 and the daily participation level has reached a peak of 58 in December. Their active participation in transactions makes possible the adjustment of the positions in the wholesale market and thus balancing most of the commitments with availabilities/necessities even since the day prior to the delivery date.

Centralized Market for Bilateral Contracts (public auctions)

Year 2007 ends with excellent results for the Centralized Market for Bilateral Contracts awarded through public auction. This mechanism, launched by OPCOM in December 2005 which allows the centralized trading of electricity for periods of time larger than one month, has met the expectations:

- The number of contracts concluded in the Centralized Bilateral Contracts Market (with deliveries in 2007 and 2008) is 5 times larger than the number concluded in 2006, reaching 158 contracts with a total volume of 11.9 TWh.
- It was provided the increase of the transparency in trading of bilateral contracts for electricity on the competitive segment of the wholesale market. We refer here to the trading mechanism as well as to the information offered to the public and to the participants (including since spring 2007 the contract price according with the new Electricity Law).
- The relevance of the prices on the Centralized Market for Bilateral Contracts – on average 48.35 euro/MWh - is demonstrated by the traded volume and by the number of active participants, 47 – the average number of participants/auction being 6. Also, the price is convergent with the DAM one. The weighted average price of these contracts was 50 euro/MWh.
- During 2007 there were already concluded contracts for delivery during 2008. The total quantity related to these contracts is of 7.6 TWh, representing a market share of 14.24 % from the net consumption of 2007.

Centralized Market for Bilateral Contracts with Continuous Negotiation (forward with physical delivery)

On 15th of March 2007 was launched the trading system of the Centralized Market for Bilateral Contracts with Continuous Negotiation (CMBC-CN), where a number of 82 contracts for 1 MWh, representing a total quantity of 22,208 MWh, were traded. This represents an on-line trading alternative, put at the disposal of

the registered market participants by the Romanian Power Market Operator, OPCOM SA. The product allows trading of standard bids meaning standardized conditions for electricity delivery with delivery periods equal and longer than one week.

Centralized Green Certificates Market

Even the trading period for the year 2007 has not yet ended, February 2008 being the last month in which the mandatory quota for green certificates established for the suppliers for the end consumers must be fulfilled, until now 17,709 certificates were traded, representing 53 % of the issued green certificates.

After the auction held in December on the Centralized Green Certificates Market 4,304 certificates were traded, at an average price of 42 euro/certificate.

The regulatory framework for E-RES promotion and the marketplace offered by OPCOM have attracted monthly new participants, more and more producers and suppliers of electricity have expressing interest in contributing to the establishment of the trading value for green certificates through the specific competitive mechanism of the centralized market provided by OPCOM.

Best practices

According to the best practices in the power exchanges world, the Romanian market operator OPCOM launched at the end of 2005 a product group dedicated financial market development, having as first targets the CBCM and forward with physical delivery (CBCM-CN) preparation. Following the same path and with similar rules, in December 14th 2007 a product group dedicated DAM was launched.

Beyond the national market framework, best practices were addressed when in September an Implementation Group was agreed, including ESO EAD (Bulgarian TSO), Transelectrica (Romanian TSO) and OPCOM (Romanian PX). A similar group Romania – Hungary is envisaged for 2008.

Conclusions

Trough the products that OPCOM is offering, a quantity of 11.6 TWh delivered during 2007 and representing 22 % from the national consumption was transparently traded.

At the same time, a quantity of 7.6 TWh, to be delivered during 2008, already representing over 14 % from 2008 forecasted consumption, was traded.

OPCOM had correctly informed the public and the market participants on how the transactions were concluded and published the related prices.

The shares of centralized trades, for deliveries during 2007 and 2008 is ensuring a consistent price signal for the Romanian wholesale electricity market, according with the political will expressed through the Energy Law and the National Strategy, enacted during 2007, strengthening the position of OPCOM at European market level, as a liquid, equidistant and fairly marketplace.

RS Republic of Serbia

The key events concerning market liberalization in Serbia during 2007 are as following:

- In 2007 Serbian Government has approved transmission tariff for the first regulatory period which is in force from January 1, 2008.
- Till the end of 2007 Energy Agency has issued 22 licenses for electricity trade on wholesale market.
- From July 1, 2007 EMS as Serbian Transmission System and Market Operator has implemented explicit auctions for monthly allocation of cross border capacities on all borders thus replacing previous system of partial use of pro-rata and explicit auctions which was in use in the first half of the year.
- New IT systems for scheduling (ESS), cross-border capacity allocation (TCA) and market management (MMS) were commissioned in autumn 2007. These systems are integrated with EMS/SCADA and system for remote acquisition of accounting and metering data (SRAAMD) based on ETSO standards.

SI Slovania

On 1st September 2007 coordinated allocation mechanism on Italian border was introduced

On 1st December 2007 coordinated allocation mechanism on Austrian border was introduced

SK Slovak Republic

Energy market evolution in Slovakia has been influenced by the existing energy legislation, regulation framework as well as portfolio of generation and transmission infrastructure.

Concerning energy legislation frame in the year 2007 Regulation Act (Act. No. 276/2201) was amended, resulting in changes of several provisions of Energy Act (Act. No. 656/2004). Objective of revision of Regulation Act was to allow complex price regulation and put whole regulation process under social control as well as structural transformation of regulation authority.

The necessity of Energy Act revision has been invoked particularly because of SOS directive transposition (Directive 2005/89/ES) as well as necessity in praxis earned knowledge application (e.g. modification of provisions concerning a state of emergency, conditions of electricity supply from renewable energy source modification). The process of amendment preparing proceeded in the second half-year of 2007, and finally, its ratification was finished during first quarter of the year 2008. The revision of Energy Act has number 112/2008 and is valid from 1st of April 2008.

Changes in Regulation Act resulted in changes in secondary legislation. In electricity market area on July 4, 2007 regulation of the Slovak Government Nr. 317/2007 was issued, by which standards for electricity market functioning were set up. This regulation i.e. in detail determines the issue of intra-day trade establishment on the determined area, basic period of evaluation and clearing of deviations, responsibility for deviation and deviation chaining, extension of publication of operational data etc.

Changes in energetic legislation were the reason for the amendment of SEPS, a. s. Operational Agenda.

The objective of SEPS, a.s. is to ensure the electricity transmission from producers to customers as well as exports, imports and transits of electricity via Slovak territory. In 2007, the consequent documents concerning electricity transmission were valid:

- Technical Conditions for Connection, Access and Transmission System Operation - amended in June 2006,

- Dispatch Order for Control of the Power System of the Slovak Republic,

- Trading Order SEPS, a.s. (approved by Regulatory Office for Network Industries on November 16, 2007 and valid from December 12, 2007).

The Slovak Republic belongs to countries with balanced mix of installed capacity, approximately one third of total installed power capacity is from nuclear a third from thermal and the last part comes from hydroelectric power plants.

In 2007, more than one half of electricity was produced in nuclear plants, almost one-third in thermal plants, hydroelectric power plants produced the rest.

Near the end of 2006 one of 440 MW blocks of nuclear power plant in Jaslovské Bohunice was closed down and moreover, more than 400 MW in thermal resources were closed down due to ecological reasons. Decrease in installed production resources let to decrease of production, as well as to the fact that Slovakia, since 1999 belonged to main electricity exporters, in 2007 became an importing country for the first time.

In the process of access negotiations with EU, the Slovak government accepted a commitment to close down (in 2006 and 2008) two 440 MW blocks of the nuclear power plant in Jaslovske Bohunice, i.e. by the end of 2008 by additional 440 MW of total installed power capacity will be lost due to this reason.

The objective of regulatory policy is to ensure non-discriminatory and transparent system performance in network industries. Since 2005 the price of basic electricity has been deregulated (except households). However, ancillary services will be further regulated.

The Slovak Republic has 400 and 220 kV interconnectors with all neighbouring countries except Austria. Due to its geographic location the Slovak Republic is significantly involved in electricity transits, especially in the north-south direction (from Poland to Hungary).

On the present, yearly, monthly and daily auctions take place on all Slovak cross-border profiles. On the profiles of SEPS/ČEPS, SEPS/PSE-O 5 TSO coordinated auctions (ČEPS, PSE-O, E.ON, VE-T, SEPS) are realized according to the common auction rules. Moreover, intra-daily auctions under special contract exist between SEPS and ČEPS on the profile of SEPS/ČEPS. No agreement about allocation of cross-border capacities has been concluded with the Ukrainian party, so that there are unilateral auctions based on yearly, monthly or daily basis on the profile of SEPS/WPS. Allocated auctions are unilaterally guaranteed by SEPS, market participants have to ensure transmission capacity on the Ukrainian side as well. On the profiles of SEPS/MAVIR, explicit auctions on yearly, monthly or daily basis take place. Yearly and monthly auctions are unilateral, each party (SEPS, a.s. and MAVIR) allocate concerned part of ATC (allocated transmission capacity) independently according to their own rules and the results of auctions are reciprocally accepted. Daily auctions are common. There are carried out for both parties (SEPS, a.s. and MAVIR) by SEPS, a.s.

APPENDIX

Appendix 1 Comments on Data Representativeness

Every national correspondent company is in charge of collecting data aggregated for the whole country.

Yet, in some countries, the collected data do not cover the entire national system. It might be due to a limited access to data on the distribution network, to production units connected to private grids for own consumption, etc.

National Representativeness index is the estimation of the percentage of the national value the collected data are representative of.

	2003		2004		2005		2006		2007	
	Generation	Load	Generation	Load	Generation	Load	Generation	Load	Generation	Load
AT	**84.0**	**82.0**	**90.0**	100.0	**90.0**	**88**	**90.0**	**88.0**	**-**	**-**
BG	100.0	100.0	100.0	100.0	100.0	100.0	**99.8**	**99.9**	**99.8**	**99.8**
DE	100.0	**91.0**	100.0	**91.0**	100.0	**91.0**	100.0	**91.0**	100.0	100.0
ES	**94.0**	**94.0**	**94.0**	**94.0**	**94.0**	**94.0**	**98.0**	**98.0**	**98.0**	**98.0**
PT	**92.0**	**92.0**	**94.0**	**94.0**	**92.0**	**92.0**	**97.0**	**97.0**	**97.0**	**97.0**

Tab. 23 National Data Representativeness

As generation adequacy is based on the comparison of load and generation, National Representativeness of load data and generation data should be almost identical to make the generation adequacy assessment reliable.

AT Austria

Concerning the consumption in the SAR 2006 the values were based on the consumption in the public grid and a (estimated) representativity factor. For the retrospect 2007 the total consumption was used (representativity = 100%).

BE Belgium

The reported figures are best estimates based on actual measurements and extrapolations from survey results.

CH Switzerland

The data for December 2007 are still missing. We hope that the Swiss Federal Office for Energy will publish it end March or in the beginning of April 2008. Then we will be able to complete the most important parts of the Excel sheets. However, at that time the data concerning the net generating capacity as of 31.12.2007 won't yet be available.

FR France

The monthly values given in the file UCTE SAR 2007, on the sheet 'Energy Balance', for France, are coherent with the annual definitive values. Therefore, there can be some small differences with the provisional values published each month in the monthly statistics.

GR Greece

The data representativeness referring to the Greek Interconnected System is 100%. The remote systems of the Greek Islands are not included.

The National representativeness, including the remote systems of the Greek Islands comes up to 91.16%.

IT Italy

Representativeness for consumption, peak load and generation are equal to 100%.

LU Luxembourg

Consumption: 100%

Peak Load: 100%

Generation: 100%

NL The Netherlands

For Consumption and Generation we use the figures of our National Statistics Office, which are complete data for the whole country.

Regarding the peak load; TenneT only measures the load on the high voltage grid in which isn't included load covered by generation on lower voltage levels. On basis of analysis we've concluded that the national load is on average about 7% higher than the load as measured by TenneT, so the given data are risen by 7%. We have to keep in mind that this approximation might cause seasonally a slight inaccuracy.

PL Poland

Remark concerning Power Balance table: for August there is second Wednesday due to 3rd Wednesday there was the holiday in Poland and this day was not typical weekday.

PT Portugal

In general our statistics refer to the consumption supplied by the public grid, about 97% of the national consumption. This means that in the auto-production we consider the surplus delivered to the public grid, but not the auto-consumption. However, in the case co-generators use the legal possibility to sell all the energy produced (including the auto-consumption), to profit from special status regime tariff, we consider all that production.

UA-W Ukraine-West

Representatives Western Ukraine of both energy and power data are 100%.

Appendix 2 Additional Energy Tables

Twh	AT	BA	BE	BG	CH	CZ	DE	ES	FR	GR	HR	HU	IT	LU	ME	MK	NL	PL	PT	RO	RS	SI	SK	UA-W
Nuclear Power	-	-	45.9	13.6	26.3	24.6	133.2	52.7	418.6	-	-	13.8	-	-	-	-	4.0	-	-	7.1	-	5.4	14.2	-
Fossil Fuel Power	21.1	7.8	33.7	22.0	2.1	54.0	372.2	157.5	55.0	47.6	6.8	21.8	253.6	2.9	0.8	5.0	87.8	145.1	26.8	33.7	29.0	4.8	7.1	8.1
including lignite sources	*-*	*7.8*	*-*	*13.0*	*-*	*41.6*	*143.2*	*20.7*	*-*	*31.1*	*-*	*4.9*	*-*	*-*	*0.8*	*4.6*	*-*	*47.5*	*-*	*18.0*	*28.5*	*4.3*	*1.7*	*-*
including hard coal sources	*6.3*	*-*	*0.9*	*6.9*	*-*	*7.4*	*133.2*	*47.3*	*23.2*	*-*	*2.2*	*1.6*	*43.4*	*-*	*-*	*-*	*-*	*93.8*	*11.7*	*4.4*	*-*	*0.4*	*1.7*	*-*
including gas sources	*9.4*	*-*	*22.3*	*-*	*-*	*3.7*	*71.9*	*84.8*	*14.5*	*13.2*	*1.8*	*13.9*	*142.6*	*2.9*	*-*	*-*	*-*	*3.8*	*10.5*	*10.3*	*0.5*	*0.1*	*1.4*	*-*
including oil sources	*1.3*	*-*	*0.1*	*-*	*-*	*0.2*	*7.3*	*4.5*	*7.1*	*3.3*	*1.2*	*0.5*	*24.9*	*-*	*-*	*0.4*	*-*	*-*	*1.1*	*0.8*	*-*	*-*	*-*	*-*
including mixed sources	*-*	*-*	*9.0*	*2.1*	*-*	*-*	*-*	*-*	*-*	*-*	*1.6*	*-*	*23.9*	*-*	*-*	*-*	*-*	*-*	*0.2*	*-*	*-*	*-*	*-*	*-*
including non attributable sources	*4.2*	*-*	*1.4*	*-*	*2.1*	*1.0*	*16.6*	*0.3*	*10.2*	*-*	*-*	*0.9*	*18.8*	*-*	*-*	*-*	*87.8*	*-*	*3.4*	*0.2*	*-*	*-*	*2.3*	*8.1*
Renewable Energy Sources	4.2	-	3.6	-	1.1	0.3	64.7	31.0	7.9	1.5	0.1	1.5	9.4	0.2	-	-	6.9	0.6	6.1	0.0	-	-	0.3	-
including wind farms	2.0	-	0.5	-	-	0.1	39.5	26.6	4.0	1.3	0.0	0.1	4.2	0.1	-	-	3.4	0.5	4.0	0.0	-	-	0.0	-
including other RES	2.2	-	3.1	-	1.1	0.2	25.2	4.4	3.9	0.2	0.0	1.4	5.2	0.1	-	-	3.5	0.1	2.1	-	-	-	0.3	-
Hydro Power	34.9	4.0	1.7	3.1	36.4	2.5	27.2	29.9	63.2	3.4	4.4	0.2	38.5	0.9	1.3	1.1	0.1	2.7	10.2	15.6	10.1	2.8	4.5	0.1
Non Clearly Identifiable Energy Sources	3.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Generation	**63.7**	**11.8**	**84.9**	**38.7**	**65.9**	**81.4**	**597.3**	**271.1**	**544.7**	**52.5**	**11.3**	**37.3**	**301.5**	**3.9**	**2.0**	**6.1**	**98.8**	**148.4**	**43.1**	**56.4**	**39.0**	**13.1**	**26.1**	**8.2**
Physical Imports	22.1	3.5	15.8	3.0	48.6	10.2	44.3	8.8	10.5	6.4	7.9	14.7	48.6	6.8	4.8	3.4	23.1	7.8	9.6	4.0	8.9	6.1	13.6	2.9
Physical Exports	15.5	4.1	9.0	7.5	50.6	26.4	63.3	14.5	67.2	2.1	1.5	10.7	2.6	2.9	2.2	0.9	5.6	13.1	2.2	6.1	8.7	5.7	11.9	6.8
Physical Exchanges Balance	**6.6**	**- 0.6**	**6.8**	**- 4.5**	**- 2.1**	**- 16.2**	**- 19.0**	**- 5.8**	**- 56.7**	**4.3**	**6.4**	**4.0**	**46.0**	**4.0**	**2.6**	**2.5**	**17.6**	**- 5.4**	**7.5**	**- 2.1**	**0.2**	**0.4**	**1.7**	**- 4.0**
Pumped Storage Energy	3.0	-	1.7	0.6	2.1	0.6	9.1	4.3	7.7	1.1	-	-	7.6	1.1	-	-	-	0.9	0.5	0.2	0.9	-	0.2	-
Consumption	**67.4**	**11.2**	**89.9**	**33.6**	**61.8**	**64.7**	**569.2**	**261.0**	**480.3**	**55.7**	**17.7**	**41.3**	**339.9**	**6.8**	**4.7**	**8.6**	**116.4**	**142.2**	**50.0**	**54.1**	**38.4**	**13.5**	**27.6**	**4.3**

Tab. 24 Energy Balance 2007

Twh	AT	BA	BE	BG	CH	CZ	DE	ES	FR	GR	HR	HU	IT	LU	ME	MK	NL	PL	PT	RO	RS	SI	SK	UA-W
Nuclear Power	-	-	44.3	18.1	26.2	24.5	158.7	57.4	428.7	-	-	12.7	-	-	-	-	3.3	-	-	5.2	-	5.3	16.6	-
Fossil Fuel Power	22.9	7.5	32.6	18.9	2.3	49.9	361.5	149.3	53.8	42.7	5.4	18.8	250.3	3.2	1.1	4.9	84.0	145.7	28.4	34.2	27.6	4.7	5.4	8.3
including lignite sources	*0.7*	*7.5*	*-*	*10.6*	*-*	*39.2*	*138.5*	*20.2*	*-*	*29.2*	*-*	*5.0*	*-*	*-*	*1.1*	*4.9*	*-*	*49.2*	*-*	*18.9*	*27.4*	*4.3*	*1.7*	*-*
including hard coal sources	*6.4*	*-*	*1.4*	*6.4*	*-*	*6.0*	*126.9*	*42.2*	*21.6*	*-*	*2.0*	*1.7*	*40.2*	*-*	*-*	*-*	*-*	*92.4*	*14.1*	*3.6*	*-*	*0.4*	*2.2*	*-*
including gas sources	*10.6*	*-*	*21.1*	*-*	*-*	*3.7*	*70.8*	*80.2*	*14.0*	*10.2*	*0.3*	*10.3*	*132.2*	*3.2*	*-*	*-*	*-*	*4.1*	*9.8*	*10.3*	*0.2*	*0.0*	*1.2*	*-*
including oil sources	*1.6*	*-*	*0.1*	*-*	*-*	*0.2*	*9.5*	*6.5*	*7.8*	*3.3*	*0.8*	*0.0*	*31.3*	*-*	*-*	*-*	*-*	*-*	*1.4*	*1.3*	*-*	*-*	*-*	*-*
including mixed sources	*-*	*-*	*8.8*	*1.9*	*-*	*-*	*-*	*-*	*-*	*-*	*2.3*	*1.8*	*28.6*	*-*	*-*	*-*	*-*	*-*	*0.2*	*-*	*-*	*-*	*-*	*-*
including non attributable sources	*3.7*	*-*	*1.0*	*-*	*2.3*	*0.7*	*15.8*	*0.3*	*10.4*	*-*	*-*	*-*	*18.0*	*-*	*-*	*-*	*84.0*	*-*	*2.9*	*0.1*	*-*	*-*	*0.3*	*8.3*
Renewable Energy Sources	3.3	-	3.4	-	1.1	0.2	50.6	26.7	5.6	1.3	0.1	1.2	8.1	0.1	-	-	7.5	0.3	4.8	0.0	-	-	0.0	-
including wind farms	1.7	-	0.4	-	0.0	0.0	30.7	22.7	2.3	1.2	0.0	0.0	3.0	0.1	-	-	2.7	0.2	2.9	0.0	-	-	0.0	-
including other RES	1.6	-	3.0	-	1.1	0.1	19.9	4.1	3.3	0.1	0.0	1.1	5.1	0.1	-	-	4.8	0.1	1.9	-	-	-	0.0	-
Hydro Power	37.3	5.9	1.6	4.5	32.6	3.2	26.4	28.9	61.0	6.4	6.1	0.2	42.9	0.9	1.7	1.6	0.1	2.8	11.2	18.0	10.9	3.1	4.4	0.1
Non Clearly Identifiable Energy Sources	0.4	-	-	-	-	-	-	-	-	-	-	0.7	-	-	-	-	-	-	-	-	-	-	2.6	-
Net Generation	**63.9**	**13.4**	**81.9**	**41.5**	**62.1**	**77.8**	**597.2**	**262.3**	**549.1**	**50.4**	**11.6**	**33.5**	**301.3**	**4.2**	**2.8**	**6.6**	**94.9**	**148.9**	**44.4**	**57.4**	**38.5**	**13.1**	**29.0**	**8.4**
Physical Imports	21.3	3.0	18.9	1.1	48.8	11.5	46.1	9.1	8.3	6.1	8.4	15.3	46.6	6.8	2.9	3.0	27.3	4.8	8.6	1.6	8.6	7.7	9.3	1.8
Physical Exports	14.4	5.2	8.7	8.9	46.1	24.1	65.9	12.4	71.5	1.9	2.7	8.1	1.6	3.3	1.1	1.2	5.9	15.8	3.2	5.9	8.5	7.5	10.9	5.8
Physical Exchanges Balance	**6.9**	**- 2.2**	**10.2**	**- 7.7**	**2.7**	**- 12.6**	**- 19.8**	**- 3.3**	**- 63.2**	**4.2**	**5.7**	**7.2**	**45.0**	**3.6**	**1.9**	**1.8**	**21.5**	**- 11.0**	**5.4**	**- 4.2**	**0.1**	**0.2**	**- 1.6**	**- 4.1**
Pumped Storage Energy	3.3	-	1.7	0.5	2.7	0.9	9.1	5.3	7.5	0.6	-	-	8.8	1.1	-	-	-	1.4	0.7	0.2	0.9	-	0.2	-
Consumption	**67.4**	**11.2**	**90.4**	**33.3**	**62.1**	**64.2**	**568.3**	**253.7**	**478.4**	**54.0**	**17.2**	**40.7**	**337.5**	**6.6**	**4.7**	**8.4**	**116.3**	**136.5**	**49.2**	**53.0**	**37.7**	**13.4**	**27.2**	**4.3**

Tab. 25 Energy Balance 2006

Seasonal Consumption	2003		2004		2005		2006		2007	
	Summer TWh	Winter TWh	Summer TWh	Winter TWh	Summer TWh	Winter TWh	Summer TWh	Winter TWh	Summer TWh	Winter TWh
AT	25.6	30.0	26.0	30.6	26.1	31.0	31.4	36.0	31.5	35.8
BA	4.6	5.7	4.7	6.0	5.1	6.0	5.2	6.0	5.2	6.0
BE	45.4	39.9	41.0	46.6	41.2	46.7	42.4	48.0	42.2	47.7
BG	12.5	17.9	15.3	20.3	15.9	20.7	14.3	19.0	15.1	18.5
CH	27.8	31.3	27.6	32.8	28.2	33.5	28.4	33.8	28.3	33.5
CS	16.2	23.0	16.8	23.1	17.4	24.3				
CZ	26.3	33.6	27.2	34.3	27.8	34.9	28.7	35.5	29.3	35.4
DE	237.7	269.8	263.1	298.1	264.1	299.1	267.1	301.2	267.5	301.7
ES	109.7	114.0	115.0	120.4	119.6	127.2	124.0	129.8	126.2	134.8
FR	200.4	250.4	209.8	269.4	209.9	273.3	206.3	272.1	207.5	272.8
GR	25.4	24.4	25.8	25.4	26.7	26.2	27.2	26.8	28.7	27.0
HR	7.1	8.4	7.3	8.7	7.7	9.0	8.0	9.2	8.3	9.3
HU	18.3	20.2	18.1	20.2	18.7	20.6	19.4	21.3	20.0	21.3
IT	159.6	160.0	159.9	165.4	162.9	167.5	166.5	171.0	168.2	171.7
LU	2.9	3.2	3.0	3.3	3.0	3.3	3.2	3.5	3.2	3.5
ME							2.1	2.5	2.1	2.5
MK	1.9	2.7	3.1	4.3	3.4	4.7	3.4	5.0	3.5	5.1
NL	52.7	57.4	52.7	58.5	54.8	59.8	55.2	61.1	55.2	61.2
PL	57.4	69.3	60.0	70.6	60.0	70.7	63.0	73.5	66.3	75.9
PT	20.6	22.5	21.7	23.8	22.8	25.1	23.4	25.7	23.8	26.2
RO	23.0	26.4	23.5	27.2	24.0	27.9	24.9	28.2	25.6	28.5
RS							18.9	19.1	19.5	18.9
SI	6.0	6.4	6.1	6.5	6.7	6.1	6.4	6.9	6.6	6.9
SK	11.7	14.7	11.9	14.4	11.9	14.4	12.6	14.7	12.8	14.8
UA-W	1.6	2.5	1.8	2.6	1.8	2.6	1.9	2.5	1.9	2.4
UCTE	**1 089.0**	**1 239.2**	**1 141.4**	**1 312.5**	**1 159.6**	**1 334.5**	**1 183.8**	**1 352.3**	**1 198.6**	**1 361.5**

Tab. 26 National Seasonal Consumption Retrospect

Physical Exchanges	Imports				Exports				Balance (Import - Export)			
	2004 TWh	2005 TWh	2006 TWh	2007 TWh	2004 TWh	2005 TWh	2006 TWh	2007 TWh	2004 TWh	2005 TWh	2006 TWh	2007 TWh
AT	16.500	20.261	21.257	22.130	13.300	17.648	14.407	15.511	3.200	2.613	6.850	6.619
BA	1.700	1.055	3.000	3.500	3.600	2.466	5.200	4.100	-1.900	-1.411	-2.200	-0.600
BE	14.600	14.328	18.853	15.788	6.800	8.024	8.695	9.037	7.800	6.304	10.158	6.751
BG	0.700	0.799	1.139	3.000	6.600	8.379	8.882	7.500	-5.900	-7.580	-7.743	-4.500
CH	37.700	47.084	48.788	48.568	38.400	40.734	46.085	50.630	-0.700	6.350	2.703	-2.062
CS	6.000	8.500	9.700		4.000	7.300	7.800		2.000	1.200	1.900	
CZ	9.800	12.351	11.466	10.204	25.500	24.985	24.097	26.357	-15.700	-12.634	-12.631	-16.153
DE	44.200	53.400	46.100	44.300	51.500	61.900	65.900	63.300	-7.300	-8.500	-19.800	-19.000
ES	8.100	10.212	9.093	8.773	11.100	11.555	12.373	14.523	-3.000	-1.343	-3.280	-5.750
FR	6.600	8.061	8.300	10.500	68.700	68.390	71.500	67.200	-62.100	-60.329	-63.200	-56.700
GR	4.900	5.618	6.100	6.400	2.000	1.837	1.900	2.100	2.800	3.800	4.800	5.800
HR	10.100	8.802	8.373	7.878	6.400	3.633	2.691	1.451	3.700	5.169	5.682	6.427
HU	13.800	15.635	15.270	14.680	6.300	9.411	8.062	10.690	7.500	6.224	7.208	3.990
IT	46.500	50.300	46.600	48.600	0.800	1.100	1.600	2.600	45.700	49.200	45.000	46.000
LU	6.500	6.401	6.830	6.845	3.100	3.151	3.275	2.886	3.400	3.250	3.555	3.959
ME			2.932	4.800			1.066	2.190			1.866	2.610
MK	2.000	2.395	2.998	3.388	0.800	0.796	1.202	0.905	1.200	1.599	1.796	2.483
NL	21.400	23.691	27.346	23.139	5.200	5.398	5.887	5.565	16.200	18.293	21.459	17.574
PL	5.300	5.003	4.774	7.752	14.600	16.189	15.775	13.110	-9.300	-8.300	-11.001	-5.358
PT	8.600	9.620	8.624	9.641	2.100	2.801	3.183	2.153	6.500	6.819	5.441	7.488
RO	1.700	1.605	1.635	3.954	3.000	4.520	5.884	6.052	-1.100	-1.100	-4.249	-2.098
RS			8.568	8.905			8.489	8.658			0.079	0.247
SI	4.300	9.325	7.706	6.106	5.000	9.548	7.477	5.683	-0.800	-0.800	-0.800	-0.800
SK	8.700	8.570	9.320	13.580	10.600	11.292	10.923	11.855	-1.900	-2.722	-1.603	1.725
UA-W	1.600	1.780	1.770	2.851	4.900	5.500	5.840	6.821	-3.300	-3.720	-4.070	-3.970
UCTE	**281.300**	**324.796**	**326.843**	**335.281**	**294.300**	**326.557**	**340.393**	**340.877**	**-13.000**	**2.382**	**-13.980**	**-5.319**

Tab. 27 Physical Exchanges Energy Retrospect

Appendix 3 Additional Power Tables

Net values in GW, at the reference time 11 AM on 3rd Wednesday		Jan.	Feb,	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	Nuclear Power	111.4	111.4	111.4	111.4	111.4	111.4	111.4	112.1	112.1	112.1	112.1	112.1
2	Fossil Fuels	324.3	324.3	325.2	326.6	328.1	328.6	330.0	330.7	331.6	332.8	333.0	333.8
2A	*of which, Lignite*	61.6	61.5	61.5	61.5	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.5
2B	*of which, Hard Coal*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*	*77.1*
2C	*of which, Gas*	*84.1*	*84.2*	*85.0*	*86.0*	*87.3*	*87.8*	*89.2*	*89.8*	*90.7*	*91.9*	*91.9*	*92.7*
2D	*of which, Oil*	*35.3*	*35.3*	*35.3*	*35.5*	*35.6*	*35.6*	*35.6*	*35.7*	*35.7*	*35.6*	*35.8*	*35.8*
2E	*of which, Mixed Fuels*	*32.2*	*32.3*	*32.3*	*32.4*	*32.4*	*32.4*	*32.4*	*32.4*	*32.4*	*32.5*	*32.5*	*32.5*
2F	*of which, Non Attributable Fossil Fuels*	*33.9*	*34.0*	*34.0*	*34.0*	*34.1*	*34.1*	*34.1*	*34.1*	*34.1*	*34.1*	*34.2*	*34.2*
3	Renewable Energy Sources (other than hydro)	*53.3*	*54.0*	*54.6*	*54.9*	*55.5*	*56.1*	*56.6*	*57.0*	*57.4*	*57.8*	*58.5*	*58.7*
3A	*of which, Wind*	40.5	41.0	41.4	41.7	42.2	42.7	43.0	43.3	43.7	44.0	44.6	44.7
3B	*of which, Other RES*	*12.8*	*13.0*	*13.2*	*13.2*	*13.3*	*13.4*	*13.6*	*13.7*	*13.8*	*13.8*	*13.9*	*14.0*
4	Hydro power (total)	135.4	135.3	135.3	135.3	135.3	135.3	135.3	135.3	135.3	135.3	135.3	135.4
5	Not Clearly Identifiable Energy Sources	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
6	**Net Generating Capacity (6=1+2+3+4+5)**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**	**625.5**
7	Non-Usable Capacity	102.9	106.0	101.0	121.3	115.5	116.7	118.3	138.4	129.8	132.2	122.9	109.3
8	Maintenance and Overhauls	18.7	22.3	30.0	47.3	56.9	58.2	52.2	55.7	52.8	45.0	39.0	20.0
9	Outages	16.8	15.2	16.3	18.4	14.3	16.6	12.8	14.4	17.7	17.5	18.4	13.5
10	System Services Reserve	29.5	29.4	28.6	29.1	29.6	27.4	27.5	27.3	28.3	28.3	29.2	29.2
11	**Unavailable Capacity (11=7+8+9+10)**	**167.9**	**172.8**	**175.9**	**216.2**	**216.3**	**218.9**	**210.8**	**235.7**	**228.6**	**223.0**	**209.6**	**172.0**
12	Reliably Available Capacity (12=6-11)	457.6	453.4	451.7	413.2	415.2	413.9	423.8	400.6	409.1	416.2	430.6	469.2
13	Load	359.6	349.4	351.3	317.8	318.2	329.5	332.5	269.0	321.4	329.7	358.8	384.1
14	**Remaining Capacity (14=12-13)**	**97.9**	**104.0**	**100.4**	**95.4**	**97.0**	**84.4**	**91.2**	**131.6**	**87.7**	**86.5**	**71.8**	**85.1**
15	Margin Against Monthly Peak Load	40.7	32.9	19.4	31.7	18.4	15.3	15.2	68.2	24.8	35.1	37.4	31.7
16	**Remaining Margin (17=14-15)**	**57.2**	**71.1**	**81.0**	**63.7**	**78.7**	**69.1**	**76.0**	**63.3**	**62.9**	**51.4**	**34.4**	**53.4**
17	Physical Imports	45.4	40.3	40.6	38.2	33.5	34.0	35.9	32.8	34.9	39.4	36.4	34.4
18	Physical Exports	44.1	40.0	38.4	35.8	31.7	35.8	33.5	34.7	34.7	38.0	32.3	31.4
19	**Exchanges (19=17-18)**	**1.3**	**0.3**	**2.2**	**2.4**	**1.8**	**- 1.8**	**2.4**	**- 1.9**	**0.2**	**1.4**	**4.0**	**3.0**

Tab. 28 UCTE Power Balance 2007

End of December	Hydro Power	Nuclear Power	Fossil Fuel	Renewable Energy Sources	Not Clearly Identified	NGC
	GW	GW	GW	GW	GW	GW
AT	11.853	-	6.344	0.985	-	19.1
BA	2.100	-	2.000	-	-	4.1
BE	1.411	5.825	8.226	0.861	-	16.3
BG	2.700	2.000	5.750	0.009	-	10.4
CH	13.400	3.200	0.100	0.300	0.500	17.5
CZ	2.200	3.500	10.500	0.300	-	16.5
DE	9.110	20.274	70.452	28.380	-	128.2
ES	19.179	7.458	44.208	13.438	-	84.2
FR	25.400	63.300	24.100	3.100	-	115.9
GR	3.200	-	8.008	0.800	-	12.0
HR	2.071	-	1.700	0.055	-	3.8
HU	0.046	1.799	5.360	0.485	0.723	8.4
IT	21.100	-	69.100	3.400	-	93.6
LU	1.128	-	0.490	0.069	-	1.6
ME	0.700	-	0.200	-	-	0.9
MK	0.500	-	0.900	-	-	1.4
NL	-	0.500	18.911	4.372	-	23.7
PL	2.327	-	29.818	0.318	-	32.4
PT	4.950	-	6.703	2.397	-	14.0
RO	5.859	1.300	8.995	0.007	-	16.1
RS	2.831	-	5.524	-	-	8.3
SI	0.874	0.696	1.270	-	-	2.8
SK	2.429	2.200	2.580	0.063	-	7.2
UA-W	-	-	-	-	-	
UCTE	**135.4**	**112.1**	**331.2**	**59.3**	**1.2**	**639**

Tab. 29 **Net Generating Capacity per Primary Sources at the End of 2007**

Load	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	De GW
AT	8.472	8.410	8.384	7.745	7.721	7.797	7.859	7.404	7.596	8.026	8.740	8.8
BA	1.600	1.400	1.500	1.300	1.300	1.400	1.400	1.300	1.300	1.500	1.600	1.8
BE	12.394	12.213	11.979	11.308	11.384	11.605	10.466	8.908	11.571	12.017	12.712	12.9
BG	5.200	4.800	4.700	4.300	3.900	4.200	4.400	4.200	4.000	4.500	5.400	6.3
CH	9.161	9.066	9.239	8.367	8.113	8.693	8.209	7.851	8.792	8.563	9.477	9.7
CZ	9.300	9.100	8.900	8.200	8.000	7.900	7.900	7.900	8.000	8.300	9.700	9.9
DE	71.700	69.700	70.200	67.600	66.400	67.900	66.700	64.000	67.700	69.600	71.200	69.5
ES	38.732	37.235	37.535	33.561	34.242	34.908	37.541	31.165	34.051	33.323	36.530	40.4
FR	69.400	67.700	72.500	56.200	57.900	56.100	56.800	42.000	57.500	60.500	69.900	84.8
GR	7.300	7.100	6.700	6.600	7.500	9.000	9.400	6.100	7.500	6.800	7.200	8.2
HR	2.388	2.298	2.357	2.004	2.024	2.308	2.448	1.871	2.122	2.183	2.591	2.7
HU	5.710	5.714	5.497	5.303	5.144	5.781	5.976	5.470	5.347	5.593	5.782	5.9
IT	51.100	50.600	49.500	46.900	47.300	54.000	55.900	28.200	49.200	48.000	51.800	52.2
LU	0.952	0.903	0.896	0.893	0.809	0.849	0.839	0.600	0.932	0.889	0.907	0.8
ME	0.600	0.520	0.490	0.490	0.470	0.510	0.540	0.520	0.490	0.580	0.590	0.6
MK	1.188	1.056	1.041	0.964	0.802	0.927	0.951	0.871	0.830	1.014	1.256	1.3
NL	17.800	16.100	15.900	15.200	14.900	14.600	13.600	13.300	13.300	14.700	15.800	16.6
PL	19.415	19.411	19.159	17.684	17.528	17.520	17.602	17.326	17.887	18.766	20.260	21.1
PT	7.467	7.304	6.915	6.545	6.535	6.541	6.597	4.634	6.675	6.606	7.120	8.0
RO	7.218	6.873	6.362	6.270	6.430	6.774	7.175	6.117	6.304	6.782	7.428	8.1
RS	5.604	5.311	5.080	4.343	4.008	4.113	4.280	3.924	4.233	4.913	5.799	6.4
SI	1.907	1.835	1.827	1.710	1.796	1.844	1.841	1.367	1.786	1.839	1.956	1.9
SK	4.190	4.004	3.983	3.643	3.415	3.573	3.539	3.338	3.676	3.963	4.269	4.4
UA-W	0.762	0.738	0.726	0.599	0.556	0.618	0.600	0.643	0.587	0.675	0.762	0.8
UCTE	**359.6**	**349.4**	**351.4**	**317.7**	**318.2**	**329.5**	**332.6**	**269.0**	**321.4**	**329.6**	**358.8**	**38**

Tab. 30 **Load at Reference Time in 2007**

Services System Reserve	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700	0.700
BA	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
BE	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024
BG	1.400	1.400	1.280	1.289	1.280	1.270	1.260	1.260	1.260	1.260	1.400	1.400
CH	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
CZ	0.900	1.000	1.100	1.100	1.100	1.000	0.900	1.100	1.100	1.200	1.200	0.900
DE	7.837	7.130	6.795	7.570	7.658	7.253	7.285	7.647	7.295	6.984	7.012	6.973
ES	0.892	0.890	0.795	0.897	0.895	0.893	0.939	0.884	0.904	0.798	0.892	0.889
FR	4.911	4.893	5.010	4.944	5.003	3.475	3.490	3.468	3.693	4.616	4.727	4.687
GR	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800	0.800
HR	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
HU	0.476	0.752	0.665	0.584	0.788	0.607	0.613	0.652	0.591	0.553	0.810	0.810
IT	3.300	3.500	3.400	3.100	3.200	3.500	3.600	2.700	3.500	3.500	3.400	3.600
LU	-	-	-	-	-	-	-	-	-	-	-	-
ME	-	-	-	-	-	-	-	-	-	-	-	-
MK	0.144	0.144	0.144	0.144	0.144	0.144	0.144	0.144	0.144	0.144	0.144	0.144
NL	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400	0.400
PL	1.553	1.627	1.418	1.533	1.567	1.126	1.361	1.487	1.827	1.295	1.610	1.696
PT	0.758	0.753	0.735	0.727	0.720	0.721	0.772	0.742	0.761	0.762	0.788	0.807
RO	0.930	0.823	0.809	0.803	0.793	0.950	0.783	0.894	0.811	0.833	0.841	0.838
RS	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
SI	0.297	0.297	0.297	0.297	0.297	0.297	0.297	0.297	0.297	0.297	0.297	0.297
SK	0.672	0.707	0.698	0.661	0.678	0.698	0.577	0.599	0.668	0.640	0.653	0.733
UA-W	0.418	0.417	0.416	0.415	0.413	0.412	0.412	0.413	0.414	0.417	0.418	0.420
UCTE	**29.512**	**29.357**	**28.586**	**29.089**	**29.560**	**27.370**	**27.457**	**27.310**	**28.289**	**28.323**	**29.215**	**29.218**

Tab. 31 System Services Reserve in 2007

	Average Net Generating Capacity GW (1)	Average Overhauls Capacity GW	Average Overhauls Capacity % of (1)	Maximum Overhauls Capacity GW	Maximum Overhauls Capacity % of (1)	Maximum Overhauls Capacity 2007	Maximum Overhauls Capacity 2006	Maximum Overhauls Capacity 2005
AT	19.2	-	-	-	-	January	Jan	n.a.
BA	4.1	0.258	6.301	0.600	14.6	April	Apr	May
BE	16.3	0.837	5.141	1.905	11.7	September	Sep	Sep
BG	10.5	1.520	14.533	2.300	22.0	September	Jun	Jul
CH	17.5	0.267	1.524	1.900	10.9	August	Aug	Jul
CZ	16.4	1.425	8.711	2.900	17.7	September	Sep	Sep
DE	126.5	9.833	7.772	15.400	12.2	May	May	Jun
ES	81.2	1.931	2.377	5.999	7.4	November	Apr	Apr
FR	115.6	11.701	10.120	18.600	16.1	August	May	Aug
GR	12.0	0.517	4.306	1.900	15.8	April	May	Nov
HR	3.8	0.108	2.832	0.300	7.8	October	Oct	Sep
HU	8.3	0.393	4.713	0.909	10.9	April	Oct	Sep
IT	91.8	4.667	5.086	5.000	5.4	June	Aug	Nov
LU	1.7	0.032	1.902	0.385	22.8	April	Jan	Feb
ME	0.9	0.058	6.829	0.300	35.1	August	n.a.	n.a.
MK	1.4	0.195	13.794	0.403	28.6	June	May	May
NL	21.9	0.491	2.242	0.947	4.3	July	Nov	May
PL	32.4	2.803	8.660	4.428	13.7	May	Jul	Jul
PT	13.9	0.339	2.445	0.926	6.7	May	Sep	Oct
RO	15.8	1.875	11.879	2.812	17.8	June	Jul	Jun
RS	8.4	1.065	12.750	2.105	25.2	September	n.a.	n.a.
SI	2.8	0.249	8.751	0.767	27.0	October	Apr	Jul
SK	7.2	0.597	8.267	1.355	18.8	September	Apr	Apr
UA-W	2.5	0.351	13.791	0.565	22.2	August	Jul	Jul
UCTE	**632.0**	**41.512**	**6.568**	**58.216**	**9.211**	**June**	**May**	**May**

Tab. 32 Maintenance & Overhauls Characteristics in 2007

	Average Net Generating Capacity	Average Outages Capacity		Maximum Outages Capacity				
	GW (1)	GW	% of (1)	GW	% of (1)	2007	2006	2005
AT	19.2	-	-	-	-	January	n.a.	n.a.
BA	4.1	0.250	6.098	0.400	9.8	May	April	August
BE	16.3	0.474	2.913	1.167	7.2	October	May	June
BG	10.5	0.276	2.637	0.690	6.6	June	July	January
CH	17.5	-	-	-	-	n.a.	n.a.	April
CZ	16.4	0.342	2.089	1.300	7.9	April	November	December
DE	126.5	3.125	2.470	4.800	3.8	November	December	November
ES	81.2	2.861	3.522	5.193	6.4	September	August	August
FR	115.6	2.321	2.007	4.800	4.2	March	March	July
GR	12.0	0.417	3.472	0.900	7.5	January	August	June
HR	3.8	-	-	-	-	January	n.a.	November
HU	8.3	0.171	2.050	0.403	4.8	January	May	March
IT	91.8	1.958	2.134	3.000	3.3	June	April	August
LU	1.7	-	-	-	-	January	n.a.	n.a.
ME	0.9	0.017	1.951	0.200	23.4	May	n.a.	n.a.
MK	1.4	-	-	-	-	January	n.a.	n.a.
NL	21.9	1.000	4.567	1.000	4.6	January	January	n.r.
PL	32.4	1.289	3.982	2.353	7.3	October	November	October
PT	13.9	0.075	0.539	0.298	2.1	July	October	April
RO	15.8	1.051	6.657	1.438	9.1	January	December	February
RS	8.4	0.243	2.909	0.644	7.7	June	August	November
SI	2.8	-	-	-	-	January	n.a.	December
SK	7.2	0.100	1.390	0.550	7.6	August	November	April
UA-W	2.5	0.016	0.639	0.195	7.7	October	August	Sepember
UCTE	**632.0**	**15.985**	**2.529**	**18.403**	**2.912**	**November**	**May**	**May**

Tab. 33 Outages Characteristics in 2007

Non Usable	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	3.000	3.000	3.000	5.000	5.000	5.000	4.000	4.000	4.000	3.000	4.000	4.000
BA	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
BE	1.192	0.972	1.039	1.291	1.161	1.416	1.279	1.212	1.314	1.057	0.959	1.173
BG	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200	1.200
CH	4.500	4.500	4.500	2.100	2.100	2.100	2.100	2.100	2.100	4.500	4.500	4.500
CZ	2.100	2.500	3.200	2.000	2.300	2.300	2.400	2.300	2.000	2.300	1.900	1.800
DE	22.482	24.162	23.702	24.518	23.792	24.878	25.492	23.773	25.251	24.870	25.042	25.646
ES	20.141	21.702	17.672	21.535	20.422	22.592	23.278	22.908	24.043	26.682	25.461	22.923
FR	15.747	18.131	16.681	26.471	20.085	23.355	27.622	32.837	30.950	26.939	25.176	14.243
GR	0.800	1.000	1.000	1.200	1.200	1.000	0.800	0.800	0.800	1.200	1.200	1.200
HR	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
HU	0.996	0.987	1.002	1.067	1.194	1.413	1.498	1.481	1.140	1.065	0.924	0.903
IT	18.800	17.200	18.900	23.300	23.700	14.500	12.000	29.100	23.400	25.200	19.700	19.500
LU	-	0.027	0.015	0.027	0.025	0.025	0.025	-	0.015	-	-	-
ME	-	-	-	-	-	-	-	-	-	-	-	-
MK	-	-	-	-	-	-	-	-	-	-	-	-
NL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
PL	3.026	2.727	2.804	3.284	4.412	7.719	7.706	6.939	4.491	4.173	4.071	3.750
PT	2.809	2.379	1.460	2.252	2.733	2.590	2.838	3.275	3.353	3.589	3.177	3.104
RO	1.850	1.464	0.986	1.812	1.912	2.114	1.653	2.064	1.704	2.103	1.385	1.395
RS	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311	0.311
SI	0.264	0.152	0.166	0.189	0.224	0.212	0.216	0.281	0.086	0.249	0.266	0.240
SK	1.957	1.795	1.657	2.009	1.991	2.215	2.201	2.134	2.020	2.151	2.001	1.681
UA-W	0.457	0.457	0.407	0.454	0.472	0.433	0.407	0.364	0.353	0.342	0.363	0.393
UCTE	**102.9**	**106.0**	**101.0**	**121.3**	**115.5**	**116.7**	**118.3**	**138.4**	**129.8**	**132.2**	**122.9**	**109.3**

Tab. 34 Non Usable Capacity in 2007

RAC	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	15.482	15.482	15.482	13.482	13.482	13.482	14.482	14.482	14.482	15.482	14.482	14.482
BA	3.300	3.200	3.100	2.700	2.600	3.200	3.100	3.100	3.100	3.200	3.200	3.300
BE	12.531	13.722	13.001	13.757	12.315	12.662	12.575	13.203	12.013	11.982	12.461	13.058
BG	7.029	6.739	6.869	5.520	5.729	5.499	5.599	5.999	5.499	5.499	6.759	7.059
CH	12.000	12.000	12.000	14.400	14.400	13.400	14.100	12.500	14.400	12.000	12.000	12.000
CZ	12.900	11.600	11.000	10.900	10.800	10.500	11.500	10.600	10.000	10.900	12.200	12.500
DE	87.152	85.300	86.296	77.926	77.105	77.703	78.749	79.727	76.720	81.052	84.444	89.065
ES	55.217	53.183	58.077	52.055	52.984	50.097	53.067	53.663	52.378	50.266	47.544	58.834
FR	87.482	83.826	81.059	67.535	72.862	68.720	67.188	60.295	64.957	71.295	74.247	88.520
GR	9.008	9.308	9.308	7.708	8.808	9.808	10.208	9.508	9.808	9.408	8.508	9.708
HR	3.526	3.526	3.526	3.426	3.426	3.426	3.426	3.326	3.326	3.226	3.326	3.526
HU	6.296	6.376	5.566	5.513	5.410	5.687	5.621	6.105	5.526	6.658	6.480	6.590
IT	60.800	62.400	59.900	57.900	58.600	66.000	70.900	53.500	60.000	58.300	63.500	64.200
LU	1.687	1.660	1.672	1.275	1.662	1.662	1.662	1.687	1.672	1.687	1.687	1.687
ME	0.850	0.850	0.850	0.850	0.650	0.650	0.650	0.550	0.850	0.850	0.850	0.900
MK	1.266	0.965	0.952	0.965	1.266	0.863	0.965	1.154	0.965	1.154	1.077	1.266
NL	19.946	20.654	20.602	20.510	20.496	20.677	20.069	20.193	21.028	20.412	20.607	21.113
PL	26.351	26.191	24.801	22.754	21.415	18.547	17.994	19.438	20.581	21.350	22.485	24.139
PT	9.774	10.305	11.263	10.234	9.471	9.960	9.988	9.679	9.829	8.936	9.720	9.746
RO	10.365	10.912	11.611	10.272	9.631	8.678	9.430	9.723	10.301	9.876	11.028	11.965
RS	6.770	7.178	6.436	6.229	5.144	5.722	5.097	5.548	4.884	6.499	6.878	7.244
SI	2.073	2.134	2.377	2.107	1.900	1.927	2.219	1.971	2.318	1.528	2.207	2.233
SK	4.272	4.404	4.656	3.726	3.798	3.686	3.853	3.448	3.230	3.422	3.534	4.504
UA-W	1.474	1.475	1.331	1.480	1.269	1.309	1.345	1.202	1.212	1.210	1.383	1.546
UCTE	**457.6**	**453.4**	**451.7**	**413.2**	**415.2**	**413.9**	**423.8**	**400.6**	**409.1**	**416.2**	**430.6**	**469.2**

Tab. 35 Reliably Available Capacity in 2007

RC w/o X	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	7.010	7.072	7.098	5.737	5.761	5.685	6.623	7.078	6.886	7.456	5.742	5.607
BA	1.700	1.800	1.600	1.400	1.300	1.800	1.700	1.800	1.800	1.700	1.600	1.500
BE	0.137	1.509	1.022	2.449	0.931	1.057	2.109	4.295	0.442	- 0.035	- 0.251	0.074
BG	1.829	1.939	2.169	1.220	1.829	1.299	1.199	1.799	1.499	0.999	1.359	0.759
CH	2.800	2.900	2.800	6.000	6.300	4.700	5.900	4.600	5.600	3.400	2.500	2.200
CZ	3.600	2.500	2.100	2.700	2.800	2.600	3.600	2.700	2.000	2.600	2.500	2.600
DE	15.410	15.642	16.098	10.299	10.656	9.772	12.062	15.736	9.016	11.427	13.259	19.521
ES	16.485	15.948	20.542	18.494	18.742	15.189	15.526	22.498	18.327	16.943	11.014	18.349
FR	18.082	16.126	8.559	11.335	14.962	12.620	10.388	18.295	7.457	10.795	4.347	3.720
GR	1.708	2.208	2.608	1.108	1.308	0.808	0.808	3.408	2.308	2.608	1.308	1.508
HR	1.138	1.228	1.169	1.422	1.402	1.118	0.978	1.455	1.204	1.043	0.735	0.813
HU	0.586	0.662	0.069	0.210	0.266	- 0.094	- 0.355	0.635	0.179	1.065	0.698	0.619
IT	9.700	11.800	10.400	11.000	11.300	12.000	15.000	25.300	10.800	10.300	11.700	12.000
LU	0.735	0.757	0.776	0.382	0.853	0.813	0.823	1.087	0.740	0.798	0.780	0.842
ME	0.250	0.330	0.360	0.360	0.180	0.140	0.110	0.030	0.360	0.270	0.260	0.250
MK	0.078	- 0.091	- 0.089	0.001	0.464	- 0.064	0.014	0.283	0.135	0.140	- 0.179	- 0.120
NL	2.146	4.554	4.702	5.310	5.596	6.077	6.469	6.893	7.728	5.712	4.807	4.513
PL	6.936	6.780	5.642	5.070	3.887	1.027	0.392	2.112	2.694	2.584	2.225	3.033
PT	2.306	3.001	4.348	3.690	2.936	3.419	3.391	5.044	3.154	2.331	2.599	1.717
RO	3.147	4.039	5.249	4.002	3.201	1.904	2.255	3.606	3.997	3.094	3.600	3.786
RS	1.166	1.867	1.356	1.886	1.136	1.609	0.817	1.624	0.651	1.586	1.079	0.752
SI	0.166	0.299	0.550	0.397	0.105	0.083	0.378	0.604	0.532	- 0.311	0.251	0.249
SK	0.082	0.400	0.673	0.083	0.383	0.113	0.314	0.110	- 0.446	- 0.541	- 0.735	0.079
UA-W	0.712	0.737	0.605	0.881	0.713	0.691	0.745	0.559	0.625	0.535	0.621	0.718
UCTE	**97.9**	**104.0**	**100.4**	**95.4**	**97.0**	**84.4**	**91.2**	**131.6**	**87.7**	**86.5**	**71.8**	**85.1**

Tab. 36 Remaining Capacity without Exchanges in 2007

RM w/o X	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	6.232	6.695	6.832	5.186	5.303	5.311	6.298	6.483	6.033	6.609	5.303	5.044
BA	1.400	1.400	1.400	1.000	1.100	1.700	1.600	1.500	1.500	1.400	1.300	1.200
BE	- 1.187	0.363	0.336	1.670	0.387	0.658	0.586	0.998	- 0.061	- 0.712	- 1.262	- 1.147
BG	1.061	0.591	1.045	0.251	1.166	0.849	0.800	1.223	0.626	- 0.077	0.424	0.171
CH	2.600	2.700	2.600	5.800	6.100	4.500	5.700	4.400	5.400	3.200	2.300	2.000
CZ	3.100	2.100	1.800	2.000	2.700	2.400	3.400	2.400	1.500	1.500	1.900	2.300
DE	9.732	9.936	12.087	6.994	3.728	4.493	7.468	9.197	2.547	5.979	6.059	10.521
ES	11.848	12.497	18.316	15.479	17.046	13.171	14.029	14.762	15.018	13.223	6.032	13.958
FR	1.182	6.026	6.459	- 0.265	14.662	11.220	9.188	3.495	4.257	- 1.105	- 6.653	- 0.480
GR	0.508	1.108	1.508	0.208	1.108	- 0.592	- 0.192	0.008	1.208	1.808	0.308	0.708
HR	0.785	0.833	0.878	0.951	1.158	0.915	0.700	0.770	0.900	0.490	0.389	0.428
HU	0.070	0.186	- 0.489	- 0.228	- 0.358	- 0.450	- 0.699	0.090	- 0.311	0.464	- 0.122	0.008
IT	7.400	9.400	9.300	7.900	7.600	11.600	14.300	2.600	8.800	7.700	8.300	7.300
LU	0.671	0.637	0.649	0.296	0.684	0.649	0.674	0.824	0.678	0.666	0.641	0.626
ME	0.250	0.330	0.360	0.360	0.180	0.140	0.110	0.030	0.360	0.270	0.260	0.250
MK	0.078	- 0.091	- 0.089	0.001	0.464	- 0.064	0.014	0.283	0.135	0.140	- 0.179	- 0.120
NL	1.446	3.854	4.002	4.610	4.896	5.377	5.769	6.193	7.028	5.012	4.107	3.813
PL	4.620	4.699	4.120	2.857	3.400	0.413	- 0.215	0.781	0.553	0.233	0.229	1.410
PT	0.891	1.654	3.501	2.872	2.453	2.916	2.538	2.489	2.595	1.739	1.577	0.647
RO	2.729	3.282	3.682	3.180	2.959	1.559	1.909	2.656	3.164	2.183	2.697	3.284
RS	1.166	1.867	1.356	1.886	1.136	1.609	0.817	1.624	0.651	1.586	1.079	0.752
SI	0.028	0.125	0.354	0.198	- 0.017	- 0.038	0.303	0.090	0.359	- 0.612	0.131	0.146
SK	0.082	0.299	0.547	- 0.174	0.228	0.106	0.249	- 0.044	- 0.537	- 0.624	- 0.817	0.079
UA-W	0.526	0.568	0.476	0.668	0.569	0.659	0.674	0.493	0.481	0.305	0.442	0.521
UCTE	**57.2**	**71.1**	**81.0**	**63.7**	**78.7**	**69.1**	**76.0**	**63.3**	**62.9**	**51.4**	**34.4**	**53.4**

Tab. 37 Remaining Margin without Exchanges in 2007

Exchanges Import-Export	Jan GW	Feb GW	Mar GW	Apr GW	May GW	Jun GW	Jul GW	Aug GW	Sep GW	Oct GW	Nov GW	Dec GW
AT	2.514	0.725	- 0.656	- 0.693	0.139	- 0.940	- 2.357	- 0.794	- 2.131	- 0.757	- 0.474	- 0.442
BA	0.100	- 0.200	- 0.100	- 0.100	0.200	-	-	- 0.200	- 0.200	- 0.200	- 0.500	- 0.100
BE	1.618	0.288	1.045	- 0.445	0.926	0.647	0.533	- 0.090	2.359	1.535	1.636	1.351
BG	- 0.110	- 0.250	- 0.270	- 0.730	- 0.100	- 0.880	- 0.630	- 0.570	- 0.750	- 0.660	- 0.640	- 0.520
CH	0.700	- 0.300	0.200	- 0.600	- 3.100	- 2.500	- 4.000	- 1.400	- 2.900	- 0.800	1.000	- 1.500
CZ	- 2.300	- 1.400	- 1.100	- 1.800	- 1.700	- 0.900	- 1.700	- 1.500	- 1.100	- 1.500	- 1.600	- 1.700
DE	- 2.497	- 0.482	- 4.071	0.935	3.788	2.277	5.116	4.133	1.734	1.247	- 1.530	- 3.702
ES	1.262	- 0.209	- 1.751	- 1.360	- 0.980	- 1.125	- 0.478	- 0.501	- 1.953	- 1.902	0.009	- 0.018
FR	- 10.500	- 8.200	- 2.100	- 5.800	- 7.400	- 10.100	- 4.700	- 10.700	- 6.300	- 6.700	0.200	3.200
GR	0.100	0.300	0.500	0.700	-	0.700	0.800	0.500	0.300	0.400	0.200	0.300
HR	0.553	0.936	0.681	0.675	0.610	0.742	0.692	0.738	0.766	0.372	0.827	0.763
HU	0.492	0.603	0.733	0.807	0.550	0.848	0.794	0.454	0.805	0.418	0.050	0.009
IT	7.000	7.200	7.100	7.000	5.600	6.100	5.800	3.000	6.900	6.900	4.000	4.200
LU	0.428	0.308	0.277	0.598	0.337	0.251	0.151	0.542	0.362	0.343	0.165	0.214
ME	0.410	0.308	0.147	0.245	0.127	0.497	0.304	0.503	0.207	0.415	0.376	0.380
MK	0.190	0.215	0.250	0.223	0.146	0.424	0.329	0.315	0.302	0.235	0.410	0.392
NL	2.987	2.267	2.131	3.350	3.387	3.016	1.987	3.136	1.508	1.434	1.085	1.535
PL	- 0.740	- 1.764	- 0.688	- 0.965	- 0.690	- 0.859	- 0.079	- 0.165	- 1.304	- 1.090	- 1.154	- 0.961
PT	- 0.601	0.528	0.836	0.791	0.388	0.604	- 0.109	0.978	1.206	1.187	- 0.011	- 0.031
RO	- 0.413	- 0.558	- 0.448	0.043	- 0.011	- 0.345	- 0.113	- 0.058	- 0.358	- 0.428	- 0.601	- 0.593
RS	0.339	0.329	0.096	- 0.169	- 0.139	- 0.457	0.132	- 0.045	0.389	- 0.038	0.352	0.244
SI	0.032	- 0.029	- 0.017	- 0.134	0.158	0.167	- 0.080	- 0.087	- 0.070	0.605	0.032	0.086
SK	0.246	0.160	- 0.060	0.379	- 0.099	0.604	0.579	0.446	0.803	0.859	0.717	0.373
UA-W	- 0.497	- 0.496	- 0.503	- 0.544	- 0.351	- 0.550	- 0.549	- 0.543	- 0.352	- 0.496	- 0.504	- 0.499
UCTE	**1.313**	**0.279**	**2.232**	**2.406**	**1.786**	**- 1.780**	**2.421**	**- 1.909**	**0.223**	**1.379**	**4.045**	**2.982**

Tab. 38 Exchange Balance (Import-Export) in 2007

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