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**COMMISSION STAFF WORKING PAPER**

**Second benchmarking report on  
the implementation of the internal electricity and gas market**

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### Second benchmarking report on the implementation of the internal electricity and gas market

(updated report incorporating Candidate Countries)

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# SECOND BENCHMARKING REPORT ON THE IMPLEMENTATION OF THE INTERNAL ELECTRICITY AND GAS MARKET

## EXECUTIVE SUMMARY

### Background

The European Council in Barcelona in March 2002 welcomed the first benchmarking report of the Commission concerning the effective opening of the internal market for gas and electricity<sup>1</sup> and called on the Commission to update it annually before every Spring European Council. This Report contains the final updated results of the Commission's second benchmarking exercise.<sup>2</sup> The report now includes preliminary results for candidate countries for which a limited amount of information has been collected during 2002. There is also an Annex on the status of reforms in countries participating in the south east Europe electricity market.

The Energy Council has now reached a common position on amendments to the electricity and gas Directives and a Regulation on cross border electricity exchanges. If agreed under the co-decision procedure, this will mean that all non-household customers will be eligible to change supplier by 1 July 2004 and all customers by 1 July 2007. The agreement also envisages legal unbundling of transmission system operators by 2004 and of distribution systems by 2007. Finally, under the agreement, network access will be on the basis of published tariffs with the methodology for tariff setting approved in advance by a nominated regulatory authority in all Member States.

Candidate countries will initially be required to implement the existing Directives on Accession. If the Council and Parliament agree the new package of measures, these will also have to be transposed in due course. However many candidate countries have already gone further than the current minimum requirements, particularly for electricity. Most accession countries have adopted legal unbundling for the transmission system operator and all envisage regulated third party access. For gas, progress in the candidate countries is not as well advanced. Unbundling requirements are currently very minimal and some candidate countries retain negotiated network access, which would not be possible according to the proposed revision to the Directive.

### Implementation of the Electricity Directive: Detailed Evaluation

In existing Member States, there has been some progress in the electricity sector since 2001 in terms of the general functioning of the market particularly in Germany, Austria and the Netherlands. However, there remain areas that are causing particular difficulties as follows:

- differential rates of market opening continue to reduce the scope of benefits to customers from competition, leading to higher prices than otherwise to small businesses and households, and also promote distortion of competition between energy companies by allowing the possibility of cross-subsidies at a time when companies are restructuring themselves into pan-European suppliers;

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<sup>1</sup> SEC(2001) 1957, 3 December 2001

<sup>2</sup> **Changes to data and assessments from the initial report, SEC (2002) 1038, are in bold underline.**

- disparities in access tariffs between network operators which, due to the lack of transparency caused by insufficient unbundling and inefficient regulation, may form a barrier to competition;
- the high level of market power among existing generating companies associated with a lack of liquidity in wholesale and balancing markets which impedes new entrants;
- insufficient interconnection infrastructure between Member States and, where congestion exists, unsatisfactory methods for allocating scarce capacity.

**Table 1 Implementation of the Electricity Directive**

	Declared market opening (%)	Unbundling: transmission system operator\owner	Unbundling: Distribution system operator	Regulator	Overall network tariffs	Balancing conditions favourable to entry	Biggest three generators' share of capacity (%)
Austria	100	Legal	Accounting	ex-ante	above average	moderate	45
Belgium	52	Legal	Legal	ex-ante	average	unfavourable	96 (2)
Denmark	100	Legal	Legal	ex-post	average	favourable	78
Finland	100	Ownership	Management	ex-post	average	favourable	45
France	34	Management	Accounting	ex-ante	average	moderate	92
Germany	100	Legal	Accounting	NTPA <sup>1</sup>	above average	moderate	64
Greece	34	Legal\Mgmt	Accounting	ex-ante	average	moderate	97 (1)
Ireland	56	Legal\Mgmt	Management	ex-ante	average	moderate	97 (1)
Italy	70	Own\Legal	Legal	ex-ante	average	moderate	69
Lux	57	Management	Accounts	ex-ante	above average	unfavourable	n.a.
Neth	63	Ownership	Management	ex-ante	average	moderate	59
Portugal	45	Legal	Accounting	ex-ante	average	moderate	82
Spain	100	Ownership	Legal	ex-ante	average	favourable	83
Sweden	100	Ownership	Legal	ex-post	average	favourable	90
UK	100	Ownership	Legal	ex-ante	average	favourable	36
<b>Candidate Countries</b>							
Estonia	10	Management	Not examined in this report	ex-ante	not examined in this report	not examined in this report	98 (1)
Latvia	11	Legal		ex-ante			95 (1)
Lithuania	21	Legal		ex-ante			98 (2)
Poland	51	Legal		ex-ante			47
Czech R	30	Legal		ex-ante			77
Slovakia	41	Legal		ex-ante			80 (1)
Hungary	30	Accounts		unknown			unknown
Slovenia	64	Legal		ex-ante			90
Romania	33	Legal		ex-ante			70
Bulgaria	15	Accounts		ex-ante			61
Turkey	23	Legal		ex-ante			65
Cyprus	0	Management		ex-ante			100
Malta	0	Derogation		unknown			100

<sup>1</sup> NTPA=Negotiated third party access

Table 1 above summarises the position in each Member State and candidate country in relation to the obstacles identified above. Where structures are in place which are likely to have negative consequences for the development of the internal market, these are shaded red. Green shading means more positive conditions exist. If no judgement can be made the boxes

are left unshaded. The more boxes that are shaded red, the less likely it is that competition will develop to its full potential.

The table highlights a number of improvements for existing Member States since the first report in terms of the market opening timetable and unbundling of the transmission networks. However the new coverage of unbundling for distribution networks shows a generally unsatisfactory position. Network charges still appear high in certain Member States and there is still evidence that balancing mechanisms are unfavourable to new entrants. Wholesale market concentration remains an issue in most Member States and little progress, other than in Italy, has been made. For candidate countries there is a somewhat incomplete picture at present. Although transmission unbundling has generally been carried out in a satisfactory way, there remain obstacles in terms of incomplete market opening and possible concentration.

### **Implementation of Gas Directive: Detailed Evaluation**

As far as gas is concerned, there has been less progress in existing Member States since last year than for electricity, the most significant barriers being as follows:

- similar concerns to those for electricity about the unequal level of market opening;
- inappropriate tariff structures and large and unexplained disparities in network access tariffs between countries and regions for transportation and distribution transactions which form a barrier to competition and provide revenue for cross-subsidies;
- lack of transparency regarding the availability of infrastructure capacity, both internally and cross-border, as well as capacity reservation procedures which do not allow third parties the flexibility to change their gas sources or their customer base without incurring increased costs;
- concentration of gas production and import in a few companies and slow development of gas trading hubs which often means that new entrants find it very difficult to buy wholesale gas on reasonable terms, although this situation could be significantly improved with better arrangements for cross border trade and the creation of an fully integrated single market;
- balancing regimes which are unnecessarily stringent, being non-market based and not reflective of the costs incurred.

Table 2 below summarises the position in each Member State and the candidate countries highlighting characteristics in the same way as for the electricity section. Again, practices likely to impede competition are shaded red, with positive conditions in green.

A more detailed evaluation has been carried out for gas in this year's report, which considers the additional areas of unbundling of distribution system operators, capacity booking procedures as well as balancing conditions and wholesale gas markets. There is also a detailed assessment of overall network tariffs.

**Table 2 Implementation of the Gas Directive**

	Declared market opening (%)	Unbundling transmission system operator	Unbundling Distribution system operator	Regulator	Transmission tariff Structure	Overall network tariffs	Capacity booking procedure	Balancing conditions favourable to entry Y/N	Concentration in wholesale market
Austria	100	Legal	Legal	ex-ante	under review	n.a.	moderate	favourable	yes
Belgium	59	Legal	Legal	ex-ante	distance	normal	flexible	moderate	unknown
Denmark	35	Legal	Legal	ex-post	postalised	<u>normal</u>	<u>moderate</u>	<u>moderate</u>	yes
France	20	Accounts	Accounts	<u>ex-ante</u>	distance	high	inflexible	moderate	yes
Germany	100	Accounts	Accounts	NTPA <sup>1</sup>	distance	high	inflexible	unfavourable	moderate
Ireland	82	Management	Management	ex-ante	entry-exit	normal	flexible	moderate	unknown
Italy	<u>100</u>	Legal	Legal	ex-ante	entry-exit	normal	flexible	favourable	yes
Luxbg	72	Accounts	Accounts	ex-ante	postalised	normal	flexible	unfavourable	yes
Neth	60	Management	Accounts	hybrid	<u>entry-exit</u>	normal	flexible	moderate	yes
Spain	<u>100</u>	Ownership	Legal	ex-ante	postalised	normal	flexible	favourable	<u>yes</u>
Sweden	47	Accounts	Accounts	ex-post	postalised	high	flexible	n.a.	yes
UK	100	Ownership	Ownership	ex-ante	entry-exit	normal	flexible	favourable	moderate
Estonia	80	Accounts	Not covered in this report	ex-ante	not decided	not covered in this report	not covered in this report	not covered in this report	yes
Latvia	0	Accounts		NTPA	not decided				yes
Lithuania	80	Accounts		ex-post	Postalised				yes
Poland	34	None		ex-ante	Postalised				yes
Czech R	0	Accounts		Ex-ante	not decided				yes
Slovakia	33	Accounts		ex-ante	Postalised				yes
Hungary	0	Management		Ex-ante	not decided				yes
Slovenia	50	Accounts		NTPA	Postalised				yes
Romania	25	Legal		Ex-ante	Postalised				moderate
Bulgaria	73	Accounts		ex-ante	Postalised				yes
Turkey	80	Accounts		ex-ante	not decided				yes

<sup>1</sup> NTPA=Negotiated third party access

The table shows improvements in many Member States concerning the market opening timetable; and in Spain, Austria and the Netherlands for unbundling. Another significant advance was the abandonment of the joint sales organisation by Norwegian gas producers following a case opened by the Commission.<sup>3</sup> However, overall, the picture is generally behind that in the electricity sector. The situation in candidate countries is even more negative. Very few measures supporting competition have been taken and there is a clear problem of concentration of gas supply sources.

### Results of market opening for customers (Member States only)

The obstacles highlighted in the sections above would appear to have had some effect on the impact of the market opening in Member States. Table 3 below reviews the current **(July 2002) price** level and trends in prices for different customer groups. Member States have been grouped according to whether prices are low, medium or high relative to the EU average, and to whether prices have increased (>5%), been stable (±5%), or reduced (>5%) since the entry into force of the Directives.

<sup>3</sup> Commission Press Release IP\02\1084 17 July 2002

**Table 3 Summary of energy price levels: July 2002**

ELECTRICITY			
Large Users			
trend since 1/1999	Low	Med.	High
Falling	S	L UK E	D
Stable	SF	F NL <u>EL</u>	
Rising		DK	IT IRL B <u>P</u>

Austria: no data

ELECTRICITY		
Small Commercial		
Low	Med.	High
S <u>UK</u>	A I	D B L
SF	P E F	IRL
DK	NL EL	

ELECTRICITY		
Household		
Low	Med.	High
EL <u>A</u>	E UK	D I
S	F	B P L
DK <u>SF</u>	IRL <u>NL</u>	

GAS			
Large Users			
trend since 7/2000	Low	Med.	High
Falling	F <u>S</u>	E	<u>L</u>
Stable		B <u>DK, I</u>	<u>D</u>
Rising		AT UK	

Ireland, NL: no data

GAS		
Small Commercial		
Low	Med.	High
	S <u>E</u>	<u>DK</u>
	B L IRL	I
UK NL	F <u>D</u>	A

GAS		
Household		
Low	Med.	High
DK		
UK L	<u>IRL</u> B <u>I</u>	E
NL	<u>S A</u>	D F

Changes from January 2002 prices in **bold underline**

It is worth noting that, in a number of cases, price trends are distorted somewhat by regulatory rebalancing of distribution tariffs between different customer groups. This has occurred, for example, in both Italy and Ireland in recent years for electricity. Such re-balancing makes it difficult to come to any conclusions about the effects of market opening in these cases.

For electricity, it can be seen that prices in the UK, Germany and Austria have fallen across all consumer groups as a result of full market opening while prices in Sweden and Finland are also falling or reasonably stable at low levels. In other Member States, there is usually a group, which is either missing out on falling prices, or experiencing rising prices.

For gas, it appears that, other than in Denmark, price reductions for larger users have often been offset by high or increasing bills for small businesses and households. This applies, for example, to France, Spain and Sweden. Until recently it could be seen that the lack of effective market opening for gas in Germany was accompanied by high and, in some cases, rising prices. **However this trend has been partially reversed in the July 2002 data for Germany especially for higher consumption households and small business customers.** In the UK, with full and effective market opening, prices to domestic users have been kept relatively low.

**Table 4 : Switching Estimates for the period 1998-2001**

	<b>ELECTRICITY</b>				<b>GAS</b>			
	Large eligible industrial users		Small commercial/ domestic		Large eligible industrial users		Small commercial/ domestic	
	switch	switch or renegotiate	switch	switch or renegotiate	switch	switch or renegotiate	switch	switch or renegotiate
Austria	20-30%	unknown	5-10%	unknown	<2%	unknown	not eligible	
Belgium	2-5%	30-50%	not eligible		unknown	unknown	not eligible	
Denmark	>50% <sup>4</sup>	>80%	not eligible		2-5%	unknown	not eligible	
Finland	unknown	>50%	5-10%	10-20%	not eligible		not eligible	
France	10-20%	unknown	not eligible		20-30%	unknown	not eligible	
Germany	20-30%	>50%	5-10%	10-20%	<2% <sup>5</sup>	unknown	<2%	unknown
Greece	nil.	nil.	not eligible		not eligible		not eligible	
Ireland	10-20%	unknown	not eligible		20-30%	unknown	not eligible	
Italy	>50%	100%	not eligible		10-20%	unknown	2-5%	unknown
Luxembourg	10-20%	>50%	not eligible		5-10%	100%	not eligible	
Netherlands	20-30%	100%	not eligible		30-50%	unknown	not eligible	
Portugal	5-10%	unknown	not eligible		not eligible		not eligible	
Spain	10-20%	>50%	not eligible		20-30%	unknown	not eligible	
Sweden	unknown	100%	10-20%	>50%	<2%	unknown	not eligible	
UK	>50%	100%	30-50%	n.a.	>50%	unknown	30-50%	>50%
<b>Candidate Countries</b>								
Estonia	not covered in this report							
Latvia								
Lithuania								
Poland								
Czech R								
Slovakia								
Hungary								
Slovenia								
Romania								
Bulgaria								
Turkey								
Cyprus								
Malta								

source: Eurostat, Information provided by survey.

Table 4 reports estimates of the degree of customer activity in terms of switching and renegotiating supplier. For electricity it shows that, in almost all Member States, the majority of large eligible customers have by now taken the opportunity to explore alternative suppliers, even if they end up retaining the previous one. For smaller customers it is of particular note that customer switching in Germany and Austria has increased in the last year. The degree of customer activity for gas is more disappointing in general. Some progress has been made in Spain, Italy and Ireland for large users. However for smaller customers only the UK, to date, has been able to provide real customer choice to the same degree as for electricity.

During 2003 Member States, supported by Eurostat, will be carrying out a more detailed evaluation of customer activity. This will include a comprehensive survey of customers and

<sup>4</sup> for 2001 only

<sup>5</sup> this is thought to represent 10% of consumption



additional information such as the extent to which foreign suppliers have penetrated in each country.

### **Public Service Issues**

A broader range of information has been collected from Member States in this year's report in terms of the measures being taken to ensure public service in a competitive market. It shows that Member States are aware of the need to ensure security of supply, to deliver high levels of service to all customers and to defend the Community's environmental objectives. Key issues being addressed in Member States include:

- the projected security of supply position for electricity in certain regions such as the Nordic countries and Ireland as well as the longer term issues relating to gas supplies from outside the EU;
- continuing attention on the need to ensure low income customers should benefit from competition and continue to have access to electricity at an affordable price and that disconnection should be a last resort;
- measures to increase the share of renewable energy and combined heat and power (CHP), and to encourage demand management.

Evidence from surveys of consumers shows a continued high level of satisfaction with the quality of service<sup>6</sup>. However some doubts were expressed concerning the difficulties faced by households in making fair comparisons of prices and dealing with intrusive marketing techniques. These concerns, and the vital importance of electricity and gas as a service of general economic interest, underline the need for continued government regulation of these sectors after market opening measures have taken place.

Limited data has been collected for candidate countries and it is difficult to draw clear conclusions regarding the trends in the quality of service. However for electricity in particular, the position in terms of reserve generation capacity is currently very favourable. This however is likely to erode over time as demand grows and the some plant reaches the end of its economic life.

### **Overall Conclusions**

This analysis again supports the hypothesis that full market opening, combined with appropriate structural measures relating to unbundling and regulation, is necessary to deliver consistent benefits across all consumer groups. In particular, it is clear that smaller consumers in markets without full and effective market opening are unable to benefit from competitive conditions and are likely to suffer in relative terms as a consequence.

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<sup>6</sup> Eurobaromètre 58 - L'opinion des consommateurs sur les services d'intérêt général (décembre 2002) DG SANCO

# SECOND BENCHMARKING REPORT ON THE IMPLEMENTATION OF THE INTERNAL ELECTRICITY AND GAS MARKET

## MAIN REPORT

### 1. BACKGROUND TO THIS REPORT

This report contains the final conclusions of the Commission following its second benchmarking exercise of the European gas and electricity market. The report considers in detail the regimes in place for electricity and gas in each Member State and also, partially, for candidate countries. It makes use of information collected in a detailed survey of regulators, governments and industry participants. These surveys have been followed up where necessary by contacts between officials of DG Energy and Transport and the governments and/or industry representatives in the countries concerned.

### 2. LEGISLATIVE MEASURES

Table 5 below sets out the basic legislative position by country for both electricity and gas as at the end of February 2003, showing the proportion of the market open to competition, the relevant thresholds, and information on the regulation of the market and unbundling.

For electricity, several Member States have extended market opening since the previous report. Both Spain and the Flanders region of Belgium will open their market in 2003. Italy has recently opened the market to customers above 0.1GWh/year. For gas, there have been increases in market opening in the last year, with Austria, Spain and Italy moving to 100% market opening. Both Denmark and the Flanders region of Belgium have brought forward full market opening to 2003-04.

Regarding structural measures, the regulator has recently taken control of the gas sector, as well as electricity, in Austria, France and Ireland. Germany is the only Member State to retain a model without sectoral regulation but relies mainly on an ex-post control by its competition authorities. In terms of unbundling of transmission system operators (TSOs) there have been further measures taken in a number of countries such as Italy, Belgium and the Netherlands.

**Table5 : Measures Adopted by Member States in Implementing the Directives**

	Electricity						Gas					
	Market opening	size of open market TWh	eligibility threshold	100% in/by	Unbundling transmission	Network access	Market opening	size of open market bcm	eligibility threshold	100% in/by	Unbundling transmission	Network access
Austria	100%	52	-	2001	Legal	Reg.	100%	7.0	-	2003	Legal	Reg.
Belgium <sup>7</sup>	52%	40	1/10GWh	2003/7	Legal	Reg.	59%	8.5	5mcm	2003/6	Legal	Reg.
Denmark	<b>100%</b>	32	-	2003	Legal	Reg.	35%	1.7	25mcm	2004	Legal	Reg.
Finland	100%	75	-	1997	Ownership	Reg.	Derogation <sup>8</sup>					
France	<b>37%</b>	131	<b>7 GWh</b>	<b>2007</b>	Management	Reg.	20%	7.5	25mcm	<b>2007</b>	Accounts	<b>Reg.</b>
Germany	100%	483	-	1999	Legal <sup>9</sup>	Neg.	100%	77.0	-	2000	Accounts	Neg.
Greece	34%	15	1kV	<b>2007</b>	Legal/Mgmt	Reg.	Derogation					
Ireland	<b>56%</b>	8	<b>0.1 GWh</b>	2005	Legal/Mgmt	Reg.	82%	3.0	2 mcm	2005	Management	Reg.
Italy	<b>70%</b>	191	<b>0.1 GWh</b>	<b>2007</b>	Own\Legal.	Reg.	<b>100%</b>	62.1	-	2003	Legal	Reg.
Luxembourg	57%	3	20 GWh	<b>2007</b>	Management	Reg.	72%	0.5	15mcm	<b>2007</b>	Accounts	Reg.
Netherlands	63%	62	3*80 A	2003	Ownership	Reg.	60%	22.3	1 mcm	2003	Management	Hybrid
Portugal	45%	17	1kV	<b>2004</b>	Legal	Reg.	Derogation					
Spain	<b>100%</b>	188	-	2003	Ownership	Reg.	<b>100%</b>	12.9	-	2003	Ownership <sup>10</sup>	Reg.
Sweden	100%	129	-	1998	Ownership	Reg.	47%	0.4	35mcm	2006	Accounts	Reg.
UK	100% <sup>11</sup>	330	-	1998	Ownership	Reg.	100%	93.8	-	1998	Ownership	Reg.
<b>Candidate Countries</b>												
Estonia	10%	1	40GWh		Management	Reg.	80%	0.7	'industry'		Account	Reg
Latvia	11%	1	40GWh		Legal	Reg.	0%	0.0	-		Account	Neg
Lithuania	26%	1	20GWh		Legal	Reg.	80%	2.1	15mcm		Account	Reg
Poland <sup>12</sup>	51%	71	10GWh		Legal	Reg.	34%	4.1	25mcm		None	Reg
Czech R	30%	20	40GWh		Legal	Reg.	0%	0.0	-		Account	Hybrid
Slovakia	41%	11	40GWh		Legal	Reg.	33%	2.5	25mcm		Account	Reg. <sup>13</sup>
Hungary	30-35%	13	6.5GWh		Accounts	Reg.	0%	0.0	-		Management	Reg
Slovenia	64%	7	41kW		Legal	Reg.	50%	0.5	25mcm		Account	Neg
Romania	33%	15	40GWh		Legal	Reg.	25%	4.0	5mcm		Legal	Reg.
Bulgaria <sup>14</sup>	15%	6	100GWh		Accounts	Reg.	73%	2.3	80 mcm		Account	Reg.
Turkey	23%	23	9GWh		Legal	Reg.	80%	12.4	1mcm		Account	Reg.
Cyprus	-	0			Management	Reg.						
Malta	-	0			Derogation	S. Buyer						

For candidate countries the picture varies considerably. Progress has been fastest to date in Slovenia in terms of the degree of market opening. For unbundling, the candidates are reasonably well advanced for electricity but there is less progress for gas. Most have chosen regulated TPA, particularly for electricity.

<sup>7</sup> The lower thresholds and earlier opening dates refer to the Flanders region only.

<sup>8</sup> There is a monopoly in Finland for the import of gas, all of which is imported from Russia, but a secondary market exists.

<sup>9</sup> Though not required in the German Energy Law, German TSOs have unbundled legally on a voluntary basis

<sup>10</sup> **Gas Natural retains a c.40% share and is the largest shareholder in Enagas, the TSO**

<sup>11</sup> In Northern Ireland the electricity market is only 35% open.

<sup>12</sup> Currently open for domestic production only

<sup>13</sup> Negotiated for transit

<sup>14</sup> The Bulgarian gas market is only open for domestic production

### 3. REGULATION AND SETTLEMENT OF DISPUTES

The importance of the role of sectoral regulators was highlighted in the previous benchmarking report. The Commission's proposal for an amendment of the electricity and gas Directives sets out a minimum level of competences for the national regulatory authority.

Annex A section 1 reviews the current status of regulators in each country. It shows that there have not been any major changes in the status of regulators since the last report. In several Member States the relevant Ministry retains a certain level of influence over regulatory decisions. For example, it may retain certain duties relating, for example, to network tariffs. This may reflect the fact that some regulatory authorities are still in the process of being established. It is also of note that the level of resources and staffing of regulators continues to grow.

Most regulators, including those in candidate countries, apply **ex-ante** regulation of network tariffs. The exceptions are Nordic countries which tend to operate **ex-post** control on tariffs combined with ownership unbundling. The power of the regulator to collect and scrutinise information also varies. Insufficient powers for the regulator in this area are likely to leave it over-dependent on the industry and damage its effectiveness. Clearly the degree of unbundling is important here since network businesses that are unbundled in ownership terms are likely to co-operate with regulatory agencies, at least in terms of ensuring fair access to networks.

### 4. ELECTRICITY INDICATORS

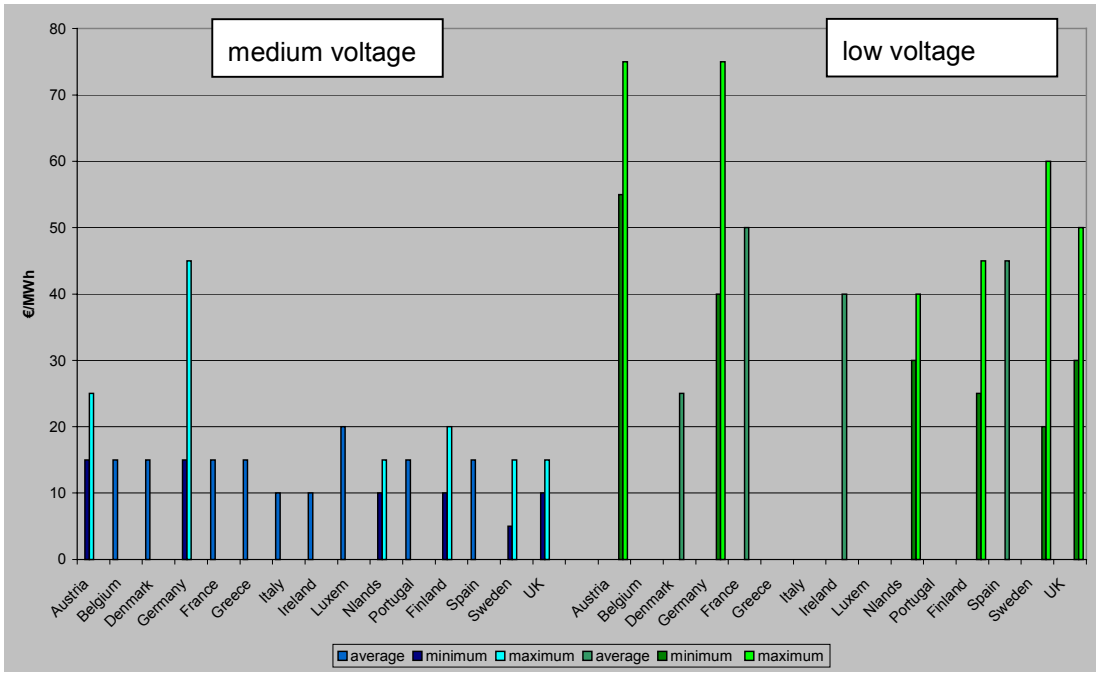
#### 4.1 Access to networks

##### *Network Tariffs*

There is a wide variation between Member States in terms of the number of companies operating the different parts of transmission and distribution network. This is, in most cases, a legacy of how electricity supply was organised prior to market opening. In some cases such as in France, Ireland and Greece, there is a single national company that owns both the transmission and most or all of the distribution system at national level. In other cases, like Germany and Austria, transmission systems are operated on a regional basis, with distribution based on numerous individual municipal areas. Other Member States fall in between these two extremes in terms of the number of system operators.

The graph below provides an analysis of the total network charges payable by customers in each Member State at two different voltage levels. Where there is a uniform charging system in the Member State concerned, a single price is given. Where numerous distribution networks exist with different charge levels, a maximum and minimum level are indicated. This is explained in more detail in Annex A, section 2.

**Graph 1 Estimated Level of Network Charges €/MWh (Existing MS only) <sup>15</sup>**



source: Survey responses, DG TREN analysis

The differences revealed in the graph above are similar to those reported in last year’s benchmarking exercise in that both Germany and Austria have some regions with higher network tariffs than the EU norm with other regions closer to the average. Network access in Luxembourg may also be considered expensive. These disparities in tariffs do not, per se, constitute illegitimate barriers to competition provided that they are transparent, non-discriminatory and cost reflective. However in some cases transparency is also lacking since there is not clear unbundling.

Clear unbundling of networks from their associated generation and supply businesses would help to ensure a better understanding of the underlying costs of the different business and guarantee that costs, profits and taxes are being allocated correctly. Annex A, section 3 examines the unbundling provisions in Member States and candidate countries for transmission. The most rigorous unbundling conditions for networks can be found in the Finland, Sweden, the UK and Italy. Requirements in many other countries are minimal by comparison.

*Balancing*

Another important issue for ensuring fair network access centres around the conditions associated with balancing. Balancing is carried out by the transmission system operator (TSO) who usually charges network users for the service of providing “top-up” or disposing of “spill” energy. The conditions for balancing are important for new entrants since they often have a smaller portfolio of clients and the risk of imbalances are usually higher. Annex C reviews the systems for balancing in terms of the derivation and level of charges and the procedures that have to be followed.

<sup>15</sup> Excludes all taxes and charges relating to public service obligations, stranded costs etc. Transmission costs are included, as are metering costs. Calculation assumptions shown in Annex A, section 2.

In most Member States the price of balancing electricity is now established on the basis of market principles, with the methodology used approved by the regulator. In other cases the prices are subject to direct regulation. However, in Belgium and Luxembourg it would appear that the TSO controls balancing without any regulatory intervention or a market process and there is some evidence that this makes conditions for new entrants unfavourable.

It is important to remember that market-based mechanisms should always be coupled with appropriate regulation. In particular, large incumbent generators may be able to use their market power to extract a high price for balancing energy to the disadvantage of smaller suppliers without their own sources of generation. This is demonstrated in Annex C where, in some cases, there is a large margin between the charges made for a negative imbalance and the compensation received for a positive imbalance. In this event the safeguards of direct regulatory intervention such as in France, Portugal and Ireland may be an advantage.

Other more detailed aspects of the balancing process relate to the length of the balancing period, the timing of “gate closure” and the possibility for customers to group their imbalances and thereby reduce overall exposure to imbalance charges. Again, the position on these varies by Member State and there are various shortcomings. Greater integration of balancing markets would be desirable and reduce the scope for incumbents to exercise market power.

## **4.2 MARKET STRUCTURE AND TRADE BETWEEN MEMBER STATES**

### *Wholesale Market*

For the electricity market, Table 6 below reports information collected by Eurostat on the generation of electricity as well as information supplied by candidate countries. It shows that a significant degree of concentration in generation persists in many cases. As already noted, the existence of generators with dominant market share is unlikely to be conducive to competition without regulatory control of wholesale and balancing markets. Thus, in order to deliver more effective competition many Member States have already carried out some release of generation capacity from the dominant suppliers, such as the UK and Italy. Recent divestment by Enel has reduced their market share considerably.

Other Member States, such as France and Ireland, have made capacity from the incumbent generator available to the wholesale market through an auction procedure. In both cases, this was the result of merger cases dealt with by the Commission.

**Table 6 Market Development Indicators: Concentration and New Entry**

	Companies with at least 5% share of installed capacity <b>2000 data</b>	Top 3 share (% installed capacity) <sup>16</sup> <b>2000 data</b>	Installed generation capacity (GW) a	Import capacity ATC (GW) b	import capacity as % of installed capacity b ÷ a	Expected new capacity in next 3 years (% installed capacity)	Power exchange Y/N
Austria	5 <sup>17</sup>	45%	18.2	<b>3.9</b>	<b>21%</b>	2%	Y
Belgium	2	96%(2)	15.7	<b>3.9</b>	<b>25%</b>	1%	N
Denmark	3	78%	12.7	<b>3.7</b>	<b>29%</b>	10%	Y
Finland	4	45%	16.2	<b>3.0</b>	<b>19%</b>	1%	Y
France	1	92%	115.4	<b>13.6</b>	<b>12%</b>	0%	Y
Germany	4	64%	118.3	<b>11.1</b>	<b>9%</b>	1%	Y
Greece	1	97%(1)	10.3	<b>1.1</b>	<b>11%</b>	34%	N
Ireland	1	97%(1)	4.8	<b>0.2</b>	<b>5%</b>	17%	N
Italy	4	69%	71.3	<b>6.1</b>	<b>8%</b>	8%	(Y)
Lux	n.a.	n.a.	1.2	<b>1.2</b>	<b>100%</b>	n.a.	N
Neth	6	59%	21.0	<b>4.5</b>	<b>21%</b>	3%	Y
Portugal	3	82%	10.7	<b>0.9</b>	<b>8%</b>	5%	(Y)
Spain	4	83%	52.6	<b>2.1</b>	<b>4%</b>	9%	Y
Sweden	3	90%	32.7	<b>6.7</b>	<b>21%</b>	n.a.	Y
UK	8	36%	78.9	<b>2.1</b>	<b>3%</b>	4%	Y
<b>Candidate Countries</b>							
Estonia	1	98% (1)	3.1	2.0	75%	not examined in this report	N
Latvia	1	95% (1)	2.0	3.6	>100%		N
Lithuania	2	98% (2)	6.1	3.1	50%		Y
Poland	6	47%	34.6	2.7	8%		Y
Czech R	1	77%	14.3	2.2	15%		Y
Slovakia	2	90%	7.4	2.8	38%		N
Hungary	5	unknown	unknown	6.0	unknown		N
Slovenia	2	90%	2.7	2.2	80%		Y
Romania	3	70%	21.9	1.0	4%		Y
Bulgaria	7	61%	10.2	2.2	20%		N
Turkey	2	65%	28.3	1.9	7%		N
Cyprus	1	100%	0.9	-	-		N
Malta	1	100%	0.5	-	-		N
Source: Eurostat: Competition Indicators in Electricity Market and survey responses							

Another advance has been the spread of power exchanges to almost all Member States and some candidate countries. Although there is a significant variation in the degree of liquidity of these markets which may constrain their effectiveness, power exchanges should contribute to the development of a transparent market price, which should assist the development of the internal market. All Member States except Belgium, Luxembourg, Greece and Ireland have some form of standardised power exchange, as do Poland, the Czech Republic, Slovenia and Romania.

#### *Cross-border Transactions*

If the ownership of generation assets is concentrated in an individual Member State, competition in the supply business may also come from cross-border transactions and Table 6 shows the potential is considerable in the case of Belgium, Denmark, Sweden and many of

<sup>16</sup> This data may understate concentration to the extent that cross ownership exists (e.g. in Italy, Germany)

<sup>17</sup> **taking into account ownership structure, there are only 3 companies with a share of 5% or more in 2002**

the candidate countries. However, this potential may be limited if arrangements for cross-border transactions are inadequate.

Following the adoption of a temporary mechanism for cross-border electricity exchanges in March 2002 and its modification in January 2003, market players involved in cross-border exchanges no longer have to pay a series of uncoordinated charges to transmission networks (pancaking) since all transit and import charges have been removed. The only cross-border charge admissible under the new system is a single export charge of **€0.5/MWh**, which some Member States continue to apply. There is, however, general agreement that this is only a temporary solution and, in the longer term, a permanent framework to decide on these issues is put forward in the proposed Regulation.

Although progress has been made on tariffication, developments are less positive regarding the harmonisation of different approaches to allocate interconnector capacity. These issues are analysed in more detail in Annex E and it is clear from this analysis that there is insufficient co-ordination of allocation between the TSO concerned. Member States have not yet fully implemented the common guidelines on congestion management agreed at the sixth Florence Forum in September 2001. These shortcomings would appear to be having an effect on the degree of use made of some interconnectors, for example between Belgium and France.

#### *Retail supply and consumer choice*

Table 7 below reviews the structure of the market in retail supply in each Member State and the amount of customer activity, in terms of the proportion of customers switching supplier or renegotiating with the incumbent since market opening.

**Table 7 Market shares retail supply**

	Number licensed suppliers	Number of suppliers independent of DSO	Number with market share > 5% <b>2000 data</b> <sup>18</sup>	Top 3 suppliers' share (all consumers) <sup>19</sup> <b>2000 data</b>	Large eligible industrial users <sup>20</sup>		Small commercial/ domestic		Estimated total switch (TWh)
					switch	switch or renege	switch	switch or renege	
Austria	40	6	7	67% (7)	20-30%	unknown	5-10%	unknown	8
Belgium	16	16	3	53%	2-5%	30-50%	not eligible		2
Denmark	70	6	3	38%	>50%	>80%	not eligible		5
Finland	80	9	3	33%	unknown	>50%	5-10%	10-20%	24
France	225	41	1	90%+ (1)	10-20%	unknown	not eligible		20
Germany	c.1200	200	3	50%	20-30%	>50%	5-10%	10-20%	74
Greece	7	6	1	100% (1)	nil.	nil.	not eligible		0
Ireland	19	18	1	90%+ (1)	10-20%	unknown	not eligible		1
Italy	170	135	2	72% (2)	>50%	100%	not eligible		71
Lux	2	0	2	100% (2)	10-20%	>50%	not eligible		1
Neth	33	15	7	48%	20-30%	100%	not eligible		10
Portugal	11	10	1	99% (1)	5-10%	unknown	not eligible		1
Spain	149	unknown	4	94%	10-20%	>50%	not eligible		13
Sweden	120	20	3	47%	unknown	100%	10-20%	>50%	39
UK	59	59	8	42%	>50%	100%	30-50%	n.a.	140

<sup>18</sup> more recent data for 2001 suggests increases in DK to 6, FI to 4, IT to 4, UK to 10 suppliers with 5% share

<sup>19</sup> includes both eligible and non-eligible markets

<sup>20</sup> note that the eligibility threshold differs considerably between Member States.



Candidate Countries					
Estonia	78	0	2	not examined in this report	not examined in this report
Latvia	12	5	unknown		
Lithuania	18	11	3		
Poland	289	255	4		
Czech R	8	0	8		
Slovakia	16	13	6		
Hungary	6	0	unknown		
Slovenia	26	21	5		
Romania	43	34	9		
Bulgaria	8	0	7		
Turkey	12	0	unknown		
Cyprus	1	0	1		
Malta	1	0	1		

Source: Eurostat: Competition Indicators in Electricity Market, Survey Responses

In many cases, market share in supply tends to reflect the organisation of local distribution networks. This means that the existence of a high number of retail supply companies each with a small market share is not necessarily indicative of active competition since it may be a result of the existence of small local monopolies. Hence the importance of customer switching activity as an indicator.

Generally the level of customer activity has increased since the last report. Countries such as the UK, with a longer history of competition, are no longer so far ahead in terms of switching rates. It is notable that the activity rate in Germany and Austria has increased for smaller customers. This will be further helped by the implementation of standardised procedures for transferring customers. Significant progress also has been made in most other Member States for large users who are either switching supplier or at least renegotiating with their incumbent company. However concern remains that renegotiated prices for large users may be the result of cross-subsidy from the closed part of the market.

### 4.3 Price developments

Table 8 below reports on wholesale prices prevailing in various power exchanges in each Member State. This shows a degree of price convergence during 2002. However the key exception to this is Spain where prices are significantly higher. **This was mainly due to low rainfall and therefore low output from hydropower plants also contributed to the high prices in these periods.**<sup>21</sup> The planned single Iberian market will also help alleviate these problems and should be implemented as soon as possible.

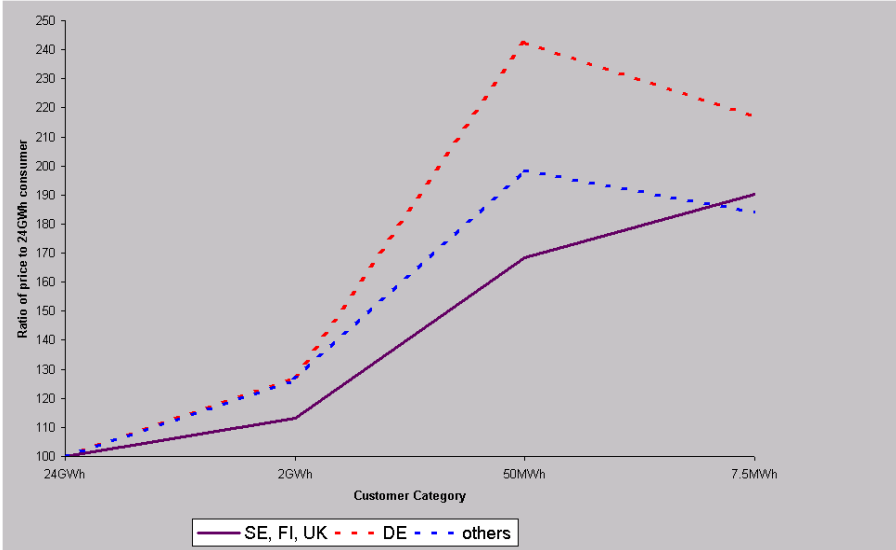
**Table 8 Average wholesale prices (€/MWh)**

	FR	DE	AT	NL	Nordel	Spain	UK
Jan 2002 0700-2300	34.1	35.3		35.7	25.7	71.4	38.4
Jan 2002 2300-0700	21.5	19.0		15.8	22.1	43.0	25.7
July 2002 0700-2300	24.1	28.6	29.5	30.6	16.4	51.9	21.4
July 2002 2300-0700	13.2	12.1	<b>12.7</b>	11.3	14.0	33.8	12.1

<sup>21</sup> In any case, prices to final customers in Spain are still regulated, even for eligible customers.

The graphs in Annex A, section 6 compare retail prices in Member States and certain candidate countries for the period 1995-2002 collected by Eurostat. Unlike the convergence shown above, these graphs demonstrate the continued large divergence between different Member States, which would appear to have fairly similar wholesale market conditions. This is likely to be the result of differing degrees of market opening, variations in network charges and the overall pressure on incumbents from competitors. Since last year there have not been, on average, significant price reductions for large users although bills in Spain, Sweden and the UK have fallen further. For smaller commercial users, prices in Sweden and Austria have fallen by 40% since 1999. For the candidates, the data available still gives the impression that prices are lower than the EU average, particularly for households.

**Graph 2 Ratio of retail prices to different user groups: source Eurostat**



Graph 2 above compares the ratio of prices paid by different user groups. On the graph, the unit price to a customer using 24GWh has been set at 100 and the other user groups have been compared to that level. Countries have been grouped according to their current market opening policies.

Normally one would expect the ratios to be similar in each Member States since prices should reflect the additional network and billing costs of serving small customers. However in many cases the ratio between prices at different levels and those for large users varies considerably. This is a clear indication that certain consumer groups, either households, small businesses or both, are paying disproportionately high prices in some Member States as a result of incomplete or ineffective market opening. This contrasts with the position in the UK and Nordic countries where the ratio between prices would appear to be more cost reflective.

**5. GAS INDICATORS**

**5.1 Access To Networks**

As with electricity, organisation of the transmission and distribution network varies a great deal by Member State depending on the historical development of the service. In some countries such as Germany, Italy and Austria there are several national and regional transmission networks and very numerous separate local distribution networks based on

municipal areas. In other Member States, such as the UK, there is a single national transmission and distribution network.

### *Network Tariffs*

For transmission networks one notable feature is that, unlike electricity, there is currently no standard structure for tariffs and different parameters are used when calculating the charge for transportation.

- In Belgium and Germany, transmission operators have tariff structures with significant distance-related components. This is true, to a lesser extent, in France where tariff structures have been modified to restrain the distance-related element.
- In the UK, Netherlands, Ireland and Italy, transmission network operators use a tariff system based on variable charges for different entry and exit points, usually on a zonal basis.
- In Denmark, Sweden, Luxembourg and Spain charges are postalised. This is also true of exit charges in Ireland.

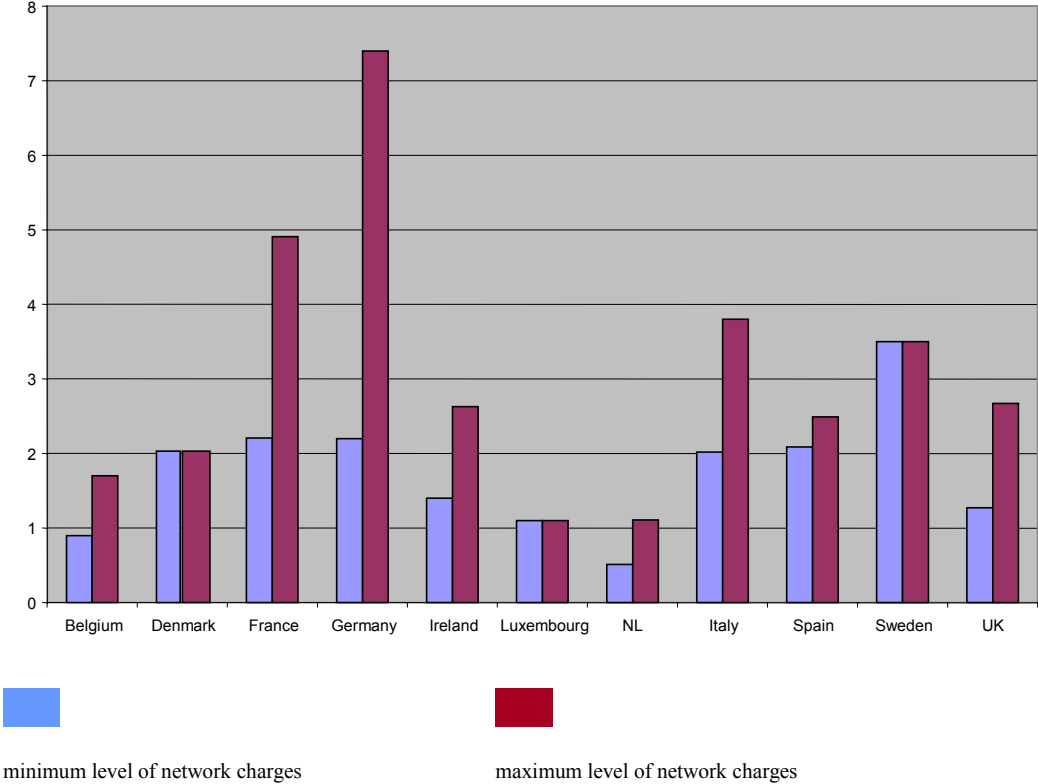
The fifth Madrid Forum adopted a set of Recommendations on Guidelines for Good Practice in relation to third party access services, tariffication and balancing. Representatives of the Council of European Energy Regulators, the Commission, consumer organisations and traders considered that an “entry-exit” tariff structure would best facilitate the development of competition. Purely distance-related tariffs were considered to have a number of drawbacks in that they were not always cost-reflective, tend to favour large suppliers with a wide portfolio of customers, and failed to give adequate locational signals.

Graph 3 below shows an analysis of network charges in Member States. This is discussed in more detail in Annex A, section 7<sup>22</sup>. The graph shows the wide variation in charging levels faced both within and between Member States. In particular the existence of distance-related charges and a multiplicity of network operators means that, in many cases, the tariff will vary considerably depending on the precise route nominated and the number of networks involved. Generally it would appear preferable, as already used for electricity, to have a nationally agreed cost reflective tariff structure and for the receipts to be fairly allocated to the different network owners on the basis of actual physical flows.

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<sup>22</sup> Network tariffs for Austria are currently under review by the regulator and not available at this stage.

**Graph 3 Estimated Total Network Access Charges - €/MWh (Large customer)<sup>23</sup>**



source: DG TREN analysis

Network users in, for example, France and Germany may face high tariffs depending on the precise route being chosen. Tariffs in Sweden also appear high compared to countries of similar size **whereas those in Denmark were reduced from October 2002.**

As with electricity, regulatory scrutiny of network charges is imperative to avoid excessive tariff levels. A greater level of unbundling of networks would facilitate this task. The unbundling provisions in each Member State and candidate countries are reviewed in Annex A, section 8. These show that the UK has the strongest unbundling requirements together with the Netherlands, Italy, Austria and Spain. The provisions in other Member States and all the accession countries are generally inadequate.

*Capacity Reservation*

Another key issue in the gas sector relates to procedures for reserving capacity where there are a number of potential problems for new entrants. As with network tariffs, there are three main methodologies for capacity reservation based on postalised, entry-exit and point to point capacity reservation. Many Member States use a point to point capacity reservation system. Conditions are often inflexible, with capacity needing to be reserved for a minimum one year period or where shorter time periods lead to higher charges. This prevents new entrants from switching between sources of gas and means that it is only possible to look for new customers once a year. Such systems are still in place in France, Germany and Denmark, whereas in the

<sup>23</sup> For a customer using 25 million m<sup>3</sup> per year with peak daily offtake 100,000 m<sup>3</sup> and peak hourly offtake 4,100 m<sup>3</sup>. Further explanation is provided in Appendix 7.

Netherlands and Belgium capacity can now be reserved on a monthly or even daily basis without additional charges. The Madrid Guidelines for Good Practice require TSOs to offer “short-term on-demand” services.

A second issue relates to the procedures for deciding how much capacity is available both within national networks and for cross-border exchanges. Contrary to the principle which has been agreed for electricity, it is often the case that part or all of the capacity of pipelines is contracted on a long-term basis to incumbent companies whether or not the capacity is actually used. These shortcomings exist in a number of countries including Germany and France. However use it or lose it provisions were agreed with Thyssengas as a result of the Marathon-Thyssengas case dealt with by the Commission<sup>24</sup>. Such provisions are also being introduced in the Netherlands, Belgium and Austria. Transparency is another problem. The Association of Gas Transmission System Operators has agreed to voluntarily publish detailed information on available transmission capacity at cross-border points and some, but not all, transmission operators have now done this.

### *Balancing and Storage*

Potential new entrants into the emerging liberalised gas markets are often obliged to purchase gas in a contract for a fixed flat volume during a year. However the customers being supplied will not have a flat demand profile. Indeed the difference between peak demand and the average is often considerable. This means that access to storage or a flexibility instrument is usually a necessary condition for new entrants to obtain effective network access. In addition, the policy of TSOs relating to balancing of the network over shorter periods is an important part of the conditions for network access.

For both balancing and storage, practice varies considerably, as discussed in Annex D. A number of countries place various restrictions on the access of third parties to storage facilities. Whereas in other Member States the terms offered for storage appear to be at excessive cost.

For balancing the most developed system is that in the UK, where there is a balancing market similar to that in place for electricity and the margin between the sell and buy price is usually relatively low. A similar system is planned in Austria. For most other Member States imbalance energy is charged at a multiple of the wholesale price without reference to market mechanisms. These multiples range from 1.5 to over 4 depending on the country and the circumstances. It is also notable that few TSOs allow pooling of imbalances and this is a disadvantage to new entrants with smaller portfolios of customers.

Overall there remains considerable scope for network operators to adopt a regime that implicitly favours their associated undertakings. Requirements for third parties to balance over hourly periods, when combined with restricted access to flexibility and storage instruments, lead to significant barriers to new entrants.

## **5.2 Market structure and cross-border trade**

### *Wholesale Markets*

Information on the structure of the gas market has been collected in Table 9 in the same way as for electricity in terms of the control of production and import of gas (analogous to

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<sup>24</sup> Commission Press release IP\01\1641 23 November 2001

electricity generation) and retail supply. This data is, however, less well developed than for electricity and a more formal exercise involving Eurostat will begin next year.

**Table 9 Market Structure in Import and Production of Gas**

	% of gas from domestic production	% of gas from imports (no. of sources)	No. of companies with at least 5% share of available gas <sup>25</sup>	% of available gas controlled by largest company	Gas release programme	Import capacity from other Member States (bcm)	Gas hub exists
Austria	22%	78% (4)	3	80%	yes	n.a.	(Y)
Belgium	0%	100% (4)	5	unknown	no	34.7	(Y)
Denmark	100%	0%	2	90%	no	n.a.	N
France	4%	96% (6)	2	90%	no	46.0	N
Germany	18%	82% (5)	5	54%	planned	90.7	(Y)
Ireland	19%	81% (1)	3	unknown	no	9.1	N
Italy	19%	81% (4)	5	75%	yes	27.3	N
Luxembourg	0%	100% (4)	1	100%	no	n.a.	N
Netherlands	80%	20% (3)	4	80%	no	38.5	(Y)
Spain	3%	97% (6)	3	<u>75%</u>	yes	2.3	N
Sweden	0%	100% (1)	1	100%	no	n.a.	N
UK	100%	0%	5	c. 50%	yes	8.8	Y
<b>Candidate Countries</b>							
Estonia	0%	100% (1)	2	80%	no	not examined in this report	N
Latvia	0%	100% (1)	1	100%	no		N
Lithuania	0%	100% (1)	4	46%	no		N
Poland	33%	67% (1)	1	100%	no		N
Czech R	3%	97% (2)	1	99.5%	no		N
Slovakia	3%	97% (1)	1	97%	no		N
Hungary	25%	75% (4)	1	100%	no		N
Slovenia	1%	99% (3)	1	100%	no		N
Romania	78%	22% (1)	5	na	no		N
Bulgaria	1%	99% (1)	1	100%	no		N
Turkey	5%	95% (6)	1	100%	no		N
Source: Survey responses, (Y) = market with limited liquidity							

As with electricity, the data shows that for both Member States and candidate countries concentration exists in national markets for the production or import of gas. Often there is a single company with a totally dominant position. This position, which is partly a consequence of dependence on a single upstream source of gas supply, may impede successful entry if new entrants are prevented from obtaining gas on acceptable terms.

Some Member States have introduced gas release programmes, such as the UK, Spain and Italy<sup>26</sup>. In these cases the main importer is obliged to sell on a certain proportion of imported gas. In the recent approval of the merger between E.On and Ruhrgas, the German authorities have proposed the imposition of a certain amount of gas release on Ruhrgas. Following action by the Commission, Norwegian gas producers also committed themselves to market their gas individually in future. In addition two major gas producers, Statoil and Norsk Hydro, committed themselves to sell in the coming five years approximately 15 billion cubic meters of gas to customers who previously could not have access to Norwegian gas.

<sup>25</sup> available gas from either local production or import, figures refer to 2001.

<sup>26</sup> Italy: limit on dominant importer/producer to 75% by 2003, 61% by 2009.

### *Cross-border Issues*

Competition may also come from cross-border exchanges of gas. Indeed it is established Commission practice in, for example merger cases, to consider the relevant market as the entire European Economic Area. However the existing problems with tariffication (in that Member States' different tariff structures are not compatible) and allocation of capacity for cross-border exchanges of gas mentioned above restrict the degree of cross-border exchange at present.

When assessed in terms of the actual flows of gas between Member States as in Annex A, section 10, it would appear that there is limited physical congestion in the EU network at present and that, overall, interconnectors are not used to their full capacity. Only transport into France and subsequently Spain shows possible evidence of congestion.

By contrast, GTE's (the European association of transmission system operators) overview shows that out of 59 border crossing points, 42% are "red", indicating that there is little or no capacity available with two-thirds of the points "red" or "yellow". Only 34% of border points have a "green light" indicating capacity available. Part of the reason for the lack of available capacity is the fact that there are no transparent procedures for calculating available capacity, and no mechanism for releasing capacity that has been booked but is then not used. This allows incumbents to hoard capacity to the detriment of new entrants. Furthermore, in addition to the lack of transparency concerning the availability of capacity discussed above, differing balancing standards also cause difficulties for anyone attempting to transport gas across borders.

Work is also being undertaken by the Commission to reduce territorial restrictions in the gas markets and clauses having similar effects, such as profit splitting mechanisms. All these clauses hinder the creation of a single energy market as they limit the geographical possibilities for the buyers to resell gas and thus create more supply competition.

### *Retail Supply and Consumer Choice*

As with electricity, the market structure in the retail supply section is the result of two main factors. Firstly, the degree of competition in the wholesale gas market may restrain the amount of effective competition downstream, particularly if cross border trade is constrained for any reason. Secondly, the historical structure in terms of the number of distribution companies will also have an impact on the number of suppliers. This is reported in Table 10 below, along with estimates of the cumulative amount of switching and renegotiation that has occurred since market opening.

**Table 10 Supplier market share**

	Number of licensed suppliers	Suppliers independent of DSO	Top supplier's overall market share <sup>28</sup>	Large eligible industrial users <sup>27</sup>		Small commercial/ domestic		Estimated total switch (bcm)
				switch	switch or renege	switch	switch or renege	
Austria	25	2	unknown	<2%	unknown	not eligible		0.1
Belgium	5	5	95%	unknown	unknown	not eligible		0.0
Denmark	4	1	92%	2-5%	unknown	not eligible		0.2
France	26	4	95%	20-30%	unknown	not eligible		4.6
Germany	740	12	unknown	< 2%	unknown	<2%	unknown	5.0
Ireland	unknown	unknown	unknown	20-30%	unknown	not eligible		0.7
Italy	750	minimal	<b>40%</b>	10-20%	unknown	2-5%	unknown	6.4
Luxembourg	6	1	85%	5-10%	100%	not eligible		0.0
Netherlands	20	20	unknown	30-50%	unknown	not eligible		8.5
Spain	30	30	70%	20-30%	unknown	not eligible		3.4
Sweden	7	0	100%	<2%	unknown	not eligible		0.0
UK	93	93	50%	>50%	unknown	30-50%	>50%	43.0
<b>Candidate Countries</b>								
Estonia	4	1	80%	not examined in this report				
Latvia	1	0	100%					
Lithuania	4	1	46%					
Poland	60	unknown	>95%					
Czech R	15	unknown	unknown					
Slovakia	1	unknown	97%					
Hungary	9	7	unknown					
Slovenia	36	na	85%					
Romania	32	18	unknown					
Bulgaria	30	1	97%					
Turkey	n.a.	unknown	unknown					
Source: Survey responses								

Since last year's report the fastest evolving markets appear to be Italy, Ireland, the Netherlands and Spain, which have a high level of customer switching. Some progress is also being made in France and this should improve following its implementation of the existing Directive. The UK remains the leader in terms of effective competition, particularly among smaller customers.

### 5.3 Price developments

There is still a general lack of transparency in the wholesale market and standardised exchanges ("hubs") have been slow to develop in Europe. However, as well as the National Balancing Point hub in the UK, trading hubs now exist at Zeebrugge, at Bunde-Oude on the Dutch-German border, and at Baumgarten in Austria. However some of these markets have very limited liquidity.

Retail gas prices are collected by Eurostat for gas customers on a twice-yearly basis. An analysis of the comparative level of prices and price developments since 1995 is set out in Annex A, section 11. It shows a significant fall in gas prices since last year, mainly due to the reduced wholesale price for gas associated with lower oil prices. These reductions continued in the July 2002 figures.

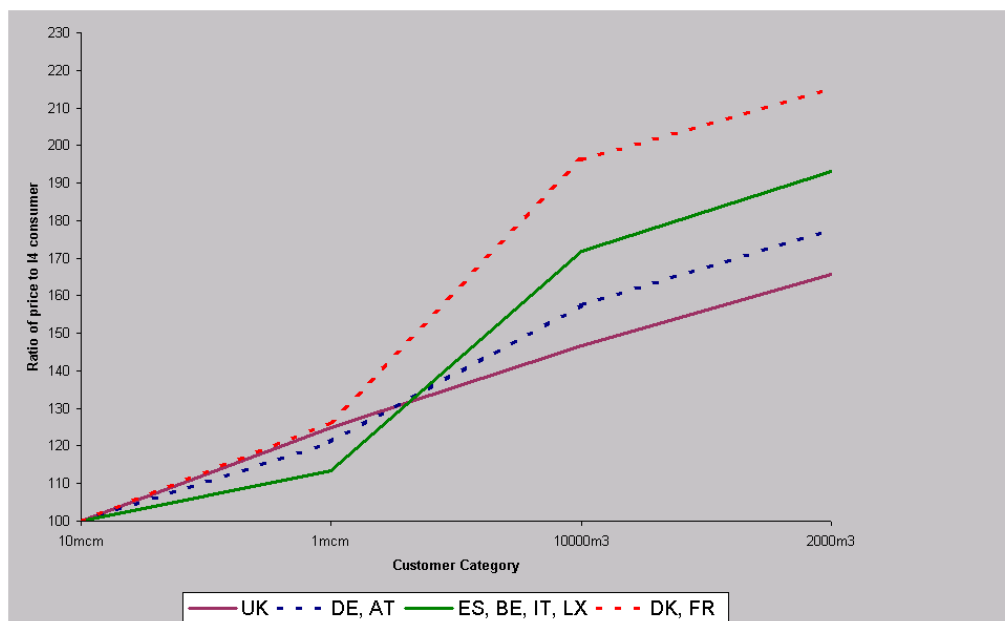
<sup>27</sup> note that the eligibility threshold differs considerably between Member States.

<sup>28</sup> includes both eligible and non-eligible markets



The graph below reports the ratio between retail prices paid by different customer groups as recorded in January 2002, in the same way as for the electricity sector. Prices for a 10mcm customer have been set to 100 and the others compared to that unit price.

**Graph 4 Ratio of retail prices to different user groups: source Eurostat**



As with electricity it might have been expected that the ratio of retail prices between different customer groups would be similar. However it is clear that countries without full market opening tend to have relatively higher prices for smaller users, with France and Denmark being the most extreme examples.

## 6. DEVELOPMENT OF INFRASTRUCTURE

The Commission published its Communication on European Energy Infrastructure in December 2001<sup>29</sup>. It underlined that the creation of a fully functioning single market for electricity and gas would be dependent on greater interconnection between Member States and a better use of the infrastructure through greater co-ordination and transparency.

The situation is particularly critical in the electricity sector, where physical cross-border trade of electricity in the EU only represented around 9% of total electricity consumption in 2002, which leaves the EU far from a real, competitive internal market. With regard to gas, a number of missing links exist in the European network and congestion is used increasingly frequently as a reason for refusal of access.

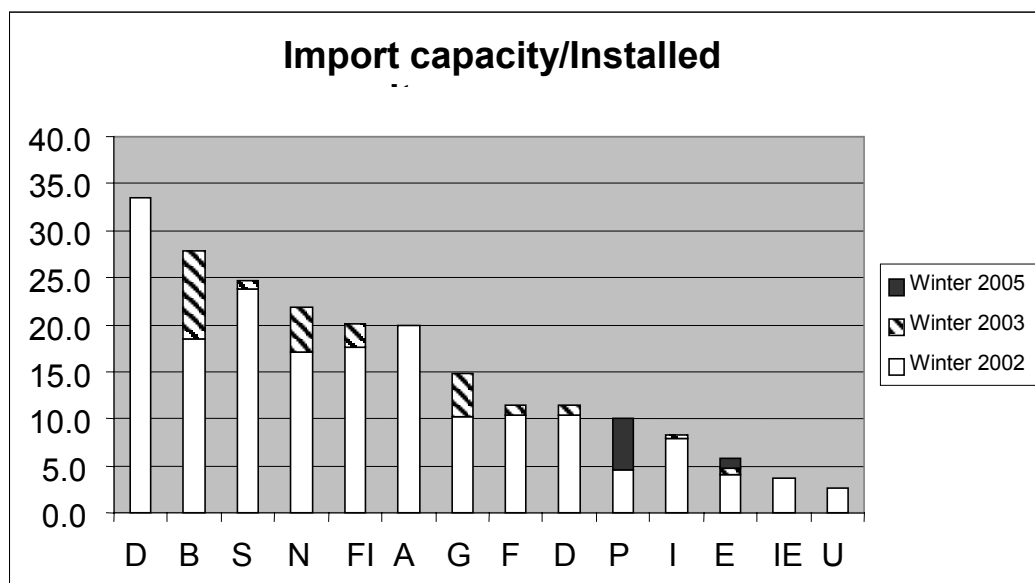
In its Communication, the Commission proposed a number of actions, that are necessary in order to improve the situation with regard to the EU energy infrastructure. These were grouped into the following five main areas:

<sup>29</sup> Communication from the Commission to the European Parliament and the Council “European energy infrastructure” COM(2001) 775 final, 20 December 2001

- ensuring a stable and favourable regulatory environment for investment in new infrastructure setting a target for all Member States to achieve a level of electricity interconnection of at least 10% of their installed capacity;
- improving the use of existing infrastructure through different “structural measures”; for example improved co-ordination between system operators;
- re-focusing Community financial support towards priority projects to be implemented through a proposed revision of the TEN-Energy Guidelines and increasing the ceiling for possible EU co-financing from 10% to 20% of total investment costs of Priority Projects;
- ensuring political awareness and commitment at Community and national level;
- sufficient gas transport capacity exists between the EU and producer countries.

The European Council in Barcelona agreed the target of 10% electricity interconnection capacity for Member States by 2005. It also urged the adoption by December 2002 of the proposed revision of the Guidelines and accompanying financial rules on trans-European Energy Networks. Subsequently the Energy and Industry Council reached political agreement on the proposed revision of the TEN-Energy Guidelines, pending the opinion of the European Parliament. However approval by the Energy Council of the suggested increase of the maximum co-financing rate for project implementation to 20% is still outstanding.

**Graph 5: Ratio of electricity import capacity/total installed capacity**



Some practical progress has been achieved recently in achieving the objectives in practice. A 500 MW connection between Greece and Italy has entered into operation, raising the import capacity of the countries concerned. Greece now belongs to the group of countries with an import capacity above 10%. A similar connection between Great Britain and Northern Ireland commissioned in 2001 will help integrate the UK and Irish markets to a degree. In addition, as a result of the Commission’s approval of the merger of EnBW and Hidrocantábrico, EDF undertook to substantially increase the transmission capacity on the interconnector between France and Spain in the near future. However, Italy, Ireland, Spain, the UK and Portugal remain substantially below the 10% target, as is shown in Graph 5 above which indicates the change since last year and the plans for 2005. The Commission has launched various other

initiatives aimed at implementing the 13 actions proposed in its December 2001 Infrastructure Communication and is monitoring progress in this respect. The Council of European Energy Regulators are making a significant contribution to this effort, in particular by taking the lead in preparing guidelines on regulatory control and financial reward for new infrastructure projects.

## 7. ENSURING SECURITY OF SUPPLY

The introduction of competition in the electricity and gas markets must be arranged so that customers can rely on a close to continuous and reliable supply. This means that, for both electricity and gas, there must be sufficient production and transportation capacity to deal with the varying levels of demand during the year and in different conditions.

**Table 11 Electricity Security of Supply**

	Security of Supply Position 2002				Measures to Encourage Peak Capacity			
	amount of reserve generating capacity <sup>30</sup>	import capacity (% of peak consumption)	% p.a. increase in peak load	increase in capacity by 2004 (GW)	Market based	Incentives e.g. capacity payments	Obligation on TSO or supplier	Tender by Regulator or TSO
Austria	34%	45%	+2.1%	0.4	x			
Belgium	2%	31%	+2.1%	0.2			x	
Denmark					x			
Finland					unknown			
France	16%	19%	+1.9%	0.4	x			
Germany	5%	15%	+0.5%	0.8	x			
Greece	7%	13%	+3.2%	1.2				(x)
Italy	9%	12%	+3.7%	5.7		(x)		
Ireland	-2%	6%	+3.0%	0.8		x		(x)
Luxembourg	-	100%	+2.8%	0.0	n.a.			
Netherlands	7%	28%	+3.0%	0.7			x	
Portugal	13%	13%	+4.0%	0.5		x		
Spain	16%	7%	+3.1%	4.6		x		
Sweden							x	
UK	12%	3%	+1.0%	5.0	x			
Nordel	1%	5%	+0.8%	6.0				
<b>Candidate Countries</b>								
Estonia	100%	>100%	+0.5%	not covered in this report	not covered in this report			
Latvia	60%	>100%	+1.5%					
Lithuania	100%	>100%	+2-3.5%					
Poland	28%	12%	+1.3%					
Czech R	28%	20%	+3.0%					
Slovakia	26%	60%	+1.5%					
Hungary	15%	>100%	+1.5%					
Slovenia	25%	>100%	+3.0%					
Romania	50%	12%	+4.0%					
Bulgaria	48%	32%	+1.0%					
Turkey	unknown	9%	+9.0%					
Cyprus	26%	0%	+5.0%					
Malta	25%	0%	+4.0%					
source: UCTE, Nordel (x) indicates planned measures								

30 According to UCTE definition of “remaining capacity” = “guaranteed capacity” minus “load at 11 am” minus “margin against peak load”, as a percentage of “load at 11am” plus “ margin against peak load”: Power Balance of UCTE: Forecast 2002-04

For electricity, the security of supply position is usually monitored by the transmission system operators (TSO) in the Member States concerned as a consequence of their function in balancing supply and demand in the network. TSOs, in any case, need to be aware of trends in generation and demand in order to plan for appropriate investments in the network.

Table 11 above provides data on the reserve generating capacity position for 2002. This shows that the current position of the EU including candidate countries in terms of the adequacy of capacity is generally favourable. Normally Member States expect to maintain the level of “remaining capacity” above 5% of available capacity, taking into account the scope for imports. Therefore, under this criterion, the main regions requiring new generation or interconnection capacity most urgently in the coming years are the Nordic countries and Ireland. In both cases, legislators are taking measures to safeguard security of supply, for example, by requiring TSOs to maintain a degree of reserve capacity. A number of other alternatives are also being considered by other Member States, as reported in the table.

Regarding security of gas supply, the current estimates, as set out in Table 12 below, suggest that existing production and import capacity are sufficient to cover EU consumption until approximately 2010. It would appear, however, that import capacity will need to be increased substantially during the period 2010-2020.

**Table 12 Current Security of Supply Position: Gas**

MTOE	1997	2005	2010	2020
Total Demand	300	380	410	435
Indigenous Production	180	190	180	125
<b>Approx. current import capacity</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>
Net Contracted Imports	120	180	195	190
Additional supply needed	-	10	35	120
Additional import capacity needed	-	-	25	110
Source: based on Eurogas\GTE data				

A recent analysis, undertaken by the International Association of Oil & Gas Producers (OGP)<sup>31</sup>, of domestic EU/EEA gas production potential and the potential of existing and new external gas suppliers within the context of a competitive single market, demonstrated that Europe has significant domestic gas reserves potentially available and abundant gas reserves within economic reach in neighbouring regions.

The emergence of active trading in wholesale gas to mirror developments in electricity will become crucial in giving producers and importers the opportunity to trade gas on the wholesale market. This will reduce the risks for companies entering into long-term agreements with producer countries by providing a transparent selling price in the EU.

Table 13 below examines the changing roles of market players. Hitherto, the task of planning and developing the gas network to meet gas security targets (as often defined by the gas industry itself) was relatively straightforward as the dominant suppliers controlled all the infrastructure requirements, gas supply and demand-side portfolio, information and any other instruments needed to conduct this type of planning.

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<sup>31</sup> “EU/EEA gas supply and the policy framework”, OGP, February 2002

**Table 13 Measures taken to support security of gas supply**

	Gas availability				Network capacity	
	Market Based	Obligation on TSO or suppliers for reserve capacity	Incentives to make gas available	Procedural e.g. Interruption schedule	requirements or “best endeavours” to provide capacity for defined peaks <sup>32</sup>	incentives/ payments to TSO in price control
Austria	no information				no information	
Belgium	x	(x)				x
Denmark		x		x	x	
France		x		x	x	
Germany				x	x	
Ireland				x	x	x
Italy		x				x
Luxembourg	no information				x	
Netherlands	no information				no information	
Spain		x			no information	
Sweden	no information				no information	
UK		x			x	x

Source: responses to Commission survey, (x) indicates planned or partial measures

In the new liberalised gas market, however, no single player will necessarily maintain overall responsibility for short- and longer-term security of gas supply at national level as industry restructures, national markets integrate, new entrants emerge and competition develops. The European gas industry including both GTE (European association of transmission system operators) and Eurogas has stressed the need for the definition of clear roles and responsibilities of the individual market players with regard to security of supply<sup>33</sup>.

Organising security of supply cannot be left to the industry alone and Member States have an obligation to ensure that all market players take minimum measures with regard to security of supply. Moreover, security measures can be costly and it is perfectly feasible that certain operators could neglect these measures to reduce costs if no agreed minimum standards apply. Thus, the adoption by Member States of measures requiring the industry to meet minimum standards is therefore an important integral part of market opening. In so doing, it is important, given that security of supply has a European dimension, that there is a degree of convergence in the approach of Member States to this issue including certain minimum standards. The Commission has therefore recently put forward a proposed Directive relating to gas security of supply with this in mind which requires Member States to impose minimum standards on suppliers while at the same time ensuring that these requirements do not impose a burden on new entrants.<sup>34</sup>

<sup>32</sup> e.g. in the case of extreme weather conditions.

<sup>33</sup> GTE i.a. in "GTE Position Paper", 15 June 2001. Eurogas i.a. in "Response of Eurogas to the DG TREN Strategy Paper", 19 March 2001.

<sup>34</sup> COM(2002) 488 final

## 8. UNIVERSAL SERVICE AND SERVICE QUALITY

As noted in the previous benchmarking exercise, competition should, in most cases, provide an incentive to improve services. However it must be remembered that part of the business, i.e. the networks, remain monopoly services. There must be a clear framework to ensure that networks minimise interruptions of supply and any attendant disruption. In addition, suppliers may need to be regulated to ensure certain minimum standards are met.

### *Universal Service*

Annex A, section 12 reviews these issues for the electricity and gas sectors. As regards the policy in the Member States, it is clear that all have adopted a framework for ensuring that there is at least one supplier with an obligation to serve all customers. Final prices charged by these default suppliers can be regulated, even where markets are fully open to domestic customers. This, in effect, sets a “price to beat” for new entrants. Such an approach provides a ceiling on the price that any individual household or company will pay for electricity or gas.

### *Price Disparities*

Another concern is that competition will lead to customers paying a different price for electricity or gas depending on their location, their choice of payment method or perceived creditworthiness. Such problems are avoided in many Member States through obligations on suppliers to offer the same terms to all similar customers, either nationally or at regional level.

With effective competition in generation and supply markets, the only systematic differences likely to emerge are where there are regions with differing network tariffs and customer service costs. The price for the energy itself should, broadly speaking, be the same at national level. Those Member States such as Germany, with many different distribution companies each with a different level of tariffs already tend to experience varying levels of final prices.

In Member States where the same conditions have to be applied in all regions, different solutions are adopted to face the problem of different distribution costs. Where the distribution zones are large enough, the additional costs of serving remote areas are spread across all users. Alternatively a compensation payment mechanism exists between distributors to ensure equalisation of tariffs to final customers, such as in Italy and Spain.

### *Vulnerable Groups*

When considering energy prices for certain disadvantaged groups of customers, there is clear evidence that Member States consider the maintenance of services to be a priority. Many countries oblige suppliers to offer certain concessions to vulnerable groups and restrict disconnection. Regarding the level of disconnection there does not, from the information available, appear to be any indication that market opening has increased the level of disconnection taking place. Indeed the introduction of properly regulated procedures may lead to improvements in affordability and standards of service for low-income customers.

### *Quality of Service*

The introduction of competition is normally expected to lead to increased quality of service as suppliers endeavour to distinguish themselves from competitors by, for example, providing a wider range of services and bill paying options. However many Member States have, through their regulators, imposed minimum obligations on service standards with sanctions in the event of a failure to meet the required level. These standards are particularly important for the

monopolist parts of the electricity and gas industry, for example, in terms of the frequency of interruptions in transmission and distribution.

Annex A, section 12 also shows that Member States have similar types of obligations and targets relating both to service continuity and voltage levels required of network operators. There seems to be little difference in approach depending on the degree of market opening. In terms of network performance, the best performers appear to be Austria and Germany, with somewhat lower performance in terms of minutes of interruptions in Ireland and Italy.

Generally, there is not much evidence to date concerning any effects of market opening on the standards of service provision. The latest Eurobarometer survey of household customers published by the Commission<sup>35</sup> suggested that the overall satisfaction level for electricity were highest in Luxembourg, Ireland and Denmark and the UK. Whereas for gas, the most satisfied customers were in Luxembourg, the Netherlands, Denmark and the UK.

## **9. ENVIRONMENTAL OBJECTIVES**

The low capital costs of gas-fired generation and its relative efficiency in fuel use is leading to its widespread adoption throughout the EU. Similarly, competition may also lead to the more rapid retirement of older and less environmentally sound capacity. This has happened in particular in the UK, which reduced emissions considerably during the 1990s. However, the introduction of competition is also likely to lead to lower energy prices than would otherwise be the case. This is because competition will provide incentives for companies to reduce costs, for example, by closing inefficient plant. This provides a challenge in environmental terms since lower prices in themselves may encourage greater consumption and also reduce the viability of renewable energy, particularly if the external cost of the use of fossil fuels is not recognised.

Since Member States have commitments to meet relating to the reduction of greenhouse gas and other emissions, it is important to ensure that market opening is made compatible with these. Within the single market, a common framework for reducing carbon dioxide emissions is required and there is thus a need to ensure that the Directive establishing a greenhouse gas emission allowance trading system is finalised as quickly as possible. Furthermore, Member States are encouraged to start national work on implementation of the scheme as soon as possible.

However in the absence of such a co-ordinated approach, Annex A, section 13 reviews the efforts of Member States to manage demand and encourage renewable generation. It demonstrates that all Member States have some kind of programme to support renewables and/or combined heat and power. The effectiveness of such policies can be gauged by an examination of the fuel mix of net new capacity added during the years 1998-2001. This shows that remarkable progress is being made with regard to renewable and CHP which comprise nearly 50% of new capacity being added in Europe. Natural gas fired generation represents the other major new source. The most important contributors to the increase in renewable energy sources in the period concerned are Germany and Spain.

It should also be underlined that many Member States have an active fiscal policy for energy with the aim of increasing the use of renewable energy and reducing consumption. The main leaders in this areas are Denmark and the Netherlands. However on this issue of energy

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<sup>35</sup> Eurobaromètre 58 - L'opinion des consommateurs sur les services d'intérêt général (décembre 2002) DG SANCO

taxation it is important to remember that gas and electricity cannot be considered in isolation. Coal and oil are also carbon-intensive fuels and need to be included in a comprehensive energy taxation system. The Council recently restarted discussion on the Commission's proposal for a Directive to restructure the taxation of energy [COM(1997) 30] and the adoption of these proposals is also encouraged.

## **10. OVERALL CONCLUSIONS**

### *Progress in building the single market*

This second benchmarking exercise demonstrates progress since last year in a number of areas for electricity. For gas though, progress is limited and more uneven.

For electricity there has been a general increase in the overall level of market opening, an improvement in the degree of unbundling of network operators, and greater clarity and transparency in regulation. Most Member States, notably Austria, Germany and the Netherlands, have seen an increase in consumer activity among eligible customers and price reductions have been recorded in Italy, Spain and the UK for large consumers in the last year. Meanwhile, prices for small businesses and consumers have fallen significantly in Austria. However some of the outstanding issues since last year have not been resolved and key problems remain, particularly concerns about the degree of unbundling, the continuing position of market dominance in some countries and the lack of infrastructure to allow cross-border exchanges.

For gas, positive developments have continued in countries such as Italy, Spain and the Netherlands, which have taken additional measures to open their markets. Prices for eligible customers have fallen considerably since last year's report although this is partly due to falling oil prices. Competition in Germany has been slower to develop and prices have remained relatively high due to the lack of competitive pressure. Overall, the prospects for competition in the gas market are significantly behind electricity.

For both gas and electricity, regulators are growing in experience and expertise and in terms of resources available. However inefficient regulatory procedures and/or the lack of adequate unbundling in some Member States may be leading to high network tariffs or inappropriate and possibly discriminatory tariff structures. The implementation of effective regulation would clearly be facilitated through the clearer separation of businesses that would result from legal unbundling.

Competition policy also plays an increasingly important role in the liberalisation process. It ensures that the introduction of competition to the benefit to consumers becomes an economic reality and is not undermined by anti-competitive practices by incumbent operators. In particular, the decision of the Norwegian gas producers to market their gas individually in future, following the intervention of the European Commission, marks a major step forward for European consumers.

Finally, despite agreement on an inter-TSO temporary mechanism for electricity, there is still limited opportunity for cross-border trade due to lack of infrastructure and a lack of co-ordination regarding capacity allocation. There has been little progress made for cross-border gas transport and there is a clear need for the Madrid Forum to make progress in this area. Overall, the internal market remains somewhat segmented with restricted competition across internal borders.



### *Market Opening and Public Service*

Most Member States are developing a formal framework to ensure security of supply. Where there are concerns about security of supply in certain regions, Member States appear to be addressing these by specific regulatory action. However, there is a need to address these issues consistently at EU level considering that a security of supply problem may have consequences for neighbouring states.

Governments and regulators are increasing aware of their role in ensuring that market operators deliver a secure and good quality service. Regulators in many Member States have taken on the task of protecting vulnerable groups and the safeguarding the standard of supply provided to customers, from both incumbent operators and new entrants.

Finally, regarding environmental policy, measures are being pursued vigorously in all Member States. In this context, the Directive on electricity from renewable sources of energy in the internal market will have to be implemented in the Member States by October 2003.

### *Revised Proposals of the Commission*

The Energy Council has now reached a political agreement regarding a timetable for full market opening and on measures relating to unbundling and the role of regulator in setting network access tariffs. These measures will lead to the development of the world's largest integrated electricity and gas market. The Commission will continue to monitor the implementation of these measures to ensure that the objectives of the Community are being achieved and, if relevant, identify the need for any further action.

## ANNEX A :SUPPLEMENTARY DATA

### SECTION I

#### COMPETENCES AND RESOURCES OF REGULATORS

	ex-ante/ ex-post	Network access conditions	Dispute settlement	Staff number	Annual Budget 2002 (€m)	Increase in budget since 2001 (€m)
Austria	Ex-ante	R(elec)/R (gas)	R(elec)/R(gas)	45	9	+2.0
Belgium <sup>36</sup>	Ex-ante	R/R	R/R	68	15	+5.5
Denmark	Ex-post	R/R	R/R	30	3	+0.5
Finland	Ex-post	R/R	R/R	15	1	-
France	Ex-ante	M/ <u>M</u>	R/ <u>R</u>	80	9	-
Germany	n.a.	N/N	C/C	n.a.	n.a.	-
Greece	Ex-ante	M/n.a.	R/n.a.	43	4	+0.5
Ireland	Ex-ante	R/R	R/R	31	6	+1.0
Italy	Ex-ante	R/R	R/R	86	18	-
Luxembourg	Ex-ante	M and R	R/R	2	n.a.	-
Netherlands	Ex-ante	R/H	C/C	55	6	+2.0
Portugal	Ex-ante	R/n.a.	R/n.a.	52	7	+2.5
Spain	Ex-ante	M/M	R/R	153	19	+2.2
Sweden	Ex-post	R/R	R/R	33	3	-
UK	Ex-ante	R/R	R/R	330	58	-45.0
<b>Candidate Countries</b>						
Estonia	Ex-ante	R/R	R/R	12	0.3	
Latvia	Ex-ante	R/R	R/R	68	0.5	
Lithuania	Ex-ante <sup>37</sup>	R/R	R/R	58	0.6	
Poland	Ex-ante	R/M	R/R	257	8.0	
Czech R	Ex-ante	R/R	R/R	69	3.2	
Slovakia	Ex-ante	R/R	R/R	50	1.5	
Hungary	Ex-ante	M/M	R/R	88	4.4	
Slovenia	Ex-ante	R/M	R/R	21	1.9	
Romania	Ex-ante	R/R	R/R	64	3.7	
Bulgaria	Ex-ante	R/R	R/R	85	0.7	
Turkey	Ex-ante	R/R	R/R	170	8.0	
Cyprus <sup>38</sup>		R	R	-	n.a.	
Malta		R	R	15	0.3	
source: Survey responses						

R – regulator responsible, M – ministry responsible, C – competition authority, N – not regulated , H - hybrid  
n.a. –no regulator

<sup>36</sup> Distribution tariffs are controlled by regional regulators, the VREG, CWAPE and IBGE. Budget and staff numbers include these authorities as well as the CREG.

<sup>37</sup> ex-post for gas network tariffs

<sup>38</sup> Planned measures, regulator not yet in place

SECTION 2

**NETWORK ACCESS: ELECTRICITY**

TOTAL NETWORK TARIFFS	Number of transmission companies	Number of distribution companies	Medium Voltage		Low voltage	
			Estimated average charge (€/MWh)	Approx. range high-low (€/MWh)	Estimated average charge (€/MWh)	Approx. range high-low (€/MWh)
Austria	3	155	20	15-25	65	50-80
Belgium	1	33	15	n.a.		
Denmark	2	77	15	n.a.	25	unknown
Finland	1	100	15	10-20	35	unknown
France	1	172	15	n.a.	50	n.a.
Germany	4	880	25	15-45	55	40-75
Greece	1	1	15	n.a.		
Ireland	1	1	10	n.a.	40	n.a.
Italy	1	219	10	n.a.		
Luxembourg	-	15	20	n.a.		
Neth	1	18	10	unknown	35	unknown
Portugal	1	3	15	n.a.		
Spain	1	297	15	n.a.	45	n.a.
Sweden	1	248	10	5-15	40	20-60
UK	4	15	unknown	10-15	40	30-50
<b>Candidate Countries</b>						
Estonia	1	67	not examined in this report		not examined in this report	
Latvia	1	13				
Lithuania	1	2				
Poland	1	33				
Czech Rep	1	320				
Slovakia	1	3				
Hungary	1	6				
Slovenia	1	5				
Romania	1	8				
Bulgaria	1	8				
Turkey	1	10				
Cyprus	1	1				
Malta	1	1				
source: Survey responses, DG Tren Analysis						

## SECTION 2 cont

### NETWORK ACCESS: ELECTRICITY

#### Notes

The analysis in this year's report has been carried out in more depth and considerable effort has been made to ensure the calculations have been made on a consistent basis in that;

- regulatory charges relating to sunk costs or RES\CHP support have been excluded,
- taxes have been excluded,
- transmission and distribution costs have been added together where appropriate,
- metering costs, losses and system services have been included where possible.

“Medium voltage” is considered to be between 15-50KV and estimates have normally been based on the 24GWh Eurostat example. “Low voltage” refers to connection at <0.4kV and calculations are based on the 3.5MWh Eurostat domestic customer example using a single tariff meter. Estimates rounded to the nearest €/MWh.

AT: Medium voltage = “Netzebene 5”, Low voltage = “Netzebene 7”. Data provided by regulator. Range = Klagenfurt (low) – Upper Austria (high).

BE: Based on connection to elia network at 30KV, annual subscription. Assumes no connection to local distribution

DK: Based on data provided by Danish regulator

FI: Data provided by Finnish government. Medium voltage refers to 2GWh Eurostat example.

FR: Based on newly approved tariff structure as proposed by the CRE

DE: Based on VDN data, Medium voltage, Customer type “5.000h/a mit Leistungsmessung”. Low voltage = 3.5MWh/year. Does not include “Single Buyer” access.

GK: Data provided by Greek government

IR: Based on ESB published network tariff structure, based on DUOS group 8, 38KV looped customers. Does not include transmission G charge. Charges for DUOS group 7 “medium voltage” approx €15/MWh

IT: Based on data provided by AEEG, excludes “taxes and charges”

LX: Based on published CEDEGEL tariffs “reseau 20kV” for medium voltage.

NL: Based on data provided by NL government: medium voltage = “Afnemers TS 25-50kV”, low voltage “Afnemers <3\* 25amp (ET)

PT: Based on data provided by ERSE. Medium voltage = connection at 1-45KV.

ES: Based on “real decreto 1483/2001”. Medium voltage = Tarifa 3.1A, type 6.1, 1-36 KV. Estimate made of consumption “per Periodo”. Low voltage = Tarifa 2.0A. “Costes con destinos especificos” deducted plus 9% reduction for low voltage due in 2003.

SE: Based on data provided on regulators website: [www.stem.se/english](http://www.stem.se/english). Medium voltage example Power demand 1MW, energy consumption 5GWh; Low voltage example, household with consumption 5MWh/year.

UK: Based on Ofgem/Ofreg analysis of distribution costs with estimated NGC transmission costs added.

SECTION 3

UNBUNDLING OF NETWORK OPERATORS: ELECTRICITY

	Basic unbundling model		Published accounts		Compliance officer		Separate corporate identity		Separate locations		Total Yes
	TSO	DSO	TSO	DSO	TSO	DSO	TSO	DSO	TSO	DSO	
Austria	Legal	Account	Y	Y (large)	N	N	Y	N	Y(1)	N	4
Belgium	Legal	Legal	Y	not yet	N	N	Y	Y	Y	some	5
Denmark	Legal	Legal	Y	Y	Y	Y	Y	N	Y	N	6
Finland	Own	Manage	Y	Y	Y	Y	Y	N	Y	large	6½
France	Manage	Account	Y	N	Y	N	Y	N	Y	N	4
Germany	Legal	Account	Y	Y(some)	N	N	Y	N	Y	N	3½
Greece	Legal/M	Account	not yet	not yet	N	N	Y	N	Y	N	3
Ireland	Legal/M	Manage	Y	in part	Y	Y	Y	N	N	N	4½
Italy	Own/Leg	Legal	Y	Y	N	N	Y	Y	Y	Y	6
Lux	Manage	Account	Y	N	N	N	N	N	N	N	1
Neth	Own	Manage	Y	Y	Y	N	Y	N	Y	N	5
Portugal	Legal	Account	Y	Y	N	N	Y	N	Y	N	4
Spain	Own	Legal	Y	Y	Y	N	Y	Y	Y	N	6
Sweden	Own	Legal	Y	Y	Y	N	Y	Y	Y	N	6
UK	Own	Legal	Y	Y	Y	Y	Y	often	Y	often	7
<b>Candidate Countries</b>											
Estonia	Manage		Y				Y		Y		3
Latvia	Legal		Y				N		N		1
Lithuania	Legal		Y				Y		Y		3
Poland	Legal		Y				Y		Y		3
Czech R	Legal		Y				Y		Y		3
Slovakia	Legal		Y				Y		Y		3
Hungary	Accounts		N				N		N		0
Slovenia	Legal		Y				Y		Y		3
Romania	Legal		Y				Y		Y		3
Bulgaria	Accounts		Y				Y		Y		3
Turkey	Legal		Y				Y		Y		3
Cyprus	Manage		N				N		N		0
Malta	Derog		N				N		N		0

*SECTION 4*

**BALANCING: ELECTRICITY**

See Annex B

*SECTION 5*

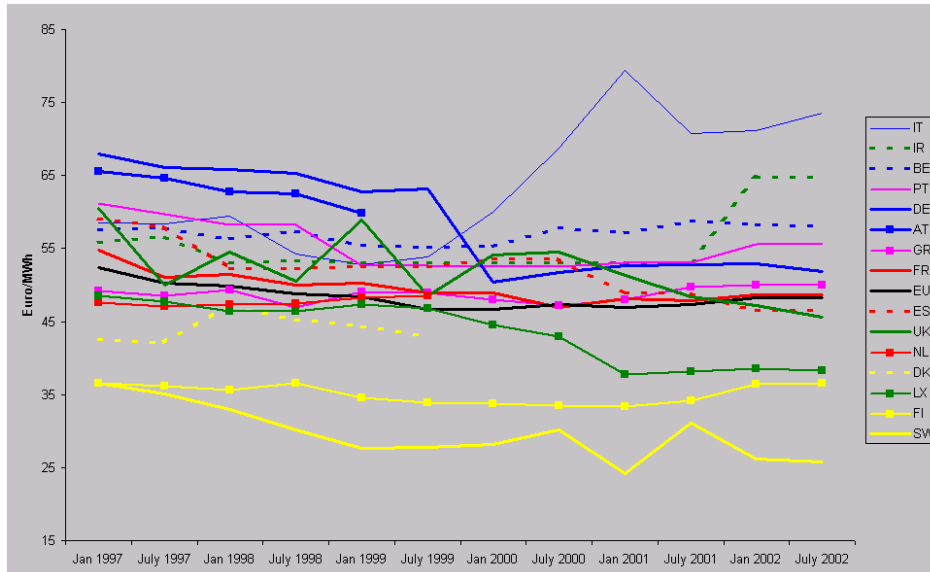
**CROSS BORDER TRANSACTIONS: ELECTRICITY**

*See Annex D*

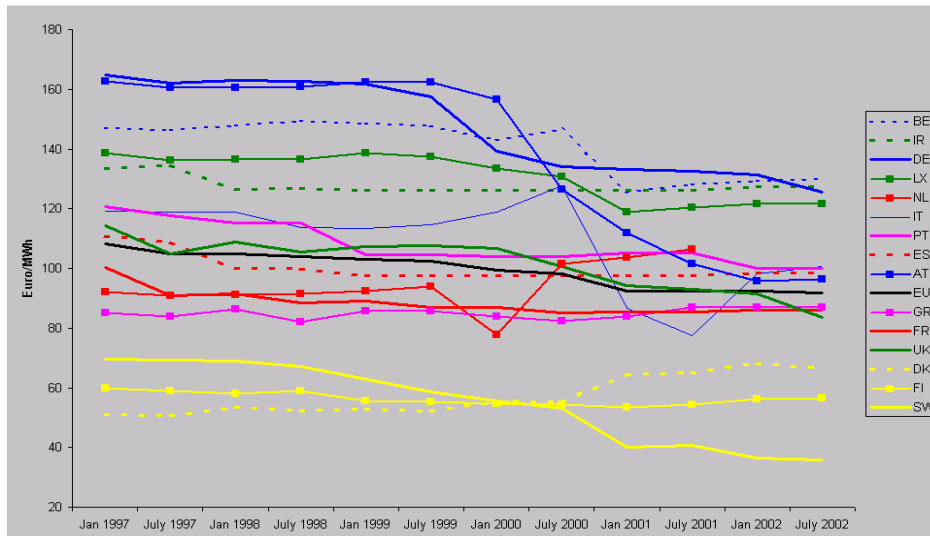
SECTION 6

EUROSTAT ELECTRICITY RETAIL PRICES (current prices, before taxes)

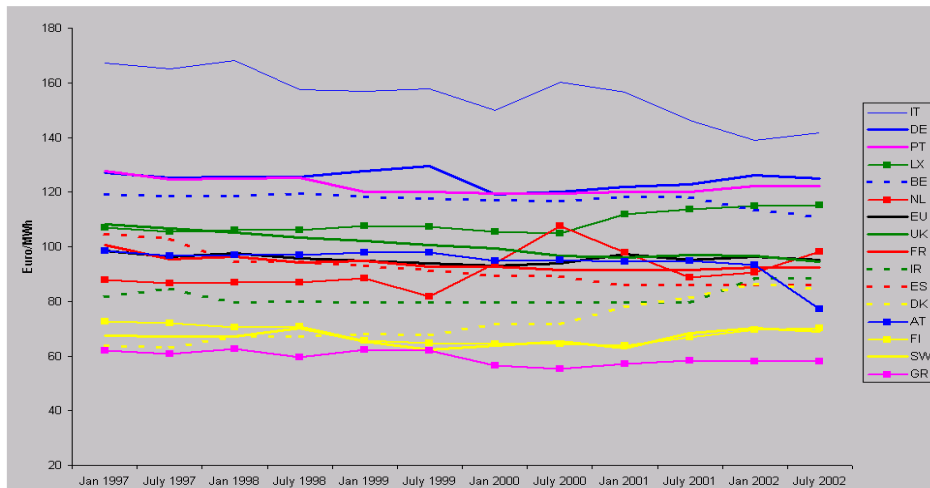
Electricity prices to large industrial consumers 1997-2002: 24GWh/year



Electricity prices to small commercial consumers 1997-2002: 50MWh/year



Electricity prices to household consumers 1997-2002: 3.5MWh/year



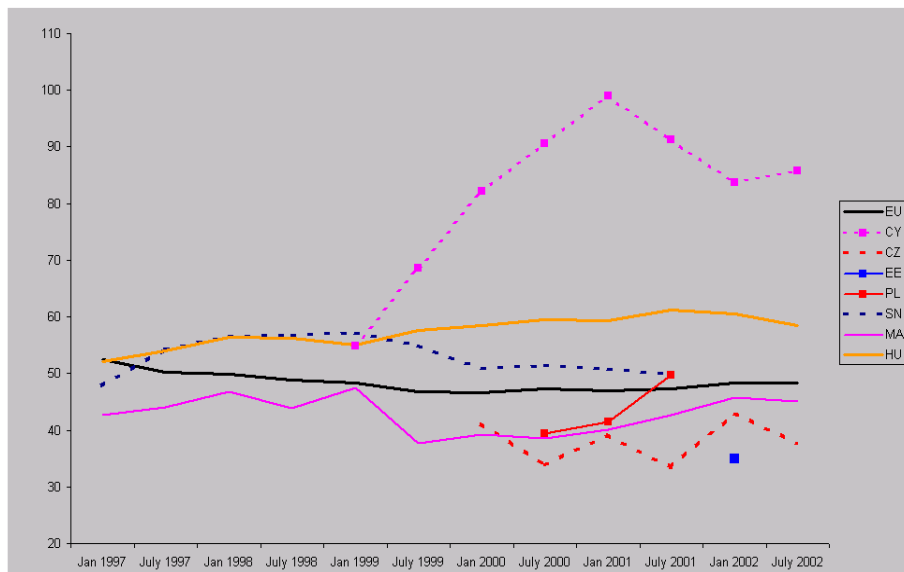


SECTION 6

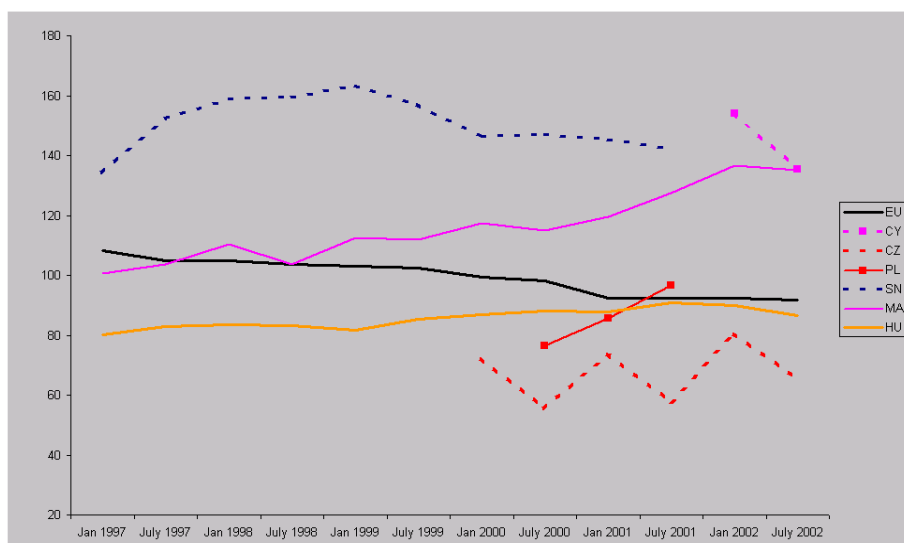
EUROSTAT ELECTRICITY RETAIL PRICES (current prices, before taxes)

(€/MWh)													Eurostat category Ig: Consumption of 24000MWh/year			
INDUSTRIAL IG																
	Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002		% change since 1/1999	% change since 7/2001	
IT	59	58	60	54	53	54	60	69	79	71	71	74	IT	39%	-7%	
IR	56	57	53	53	53	53	53	53	53	53	65	65	IR	22%	22%	
BE	58	58	56	57	55	55	55	58	57	59	58	58	BE	5%	2%	
PT	61	60	58	58	53	53	53	53	53	53	56	56	PT	6%	5%	
DE	68	66	66	65	63	63	50	52	53	53	53	52	DE	-18%	-2%	
AT	66	65	63	63	60								AT			
GR	49	49	49	47	49	49	48	47	48	50	50	50	GR	2%	4%	
FR	55	51	52	50	50	49	49	47	48	48	49	49	FR	-3%	1%	
EU	52	50	50	49	48	47	47	47	47	47	48	48	EU	0%	3%	
ES	59	58	52	52	53	53	54	54	49	49	47	47	ES	-11%	-5%	
UK	60	50	54	51	59	49	54	54	51	48	47	46	UK	-23%	-11%	
NL	48	47	47	48	48	49							NL			
DK	43	42	47	45	44	43							DK			
LX	49	48	46	46	47	47	45	43	38	38	39	38	LX	-19%	2%	
FI	37	36	36	37	35	34	34	34	33	34	36	37	FI	5%	10%	
SW	37	35	33	30	28	28	28	30	24	31	26	26	SW	-7%	7%	
(€/MWh)													Eurostat category Ib: Consumption of 50MWh/year			
INDUSTRIAL IB																
	Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002		% change since 1/1999	% change since 7/2001	
BE	147	146	148	149	148	148	143	146	125	128	129	130	BE	-12%	4%	
IR	133	135	126	127	126	126	126	126	126	126	127	127	IR	1%	1%	
DE	165	162	163	163	162	158	139	134	133	133	131	126	DE	-22%	-6%	
LX	139	136	136	137	139	137	133	131	119	121	122	122	LX	-12%	2%	
NL	92	91	91	92	92	94	78	101	104	106			NL			
IT	119	119	119	114	114	115	119	128	87	78	98	101	IT	-11%	16%	
PT	121	118	115	115	105	105	104	104	105	105	100	100	PT	-4%	-5%	
ES	111	109	100	100	98	98	98	98	98	99	99	99	ES	1%	1%	
AT	163	160	161	161	162	162	157	126	112	102	96	97	AT	-41%	-14%	
EU	108	105	105	104	103	102	99	98	92	92	93	92	EU	-11%	-1%	
GR	85	84	86	82	86	86	84	83	84	87	87	87	GR	1%	4%	
FR	100	91	92	89	89	87	87	85	85	85	86	86	FR	-3%	1%	
UK	114	105	109	105	107	108	107	101	94	93	92	84	UK	-22%	-11%	
DK	51	51	54	52	53	52	56	55	64	65	69	67	DK	26%	3%	
FI	60	59	58	59	56	55	55	54	53	54	56	57	FI	2%	6%	
SW	70	69	69	67	63	59	56	53	40	41	36	36	SW	-43%	-11%	
(€/MWh)													Eurostat category Dc: Consumption of 3.5MWh/year			
DOMESTIC DC																
	Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002		% change since 1/1999	% change since 7/2001	
IT	167	165	168	158	157	158	150	160	157	146	139	142	IT	-10%	-10%	
DE	127	125	126	126	128	129	119	120	122	123	126	125	DE	-2%	2%	
PT	128	125	125	125	120	120	119	119	120	120	122	122	PT	2%	2%	
LX	107	105	106	106	108	107	106	105	112	114	115	115	LX	7%	3%	
BE	119	119	119	120	118	118	117	117	118	118	114	111	BE	-6%	-6%	
NL	88	87	87	87	88	82	94	108	98	89	91	98	NL	11%	0%	
EU	99	96	96	96	95	94	93	94	97	95	96	95	EU	0%	-2%	
UK	108	107	105	103	102	101	99	97	96	97	97	95	UK	-7%	-2%	
FR	101	95	96	94	95	93	93	91	91	91	92	92	FR	-3%	1%	
IR	82	85	80	80	80	80	80	80	80	80	88	88	IR	11%	11%	
ES	105	103	95	95	93	91	90	90	86	86	86	86	ES	-8%	0%	
DK	64	63	67	67	68	68	72	72	78	82	87	84	DK	24%	8%	
AT	98	97	97	97	98	98	95	95	95	95	93	77	AT	-21%	-18%	
FI	73	72	71	71	66	65	65	64	64	67	70	70	FI	6%	10%	
SW	68	67	67	70	65	62	64	65	63	68	70	69	SW	5%	9%	
GR	62	61	63	60	62	62	56	55	57	58	58	58	GR	-7%	2%	

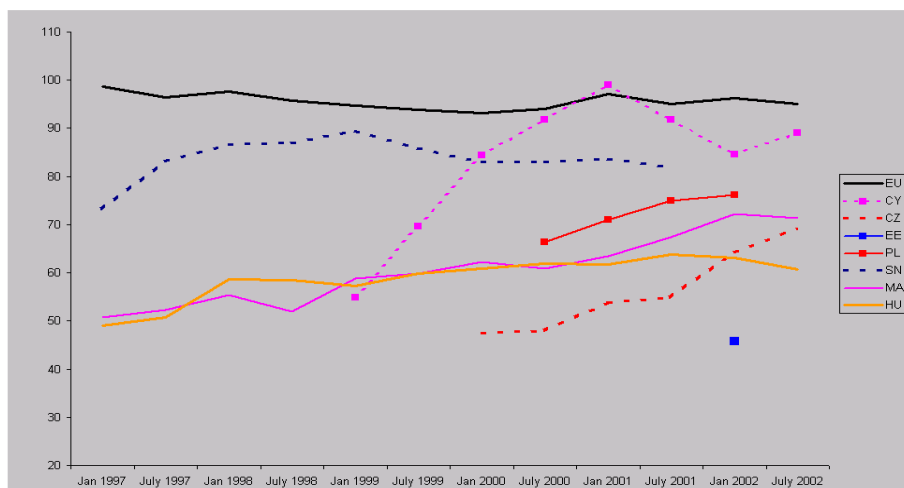
**EUROSTAT ELECTRICITY RETAIL PRICES (current prices, before taxes)**  
**Electricity prices to large industrial consumers 1997-2002: 24GWh/year**



**Electricity prices to small commercial consumers 1997-2002: 50MWh/year**



**Electricity prices to household consumers 1997-2002: 3.5MWh/year**



SECTION 7

ACCESS TO NETWORKS: GAS

Network Tariffs

	number of transmission companies		tariff structure	Number of distribution companies	Estimated charges range (€/MWh)					
	super regional	regional			25mm3 large user		100,000m3 small bus		2,000m3 domestic	
					min	max	min	max	min	max
Austria	3	5	distance	20	under review					
Belgium	1	3	distance	21	1.0	2.0				
Denmark	1	0	postalised	4	<b>2.0</b>	<b>2.0</b>				
France	2	1	distance (cap)	21	2.0	5.0				
Germany	5	<b>14</b>	distance	725	2.0	7.5	9.5	19.5	16.0	34.5
Ireland	1	0	entry-exit	1	1.5	2.5				
Italy	1	1	entry-exit	814	2.0	4.0	4.5	8.0		
Luxembourg	1	0	postalised	4	1.0	1.0				
Netherlands	2	0	entry-exit	25	0.5	1.0				
Spain	1	3	postalised	26	2.0	2.5				
Sweden	1	0	postalised	7	3.5	3.5				
UK	1	0	entry-exit	1	1.5	3.0	4.0	6.0	8.5	11.5
<b>Candidate Countries</b>										
Estonia	1	0	not published	4	not examined in this report					
Latvia	1	0	not published	1						
Lithuania	1	0	postalised	1						
Poland	2	0	postalised	12 <sup>39</sup>						
Czech R	1	0	not published	9						
Slovakia	1	0	postalised	1						
Hungary	1	0	not published	9						
Slovenia	1	0	postalised	14						
Romania	1	5	postalised	14						
Bulgaria	1	0	postalised	29						
Turkey	1	0	not published	5						
source: Survey responses, DG Tren analysis										

rounded to nearest €0.5/MWh

39 PGNIG is the largest one (6.3 million customers)

*SECTION 7 continued*

**ACCESS TO NETWORKS: GAS**

**Notes**

large user = annual consumption 25mm<sup>3</sup>, daily peak 100,000m<sup>3</sup>, hourly peak 4100m<sup>3</sup>;  
small business user = annual consumption 100,000m<sup>3</sup>, daily peak 800m<sup>3</sup>, hourly peak 33m<sup>3</sup>;  
domestic user = annual consumption 2000m<sup>3</sup>, daily peak 30m<sup>3</sup>, hourly peak 1.2m<sup>3</sup>

- BE: Minimum: assumes 100km transmission, 50km regional transmission on 500mm pipe,  
Maximum: assumed 300km transmission, 100km regional transmission on 300mm pipe
- DK: Data provided in DONG transmission and distribution tariff. Postalised tariff. Shippers transporting on the network of DONG Energi-Service have the opportunity of capacity pooling, and thus of a lower transport charge. The calculated examples are therefore 'worst case' scenarios and rarely the actual charges for transportation in the Danish network.
- FR: Minimum assumes entry at Taisnieres, exit at region Paris, plus regional distribution NTAR =1, plus local distribution NTAD =2.  
Maximum assumes entry at Taisnieres, exit at Toulouse Ouest, regional distribution NTAR =6, plus local distribution NTAD =2.
- DE: Minimum assumes 100km transport at 900mm pipe plus 50km at 350-500mm pipe plus local distribution prices from VV2 anlage 3.  
Maximum assumes 300km transport in 900mm pipe plus 100km in <350mm pipe plus local distribution prices from VV2 anlage 3
- IR: Minimum: assumes entry at Inch, postalised exit tariff  
Maximum: entry via UK interconnector, postalised exit tariff
- IT: Minimum assumes Entry Point: Passo Gries, Exit Point F, plus regional distribution on rete gas network, **no local distribution**.  
Maximum assumes Entry point: Mazara del Valo, Exit Point P, regional distribution on edison network, **no local distribution**.
- LX: Data provided in SOTEG transmission and distribution tariff. Postalised tariff
- NL: Minimum, based on Groningen to Ommen (G gas) plus postalised regional transmission, Dr = 1  
Maximum; based on Groningen to Zeeland (G gas) plus postalised regional transmission Dr = 1
- ES: Minimum: assumes customer connected at >60 bar  
Maximum: assumes connection at 4-60 bar
- UK: Minimum based on entry at Bacton: average of highest 50% of bids for Oct 01 to Mar 02, 1st-5th tranche = 0.0013p/KWh, exit zone NE1 plus postalised LDZ charges.  
Maximum based on entry at St Fergus: average of highest 50% of bids for Oct 01 to Mar 02, 1st-5th tranche = 0.0520p/KWh, exit zone SW3 plus postalised LDZ charges.

SECTION 7(CONT)

ACCESS TO NETWORKS: GAS

Capacity Booking

	Minimum booking period	type of capacity	allocation method	use it or lose it?	overall assessment
Austria	1 year or premium	“cost reflective”	fcfs\LT	planned	moderate
Belgium	1 month	point-point	fcfs	planned	flexible
Denmark	1 year or premium	point-point	fcfs	yes	moderate
France	1 year	point-point	fcfs	no	inflexible
Germany	1 year or premium	point-point	fcfs	no <sup>40</sup>	inflexible
Ireland	1 year (transfer allowed)	point-point	unclear	yes	flexible
Italy	1 month	entry-exit	pro-rata	yes in effect	flexible
Luxembourg	1 year	no congestion			flexible
Netherlands	1 month	point-point	fcfs	yes	flexible
Spain	unknown	entry-exit	fcfs	yes	flexible
Sweden	no congestion				flexible
UK	1 day	entry	auction	yes	flexible
<b>Candidate Countries</b>					
Estonia	not examined in this report				
Latvia					
Lithuania					
Poland					
Czech R					
Slovakia					
Hungary					
Slovenia					
Romania					
Bulgaria					
Turkey					
source: source: Compliance Overview of Madrid Guidelines					

<sup>40</sup> Thyssengas has an anti hoarding mechanism similar to use-it-or-lose-it.

SECTION 8

NETWORK UNBUNDLING: GAS

	Basic Unbundling Model		Published accounts		Compliance officer		Separate corporate identity		Separate HQ location		Total Y
	TSO	DSO	TSO	DSO	TSO	DSO	TSO	DSO	TSO	DSO	
Austria	Legal	Legal	Y	Y	N	N	Y	Y	Y	N	5
Belgium	Legal	Legal	Y	not yet	Y	N	Y	Y	N	N	4½
Denmark	Legal	Legal	Y	Y	Y	N	Y	N	N	N	4
France	Account	Account	N	N	N	N	N	N	N	N	0
Germany	Account	Account	Y	Y	N	N	N	N	N	N	2
Ireland	Manage	Manage	not yet	not yet	Y	Y	N	N	N	N	3
Italy	Legal	Legal	Y	Y	Y	N	Y	N	Y	N	5
Lux	Account	Account	Y	N	N	N	N	N	N	N	1
Neth	Manage	Account	Y	Y	Y	N	Y	Y	Y	N	6
Spain	Own	Legal	Y	Y	Y	N	Y	Y	Y	N	6
Sweden	Account	Account	Y	Y	N	N	N	N	N	N	2
UK	Own	Own	Y	Y	Y	Y	Y	Y	Y	Y	8
<b>Candidate Countries</b>											
Estonia	Account		Y				N		N		1
Latvia	Account		N				N		N		0
Lithuania	Account		Y				N		N		1
Poland	None		N				N		N		0
Czech R	Account		N				N		N		0
Slovakia	Account		N				N		N		0
Hungary	Account		Y				Y		N		2
Slovenia	Account		Y				N		N		1
Romania	legal		Y				N		N		1
Bulgaria	Account		Y				N		N		1
Turkey	Account		Y				N		N		1
source: Survey responses											

*SECTION 9*

**BALANCING AND STORAGE: GAS**

see Annex C

SECTION 10

**CROSS BORDER TRANSACTIONS: GAS**

bcm/year	Import capacity	Export capacity	Net inflows	% capacity use
Austria	40.8	40.3	+6.3	n.a. (transit country)
Belgium	80.3	48.9	+15.8	n.a. (transit country)
Denmark	-	4.4	-3.4	77%
France	61.5	2.5	+42.1	68%
Germany	201.7	25.7	+67.6	33%
Ireland	9.1	0	+3.0	33%
Italy	81.4	1.5	56.0	69%
Luxembourg	n.a.	n.a.	n.a.	n.a.
Netherlands	23.7	112.5	-20.5	23%
Portugal	3.1	-	2.4	77%
Spain	43.8	3.1	18.4	42%
UK	8.8	29.3	-11.1	54%
<b>Candidate Countries</b>				
Estonia	not examined in this report			
Latvia				
Lithuania				
Poland				
Czech R				
Slovakia				
Hungary				
Slovenia				
Romania				
Bulgaria				
Turkey				
source: Brattle Group report for DG TREN				

% capacity use calculated as net flow divided by appropriate capacity figure.

Heavily transited countries not calculated.

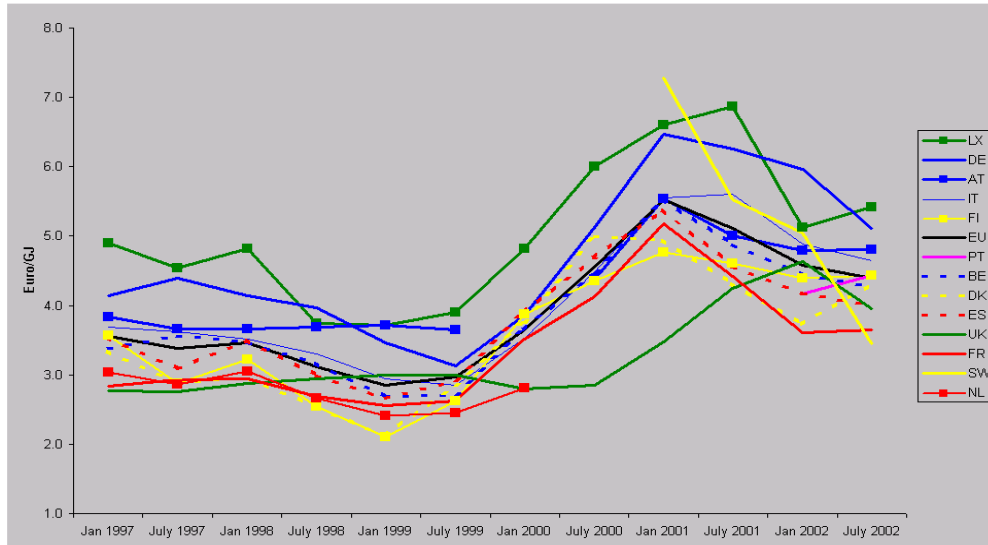
Source: Brattle Group report for DG TREN



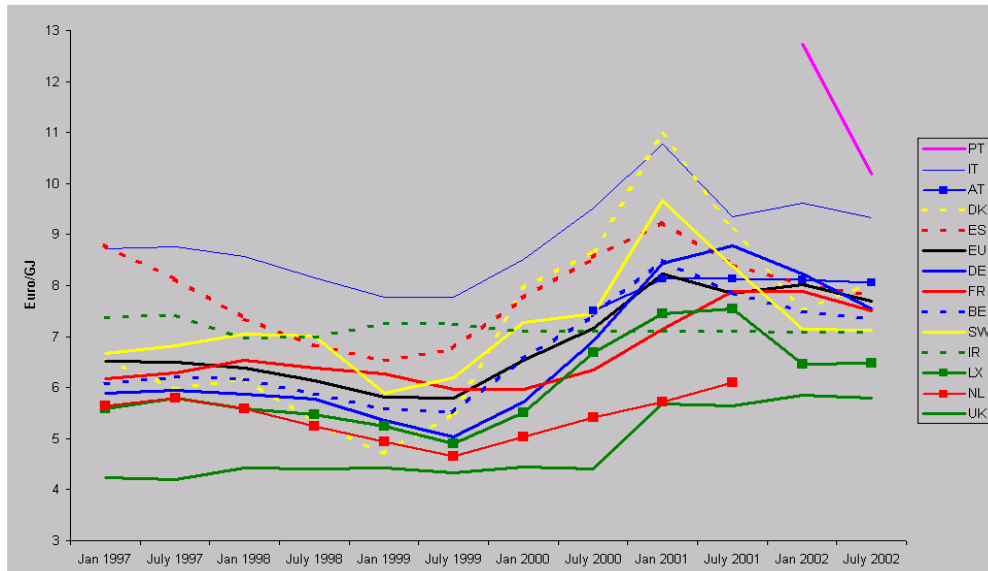
SECTION 11

EUROSTAT GAS RETAIL PRICES (current prices, before taxes)

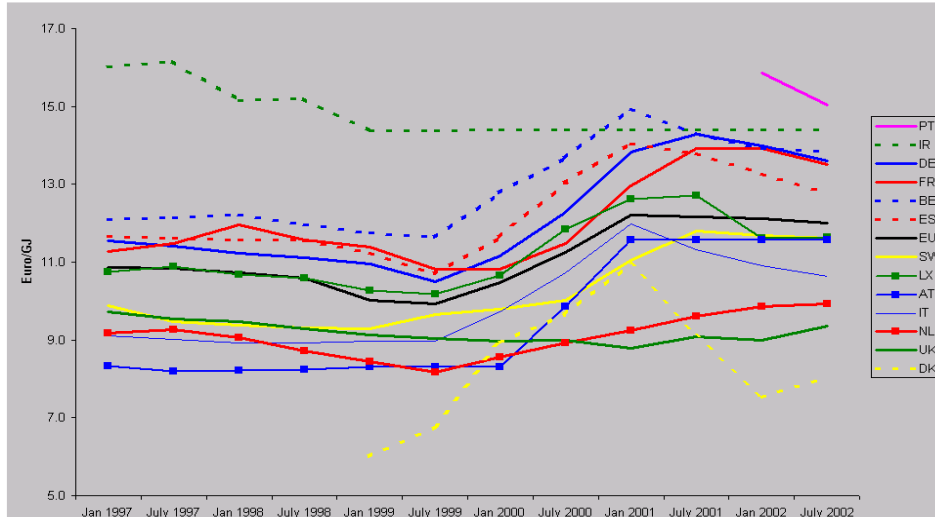
Gas prices large commercial consumers 1997-2002: 420 000GJ/year (approx. 120GWh)



Gas prices small commercial consumers 1997-2002: 420GJ/year (approx. 120MWh)



Gas Prices to household consumers 1997-2002: 16GJ/year (approx. 4.5MWh)



SECTION 11

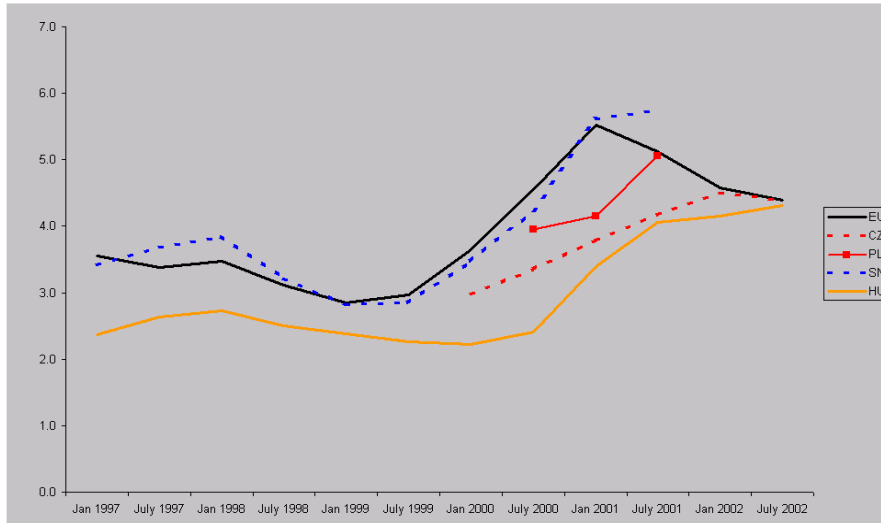
**EUROSTAT GAS RETAIL PRICES (current prices, before taxes)**

(€/GJ)		Eurostat category I4-1: Consumption of 418.6TJ/year c. 120GWh															
		Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002			% change since 7/2000	% change since 7/2001
LX		4.9	4.5	4.8	3.7	3.7	3.9	4.8	6.0	6.6	6.9	5.1	5.4	LX		-10%	-21%
DE		4.1	4.4	4.1	4.0	3.5	3.1	3.9	5.1	6.5	6.3	6.0	5.1	DE		0%	-18%
AT		3.8	3.7	3.7	3.7	3.7	3.6		4.4	5.5	5.0	4.8	4.8	AT		10%	-4%
IT		3.7	3.6	3.5	3.3	2.9	2.8	3.5	4.5	5.6	5.6	4.9	4.6	IT		3%	-17%
IR												4.5	4.6	IR			
PT												4.2	4.4	PT			
EU		3.6	3.4	3.5	3.1	2.9	3.0	3.7	4.5	5.5	5.1	4.6	4.4	EU		-3%	-14%
FI		3.6	2.9	3.2	2.5	2.1	2.6	3.9	4.4	4.8	4.6	4.4	4.4	FI		2%	-4%
DK		3.3	2.9	2.9	2.5	2.1	2.8	3.7	5.0	4.9	4.3	3.7	4.3	DK		-13%	0%
BE		3.4	3.6	3.5	3.2	2.7	2.7	3.6	4.5	5.5	4.9	4.5	4.3	BE		-4%	-12%
UK		2.8	2.8	2.9	2.9	3.0	3.0	2.8	2.9	3.5	4.3	4.6	4.0	UK		38%	-7%
ES		3.5	3.1	3.5	3.0	2.7	2.9	3.9	4.7	5.4	4.6	4.2	4.0	ES		-14%	-12%
FR		2.8	2.9	2.9	2.7	2.6	2.6	3.5	4.1	5.2	4.4	3.6	3.7	FR		-12%	-17%
SW										7.3	5.5	5.0	3.5	SW			-38%
NL		3.0	2.9	3.0	2.7	2.4	2.4	2.8						NL			
(€/GJ)		Eurostat category I1-1: Consumption of 418GJ/year c. 120MWh															
																% change since 7/2000	% change since 7/2001
		Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002				
PT												12.7	10.2	PT			
IT		8.7	8.8	8.6	8.2	7.8	7.8	8.5	9.5	10.8	9.3	9.6	9.3	IT		-2%	0%
AT									7.5	8.1	8.1	8.1	8.1	AT		7%	-1%
DK		6.5	6.0	6.2	5.3	4.7	5.5	7.9	8.7	11.0	9.1	7.5	8.1	DK		-7%	-11%
ES		8.8	8.1	7.3	6.8	6.5	6.8	7.8	8.5	9.2	8.4	8.0	7.8	ES		-9%	-7%
EU		6.5	6.5	6.4	6.1	5.8	5.8	6.5	7.2	8.2	7.9	8.0	7.7	EU		7%	-2%
DE		5.9	6.0	5.9	5.8	5.4	5.0	5.7	6.9	8.4	8.8	8.2	7.5	DE		9%	-14%
FR		6.2	6.3	6.5	6.4	6.3	6.0	6.0	6.3	7.1	7.9	7.9	7.5	FR		18%	-5%
BE		6.1	6.2	6.2	5.9	5.6	5.5	6.6	7.4	8.5	7.9	7.5	7.4	BE		-1%	-7%
SW		6.7	6.8	7.0	7.0	5.9	6.2	7.3	7.4	9.7	8.4	7.2	7.1	SW		-4%	-15%
IR		7.4	7.4	7.0	7.0	7.3	7.3	7.1	7.1	7.1	7.1	7.1	7.1	IR		0%	0%
LX		5.6	5.8	5.6	5.5	5.3	4.9	5.5	6.7	7.5	7.5	6.5	6.5	LX		-3%	-14%
NL		5.6	5.8	5.6	5.2	4.9	4.7	5.0	5.4	5.7	6.1			NL			
UK		4.2	4.2	4.4	4.4	4.4	4.3	4.5	4.4	5.7	5.6	5.8	5.8	UK		31%	3%
FI		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	FI			
(€/GJ)		Eurostat category D2: Consumption of 16GJ/year c. 4.5MWh															
																% change since 7/2000	% change since 7/2001
		Jan 1997	July 1997	Jan 1998	July 1998	Jan 1999	July 1999	Jan 2000	July 2000	Jan 2001	July 2001	Jan 2002	July 2002				
PT												15.9	15.0	PT			
IR		16.0	16.1	15.1	15.2	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	IR		0%	0%
BE		12.1	12.1	12.2	12.0	11.8	11.6	12.8	13.7	14.9	14.3	13.9	13.8	BE		1%	-3%
DE		11.5	11.4	11.2	11.1	11.0	10.5	11.2	12.3	13.8	14.3	14.0	13.6	DE		11%	-5%
FR		11.3	11.5	12.0	11.6	11.4	10.8	10.8	11.5	13.0	13.9	13.9	13.5	FR		18%	-3%
ES		11.7	11.6	11.6	11.6	11.3	10.7	11.6	13.0	14.1	13.8	13.3	12.8	ES		-2%	-7%
EU		10.9	10.8	10.7	10.6	10.0	9.9	10.5	11.2	12.2	12.2	12.1	12.0	EU		7%	-1%
SW		9.9	9.5	9.4	9.3	9.3	9.7	9.8	10.0	11.0	11.8	11.7	11.6	SW		16%	-2%
LX		10.8	10.9	10.7	10.6	10.3	10.2	10.7	11.8	12.6	12.7	11.6	11.6	LX		-2%	-8%
AT		8.3	8.2	8.2	8.2	8.3	8.3	8.3	9.9	11.6	11.6	11.6	11.6	AT		17%	0%
IT		9.1	9.0	8.9	8.9	9.0	9.0	9.7	10.7	12.0	11.3	10.9	10.6	IT		-1%	-6%
NL		9.2	9.3	9.1	8.7	8.4	8.2	8.5	8.9	9.2	9.6	9.9	9.9	NL		11%	3%
UK		9.7	9.5	9.5	9.3	9.1	9.0	9.0	9.0	8.8	9.1	9.0	9.4	UK		4%	3%
DK						6.0	6.8	9.0	9.7	11.0	9.1	7.5	8.1	DK		-17%	-11%
FI														FI			

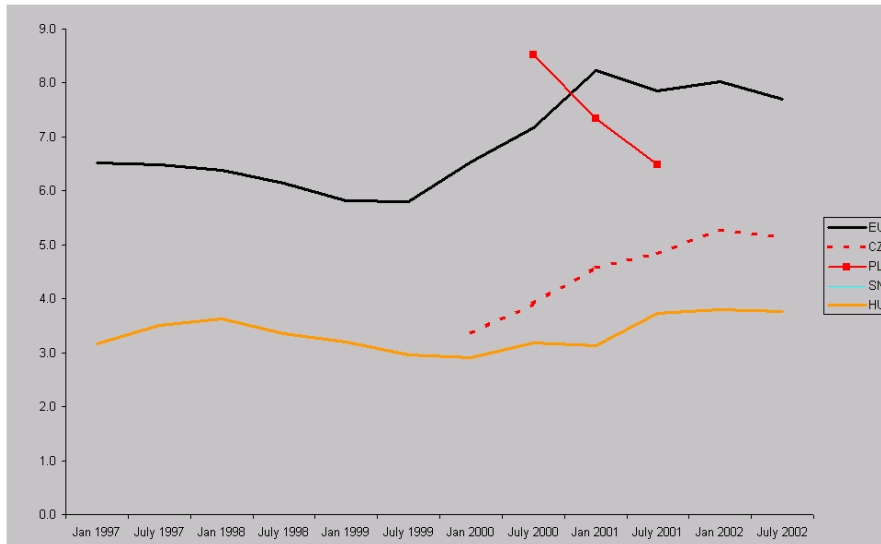
SECTION 11 cont

EUROSTAT GAS RETAIL PRICES (current prices, before taxes)

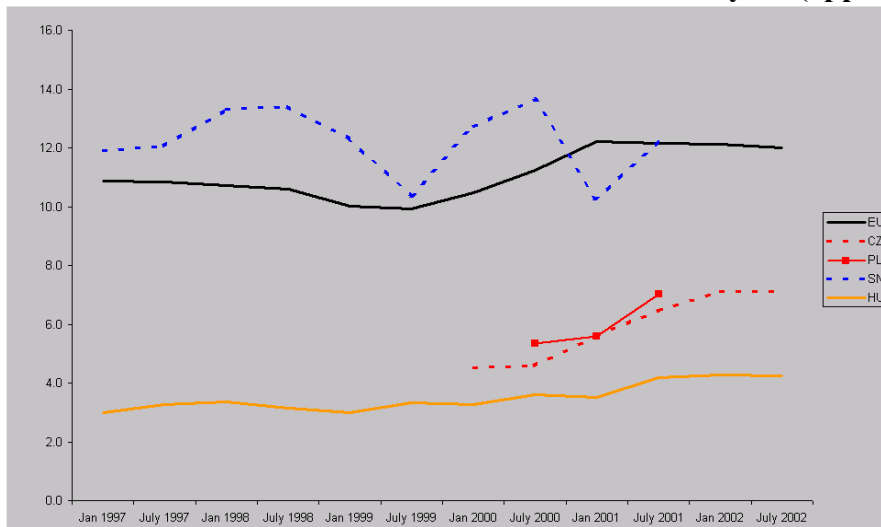
Gas prices large commercial consumers 1997-2002: 420 000GJ/year (approx. 120GWh)



Gas prices small commercial consumers 1997-2002: 420GJ/year (approx. 120MWh)



Gas Prices to household consumers 1997-2002: 16GJ/year (approx. 4.5MWh)



SECTION 12

PUBLIC SERVICE AND SERVICE STANDARDS

Electricity	Universal service			Vulnerable Customers				
	% connected to network	default supplier	perequation (uniform tariff)	special tariffs	pre-payment meters	“free” supply amount	restrictions on disconnection	number of disconnections for non-payment
Austria	99.5%	predetermined	N	-	-	-	unknown	unknown
Belgium	100%	predetermined	MS		-	Y	Y	4,988 <sup>41</sup>
Denmark	100%	predetermined	D	-	-	-	-	“negligible”
Finland	100%	designated*	N	Y	-	-	-	9,000
France	100%	predetermined	Y	-	-	-	unknown	unknown
Germany	100%	predetermined	N	-		-	Y	unknown
Greece	100%	predetermined	Y	-	-	-	-	unknown
Ireland	100%	predetermined	MS	Y	Y	Y	Y	3,670
Italy	100%	designated*	MS	-	-	-	unknown	unknown
Lux	100%	predetermined	MS	-	-	-	unknown	unknown
Neth	100%	predetermined	D	-	-	-	Y	0.7%
Portugal	100%	predetermined	MS	Y	-	-	Y	130,000
Spain	100%	predetermined	MS	-	-	-	-	unknown
Sweden	100%	designated*	N	-	-	-	Y	unknown
UK	100%	designated*	D	Y	Y	-	in some cases	375
<b>Candidate Countries</b>								
Estonia	99.9%	DSO	not examined in this report	not examined in this report				
Latvia	100%	unknown						
Lithuania	100%	DSO						
Poland	99.7%	imposed						
Czech R	100%	imposed						
Slovakia	100%	DSOs						
Hungary	100%	appointed						
Slovenia	100%	appointed						
Romania	99.5%	DSO						
Bulgaria	100%	T/DSO						
Turkey	99%	DSO						
Cyprus	100%	DSO						
Malta	100%	DSO						
source: Survey responses								

\* by regulator

Perequation: MS - national , D - across DSO area, N – none

<sup>41</sup> Total for both electricity and gas

SECTION 12 CONT.

PUBLIC SERVICE AND SERVICE STANDARDS

	Standards of Service				
Electricity	Distribution network performance minutes of interruptions per customer per year	are there targets for performance	how are these enforced	Conditions are placed on retail suppliers	how are these enforced
Austria	<1	planned	-	F	regulator
Belgium	<60 <sup>42</sup>	no information		F	revoke licence
Denmark	30	none	-	none	-
Finland	114	none	-	none	-
France	unknown	no information		no information	
Germany	15	no	-	F	possible penalties
Greece	unknown	no	-	none	-
Ireland	372	yes	C	V, M	directions
Italy	181	yes	P	no information	
Lux	unknown	no information		no information	
Neth	unknown	no information		no information	
Portugal	unknown	yes	unknown	no information	
Spain	170	yes	P	no information	
Sweden	85	yes	C,P	none	-
UK	90	yes	C,P	V, M	fines, compensation, directions, revoke licence
<b>Candidate Countries</b>					
Estonia	not examined in this report				
Latvia					
Lithuania					
Poland					
Czech R					
Slovakia					
Hungary					
Slovenia					
Romania					
Bulgaria					
Turkey					
Cyprus					
Malta					
source: Survey responses					

P = financial penalties in price limit, C = direct compensation to customers  
V = vulnerable customers, M meter reading standards, F – financial and technical status

<sup>42</sup> Medium voltage grid only

SECTION 12 (CONTINUED)

PUBLIC SERVICE AND SERVICE STANDARDS

Gas	Universal Service			Vulnerable Customers			
	% connected to network	default supplier	uniform tariff	special tariffs	pre-payment meters	restrictions on disconnection	number of disconnections
Austria	17%	no	no	-	-	-	unknown
Belgium	20%	yes	yes	-	Y	Y	4,988
Denmark	15%	yes	no	-	-	-	“few”
France	unknown	yes	no	-	-	-	unknown
Germany	51%	yes	no	-	-	-	unknown
Ireland	23%	planned	yes	-	-	-	4,829
Italy	69%	no	no	-	-	-	unknown
Lux	43%	no	yes	-	-	-	unknown
Neth	98%	not yet	no	-	-	-	unknown
Spain	30%	no	yes	-	-	-	unknown
Sweden	minimal domestic customers for gas						
UK	80%	no	no	-	Y	Y	26,088
<b>Candidate Countries</b>							
Estonia	18%	yes	not examined in this report	not examined in this report			
Latvia	33%	yes					
Lithuania	39%	no					
Poland	52%	yes					
Czech R	62%	unknown					
Slovakia	83%	yes					
Hungary	72%	appointed					
Slovenia	unknown	Yes					
Romania	20%	yes					
Bulgaria	0,3%	yes					
Turkey	8%	yes					
source: Survey responses							

## SECTION 13

## ENVIRONMENTAL POLICY FRAMEWORK

				Net addition to generation 1998-2001 (MW)			
	VAT rate	energy tax	main RES support mechanism	net new coal/oil	net new gas	net new RES/CHP	other
Austria	20	**	fixed feed in tariff	no information			
Belgium	21	*	quota system (green certs.)	-225	-225	+433	-
Denmark	25	***	quota system (green certs)	-803	+317	-	+32
Finland	22	*	investment subsidies	+270	+160	+307	+220
France	19.6/5.5	*	quota system (tender)	no information			
Germany	16	**	fixed feed in tariff	-166	-101	+3150	+1251
Greece	8	none	fixed feed in tariff plus subsidies	-80	+492	-	-
Ireland	12.5	none	quota system (tender)	0	+310	+1074	+84
Italy	20/10	**	quota system	-	+4880	+1167	-
Lux	6	*	fixed feed in tariff	no information			
Neth	19	***	quota system (green certs)	-	+227	+511	-
Portugal	5	none	fixed feed in tariff	-50	+660	-	-
Spain	16	*	fixed feed in tariff	+341	-	+5942	+1057
Sweden	25	**	quota system (green certs)	-2500	-	+7	-600
UK	17.5/5	*	quota system (tender)	-5228	+5734	+109	-257
<b>Total</b>				<b>-8400</b>	<b>+12500</b>	<b>+12700</b>	<b>+1800</b>
<b>Candidate Countries</b>							
Estonia	not examined in this report						
Latvia							
Lithuania							
Poland							
Czech R							
Slovakia							
Hungary							
Slovenia							
Romania							
Bulgaria							
Turkey							
Cyprus							
Malta							
source: Eurostat, Survey responses							

\* average energy tax less than €5/MWh

\*\* average energy tax between €5-15/MWh

\*\*\* average energy tax above €15/MWh

## **ANNEX B BENCHMARKING OF COUNTRIES IN SOUTH EAST EUROPE ELECTRICITY MARKET**

### **1 BACKGROUND TO THIS REPORT**

This report contains a first assessment of current plans for the reform of the South East Europe electricity market. The report is based on a survey of the regulators and governments in these countries as to the current position and future intentions. This report covers Bulgaria, Greece, Romania and Turkey as well as Bosnia and Herzegovina, Croatia, Serbia and Montenegro and the former Yugoslav Republic of Macedonia. These countries signed a Memorandum of Understanding on the Regional Electricity Market in South East Europe and its Integration into the European Union Internal Electricity Market.

The coverage of this report is less detailed than that for existing Member States and candidate countries. However, as and when a single market for electricity throughout the whole continent becomes a reality, the scope of this report will be extended so that there is comparable coverage.

### **2 SUMMARY**

Overall, the South East Europe countries have engaged themselves in adopting the Electricity Directive in force (96/92) and the new proposals when adopted. In particular, a time schedule is set that includes: opening up of the state electricity markets by 2005, the creation of Regulatory Bodies and Transmission System Operators by 2003 and Distribution System Operators by 2005.

Most of the countries are already in the process of adopting the legislative measures to get in line with the provisions foreseen in the Memorandum of Understanding on the Regional Electricity Market in South East Europe. As well as the need for this additional legislation, there are other barriers to a competitive market to overcome, associated with concentration and poorly functioning interconnection

There is considerable potential to improve the functioning of cross border trade among these countries where, in some cases, a considerable level of interconnection exists or can be brought back into operation. The initiatives of the regional South East Europe market will therefore play a pivotal role in improving the efficiency of the electricity supply industry in providing a better service to customers.

### **3 MARKET OPENING POSITION AND INTENTIONS**

Table 1 below sets out basic information on the size of the electricity market, the current position by country relating to the proportion of the market open to competition, the relevant thresholds, and information on the regulation of the market and unbundling.



**Table 1 Basic Information, Current and Planned Market Opening Measures**

	Electricity consumption		Market opening	current eligibility threshold	date for non-household market opening	Current unbundling for transmission:	Network access regulated or negotiated	Authorisation or tendering
	total (TWh)	peak (GW)	%					
Croatia	13	2,8	[9%]	-	2005	[Legal]	[Regulated]	[Both]
Bosnia-Herzeg	10	1,9	0%	-		[Legal]	[Regulated]	[Authorisation]
Romania	45	8,4	33%	40GWh		Legal	Regulated	Authorisation
Bulgaria	37	6,9	15%	100 GWh		Accounts	Regulated	Tender
Serbia	34	6,8	[12%]	[25 GWh]		[Accounts]	[Regulated]	[Both]
Montenegro	4	0,7	0%	-		[Accounts]	[Regulated]	Tendering
FYROM	6	1,3	18%	110KV		not decided	Regulated	[Authorisation]
UNMIK		0,8	0%	-		Accounts	[Regulated]	[Authorisation]
Albania	6	1,2	0%	-		Management	Regulated	Authorisation
Turkey	100	19,6	23%	9GWh		Legal	Regulated	Authorisation
<b>Note:</b>								
Greece	48	8,7	34%	1KV	-	Legal /Mgmt	Regulated	Authorisation
planned measures [in brackets]								

The table shows that at present there are very different approaches being taken regarding market opening. The Memorandum of Understanding has established a deadline for market opening to all non-households by 2005. However, apart from the candidate countries, Romania, Bulgaria and Turkey, only the FYROM has made the first step towards market opening. Bosnia and Herzegovina plans the creation of Regulatory Commissions, Transmission Company and Independent System Operator in 2003. Similarly outside the candidate group there is, as yet, little progress in establishing an independent unbundled transmission system operator. Croatia does, however, have plans for legal unbundling in the near future.

Regarding regulation, almost all the jurisdictions examined plan to have a system of regulated third party access. Similarly most countries have already opened or have plans to open the generation market by adopting an authorisation procedure for new generation capacity although Bosnia and Herzegovina, Bulgaria and Montenegro are currently retaining the tendering approach, as are Serbia and Croatia for the non-eligible market.

#### 4 REGULATORY AUTHORITIES

Effective regulation of networks has been demonstrated as an important building block for securing competition in electricity markets. The Commission's proposal envisages a specified regulatory body in each Member States with defined core responsibilities. It also underlines the importance of independence from the industry being regulated.

**Table 2 Responsibilities of regulators**

	Are tariffs approved ex-ante/ex-post?	Who approves tariffs?	Who settles disputes?	Who Scrutinises work of regulators	Strong information powers for regulator	Budget (€m)	Staff
Croatia	ex-ante	Ministry\Reg	Regulator	Parliament	yes	2	8
Bosnia-Herzeg	[ex-ante]	[Reg]	[Regulator]	[Parliament]	[yes]	na	na
Romania	ex-ante	Regulator	Regulator	Ministry	yes	1,6	65
Bulgaria	ex ante	Regulator	Regulator	Ministers	yes	1	85
Serbia	unknown	[Reg]	[Regulator]	[Parliament]	[yes]	[1]	[35]
Montenegro	unknown	[Reg]	[Regulator]	[Parliament]	[yes]	na	na
FYROM	unknown	[Reg]	[Regulator]	[Parliament]	[yes]	na	na
UNMIK	unknown	[Reg]	[Regulator]	[Parliament]	[yes]	na	na
Albania	ex-ante	Regulator	Regulator	Parliament	unknown	0,2	15
Turkey	ex-ante	Regulator	Regulator	Ministers	yes	8	170
<b>Note:</b>							
Greece	ex-ante	Ministry	Regulator	Parliament	yes	4	70
planned measures [in brackets]							

The table above assesses the responsibilities of the regulator office in each country as well as the relationship between regulatory offices and Ministries. It also compares the budget of the energy regulator in each jurisdiction. The table shows that the candidate countries covered, have all established a reasonably large regulatory office with a significant degree of independence from Ministerial control and strong powers to collect and audit information from regulated businesses. The same is also true in Albania. Although the other jurisdictions in the former Yugoslavia have yet to decide on the exact structure, they appear to have in mind a similar approach.

## 5 NETWORK ACCESS

Transparent and non-discriminatory network access conditions are a necessary condition for fair competition. The analysis below sets out basic information on the number of network companies in each country. It also examines whether countries meet the minimum requirement that tariffs for the use of the networks concerned are published. This should be seen as a first step for any country seeking to opening its electricity market to competition.

**Table 3 Publication of network access tariffs**

	Number of transmission companies	Published Tariffs	Number of Distribution companies	Published Tariffs
Croatia	1	no	1	no
Bosnia-Herzeg	3 [1]	no	4 [3]	no
Romania	1	yes	8	yes
Bulgaria	1	yes	8	no
Serbia	1	no	11	no
Montenegro	1	no	16	no
FYROM	1	no	1	no
UNMIK	1	no	7 areas	no
Albania	1	yes	9	yes
Turkey	1	no	33	no
<b>Note:</b>				
Greece	1	yes	1	not yet

The analysis shows that only Romania and Albania have published both transmission and distribution tariffs. For the other countries there is much less transparency in this regard.

## 6 UNBUNDLING

One of the keys to achieving fair access to networks is the degree of unbundling of the network businesses from the competitive parts of the industry; i.e. generation and supply. As well as the contents of the Directives, there are practical considerations involved, particularly when the requirement is management unbundling for which there is not a precise definition. The table below therefore examines, for the TSO only, some basic unbundling measures that might be expected in the initial stages of market opening.

**Table 4 Unbundling of Transmission Network**

	Are accounts published?	Do network and other businesses have a separate corporate identity (tel. website etc)	Do network and other businesses have separate offices
Croatia	no	no	no
Bosnia-	[yes]	[yes]	[yes]
Romania	yes	yes	yes
Bulgaria	yes	yes	yes
Serbia	no	no	no
Montenegro	no	no	no
FYROM	no	no	no
UNMIK	no	no	yes
Albania	yes	no	no
Turkey	yes	yes	no
<b>Note:</b>			
Greece	no	yes	yes

This shows limited progress in the area of unbundling. Only Romania and Bulgaria have achieved all three of the basic unbundling measures identified for the transmission network. Turkey is the next most advanced.

## 7 DESIGN OF GENERATION MARKET

Competition also requires sufficient scope for competition between electricity generators, either within the country concerned, or as a result of cross border exchanges.

Electricity markets can be set up in two main ways. In most EU Member States, the market is set up to allow long term bilateral contracts between producers and suppliers. Some electricity is also exchanged in the basis of standardised short-term contracts on a “power exchange”, which in turn provides a reference price. There may then also be a balancing mechanism to take account of occasions where the injections and withdrawals carried out by market participants are out of balance.

The alternative, which is becoming less common, is a Pool system whereby all electricity is exchanged in a centrally organised market. This is similar to a Single Buyer approach although often market players are allowed to engage in bilateral arrangements known as “Contracts for Differences” which allow a longer-term price to be agreed. Indeed, the ability to do this is a requirement of the current electricity Directive. In such a Pool approach, balancing is often dealt with by using a single price for balancing energy, whether the required adjustments are up or down. Alternatively balancing costs may be socialised.

The table below analyses the structure of the generation market in each country in the south East European electricity market. There is also a rudimentary analysis of the balancing arrangements in the countries concerned.

**Table 5 Wholesale Market Structure and Balancing**

	% of electricity covered by			Concerning balancing		
	Single buyer/ obligatory pool	Bilateral Trades Or CFDs	Power exchange	Imbalances charged to	Imbalance charges set by	Balancing period
Croatia	unknown			socialised	na	unknown
Bosnia-Herzeg	no market set up yet			[those out of balance]	[Regulator]	[1 h]
Romania	-	88%	12%	those out of balance	market operator	1 h
Bulgaria	100%	-	-	[those out of balance ]	TSO	1h
Serbia	no market set up yet			socialised	na	1h
Montenegro	no market set up yet			socialised	na	1 h
FYROM	no market set up yet			unknown	unknown	1 h
UNMIK	unknown			unknown	unknown	unknown
Albania	no market set up yet			unknown	unknown	unknown
Turkey	-	100%	-	hybrid	TSO	6h
<b>Note:</b>						
Greece	-	100%	-	socialised	Ministry	1 hour
planned measures [in brackets]						

The table shows that many of the jurisdictions assessed do not have any kind of market structure for generation. For the remainder, Bulgaria has established a compulsory Pool or single buyer model, with Romania, Turkey and Greece using a model based on bilateral contracts. Romania is the only country with a power exchange. Likewise, balancing mechanisms are also poorly developed in general.

## 8 STRUCTURE OF GENERATION AND SUPPLY MARKET

The degree of concentration in generation markets is also a factor in development of competition. Where a large proportion of generation is controlled by a small number of companies, this makes it very difficult for new retail suppliers to enter the market. Such problems may be magnified where long term power purchase contracts exist between generators and supply companies. Table 6 below therefore examines the issue of concentration in both the generation and supply market.

**Table 6 Market Structure and Concentration**

	Generation				Supply		
	No. with at least 5%	Top 3 share	Installed capacity (GW)	Import capacity as proportion of installed capacity (%)	Number of suppliers	Number of independent suppliers of DSO	No. with at least 5%
Croatia	1	95% (1)	3,6	30%	unknown	unknown	unknown
Bosnia-Herzegovina	3 [7-8]	98%	4,0	35%	4	0	3
Romania	7	50%+	19,5	19%	51	43	9
Bulgaria	7	61%	10,2	20%	8	0	7
Serbia	1	97% (1)	8,5	17%	6	0	unknown
Montenegro	1	100% (1)	n.a.	>100%	1	0	1
FYROM	1	100%	1,5	>100%	1	0	1
UNMIK	0	100	1,5	>100	1	0	1
Albania	1	95%	n.a.	>100%	1	0	1
Turkey	1	59% (1)	18,8	10%	1	0	1
<b>Note:</b>							
Greece	1	98%(1)	10,3	11%	6	5	1

Many countries examined have a degree of concentration at national level, although this is often diluted by considerable capacity for cross border exchanges. Bulgaria and Romania are probably the only countries with the potential for a reasonably competitive national market with several large players. However the other states could rely on international trade to provide competition. Both Serbia and Turkey have significant concentration combined with limited import capacity.

## 9 CROSS BORDER ISSUES

Competition from cross border exchanges in electricity requires sufficient inter-connection capacity to exist, as well as a tariffication and capacity allocation methods that are conducive to competition, in that they are non-discriminatory and transparent.

A particular principle that should be adopted is that specific import, export or transit charges for crossing national borders are not a suitable mechanism for arranging cross border exchanges and are unlikely to be a cost reflective system. Where possible such charges should be removed and be replaced by appropriate locational signals incorporated into network charges for generation and load as a whole. The table below considers the methodologies currently in place in each country.

**Table 7 Cross Border Issues**

	Transit charge	Import/Export charges (€/MWh)	Interconnection capacity (MW)	Extent of LT reservation	Allocation method	
Croatia	unknown	unknown	800	unknown	unknown	
Bosnia-Herzegovina	4,5% of volume	zero	1400	zero	first come/ first served	
Romania	G&L components from transmission charges	G&L components from transmission charges	1690	zero	first come/ first served	
Bulgaria	negotiated	no	2600 export 2150 import	zero	first come/ first served	
Serbia	negotiated	unknown	1500	c. 2000	zero	
Montenegro	€1,2/MWh	unknown	4700		zero	n/a
FYROM	1.5% of volume	unknown	2000		250MW	no congestion
UNMIK	1.5% of volume per 100 km	none	unknown		unknown	shedding schedule
Albania	1,6€/MWh	34€/MWh	1100	unknown	shedding schedule	
Turkey	no	no	1850	none	no congestion	
<b>Note:</b>						
Greece	no	no	1100	none	auctions	

Table 7 shows that a number of the countries examined still retain specific charges for cross border transactions. The interconnections between these countries have to be further developed in order to exploit the considerable potential for these countries to contribute toward a well functioning regional market for electricity in the medium term.

It is worth mentioning that in June 2002 the SETSO task force was set up, under the umbrella of ETSO, seeking to elaborate a cross boarder mechanism based on the principles of the ETSO mechanism, for the second synchronous zone of UCTE. To achieve the longer term objective of the market integration into the European Internal Electricity Market considerable investment is needed to reconnect the region's electricity system to the European one.

## 10 PUBLIC SERVICE ISSUES

Electricity is a public service that can be considered of general economic interest. It is important therefore to monitor the position in each country in terms of security of supply and on the arrangements for ensuring a continuous supply. The table below examines these issues.

**Table 8 Security and Continuity of Supply**

	amount of reserve generating capacity <sup>43</sup>	Import capacity/ peak load	% p.a. increase in demand	% of households connected	default supplier
Croatia	31%	29%	2-3%	100%	DSO
Bosnia-Herzeg	30%	70%	2-3%	99%	yes
Romania	50%	12%	4%	99.5%	DSO

<sup>43</sup> based, where possible on UCTE definition of "remaining capacity"

Bulgaria	48%	32%	1%	100%	DSOs
Serbia	8%	c. 20%	3%	99%+	T/DSO
Montenegro			5%	100%	yes
FYROM			5%	100%	TSO
UNMIK	5%	40%	4%	100%	DSO
Albania	8%	90%	10%	100%	unknown
Turkey	unknown	9%	9%	99%	DSO
<b>Note:</b>					
Greece	7-8%	13%	4-5%	100%	T/DSO

Some of the jurisdictions examined have considerable amounts of reserve capacity and there is little chance of any shortage of generation in the short term, particularly if the use of interconnectors can be improved and cross border exchanges made easier. However supply is less plentiful in the former Yugoslavia, Albania and Greece and demand is growing rapidly. Governments will need to ensure that new investment in generation, or interconnection capacity is increased accordingly.

Several studies on the electricity sector in South East Europe indicate that an overall generation gap may open by 2012. Therefore, all the parties involved in the south east European electricity market seek to identify the infrastructure needs in generation and transmission, and bring the regional infrastructure up to a point comparable to the EU standards. In particular the international financial institutions (the World Bank, EBRD, EIB, USAID and CIDA) together with bilateral donors have joined their efforts by providing assistance in establishing an interconnected electricity market in the region.

## **11 OVERALL CONCLUSIONS**

Some progress is being made in the South East Europe region on electricity market opening, particularly for those that are accession countries to the EU. Legal measures for partial market opening are either in place or planned. Measures aimed at separating networks and setting transparent and regulated network access tariffs are also in progress but some details still need to be implemented.

As with many existing Member States, barriers exist associated with concentration of generation, poor use of interconnection and a lack of co-ordination of spot markets for electricity. There is considerable potential for improvement in these areas and the initiative aimed at creating a South East Europe regional market will help realise this potential.



## ANNEX C BALANCING CHARGES FOR ELECTRICITY

### Background

An important part of the access conditions are the arrangements in place for balancing input to and withdrawal from the network. If conditions for balancing are restrictive and do not provide adequate flexibility then this will constitute a barrier to those who wish to use the network. Furthermore, where balancing is provided by a vertically integrated company, it is important that charges are cost reflective and non-discriminatory in the same way as for transportation and distribution tariffs. This Annex assesses the balancing regimes currently in place for the electricity markets in each Member State and candidate countries.

### Electricity Balancing

Electricity networks must balance at all times and no storage is possible. However suppliers may not be able to guarantee that the electricity purchased by their clients will, at all times, match the amount of electricity they have contracted to buy from generators or generate themselves. This is particularly the case for companies with a small portfolio of customers; i.e. new entrants to the market.

**Table 1 Basic Electricity Balancing Arrangements**

	Balancing period (minutes)	How are charges set	Supernational (S) National (N) or regional (R) balancing	Balancing groups allowed	Intraday market possible	“Gate closure”	Dominant single generator within balancing area?	
Austria	15/30 <sup>44</sup>	market	<b>R</b>	Y	N	day ahead	<b>Y</b>	
Belgium	15	TSO	N	Y	N	day ahead	Y	
Denmark	60	market	S	Y	Y	2.5 hours	N	
Finland	60	market	S	Y	Y	2.5 hours	N	
France	30	regulated	N	Y	N	day ahead	Y	
Germany	15	market	R	Y	N <sup>45</sup>	day ahead	Y	
Greece	60	balancing costs socialised						Y
Ireland	30	reg/market	N	Y	N	day ahead	Y	
Italy	under review						Y	
Lux	15	TSO	N	Y	N	day ahead	N	
Neth	15	market	N	Y	N	day ahead	N	
Portugal	60	regulated	N	unknown	N	unknown	Y	
Spain	60	market	N	unknown	Y	0.5-3.5 hrs	N	
Sweden	60	market	S	Y	Y	2.5 hours	N	
UK	30	market	N	Y*	Y	1 hour	N	

<sup>44</sup> 15 Minutes for supplies within a control area, 30 minutes (according to UCTE rules) across control areas”

<sup>45</sup> An intraday market is being piloted in two regions in Germany.

Candidate Countries			
Estonia	60	TSO	N
Latvia		na	N
Lithuania	60	Reg/market	N
Poland	60	market (max)	N
Czech R		market	N
Slovakia	60	[market from 2003]	N
Hungary			N
Slovenia	60	balancing costs socialised	
Romania	60	market	N
Bulgaria	60	TSO	N
Turkey	360	market operator	N
Cyprus	30	market operator	N
Malta			N
not examined in this report			
source: Survey responses			

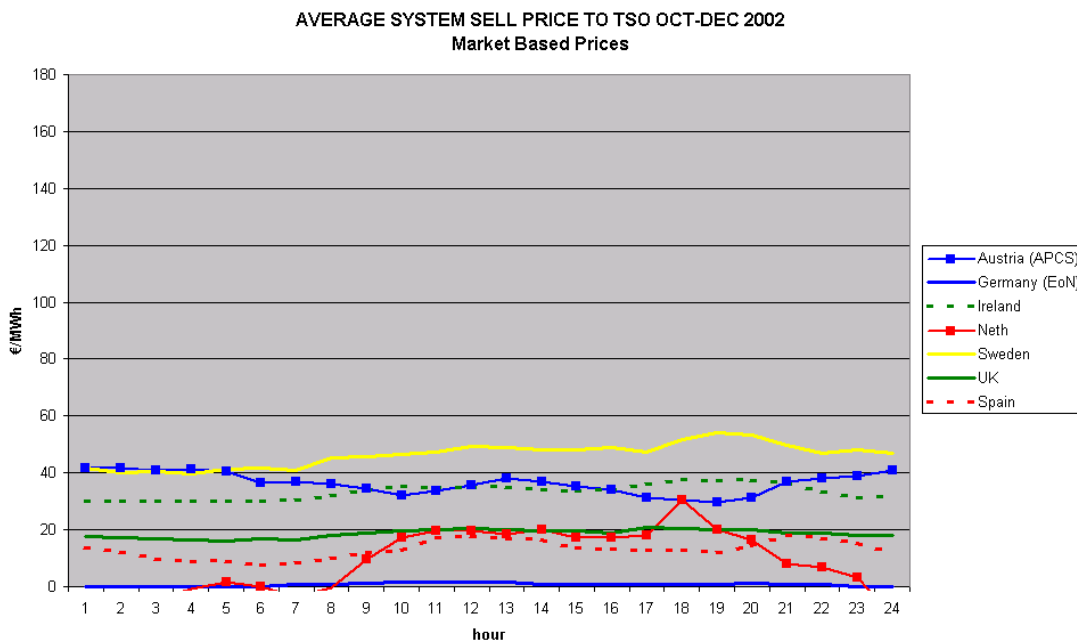
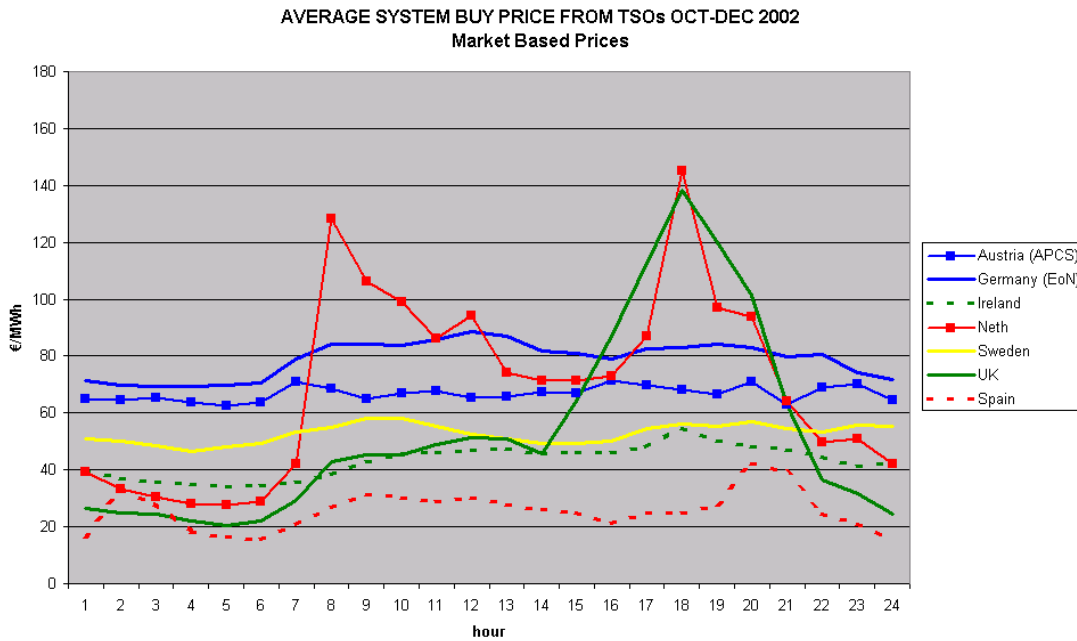
\* Balancing groups only allowed in UK within the DSO area

Transmission system operators are required to implement a mechanism whereby balancing or “regulating” energy is provided if suppliers are short of energy and also for disposing of excess energy injected into the network by generators if customers take less than expected. The mechanism chosen determines the level of charges for network users who are unable to remove all their imbalances. These prices may be determined by a market mechanism, or there may be an administered charge. In most cases this charge varies according to the degree of imbalance and the time of day or year. Balancing mechanisms also differ relating to the whether balancing is carried out at national or regional level, whether grouping of imbalances of individual clients is allowed and the distance from real time at which imbalances are calculated. This information is set out in Table 1 above.

Serious problems, however can result in balancing mechanisms if there are only one or two dominant generators. Such markets therefore may need to be closely regulated in order that new smaller retailers are not exposed to excessive balancing costs determined by the incumbent generators. The extent of this problem can be assessed by examination of the balancing prices recorded in individual TSO areas. This is explained in the graphs below which show the average system sell and system buy prices for selected countries for each hour of the day during the period October – December 2002.<sup>46</sup>

The system buy price is paid by those suppliers which have not injected enough energy into the network to cover their customers’ demands. The system sell price apply to those suppliers which have input more energy that their customers use. The graphs have been constructed by taking the average prices for each hourly period over the 92 days concerned.

<sup>46</sup> For Member States with settlement periods less than one hour, an average has been taken. Data for Ireland is to 15 Dec 2002



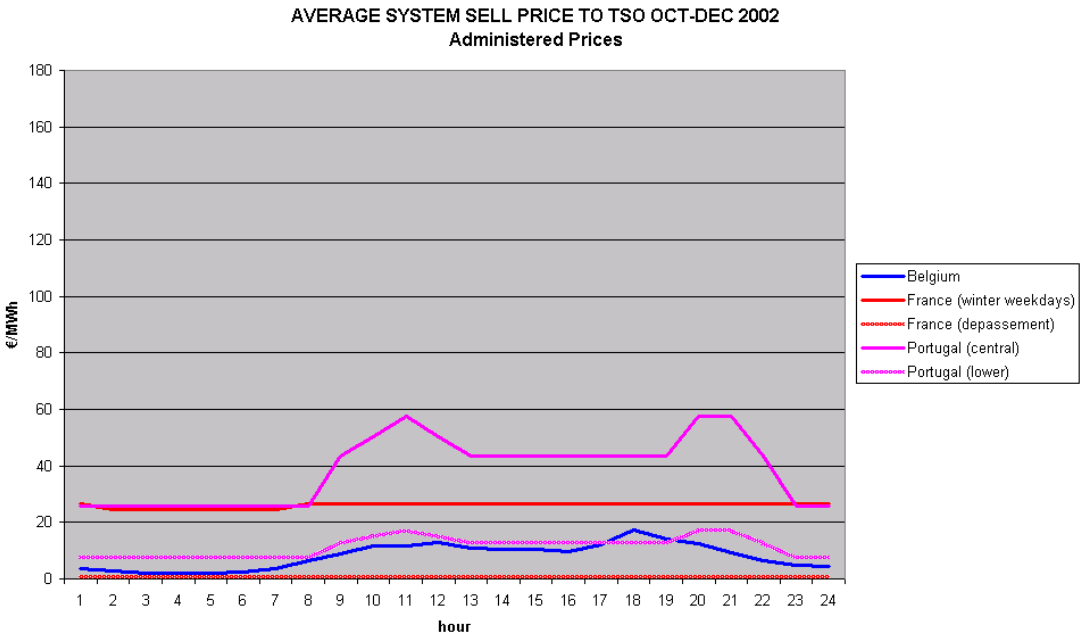
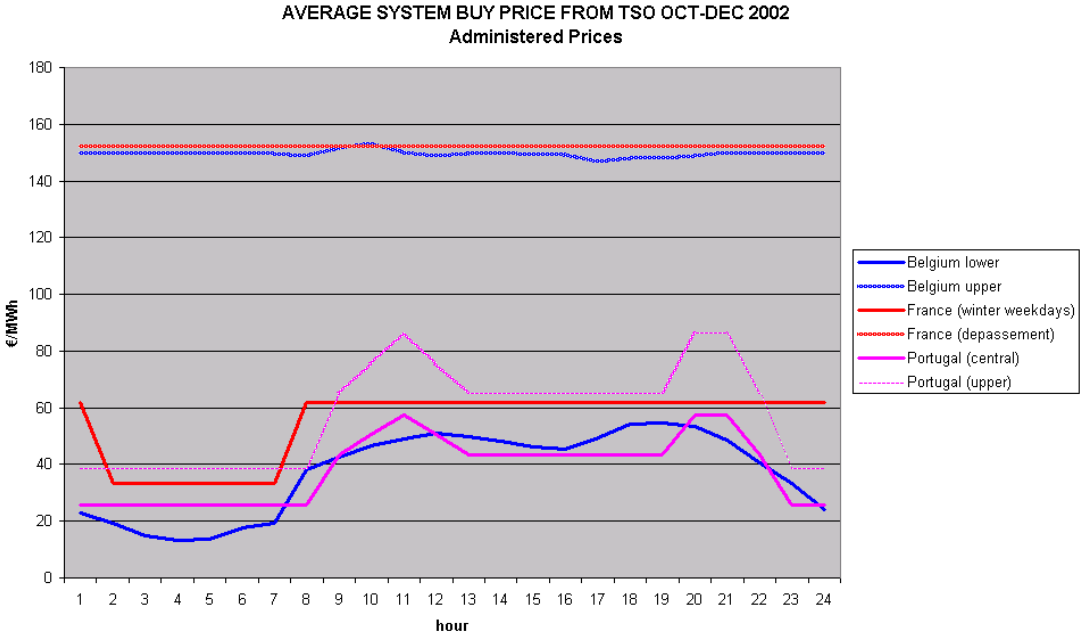
The two graphs above show system sell and buy prices for those Member States with market based mechanisms. For the buy price, the market in the Netherlands and the UK show considerable variation depending on time of day, as would be expected, although the Dutch market has a peak between 0900-1300 which does not occur in the UK. Prices in other markets are not so responsive to the time period.

System sell prices generally have a flatter profile during the day. Those in Austria and Sweden are the most generous relating to spill energy whereas prices in the Netherlands are very low, even negative in off-peak time. System sell price in Germany rarely exceeds zero.

Overall, the deviation between the system buy price and sell price appears to be the largest in the Netherlands and in Germany. For the latter, the margin is more than €60/MWh regardless of the time of day. This produces an unfavourable situation with respect to new entrants,

particularly pure retail suppliers without generation assets, or companies with small portfolios of customers which have less predictable demand than a large grouping of customers. For example an average 5% imbalance, equally spread between surplus and deficit, would add €3/MWh to the costs of a new entrant.

The following two graphs show administered balancing prices. In most cases, system buy prices are generally lower than those set in market regimes expect for extreme circumstances, in the case of Belgium and France. These extreme settlement prices apply to balances where they exceed a pre-defined threshold. Administered system sell prices are reasonably similar to those generated in the market regimes with the Portuguese prices the most generous.



## **Conclusions**

Generally speaking, a market mechanism is preferable for determining charges since this avoids charges being based on arbitrary assessment of the costs. The exception is where generators have significant market power to set the balancing price which is the case in many Member States. Integration of balancing markets is to be recommended since this reduces such concentration problems. It is also helpful for suppliers to be able to group imbalances and to trade away imbalances as close to real time as possible. There are a number of improvements that could be made to balancing arrangements in Member States.

## ANNEX D GAS BALANCING AND STORAGE

### Background

Potential new entrants into the emerging liberalised gas markets are often obliged to purchase gas in a contract for a fixed flat volume during a year. However the customers being supplied will not have a flat demand profile. Indeed the difference between peak demand and the average is often considerable. This means that access to storage or a flexibility instrument is usually a necessary condition for new entrants to obtain effective network access. In addition, the policy of TSOs relating to balancing of the network over shorter periods is an important part of the conditions for network access.

### Gas Balancing Regimes and Charges

Imbalances usually occur because supplier cannot predict exactly what their customers will use in any given period. Imbalances may put additional costs on TSOs since they may have to purchase additional gas to meet shortfalls, or dispose of surplus gas injected into the system. Unlike electricity, gas can be compressed in the network and so the requirements of system operation are often not as severe.

**Table 1 Summary of Gas Balancing rules**

	Balancing period	Conditions set/approved by	Tolerance bands	Premium for "short" imbalance over tolerance band (x market price)
Austria <sup>47</sup>	hourly	regulator	2%	market based price
Belgium	hourly	TSO	some	+30%
Denmark <sup>48</sup>	hourly	regulator	cumulative 40%	+20-60%
France	daily	TSO	20%/5%	+50%
Germany	hourly	TSO	cumulative 15%	+100-420%
Ireland	daily	regulator	8%/3%	+100%
Italy	daily	regulator	8%	+3%
Luxembourg	daily	TSO	5%/3%	Up to +50% + capacity penalty
Netherlands	hourly/daily	regulator	2/15%	+90%
Spain	daily	regulator	n.a.	to be approved
Sweden	no information available			
UK	daily	market	zero	usually <20%
<b>Candidate Countries</b>				
Estonia	rules not yet in place		not examined in this report	
Latvia	rules not yet in place			
Lithuania	Daily	TSO		
Poland	rules not yet in place			
Czech R	rules not yet in place			
Slovakia	hourly	unknown		
Hungary	daily	unknown		
Slovenia	Hourly-daily	TSO		
Romania	Daily-monthly	unknown		
Bulgaria	hourly	TSO/reg		
Turkey	rules not yet in place			
source: Compliance Overview of Madrid Guidelines				

<sup>47</sup> from October 2002

<sup>48</sup> a new network code was introduced in October 2002

Charges are, however, made by the TSO to suppliers and shippers which fail to achieve balance and these are summarised in Table 1 above. For balancing, the most developed system is that in the UK, where there is a balancing market similar to that in place for electricity and the margin between the sell and buy price is usually relatively low. A similar system is planned in Austria. For most other Member States imbalance energy is charged at a multiple of the wholesale price without reference to market mechanisms.

These multiples range from 1.5 to over 4 depending on the country and the circumstances. A factor of 4 would mean that, based on a wholesale price of €11/MWh, a supplier with an average 5% imbalance over the period could add a further €2.2/MWh to their costs as a result of balancing charges

Finally, it is notable that only a few TSOs allow pooling of imbalances and this is a disadvantage to new entrants with smaller portfolios of customers. A number of TSOs allow for a degree of tolerance which recognises the possibility of accommodating imbalances in the network.

**Access to Storage**

As noted, access to storage is required because companies are usually obliged to buy gas from producers with a flat profile during the year, whereas customers’ demands may vary considerably.

**Table 2 Summary of Gas Storage in Member States**

	Number of facilities	Amount of storage (million m3)	withdrawal capacity (million m3/day)	Storage available for TPA	Estimated storage\ modulation charge for stylised example (€000) (see Annex)
Austria	5	2200	24	yes <sup>49</sup>	unknown
Belgium	2	580	22	modulation only	250-500
Denmark	2	810	25	yes	250-500
France	15	11100	0	modulation only	500-750
Germany	42	19099	438	yes	250-750
Ireland	0	0	0	none available	-
Italy	10	15500	280	yes	
Luxembourg	unknown	unknown	unknown	none available	-
Netherlands	3	2500	145	yes	>5000
Spain	2	1500	11	yes	250-500
Sweden	0	0	0		-
UK	9	3660	140	yes	<250

Source: Eurogas, company websites

Table 2 sets out some basic data on storage and modulation services, including an approximate estimate of the charges made for the use of storage facilities.

<sup>49</sup> from October 2002

## **Conclusions**

Overall there remains considerable scope for network operators to adopt a regime that implicitly favours their associated undertakings. Requirements for third parties to balance over hourly periods, when combined with restricted access to flexibility and storage instruments, lead to significant barriers to new entrants.



## ANNEX CALCULATION OF ESTIMATED CHARGE FOR HYPOTHETICAL STORAGE CONTRACT

The following assumptions have been used:

Annual consumption 25.000.000 m<sup>3</sup>

Base demand 1.600 m<sup>3</sup>/h during 4380 hours consecutively

Peak demand 4.100 m<sup>3</sup>/h during 4380 hours consecutively

Supplier has purchased gas with a flat flow profile during the year to cover demand

2.850 m<sup>3</sup>/h during 8760 hours

Storage needed inflow for 4380 hours at 1.250 m<sup>3</sup>/h

outflow for 4380 hours at 1.250 m<sup>3</sup>/h

total storage capacity = 5.475.000 m<sup>3</sup>

		Wingas	Ruhrgas <sup>50</sup>	Thyss	BEB	VNG	UK Hornsea	Fluxys <sup>51</sup>	GDF	GT NL	DONG <sup>52</sup>	Enagas
inflow	€/m <sup>3</sup> /h	56		45						38		
outflow	€/m <sup>3</sup> /h	81,50	150	13								
service	€/m <sup>3</sup> /h	2,30		0	8							
Total storage capacity	€/m <sup>3</sup>	0,006		0,09	0,06	0,07	0,03	0,05	0,11	1,00	0,04	0,05
<b>TOTAL</b>	€											
fixed charges	€000	14	40	26	72	30		41				
<b>Total charge</b>	€	<b>219</b>	<b>724</b>	<b>606</b>	<b>382</b>	<b>392</b>	<b>165</b>	<b>309</b>	<b>602</b>	<b>5523</b>	<b>242</b>	<b>274</b>

<sup>50</sup> A pre-defined ratio between maximum storage and inflow\outflow rates mean that the purchase of an outflow rate of 4562m<sup>3</sup>/h is required

<sup>51</sup> Based on 5.475 units of standard storage package

<sup>52</sup> Based on small flex storage package

## ANNEX E

### CONGESTION MANAGEMENT IN THE EU ELECTRICITY TRANSMISSION NETWORK – STATUS REPORT

#### 1 METHODS CURRENTLY APPLIED TO CONGESTION MANAGEMENT

Congestion is a common phenomenon in the European electricity market. As indicated in the annex 1, of 24 interconnectors<sup>53</sup>, 12 are permanently or frequently congested, 5 are occasionally congested and only 7 are seldom or never congested. A considerable amount of the existing capacity is allocated to long term contracts, especially in the areas where the market price differences at the border are the highest (Borders of Italy, Netherlands and Spain).

In the EU, other than the internal interconnections of the Nordel area, a contract path principle is applied for capacity allocation. A market party has to apply for capacity on all successive interconnectors between the countries of injection and withdrawal of electricity, and he can do it on any of the alternative paths.

In the UCTE area the allocation of capacities is very much dependent on network safety, reliability and co-operation agreements made in the UCTE. The calculation of available capacities is based on the application of a winter and a summer base case which is an estimation of a realistic network flow situation at a specified time. Net transfer capacities are obtained by adding to these base case loads additional flows at each interconnector until the security limit is reached. The base case chosen and several of the UCTE rules have a big influence on the amount of capacity made available. In addition to UCTE rules, each TSO has its own rules regarding network planning and operation. Examples of differences which have a big influence on capacity made available are admissible line temperatures, application of n-1 rules (sometimes n-2) and operations presumed to be taken after faults.

At present the capacity allocation methods for cross-border trade of electricity vary considerably. The following list gives an overview of the methods, the annex 1 gives a more detailed view per interconnector.

- **Retention:** Capacity is reserved for vertically integrated utilities. This applies especially to Switzerland and to all old long term contracts.
- **First come, first served:** The capacity is allocated according to the requests until all capacity is booked.
- **Pro-rata:** Market participants make requests for capacity and then the demand for capacity is curtailed on pro-rata basis to fit the available amount.
- **Explicit auctioning:** The capacity is auctioned for different time periods (for example year, month, week, hour). Bids are accepted starting from the highest. However the price to be paid by all the accepted bidders is usually the lowest accepted bid.

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<sup>53</sup> Interconnector is the system of direct transmission lines between two countries.

- **Implicit auctioning/ market splitting:** Allocation of the cross-border capacity is based on generators' bids into the electricity spot markets. The interconnector capacity is allocated by the TSO on the basis of the prevailing wholesale prices in the organised power exchanges either side of the interconnector. Any remaining price difference between the two markets means that the TSO will make a profit from its "brokering" activities.

Explicit and implicit auctions/market splitting are market based options. Every method has several possible variations, they are not discussed here in detail.

## 2 APPLICATION OF MARKET BASED METHODS

The Congestion management guidelines agreed in the 6<sup>th</sup> Florence Forum<sup>54</sup> stipulate that the congestion management problems should be addressed with market based solutions. The conclusions of the 8<sup>th</sup> Florence forum stipulate that market based methods should be applied to all congested interconnectors from 1 January 2003. However Annex 1 shows that only half of the interconnectors are applying at the moment market based methods.

The delay in implementing market based congestion management systems has created a very unclear situation at certain borders and has seriously prevented non-incumbent market parties from operating. Market parties have made several complaints against the practices at the interconnectors still using non-market based methods such as first-come, first-served. There seems to be a number of reasons why the implementation has been slow even if plans for improvement exist. Some parties claim that the difficulty in reaching an agreement with a relatively large group of parties involved, that is to say, (at least) two TSO's and two regulators.

Another reason for delay has been the difficulty to agree on allocable capacities between interconnectors. Especially there has been a dispute about the capacity available from France to Italy and from Switzerland to Italy, as there is a strong interrelationship between these two interconnectors.

Two other important issues related to capacity allocation have been raised by market parties:

- Information on available capacity and factors influencing it (for example outages due to maintenance).
- Firmness of the allocated capacity (in some cases the TSO has cut capacity, arguing that the capacity allocated was non-firm).

It is also important to note that there seems to be no progress at the moment in increasing the involvement of power exchanges in congestion management systems, through implicit auctions or market splitting. The idea of "capacity slicing" presented in earlier Florence forum documents has also not yet been taken forward.

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<sup>54</sup> Conclusions of the 6<sup>th</sup> Florence forum, "Guidelines on Congestion management", 9.-10.11.2000

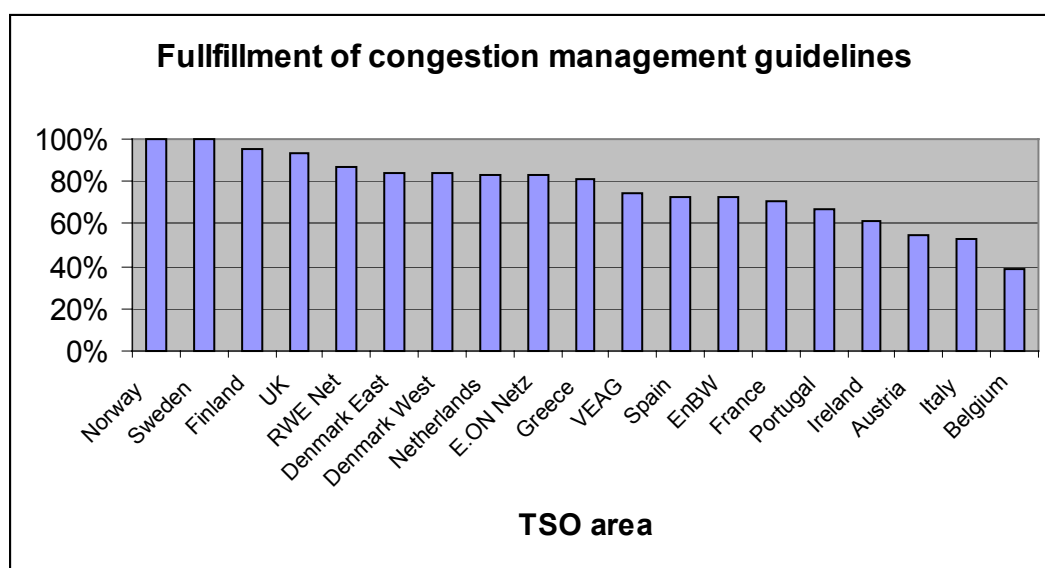
### 3 IMPLEMENTATION OF THE GUIDELINES

#### 3.1 Overview

The Congestion management guidelines agreed at the 6<sup>th</sup> Florence Forum have 33 paragraphs, with some of the paragraphs contain several guideline items. An inquiry made by the CEER congestion management working group analyses the implementation in each member state of these guidelines item by item<sup>55</sup>. The general conclusion is the following:

- where market based methods are not applied, several other guidelines items are not fulfilled either; however,
- applying market based methods does not automatically imply compliance with the rest of the guidelines.

Annex 2 gives a statistical overview about the compliance with the congestion management guidelines. As a non weighted average the compliance is 77%<sup>56</sup>. The following picture illustrates the level of compliance by TSO area.



In the following paragraphs some of the key items in the guidelines are discussed more in detail.

#### 3.2 Netting and use-it-or-lose-it

Netting of opposite flows (item 7, 29 and 30) is not made to the extent possible. In auction systems capacity is normally sold as an option. After nomination, which is typically the day before delivery, the capacity nominated becomes an obligation, and flows in opposite directions could be netted. Depending on the interconnector there are various rules about when options become obligations and how the netting can finally be carried out.

<sup>55</sup> The German answers are from the TSOs co-ordinated by BMWi

<sup>56</sup> The answers to the questionnaire are from spring 2002. Recent developments like the nomination of the Belgian TSO 13.9.2002 have not been taken into account in the statistics.

However, on some interconnectors netting is refused on the basis of the uncertainty of exact locations of generators and loads, as in some cases the true netting effect might be less than 100%. As netting contains a risk element for the TSO, applying netting requires a further development in order to define how this risk is shared.

The use-it-or-lose-it principle (item 8) is widely applied. In several cases, however, the information about unused capacity is provided so late, that its value to the market is diminished.

### **3.3 Congestion revenues**

According to the inquiry the use of congestion management revenues is mostly compatible with the guidelines. The revenues are, however, seldom published. In case of auctions the revenues can be calculated from the published auction results. A further analysis on the revenues and on their use is necessary.

Congestion revenues (item 9) for interconnectors which are not part of any national grid (for example the submarine cable between France and England, between Sweden and Germany and Between Denmark and Germany) form a special challenge regarding the guidelines.

### **3.4 Co-ordination**

Co-ordination of congestion management methods (item 11) on both sides of the interconnector is supposed to be self-evident. However, on 4 interconnectors out of 24, the methods applied at each side of the interconnector are not co-ordinated. In several of these cases the market parties have to apply for capacity from both TSOs involved separately. Only in the case of Belgium-Netherlands-Germany and inside Nordel does a single allocation procedure cover more than one interconnector.

### **3.5 Transparency**

Transparency issues (items 17 – 18) are dealt with in detail in a CEER paper dedicated to the subject. The paper suggests publishing information on load, on transmission infrastructure and generation capacity development, on congestion management methods and on available capacity. The information should be in an easily understandable form and easily accessible.

### **3.6 Redispatching**

According to the guidelines (item 22), in case of occasional congestion co-ordinated redispatching (or counter trading) should be used in order to accommodate the demand to the interconnector.

When redispatching is used as a **preventive measure**, then it is a part of the calculation of the available capacity. At the stage of **scheduling the flows** redispatching is used to better accommodate the overall demand to the network. Some member states apply redispatching to guarantee the firmness of the declared capacity in case of internal transmission constraints. Finally redispatching is used during the **operation of the network** when the actual flows differ from the scheduled ones, in order to keep the system within security limits.

Even if redispatching is used within several member states as the main congestion management method, it is applied very little to interconnectors. An example of this is the redispatching used on the French-Spanish border, where it is used as a preventive measure.

There is, however, a discussion going on in France as to who should pay the congestion management costs since these will benefit market actors on both sides of the interconnector.

It is to be assumed that redispatching at some critical interconnectors might increase considerably the available capacity in the European network, even if there is little quantified evidence for this yet. To promote redispatching, it is important to develop rules and procedures for sharing the redispatching costs according to the benefits.

### **3.7 Transaction curtailment**

Transaction curtailment (item 23) is done in several cases also in situations other than force majeure and without compensation to market parties. Curtailment is closely linked to the firmness of the capacity sold. In some cases market parties might prefer lower cost non-firm capacity if they have an alternative means to offset the risk of curtailment.

### **3.8 Auctions**

The congestion management guidelines for the explicit auction systems (items 26-33) have been implemented relatively well. On some interconnectors, however, the existing old long term contracts reduce the available capacity significantly. There is often no limitation of how much capacity one market player can buy (item 32). The capacity is mostly tradable (item 33).

## **4. PLANS TO IMPLEMENT MARKET BASED CONGESTION MANAGEMENT SYSTEMS**

### **4.1 Borders of Italy**

The implementation of a market based method for congestion management at the borders has been delayed by the failure to create a more transparent electricity market within Italy. A tentative date for a new market system was 1 January 2003, but there is no confirmation yet on the date and on the system to be applied.

### **4.2 France-Germany**

No plans to move to market based mechanisms have been proposed. The TSOs in the Benelux area have agreed to study co-ordinated auctioning system in view of implementation from 1 January 2004.

### **4.3 France-Belgium**

The two TSOs have agreed that from 1 July 2002 a co-ordinated system of allocation of capacities will be applied. RTE will be responsible for monthly allocation and ELIA for daily allocation. The method applied is a form of first-come first-served allocation, with a rationing of the allocable capacities. More specifically, the first-come first-serve principle is applied when updating the order in which the capacity is allocated. Whereas those clients who have used more than 65% of the capacity allocated to them in the previous allocation will retain their position on the list for the next allocation. In certain cases a transaction based fee, called “congestion fee” is applied.

### **4.4 France-Spain**

There is a proposal to implement an auction system on the French-Spanish border. No final approval of the system has been reached yet.

#### 4.5 Sweden-Germany

The Baltic cable between Sweden and Germany is sells capacity on a day-ahead basis with a standard tariff. As the tariff is relative high (8-15€/MWh), a part of the capacity of the cable remains unused. No plan to implement a market based allocation system has been announced.

#### 4.6 Portugal-Spain

The Iberian Electricity Market was planned to start 1 January 2003 but there is now a delay. There has been no confirmation of the congestion management system to be applied in the integrated market.

#### 4.7 Interconnections with accession countries and third countries

In the accession and third countries, the interconnectors are mainly still in the hands of vertically integrated companies who are often in a monopoly position to sell electricity through the interconnector. The methods applied at the outer borders of the EU vary considerably. For example Vattenfall and EoN Netz organise unilateral auctions for electricity coming from Poland and the Czech Republic. Whereas the SwePol cable between Sweden and Poland is mainly reserved for the shareholders owning the link. With accession a review of the methods applied between old and new member states and third countries is necessary.

### 5 CONCLUSIONS

According to the analysis presented in the Annexes 1 and 2, it is fair to say that the congestion management guidelines agreed in the 6<sup>th</sup> Florence forum are only half way implemented. Market based methods are in use on 12 of the 24 interconnectors. However, most of the interconnectors with the highest economic value, especially those at the borders of Italy, do not have yet market based methods in place. As the implementation of market based methods is fundamental regarding compliance with the congestion management guidelines, the most important action is to move to market based methods on all interconnectors in the EU as soon as possible. This applies to the Italian borders, to the borders of France with Germany, Belgium and Spain, to the cable between Sweden and Germany and to the Spanish-Portuguese interconnector.

Several points of non-compliance with the guidelines are closely related to a lack of coherence and co-ordination. There is a need to harmonise a minimum set of capacity allocation products specifications across Europe especially regarding the time frames and the firmness of the allocation in order to make key principles like netting, use-it-or-or-loose and capacity trading work efficiently. Co-ordination of the allocation procedure at both sides of the same interconnector is a self-evident part of this harmonisation.

Transparency of the capacity calculation and allocation procedure has to be improved, the CEER guidelines show clearly what is the relevant information that should be published.

No progress has been made in involving power exchanges in the congestion management systems through implicit auctions \ market splitting. The Association of European Power Exchanges (Europex) and ETSO have been asked to analyse this and suggest a plan how to implement congestion management through power exchanges in the next Florence forum.

Redispatching over some critical interconnectors is assumed to increase interconnection capacity in an economic way. It is suggested that CEER will launch a study in order to

identify the most interesting interconnectors regarding redispatching and netting, to estimate the potential benefits and to propose rules how the costs should be shared among those parties who benefit. The results are to be presented in the next Florence forum.

Finally, the European Commission intends to analyse the status of the congestion management and to discuss introduction of congestion management systems which fulfil the congestion management guidelines on interconnectors with accession countries and with third countries. The results are also to be presented in the next Florence forum.



## Annex 1: Status of the Congestion Management in the EU (September 2002)

Country 1	Country 2	Capacity ETSO Winter 01-02/MW	Allocation method	Allocation frequency <sup>1</sup>	Capacity tradability	Redispatching to increase:	Netting	Use-it-or-lose-it	Co-ordination of both sides	Long term contracts exist	Congested	Date of introduction of a market based system
CH	IT	2800 <sup>2</sup>	Retention/Pro rata	y,d	no		no	no	no	29%	always	
FR	IT	2600 <sup>2</sup>	Pro rata	y,d	yes	Firmness	no	yes	yes	69%	always	
AT	IT	220	First come-fs/Pro rata	d	no		no	no	no	50%	always	
FR	DE	2850	First come-first serve	d	no	Firmness	no	yes	no	13% <sup>3</sup>	frequently	
DE	NL	2800	Auction	y,m,d	yes		no	yes	yes	46% <sup>4</sup>	frequently	nov-00
FR	BE	2200	First come-fs/Pro rata	m,d	no		yes	yes	yes	72% <sup>5</sup>	frequently	
FR	UK	2000	Auction	3y,y,d	yes		no	yes	yes		frequently	mar-01
DK-W	DE	1200	Auction	y,m,d	yes	Firmness	yes	yes	yes		frequently	sep-00
FR	ES	1100	First come-fs/Pro rata	d	no	Capacity	no	yes	no	45%	frequently	
DK-W	NO	950	Market splitting	d	n.a.		yes	n.a.	yes		frequently	jul-99
DK-E	DE	550	Auction	m,d	no		yes	yes	yes	100% <sup>6</sup>	frequently	jan-02
SE	DE	460	Retention/Fixed price	d	no		no	yes	yes	100%	frequently	
UK	IE	120	Auction	y,d	yes		no	yes	yes		frequently	apr-00
NO	SE	2400	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	jan-96
SE	NO	2400	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	jan-96
SE	FI	2050	Market splitting	d	n.a.	Firmness	yes	n.a.	yes		occasionally	jul-99
DK-E	SE	1700	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	oct-00
FI	SE	1650	Market splitting	d	n.a.	Firmness	yes	n.a.	yes		occasionally	jul-99
SE	DK-E	1300	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	oct-00
NO	DK-W	1000	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	jul-99
ES	PT	850	Pro rata	d	no	Firmness	no	n.a.	yes		occasionally	jan-03
DE	DK-W	800	Auction	y,m,d	yes	Firmness	yes	yes	yes		occasionally	sep-00
PT	ES	725	Pro rata	d	n.a.	Firmness	no	n.a.	no		occasionally	jan-03
DK-W	SE	610	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	jul-99
SE	DK-W	580	Market splitting	d	n.a.		yes	n.a.	yes		occasionally	jul-99
DE	DK-E	550	Auction	m,d	no		yes	yes	yes	36%	occasionally	jan-02
DE	SE	370	Retention	d	no		yes	yes	yes	100%	occasionally	
FR	CH	3000	First come-first serve	d	no		no	yes	yes	?	seldom	
UK	FR	2000	Auction	3y,y,d	yes		no	yes	yes		seldom	mar-01
BE	NL	1700	Auction	y,m,d	yes		no	yes	yes	18%	seldom	nov-00
NL	BE	1700	Auction	y,m,d	yes		no	yes	yes		seldom	nov-00
NL	DE	1350	Auction	y,m,d	yes		no	yes	yes		seldom	nov-00
ES	FR	1000	First come-fs/Pro rata	d	no		no	no	no		seldom	
BE	FR	3100	First come-fs/Pro rata	m,d	no		no	yes	yes	16% <sup>7</sup>	never	
IT	CH	3100	First come-first serve	d	no		no	no	no		never	
CH	FR	3000	Retention	d	no		no	no	yes		never	
DE	FR	2250	First come-first serve	d	no	Firmness	no	no	no		never	
IT	FR	2200	First come-first serve	d	no		no	no	yes		never	
AT	CH	2000	First come-first serve	d	no		yes	no	yes		never	
CH	AT	2000	Retention	d	no		yes	no	yes		never	
CH	DE	2000	Retention	d	no		yes	no	yes		never	
DE	CH	2000	First come-first serve	d	no		no	no	yes		never	
DE	AT	1650	First come-first serve	d	no		no	no	yes		never	
AT	DE	1150	First come-first serve	d	no		yes	no	yes		never	
GR	IT	500	Pro rata	m,w,d	no		yes	yes	yes		never	may-02
IT	GR	500	Auction	m,w,d	no		yes	yes	yes		never	may-02
IT	AT	220	First come-first serve	d	no		no	no	no		never	
IE	UK	50	Auction	y,d	yes		no	no	yes		never	apr-00

Grey cells: Conflict with the Congestion management guidelines of the 6<sup>th</sup> Florence Forum

<sup>1</sup> Allocation frequency: yearly, monthly, weekly, daily

<sup>2</sup> Value by the Italian regulator

<sup>3</sup> 750MW long term contract FR-NL, half of the capacity is assumed to this interconnector.

<sup>4</sup> Long term contracts: 600MW DE-NL up to 2003, 300MW DE-NL up to 2005 and 750MW FR-NL up to 2009 (half of the capacity of which is assumed to this interconnector).

<sup>5</sup> Assumption based on participation of Belgian companies outside Belgium (~1200MW) and on taking half of the long term contract FR-NL (750MW) to this interconnector.

<sup>6</sup> Kontek-cable long term capacity reservations: 350MW up to 2006, 200MW for the lifetime of the cable, 50MW for system services.

<sup>7</sup> Assumption based on 481MW of French ownership of production capacity in Belgium.

## Annex 2:

### **Statistics of compliance with congestion management guidelines (Situation July 2002, 19 control areas)<sup>1</sup>.**

Guideline item	
1. Is the managerial independence and the confidentiality of sensitive business information in the congestion management system of your country guaranteed?	95%
3. Is the current network used at the maximum capacity that complies with the safety standards of secure network operation?	95%
4. Are non-discriminatory and transparent standards for which congestion management methods are applied described in open and publicly available documents?	89%
5. Is discrimination between the different types of cross-border transactions kept to a minimum?	89%
6. Are price signals that result from your congestion management system directional?	72%
7a. Is every effort made to net the capacity requirements of any power flows in opposite direction over the congested interconnector in order to use the congested tie line to its maximum capacity?	67%
7b. Are transactions that relieve the congestion never denied?	84%
8. Is any unused capacity available to other agents (the use-it-or-lose-it principle)?	94%
9. Are congestion rents used in accordance with guideline #9?	89%
10a. Is the TSO offering transmission capacity to the market as 'firm' as possible?	95%
10b. Are the exact conditions for all transport over cross-border lines made known to any market party that applies for the capacity?	100%
11. Are congestion management procedures on both sides of the interconnection lines co-ordinated?	79%
15. Are long-term transmission commitments treated in the same way as other contracts?	21%
17a. Does the TSO publish all relevant data concerning the cross-border total transfer capacities?	89%
17b. Does the TSO publish estimates of the transfer capacity for each day at several time intervals before the day of transport?	68%
17c. Does the TSO provide a description of the firmness of the transfer capacity data?	68%
18a. Does the TSO publish a general scheme for calculation of the total transfer capacity and the transmission reliability margin based upon the electrical and physical realities of the network?	47%
18b. Do the safety standards, the operational and planning standards form an integral part of the information the TSO publishes in an open and public document?	63%
19. Are network congestion problems addressed with market based solutions?	63%
20. Are network congestion problems solved with non-transaction based methods, i.e. methods that do not involve a selection between the contracts of individual market parties?	78%
22. Is cross-border co-ordinated redispatching or counter trading used jointly by the concerned TSOs in the cases where the lack of a systematic congestion pattern and the network topology make it difficult to use auctions?	40%
23. Is transaction curtailment, following pre-established priority rules, left only for emergency situations where the TSOs must act in an expeditious manner and redispatching is not possible?	82%

Grey < 50%

<sup>1</sup> Numbering refers to the "Guidelines on Congestion management".

<b>Please answer the following questions only if a system of explicit auctions is applied in your country:</b>	
26. Is the auction system designed in such a way that all available capacity is being offered to the market?	82%
27a. Is the total interconnection capacity offered in a series of auctions?	45%
28. Is the auction system designed in such a way that bidders are allowed to participate in an organised power exchange in the countries involved?	100%
29a. Are the power flows in both directions over congested tie lines netted in order to maximise the transport capacity in the direction of the congestion?	45%
29b. Does the TSO propose a workable scheme for offering as much capacity to the market as possible?	91%
30. Is a penalty system implemented for parties that deviate from their notified transports, in order to provide the TSO with the financial means to guarantee the firmness of auctioned capacity by taking operational measures (e.g. counter trading, redispatching)?	73%
31. Is the auction procedure adopted capable of sending directional price signals to market participants (e.g. through a system in which transports in a direction opposite the dominant power flow that relieve the congestion result in additional transport capacity over the congested tie line)?	82%
32. Is the amount of capacity that can be bought/possessed/used by any single market player in an auction bound to a maximum (cap)?	27%
33. Is the capacity bought at the auction freely tradable before the moment of nomination?	82%
<b>Average 1-33</b>	<b>77%</b>

Grey < 50%