



From Monopoly to Competition

**Programme Committee B
Study Group B.3**

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1 Introduction.

For years, the gas sector has been characterised in many countries by national monopolies present in all the stages of the value chain. Vertical integration was seen as the natural condition of the industry all over the world.

Some 20 years ago, the move from monopoly to competition started to be explored in the UK, not without difficulties. This move involved the implementation of unbundling measures. Later on, it became a general trend in Europe, although very few countries seem to have completed the transition yet. All these European experiences took advantage of the earlier experiences in the US, which took place under different conditions, but had to address some similar entry barriers. This move has also been observed in other areas like Australia.

The motivation and practical results of this move are examined in this note.

It needs to be clarified that the analysis is focused on European countries, where this trend has been more obvious, due to the previous existence of vertically integrated national monopolies. In the US, where the natural gas industry was also characterised by vertical integration, there were no national monopolies as such, and market conditions were very different, with access to large gas infrastructures based on “contract carriage” regimes. Therefore the development of competition in the US required different measures, e.g., in the US context vertical integration has not been challenged to the same extent. Nevertheless, some relevant similarities can be observed.

In many other parts of the world, where the natural gas sector is a nascent industry, monopolies and vertically integrated companies are promoted in order to develop the sector itself, at least during an initial stage of the industry. In other countries where the sector is already mature, liberalisation is not regarded as an appropriate tool, since it is believed that a monopoly/oligopoly structure with vertically integrated companies meets better the policy goals, namely that of security of supply.

2 Rationale to move from monopoly to competition.

It is important to emphasise that competition in the gas market generally refers to the supply of gas as a commodity, not to the provision of transportation and related services. Gas transmission generally represents a natural monopoly in an area (national or regional), while for other infrastructure activities such as regasification and storage, the case is not that clear.¹

The restructuring of the industry –sometimes, but not necessarily, accompanied by privatisation– has to do with the idea that it is possible and desirable to separate the transport (or infrastructure activity, e.g. regasification or storage where appropriate) from the thing transported. That is, gas as a product can be separated commercially from transmission as a service. Once unbundled, the

¹ The approach to the regulation of LNG terminals have traditionally been the same as to transmission. However, in the last decade, the FERC’s “Hackberry decision” in the US, and art. 22 of Directive 2003/55/EC allowing for exemptions to rTPA in Europe, have changed that traditional approach. In Europe, most of existing terminals are subject to rTPA, although many of the ones under construction have been granted exemptions to rTPA.

The approach to the regulation of storage infrastructures has been more flexible. Directive 2003/55/EC allows for negotiated access (nTPA), an option in place in many countries, although rTPA is in place in some other like Italy and Spain. The decision in each country is very much driven by the geological opportunities in the country and the level of interconnection with other areas.



infrastructure usually remains a natural monopoly and is considered an essential facility, and as such is regulated, while the commodity can be provided in competition.

Competition is not a goal in itself, but a tool that has been adopted in many countries to maximize economic welfare. The provision of the commodity under competition ensures that the activity is efficiently performed, which ultimately will have its reflection in large savings for final customers, being the commodity the largest part of the final price of gas. On the other hand, national basic infrastructures generally present economies of scale, which are a source of competitive market failure. Regulation is better suited in those cases to maximize economic welfare and ensure that consumers benefit from efficiency gains. National basic infrastructures represent only a fraction of the final price (frequently less than 10%); nevertheless, regulation ensures that operators do not earn monopoly returns from selling capacity to access essential infrastructures, and that capacity is offered under objective, transparent and non-discriminatory conditions. Third party access to essential infrastructures is regarded as the key to competition.

Previously, gas was thought as a product used at the point of delivery, and paid for in a single delivery tariff. Vertical integration was the natural condition of the industry, because of the transaction costs of separating activities. It could even be argued that splitting up into subsectors was physically inconceivable. Later on, transaction costs started to be considered as sufficiently low as not to offset price decreases in potentially competitive segments.

It could be argued that the need to separate the transport from the supply of the commodity would not have arisen but for the realisation that supply was not longer a natural monopoly, due to the dynamics of a market economy and the speed of technological evolution; or that natural gas supply was not itself a natural monopoly before, but since the provision of transmission and of the commodity were bundled, the natural monopoly characteristics of the earlier were transferred to the latter. Whatever the case, it remains true that is generally inefficient to build competing infrastructures where these constitute a natural monopoly, which would result on either higher prices charges to end-users to recover total investment, or under recovery of investments.

3 Keys to competition.

The transition from monopoly to competition is conditioned by the characteristics of the market. It is therefore difficult to establish a pattern of measures that regulators should follow to successfully complete the transition.

Nevertheless, observing the measures adopted in different European countries since the 1990s (or even before in the case of the UK) and the results achieved, the following common measures could be highlighted for Europe:

- **Effective unbundling.** Effective unbundling between supply and infrastructure activities is essential to ensure competition. Different forms of unbundling can be implemented: accounting, legal, managerial and ownership unbundling.

Ownership unbundling, in the words of the European Commission, “*solves the inherent conflict of interest, which leads to discriminatory behaviour. Network operators will no longer have related supply or production companies which they could treat differently from competing companies. It also guarantees non-discriminatory access to network information and provides unbiased incentives for investments, which will guarantee security of*



supply”.² This has been the conclusion of the Commission for the pipeline sector after almost 10 years of European regulation attempting at opening the markets and, in the end, to arrive at a single internal market. This has also been the conclusion for LNG regasification terminals and underground storage facilities in other countries, where these facilities are considered part of the downstream (and not of the upstream) and receive the same treatment as pipelines. However, other stakeholders claim that ownership unbundling is not required to achieve effective unbundling between supply and infrastructure activities, and propose different forms of legal and managerial measures to fulfil the requisite of separation.

Even the effectiveness of ownership unbundling has been put in question in countries where the State has kept a stake in both the infrastructure operator and the supplier, or where the incumbent has only divested a portion of its stake in the infrastructure company. To avoid conflicts of interest that may arise in these cases, enhanced ownership unbundling measures have been applied in some countries, limiting the percentage of the shares that a single person or entity might hold of the infrastructure operator.

- **Transparent and clear, regulated access conditions to essential infrastructures.** Regulated access to essential infrastructures ensure that all shippers are granted access under the same conditions, including regulated Third Party Access (rTPA) tariffs. Through rTPA, it is much easier to monitor that infrastructure operators do not take advantage of the monopoly position that they might enjoy. The clarity of rules is facilitated by the existence of a network code or system code.

It is important to ensure that access tariffs are cost-based (not excluding cost-based incentive regulation schemes, to foster efficiency) and do not include any cross-subsidies. In particular, liberalisation measures might fail if integral end-user tariffs are not consistent with access tariffs or, more importantly, if they reflect a too low, regulated price of the commodity, preventing new entrants from making competitive offers.

A problem discussed now is whether the implementation of two or more alternative access schemes in the same market and at the same time (e.g. rTPA and nTPA, or rTPA and exemptions) would create distortions that could put in danger the whole system. So far, the existence of exemptions in some countries and of rTPA in others has not created major problems in national markets. However, it is still to be seen whether the persistence of the two systems might be incompatible and be a barrier to unify the European market.

- **Capacity booking systems with a single balancing zone:** Capacity reservation systems have an influence in competition. Point-to-point reservation systems, which are generally associated with distance-based tariffs, may not facilitate the entrance of new shippers, since they make difficult to perform gas exchanges. Also, the existence of multiple balancing areas in national markets of limited size, which imply that shippers must be balanced in all of them, and also that there are restrictions on the movement of gas between areas, may constitute an entry barrier for entrants with limited volumes of gas.

² EUROPEAN COMMISSION: “Energising Europe: A real market with secure supply”, MEMO/07/361, Brussels, 19 September 2007.



Entry-exit capacity booking systems have been adopted in a relevant number of countries to facilitate the development of competition. Entry-exit capacity booking, by decoupling the points of entry and exit of gas, allow new entrants to attract clients which can be supplied from any entry point in the systems, particularly if a single balancing zone has been implemented. Entry-exit capacity booking systems with a single balancing zone also facilitate gas trade within the network.

That said, it must be acknowledged that entry-exit capacity booking systems are not the only possible solution, and under certain configurations might not facilitate competition.

- **Gas Release Programmes.** These programmes have been implemented in a number of countries, with very different results. Gas release programs are under certain conditions an useful tool to allow new entrants to create a portfolio of customers before subscribing contracts or before receiving gas under their new contracts. They might be useless if access rules are not appropriately designed or if released volumes are insufficient.
- **Ways to deal with potential economic and financial difficulties due to Take-or-Pay clauses.** Supply contracts subscribed by incumbents prior to the liberalisation processes generally include quite rigid and onerous ToP clauses that have often been mentioned as a barrier to the opening markets. If the incumbent losses sales in absolute terms, and is not able to divert gas supplies to other markets, it will have to pay for the gas not offtaken. This means that the incumbent will accept selling gas at very low prices instead of losing sales. European Gas Directives have recognised this, allowing refusal to Third Party Access (TPA) on the basis of serious economic and financial difficulties with ToP contracts. Finding ways to deal with ToP clauses might be therefore key to ensure that market opening is not deterred by old contracts.
 - In the UK, the excess of gas supply in the market at the time of liberalisation facilitated the entrance of new competitors. Centrica, although at a high price, had the opportunity to renegotiate contracts with producing companies, at a time when the UK was not dependant on external supplies.
 - In Spain, with a rapidly growing demand, the incumbent Gas Natural did not face this problem, since although it lost near 50% of market share in a few years, it did not suffer any reduction in terms of absolute volumes. Moreover, the predominance of LNG in Spain makes it easier to adjust supplies through cargo diversion. Therefore, no regulatory intervention was required to deal with potential economic and financial difficulties with ToP contracts.

It could be argued that the promotion of hubs is also a pre-requisite for competition. However, hubs or market centres could also be seen as a natural evolution in the gas industry restructuring process, and therefore as an evidence that competition is being or has been developed in the market.

4 Assessment of measures to promote competition, and effective competition levels in European countries.

This section contains an brief description of measures to promote competition in different European countries. The measures analyzed are related to the ones highlighted in the previous





section: 1) unbundling measures, 2) access conditions, 3) capacity booking systems, 4) number of balancing zones and 5) Gas Release Programmes.

Ideally, it would be possible to compare the adopted measures with the effective level of competition achieved in different countries to draw preliminary conclusions.


A description of the main actions adopted in the US to foster liberalisation is also included in this section, in order to understand the similarities between the US experience and the European experience.



4.1 Brief description of measures adopted to promote competition in European countries.

	Unbundling measures	Access conditions	Capacity booking system	N° of balancing zones and frequency of balance	Gas Release Programmes (GRPs)
Belgium 	<p>Legal and functionally unbundled.</p> <p>Distrigas was both the TSO and the trader of gas. In 2001 Distrigas voluntary split its activities. The trading activities were hereafter managed by Distrigas and for its network activities a separate company, Fluxys, was set up.</p> <p>Fluxys operates the transmission network and underground storages. Suez holds 57.25% of Fluxys.</p> <p>Besides Fluxys LNG (LSO) is 93% owned by Fluxys.</p>	<p>Regulated TPA to all infrastructures.</p>	<p>“Enhanced Entry-Exit”</p> <p>This model guarantees that the subscribed Firm capacities remain Firm and meanwhile offers the flexibility of an Entry/Exit system.</p>	<p>4 (3 for H-gas and 1 for L-gas)</p> <p>Daily balancing with hourly constrains.</p>	
France 	<p>Legal unbundling.</p> <p>There are two main TSOs in France:</p> <ul style="list-style-type: none"> ▪ GRTgaz is legally unbundled and wholly-owned by GdF ▪ TIGF is legally unbundled and 100% owned by TIGF. 	<p>TPA to all infrastructures.</p>	<p>Entry – Exit</p>	<p>Currently, there are 5 balancing zones. In 2009, GRTgaz will merge the 3 zones in northern France. As a result there will be 3 balancing areas.</p>	<p>In 2004, Gaz de France and Total set up a temporary GRP in the Southern France amounting to around 48 TWh for a three-year period. The gas deliveries began on 1st January 2005.</p> <p>Under the CRE decision of 15 April 2004:</p> <ul style="list-style-type: none"> ▪ GdF made 15 TWh available each year for three years (i.e. 45 TWh) at the South gas exchange point, including at least 6 TWh by auction, representing roughly 15% of the gas quantities sold to eligible customers in this zone;



	Unbundling measures	Access conditions	Capacity booking system	N° of balancing zones and frequency of balance	Gas Release Programmes (GRPs)
	LNG terminals in operation are 100% owned by GdF and no unbundling measures have been applied. The same happens to storages, which are owned by GdF and TIGF.			Daily balancing.	<ul style="list-style-type: none"> Total will make 1.1 TWh available each year for three years (i.e. 3.3 TWh) by auction at the South-West gas exchange point. <p>All the quantities available were sold. Sixteen companies took part in the auctions organised by Gaz de France on 22nd October 2004. The 12 batches sold were assigned to Distrigas, Gas Natural and Total. In addition, Gaz de France sold 9 TWh on a bilateral basis to BP, Distrigas and Gas Natural.</p> <p>Eight companies took part in the auctions organised by Total on 27 October 2004. Only 5 of the 10 batches sold were acquired, by EDF and Iberdrola, at the reserve price set by Total.</p> <p>Total sold the remaining quantities on a bilateral basis at the start of 2005 to Distrigas.</p>
Germany 	Legal unbundling for the transmission network. There are not legal unbundling requirements for storage operators.	Regulated TPA to transmission networks. Negotiated TPA to storage facilities.	Entry – Exit within each TSO transmission network.	14 Hourly balancing until 30th September 2008. The German regulator BNetzA has introduced from 1 st October 2008 a switch from hourly to daily balancing to simplify workflow between suppliers and transmission-	In 2002, the Federal Minister of Economics and Technology approved the acquisition by E.ON AG ("E.ON") of rights giving sole control over Ruhrgas AG (now E.ON Ruhrgas) subject to certain obligations. The obligations are laid down in detail in the Minister's decisions of 5 July and 18 September 2002 (jointly referred to in the following as "Ministerial Approval"). One of these obligations was to establish a GRP under which E.ON Ruhrgas had to offer, in series of auctions, a certain quantity of natural gas from its import contracts. The GRP is still in force (see "Delivery Profile" below). In accordance with the Ministerial Approval, E.ON Ruhrgas has to offer a total of 200 billion kWh of natural gas (baseload) in six separate annual auctions. In each auction, E.ON Ruhrgas has to offer one sixth of the total quantity. Accordingly, a quantity totalling approx. 33 billion kWh of





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				system operators.	<p>high calorific gas is offered in the auction each year, which are made available in three annual quantities of 11.11 billion kWh. The deliveries under contracts won in the annual auction commence on October 1st of each year.</p> <table border="1"> <caption>Delivery Profile Data</caption> <thead> <tr> <th>Date</th> <th>Volume (TWh/a)</th> <th>Label</th> </tr> </thead> <tbody> <tr> <td>1/10 2003</td> <td>11.11</td> <td>1</td> </tr> <tr> <td>1/10 2004</td> <td>22.22</td> <td>2</td> </tr> <tr> <td>1/10 2005</td> <td>33.33</td> <td>3</td> </tr> <tr> <td>1/10 2006</td> <td>22.22</td> <td>4</td> </tr> <tr> <td>1/10 2007</td> <td>11.11</td> <td>5</td> </tr> <tr> <td>1/10 2008</td> <td>22.22</td> <td>6</td> </tr> <tr> <td>1/10 2009</td> <td>33.33</td> <td>5</td> </tr> <tr> <td>1/10 2010</td> <td>22.22</td> <td>6</td> </tr> <tr> <td>1/10 2011</td> <td>11.11</td> <td>6</td> </tr> </tbody> </table>	Date	Volume (TWh/a)	Label	1/10 2003	11.11	1	1/10 2004	22.22	2	1/10 2005	33.33	3	1/10 2006	22.22	4	1/10 2007	11.11	5	1/10 2008	22.22	6	1/10 2009	33.33	5	1/10 2010	22.22	6	1/10 2011	11.11	6
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<p>Great Britain</p>	<p>Ownership unbundling for the transmission network.</p>	<p>Regulated TPA to transmission network.</p> <p>Negotiated TPA to storage facilities.</p> <p>All LNG terminals in operation or under construction have been granted an exemption on Art. 22 of Directive 2003/55.</p>	<p>Entry – Exit</p>	<p>1</p> <p>Daily balancing.</p>	<p>The first gas release programme in Europe was implemented in the UK.</p> <p>Before the programme, and at OFGAS' request, in 1988 British Gas undertook to contract no more than 90% of the gas production from any given new field on the UK Continental Shelf over the period June 1989 to Mat 1991, thereby obliging producers to sell at least 10% to an independent supplier or end user.</p> <p>In 1992, OFGAS obtained an undertaking from BG to release gas under long-term contract to other suppliers to the contract market: 500 million therms from 1992/3 to 1994/5 and a further 250 million therms in 1995/6. More than 30 companies received gas under the plan during the first year, and an additional 70 in the second year, who paid BG a price equal to BG's weighted average cost of gas.</p>																														



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					<table border="1"> <thead> <tr> <th>Year</th> <th>Release Quantity (BCM)</th> <th>Release as share of eligible market</th> <th>Cap on BG Market Share of eligible customers:</th> </tr> </thead> <tbody> <tr> <td>1992</td> <td>1.35</td> <td>6.9%</td> <td>n.a.</td> </tr> <tr> <td>1993</td> <td>1.62</td> <td>6.3%</td> <td>85%</td> </tr> <tr> <td>1994</td> <td>1.35</td> <td>4.4%</td> <td>50%</td> </tr> <tr> <td>1995</td> <td>0.68</td> <td>2.0%</td> <td>40%</td> </tr> </tbody> </table> <p>The gas release programme, alongside other actions taken during 1992 (replacement of individually negotiated contracts by contracts based on published, non-discriminatory tariffs, the publication of indicative transportation tariffs, the account unbundling between the gas trading and the pipeline activities, the establishment of “Chinese walls”, and the reduction of the threshold for BG’s monopoly tariff market from 25,000 to 2,500 therms/year), led to a rapid increase in sales to large customers from independent marketers. BG’s share of the commercial/industrial market fell to around 75% by the end of 1992 and to under 25% by the end of 1995 (before the introduction of retail competition).</p>	Year	Release Quantity (BCM)	Release as share of eligible market	Cap on BG Market Share of eligible customers:	1992	1.35	6.9%	n.a.	1993	1.62	6.3%	85%	1994	1.35	4.4%	50%	1995	0.68	2.0%	40%
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Italy 	<p>Functional unbundling.</p> <p>Resolutions nos. 11/07 and 253/07, establish that the management of basis infrastructures (transmission, regasification and storage) should be functionally unbundled from the parent vertically integrated company active in the energy sector.</p> <p>Besides, an Independent System Operator (ISO) that has decision-making and</p>	<p>TPA to all infrastructures.</p> <p>New LNG terminals under construction have been granted an exemption based on Art. 22 of Directive 2003/55. Only 20% of the capacity will be offered under rTPA.</p>	<p>Entry – Exit</p> <p>Regarding RD 164/00, Art 23, tariffs shall be calculated considering first the booked capacity and the transmission distance, and second the quantity transported</p>	<p>1</p> <p>Daily balancing.</p>	<ul style="list-style-type: none"> ▪ GRP at Tarvisio entry point: the Antitrust Authority requested ENI in the Deliberation of the 21st November 2002, to set up a temporary gas release program. In this context, ENI agreed to set up a temporary gas release program involving 25 TWh. The gas release program will last 4 years, from 1st October 2004 to 30th September 2008 and will involve capacities at the Tarvisio entry point to the Italian network, interconnection point with Austria. ▪ GRP at Panigaglia LNG terminal: beginning on 1 October 2007 and over a period of two years, ENI must sell its competitors 4 bcm of gas at 26.45 eurocents/m³, lower than market price. This was decided by the Italian Competition Authority on March 2007. 																				



	Unbundling measures	Access conditions	Capacity booking system	N° of balancing zones and frequency of balance	Gas Release Programmes (GRPs)
	<p>organisational autonomy is been promoted. Its structure meets strict independent requirements to eliminate the possibility of conflicts of interest.</p> <p>ENI holds more than 50% of Snam Rete Gas shares, the Italian TSO. Furthermore, ENI also owns 100% of GNL Italia (LSO) and 100% of Stogit (SSO).</p>		<p>regardless the distance. Tariffs shall be established proportionally to the entry and exit point of the transmission network.</p>		
<p>The Netherlands</p> 	<p>The Gas Act, in effect before Directive 2003/55, was amendment to implement Directive and rules to tighten the supervision on grid management.</p> <p>In 1st September 2006 Gasunie was divided into a trading company (GasTerra) and an infrastructure company (Gasunie).</p>	<p>Regulated TPA to transmission network and storage facilities.</p> <p>LNG terminals under construction have been granted an exemption under Art. 22 of Directive 2003/55.</p>	<p>Entry – Exit</p>	<p>2 (1 for H-gas and 1 for L-gas)</p> <p>Daily balancing with hourly constrains.</p>	
<p>Spain</p> 	<p>Enagás, the main Spanish TSO, is an integrated infrastructure operator (transmission, storage and LNG terminals).</p> <p>Enagás is ownership unbundled. Pursuant Law</p>	<p>Regulated TPA to all infrastructures</p>	<p>Entry – Exit</p>	<p>1</p> <p>Daily balancing.</p>	<p>Pursuant Royal Decree-Law 6/2000, 25% of gas from Algeria via pipeline was auctioned between new entrants from 2001 to 2004 (1.4 bcm per year).</p> <p>The programme was based on the principle of keeping the incumbent neutral (as was the case in the GB). The average price paid by bidders is equivalent to Gas Natural's purchasing cost (oil related gas price) plus a fixed</p>



	Unbundling measures	Access conditions	Capacity booking system	N° of balancing zones and frequency of balance	Gas Release Programmes (GRPs)														
	<p>12/2007 no physical or legal company is entitled to own more than 5% of Enagás shares and voting rights are limited to 1% for those companies operating in the gas sector.</p> <p>Other Spanish TSOs are legally unbundled.</p> <p>Sagunto, Bilbao and Mugarodos LNG terminals main shareholders are vertically integrated companies operating in the energy sector.</p>				<p>management fee.</p> <p>After a contest phase, the number of candidates was reduced from 14 to 9 bids, which could then participate in the "auction phase". The final awarding was made on 22 October 2001 following which the successful bidders within 15 days could sign the contract in order to start supplying the awarded gas to their customers. The final result was the following:</p> <table border="1" data-bbox="1339 663 1928 866"> <thead> <tr> <th>Company</th> <th>Gas awarded - Total (BCM and %)</th> </tr> </thead> <tbody> <tr> <td>1. BP Gas España, S.A.</td> <td>1.06 BCM (25%)</td> </tr> <tr> <td>2. Iberdrola Gas, S.A.</td> <td>1.06 BCM (25%)</td> </tr> <tr> <td>3. Unión Fenosa Gas Comercializadora, S.A.</td> <td>0.85 BCM (20%)</td> </tr> <tr> <td>4. Endesa Energía</td> <td>0.76 BCM (18%)</td> </tr> <tr> <td>5. Hidrocarbónico Energía, S. A. U.</td> <td>0.42 BCM (10%)</td> </tr> <tr> <td>6. Shell España, S.A.</td> <td>0.08 BCM (2%)</td> </tr> </tbody> </table>	Company	Gas awarded - Total (BCM and %)	1. BP Gas España, S.A.	1.06 BCM (25%)	2. Iberdrola Gas, S.A.	1.06 BCM (25%)	3. Unión Fenosa Gas Comercializadora, S.A.	0.85 BCM (20%)	4. Endesa Energía	0.76 BCM (18%)	5. Hidrocarbónico Energía, S. A. U.	0.42 BCM (10%)	6. Shell España, S.A.	0.08 BCM (2%)
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4.2 Effective level of competition in European countries.

It would be desirable to compare the measures that have been implemented with the results achieved in terms of effective competition. The clearest way to evaluate whether competition exists is the switching rates of final customers, and the market shares of supply companies. However, we have found out that most national regulators do not offer reliable and comparable, or even do not offer at all, information on switching rates of customers and market shares of supply companies.

EREG, the “European Regulators’ Group for Electricity and Gas” which the European Commission set up is an advisory group of independent national regulatory authorities to assist the Commission in consolidating the Internal Market for electricity and gas, has identified this problem and has recently included in its “Work Program 2008” the development of Guidelines for Good Practice (GGP) on data to be submitted to the regulators for the development of reliable switching rates. EREG has justified this task as follows:

“Reporting of switching rates is generally poor. In a number of cases this may be due to the fact that regulators do not receive appropriate data. Guidelines shall be prepared addressing the relevant data to be provided to regulators, the categories of customer groups to be assessed and the responsibilities for data provision.”

In this section the latest information available on customer switching rates and supplier market shares has been included. Some of this information has been extracted from the reports sent every year from National Regulatory Authorities to the European Commission.³ However, the liberalisation indicators for each market are not, and have not been, standardised. Therefore, it has to be borne in mind that the information provided is not necessarily comparable and might lead to wrong conclusions if not analysed in depth.

4.2.1 Belgium

The information hereafter presented has been collected from the *Commission de Régulation de l’Electricité et du Gas* (CREG) “Annual Report 2006 to the European Commission”, available at EREG’s website.

In Belgium there were different liberalisation schemes for the existing regions:

- **Flemish Region:** Supplies to end customers have been fully open to competition since July 2003.
- **Brussels-Capital Region and the Walloon Region:** Since July 2004, virtually all professional gas consumers are eligible. The gas market in these two Regions has been fully opened to competition since 1st January 2007.

³ Yearly, National Regulatory Authorities in each European country publish an annual report as an answer to the formal request made by the European Commission to the President of the European Regulators Group for Electricity and Gas (EREG).

The electricity and gas 2003 directives (2003/54/EC and 2003/55/EC) require from the European Commission the drafting of a series of follow-up reports on both sectors. These Directives also impose requirements on the regulatory authorities relating to the issuance of a report to the European Commission on certain areas of the electricity and gas markets.



As regards market shares and switching rates:

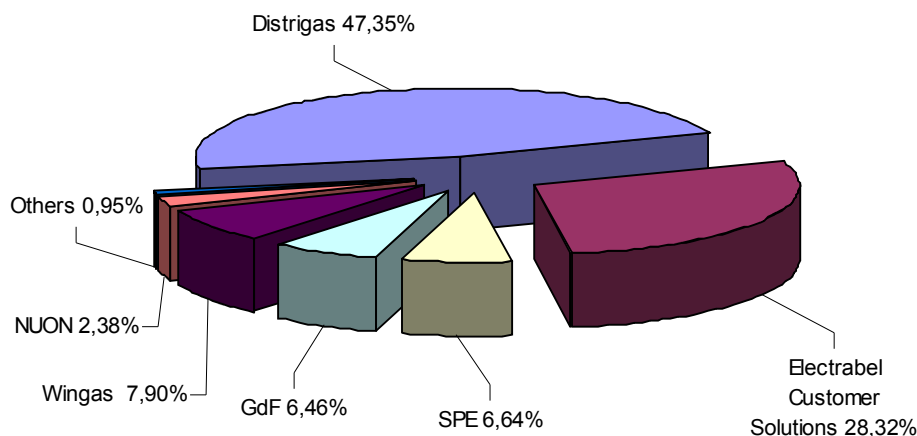
- **Flemish Region:** three suppliers have a market share in excess of 5%. Together, they account for a market share of 95.93% of the suppliers' market, as shown in the table below.

Market share in the Flemish Region.

Market (GRD + GRT)		Distrigas	Electrabel Customer Solutions	SPE	GdF	Wingas	NUON	Others
CCGTs		-	-	-	-	-	-	-
Households and small companies	< 120 MWh/year	-	28.32%	6.64%	-	-	2.38%	0.95%
Industrial customers and medium customers	< 1 mcm	3.42%	-	-	2.81%	0.32%	-	-
Large industrial customers	≥ 1 mcm	43.93%*	-	-	3.65%	7.58%	-	-
Total market		47.35%	28.32%	6.64%	6.46%	7.90%	2.38%	0.95%

Source: CREG, VREG.

Total market share per supplier in the Flemish Region.



Source: CREG, VREG.

In terms of switching rate, 5.44% of end customers (on basis of volume) chose to sign a contract with another supplier in the Flemish Region.

- **Walloon Region:** There are three suppliers with a market share of over 5%, holding jointly a share of 70% of the part of the suppliers' market.

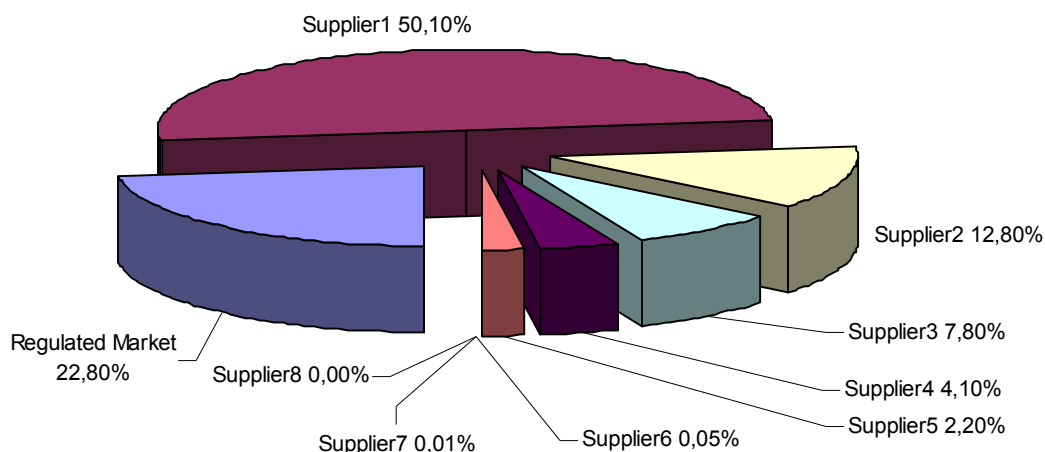


Market share in the Walloon Region.

Market (GRD + GRT)	CCGTs	Households and small companies < 120 MWh/an	Industrial customers and medium customers < 1 mcm	Large industrial customers ≥ 1 mcm	Total market
Regulated Market		> 99%			22,8%
Supplier 1	100%		1%	64%	50,1%
Supplier 2			1%	27%	12,8%
Supplier 3			65%	3%	7,8%
Supplier 4			33%	2%	4,1%
Supplier 5			0%	5%	2,2%
Supplier 6			0,33%	0,04%	0,05%
Supplier 7			0,09%	0%	0,01%
Supplier 8			0,01%	0%	0,001%
Others		< 1%			

Source: CWaPE.

Total market share per supplier in the Wallon Region.



Source: CWaPE.

The switching rate in the liberalised market amounted to 2.3%.

4.2.2 France

The *Commission de Régulation de l'Énergie* (CRE) publishes quarterly, since early 2005, an "Electricity and gas market observatory". The purpose of the observatory is to provide the general public with indicators for monitoring market deregulation. It both covers the wholesale and retail electricity and gas markets in Metropolitan France. The latest information available, published in June 2008, refers to the market situation as of 31st March 2008.

In order to understand the results published by the CRE, it is convenient to clarify that the deregulation of the French gas market has taken place in several stages:



- from August 2000, all sites with an annual gas consumption over 237 GWh and all electricity generators or simultaneous electricity and heat generators whatever their annual consumption level became eligible.
- from August 2003, all sites with an annual gas consumption over 83 GWh became eligible.
- from July 2004, all companies and local government agencies became eligible.
- from July 2007, all customers became eligible, including residential customers.

The French retail market represents 11.5 million sites, which accounts for 525 TWh.annual gas consumption.

Each customer has the choice between two different types of contract:

- Contracts under regulated tariffs (offered by incumbent suppliers only)
- Contracts at market prices (offered by incumbent suppliers and alternative suppliers).

The CRE facilitates the number of sites and the consumption at market prices, as well as the market shares of alternative suppliers, expressed also in both "number of sites" and "consumption":

Synthesis in number of sites

Situation (number of sites)	Residential sites		Non residential sites	
	March 31 st 2008	December 31 st 2007	March 31 st 2008	December 31 st 2007
- all sites	10,800,000	10,800,000	680,000	680,000
- sites with contract at market prices	271,000	114,000	178,000	163,000
- sites gained by alternative suppliers	128,000	54,000	80,000	72,000
- alternative suppliers' market share within all sites	1.2 %	0.5 %	11,7 %	10.6 %

Sources: TSOs, DSOs, incumbent suppliers – Analysis: CRE



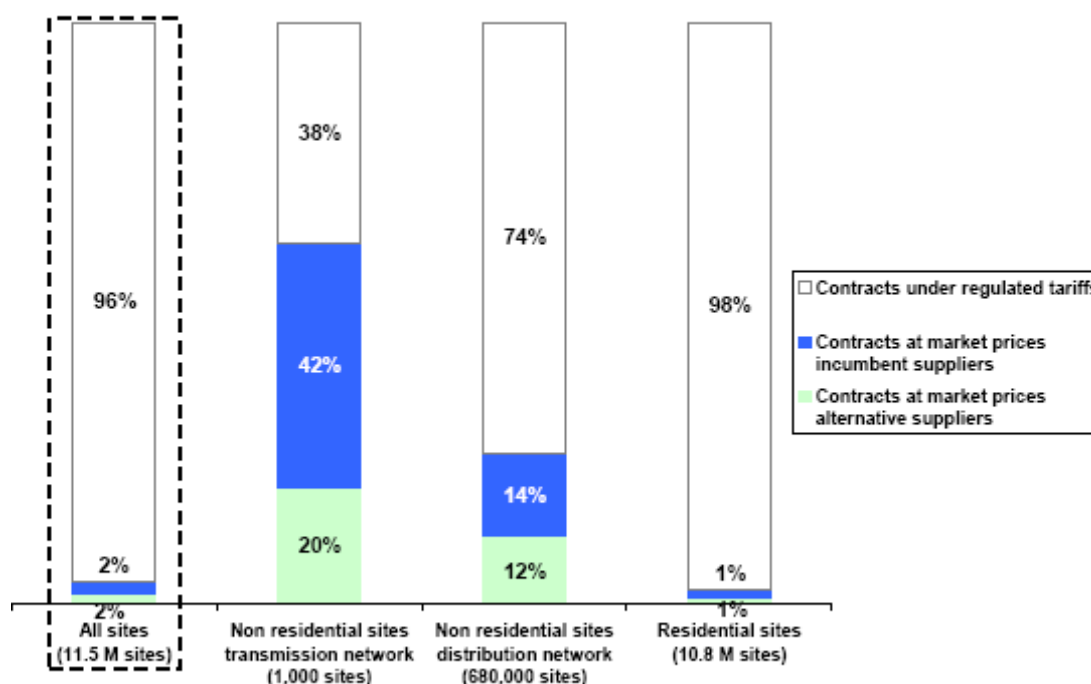
Synthesis in consumption

Situation (consumption)	Residential sites		Non residential sites	
	March 31 st 2008	December 31 st 2007	March 31 st 2008	December 31 st 2007
- all sites	148 TWh	146 TWh	376 TWh	376 TWh
- sites with contract at market prices	3.7 TWh	1.6 TWh	224 TWh	212 TWh
- sites gained by alternative suppliers	1.1 TWh	0.5 TWh	65 TWh	61 TWh
- alternative suppliers' market share within all sites	0.8 %	0.4 %	17 %	16 %

Sources: TSOs, DSOs, incumbent suppliers – Analysis: CRE

The CRE disaggregates the information above per type of contract. As would be expected, liberalisation is progressing faster for large customers.

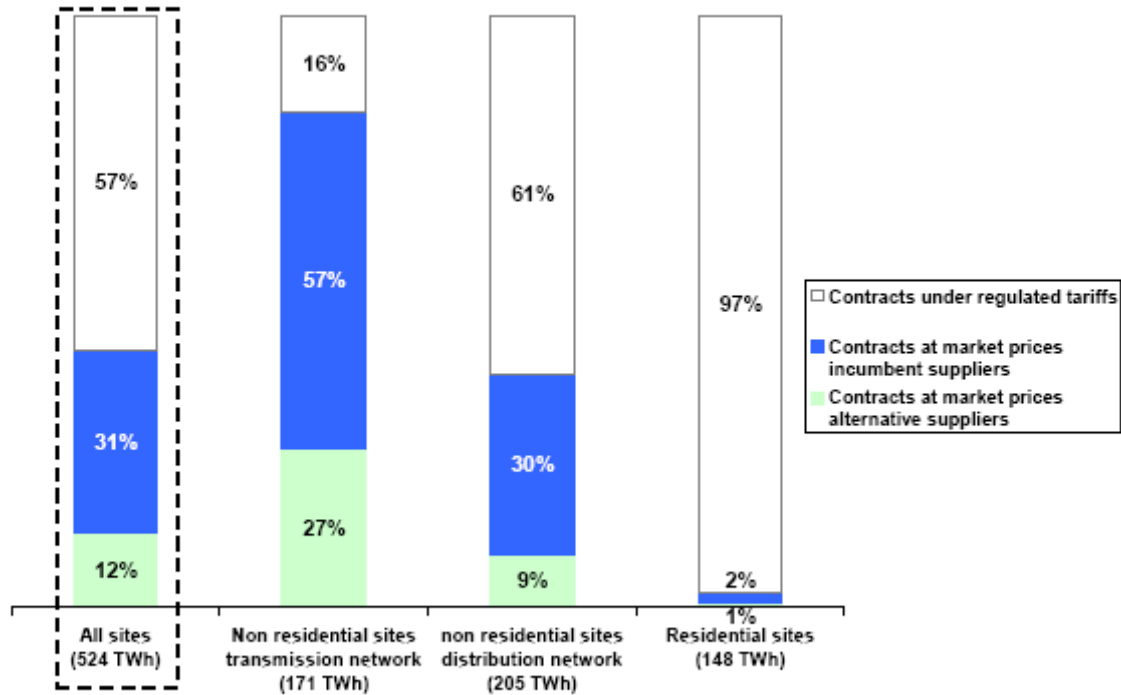
Share of sites for each type of contract on March 31st 2008



Sources: TSOs, DSOs, incumbent suppliers – Analysis: CRE



Share of consumption for each type of contract on March 31st 2008

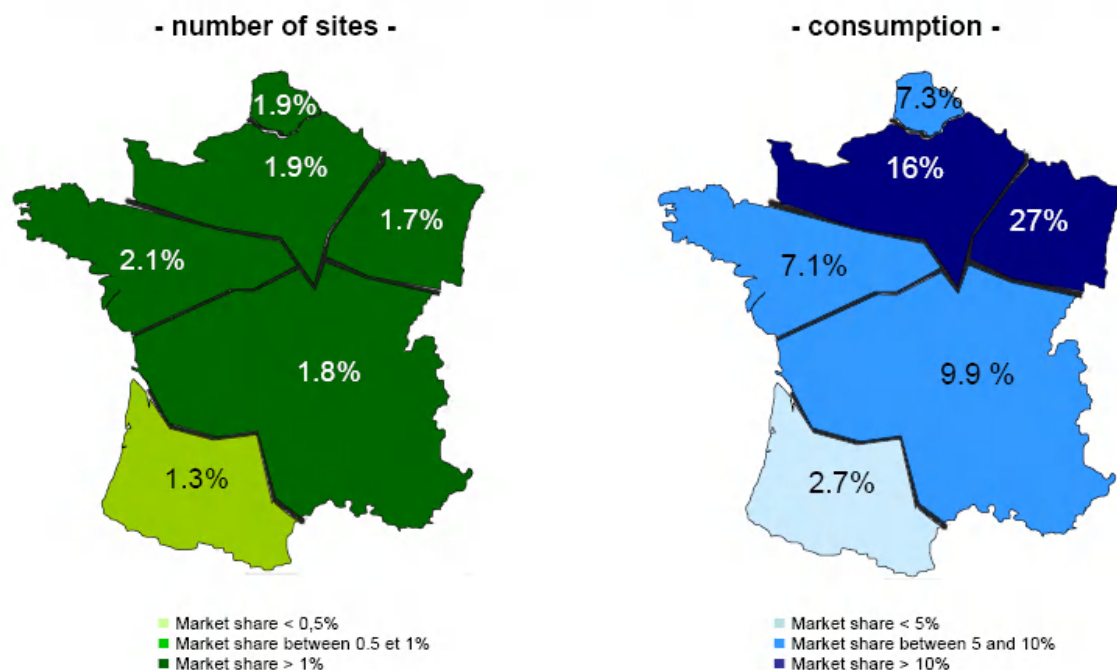


Sources: TSOs, DSOs, incumbent suppliers – Analysis: CRE

Finally, the CRE disaggregates the information per balancing area. The figures show that liberalisation is progressing faster in the Northern balancing areas, where a more relevant market exists in terms of consumption volumes, and where the interconnection capacity with other areas is greater.



Market shares of alternative suppliers in each Balancing zone on March 31st 2008



Sources: TSOs, DSOs, incumbent suppliers – Analysis: CRE

Note: On March 31st 2008, in the South-west balancing zone, 1.3% of sites and 2.7% of consumption are held by alternative suppliers

4.2.3 Germany

The following information has been gathered from the annual report developed by the national regulatory authority (*Bundesnetzagentur*) in 2006 for the European Commission.

In 2006 over 90% of network operators (local distribution system operators and TSOs) were in principle able to offer a procedure for changing suppliers. According to the *Bundesnetzagentur*, overall the change ratio in the gas sector in relation to the quantities involved is on a low level. In relation to the overall gas supply, 2006 saw a supplier change ratio of 1.25% according to information provided by gas system operators.

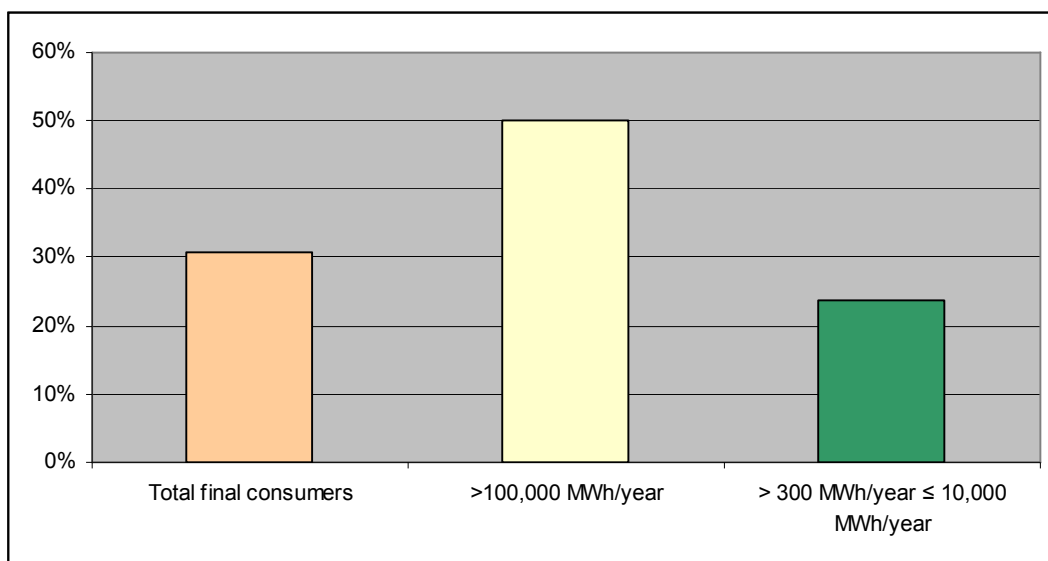
Despite an increase in the number of actual changes for the category 'household customers', compared to 2005, it is still large and very large industrial customers, i.e. final consumers with a take-off capacity in excess of 10,000 MWh/year, that clearly dominate in terms of the change ratios quoted. According to information from the gas network operators, the total volume of change of supplier by final consumers in 2006 amounted to 11.74 TWh (total consumption in 2006 in Germany was 1,028.08 TWh). Compared to the previous year (3.31 TWh) this figure increased more than threefold. According to information from the surveyed network operators, a comparison with the year 2005 showed an increase of the number of processed supplier changes for final consumers, from 302 (2005) to 8,871 (2006). Despite this the share of the overall volume of supplier changes as a percentage of the overall take-off capacity is only 1.25%. Nearly two thirds of the supplier changes among final consumers were found among households.



According to information provided by gas wholesalers and suppliers, the three largest companies supplied a total of 317.36 TWh to final consumers in 2006, which equals a market share of 30.87% (2005: 29.91%) of the total gas consumption of 1,028.08 TWh in the year 2006 (source: BMWi/BAFA). The total amount supplied by the three largest companies to final consumers has increased slightly from 312.56 TWh (2005) to 317.36 TWh (2006).

In the reporting period 2006 the concentration of the three largest companies was highest in the supply category ">100,000 MWh/year", with approximately 50%. The lowest concentration was found in the category "> 300 MWh/year ≤ 10,000 MWh/year". For this category the three largest companies together reached a market share of 23.61%.

Market shares of the first three companies in 2006.



Source: Bundesnetzagentur.

4.2.4 Great Britain

Since the late 1990s all gas customers have been free to choose their gas supplier.

British Gas share of the commercial/industrial market had already fallen to around 75% by the end of 1992 and to under 25% by the end of 1995, before the introduction of retail competition. The domestic market was fully opened to competition between April 1996 and May 1998, once competition in the industrial market had been consolidated. In 2002, the *Office of Gas and Electricity Markets* (OFGEM) concluded that the market was sufficiently competitive to remove price controls for domestic retail customers.

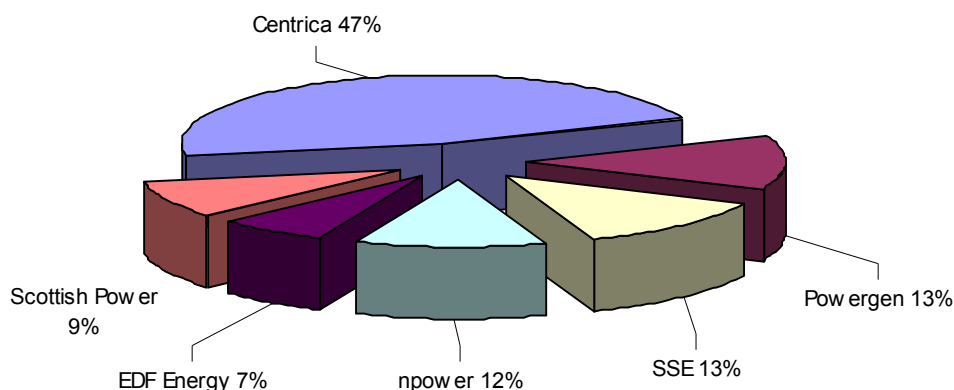
There are currently six large supplier groups in the domestic retail gas market; which are the same as the six largest domestic suppliers in the electricity market. All but one are new entrants to the gas retail market. Centrica owns the incumbent gas supplier, British Gas.



There are approximately 21.6 million domestic gas customers in GB, of which the six supply groups account for nearly 100% of the market. There are also three independent companies involved in domestic gas supply, which share less than 1% market share between them.

The following figure shows the most recent national market share data of the supplier groups in gas (March 2007).

GB domestic gas retail market shares - March 2007.



Source: OFGEM.

The information OFGEM collects on market shares in the non-domestic markets is acquired from a third party, who collects the data from suppliers. This data is presented in the next table (February 2007).

GB non-domestic gas retail market shares by volume supplied - February 2007.

	Non daily metered (Small firm)	Daily metered (large firm / Interruptible)
Powergen	22%	5%
Centrica	20%	6%
Shell Gas Direct	5%	14%
TotalFina Elf	18%	17%
Npower	6%	3%
GdF	-	19%
BP Gas	-	6%
Statoil UK	-	17%
Corona	13%	-
ENI	-	8%
SSE	6%	-

Source: Datamonitor.

In the domestic gas retail markets, there are six large supplier groups all with a share higher than 5%. The market share of the top three domestic suppliers, namely Centrica, Powergen and SSE,



is 72%. There has been a significant level of new entry into this market since it was opened. The former monopoly electricity suppliers have been the most successful entrants.

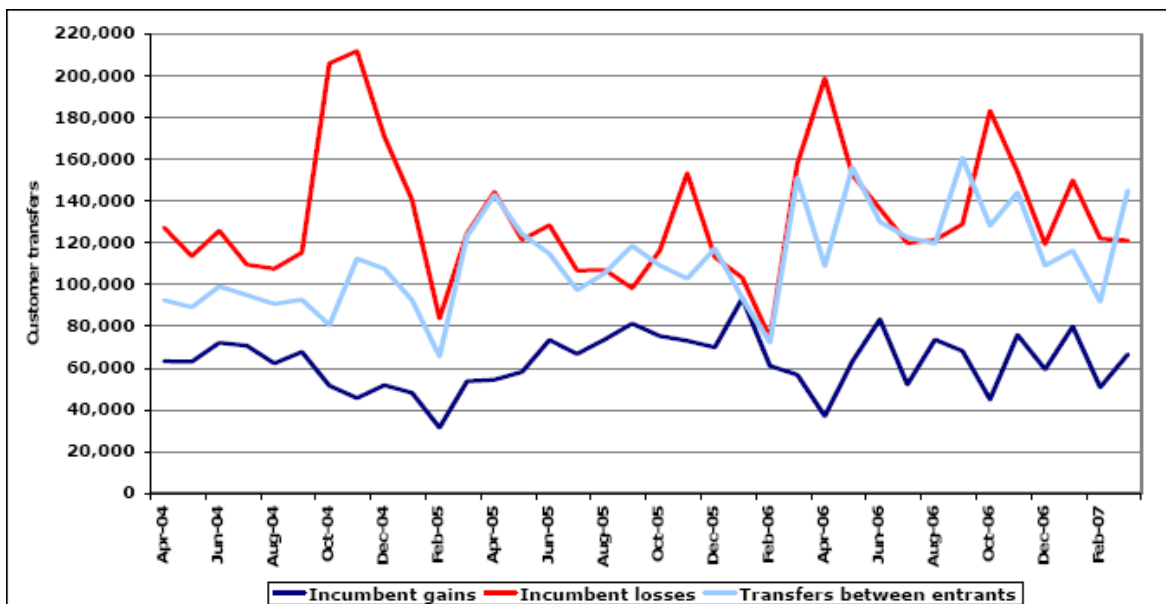
At present there are three independent companies (i.e. excluding the former monopoly electricity suppliers) in the domestic gas market. These companies have achieved the majority of their growth organically by gaining their customers rather than acquiring them. Penetration by these independent entrants has been on a relatively smaller scale compared to the large supplier groups. They have never accounted for more than 1% of the national domestic gas market.

The information presented hereafter is detailed at OFGEM's "Domestic Retail Market Report" developed in June 2007.

2006 annual rates of switching are at the highest levels in 4 years. There were on average 30,000 more switches per month than in the previous year. This is an 11% increase in monthly switching rates over the year.

On average, over the 12 months to March 2007, the net rate of loss of customers for the gas incumbent has increased 62% year on year. Switching between entrants has increased by 14% year on year.

Monthly customer transfer flows in gas.



Source: OFGEM.

During 2006 British Gas's national market share in gas fell below 50% for the first time, indicating that the majority of customers have now switched their gas supplier at least once. The following table displays market shares in the national gas market.



National market shares in gas.

Group	Dec-02	Jun-03	Dec-03	Jun-04	Dec-04	Jun-05	Mar-06	Mar-07
BGT	63%	62%	61%	59%	57%	53%	52%	47%
Powergen	12%	12%	12%	12%	13%	14%	13%	13%
SSE	6%	6%	7%	8%	8%	9%	10%	13%
npower	9%	9%	9%	9%	9%	9%	10%	12%
ScottishPower	5%	5%	6%	7%	8%	9%	9%	9%
EDF Energy	5%	5%	5%	5%	5%	5%	6%	7%
Others	0%	0%	1%	0%	0%	0%	0%	0%

Source: OFGEM.

4.2.5 Italy

The information contained in this section has been collected from the "Annual report to the European Commission on regulatory activities and the state of services in the electricity and gas sectors", elaborated by the *Autorità per l'Energia Elettrica e il Gas* (AEEG), dated 31 July 2007.

The following table summarises the main developments in the retail market since 2001:

Developments in the retail market since 2001.

	Total consumption (G(m ³))	No. of companies with >5% of final market	No. of independent companies (A)	Market Shares of the First Three Companies (%)				% Accumulation of Clients Who Changed Supplier (by Volume)			
				Thermo-electric uses	Large industrial companies (B)	Small-medium sized industrial and commercial companies (C)	Very small firms and household sector (D)	Thermo-electric uses	Large industrial companies (B)	Small-medium sized industrial and commercial companies (C)	Very small firms and household sector (D)
2001	70.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2002	70.0	4	n.a.	85.7		54.3		n.a.	n.a.	n.a.	n.a.
2003	76.4	5	n.a.	74.4		45.6		n.a.	n.a.	n.a.	n.a.
2004	80.6	5	110	80.3	54.1	n.a.	33.2	53(E)		6(F)	1(G)
2005	86.3	3	123	91.2	71.1	43.1	47.3	53(E)		6(F)	1(G)
2006	84.4	3	182	89.7	71.1	47.3	47.1	n.a.		n.a.	n.a.

(A) Fully independent of network operators

(B) Industrial companies

(C) Businesses and Services

(D) Domestic clients

(E) Standard consumer with annual consumption > 200,000 m³/year. Datum observed at 1 June 2005.

(F) Standard consumer with annual consumption 5,000-200,000 m³/year. Datum observed at 1 June 2005.

(G) Standard consumer with annual consumption < 5,000 m³/year. Datum observed at 1 June 2005.

Source: AEEG.

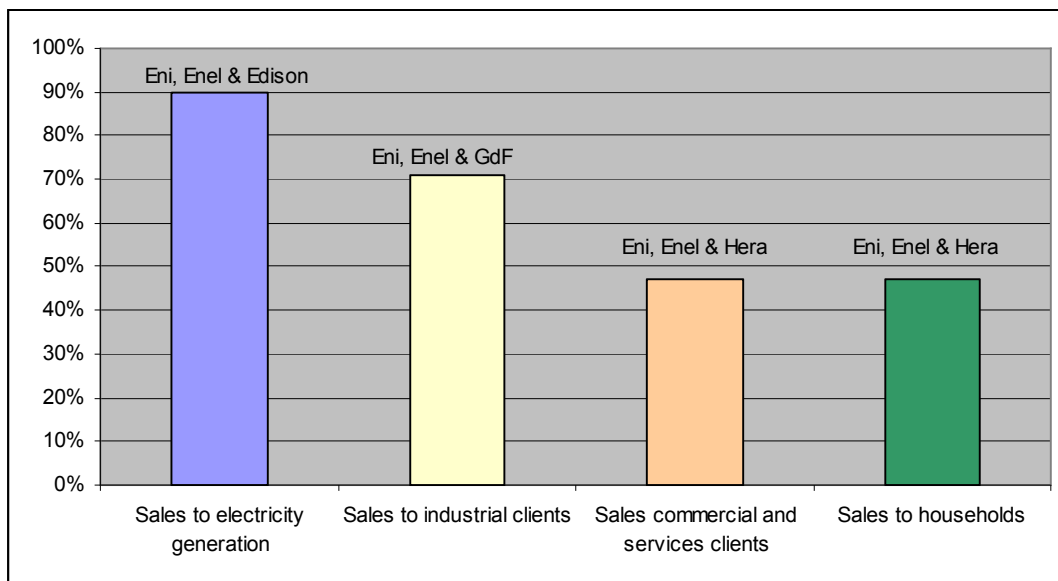
The fall in consumption did not affect the degree of market concentration, which was substantially unchanged with respect to the previous year: again in 2006, indeed, there were 3 companies with a market share of more than 5%, which, together, had a 66.5% share of the total market (including self consumption). The three major groups are ENI (44.1%), ENEL (13.2%) and Edison (9.2%).



In 2006 the first three operators covered:

- 89.7% of sales to electricity generation (in order: ENI, ENEL and Edison);
- 71.1% of sales to industrial clients (in order: ENI, ENEL and Gaz de France);
- 47,3% of sales commercial and services clients (in order: ENI, ENEL and Hera);
- 47.1% of sales to households (in the order: ENI, ENEL and Hera).

Market shares of the first three companies in 2006, by customer type.



Source: AEEG.

For the first time, the Annual survey of the natural gas sector conducted by AEEG evidenced operator self-consumption, that is the quantities of gas produced, imported and/or acquired within Italy consumed by them directly in the calendar year 1 January – 31 December 2006, split into consumption sectors. This allows to perform a more accurate analysis of market liberalisation and the level of concentration.

Excluding self-consumption from the market, overall gas sales were 77.4 G(m³). There were just 2 groups with over 5% of sales: ENI, with a 49.4% share, and ENEL with a 15.2% share. The third group is Hera with a share of just 2.9%. Edison, which consumes a large quantity of gas in its power stations, drops to fourth place with a 2.6% share. Even when the self-consumption is excluded, the level of concentration by customer type does not change significantly (or the order of the groups).

Foreign penetration of the Italian sales market does not appear relevant. 23 of the companies who answered AEEG's survey are operating on the sales market with at least one foreign partner. Together these account for a 10.6% share of the total market (including self-consumption and 4.2% of sales alone). The leading companies with foreign shareholders who sell to power generation are Edison, Gas Natural Vendita Italia and Sorgenia (who together cover 20.3% of that market); the first three suppliers to industrial clients are Sorgenia, Dalmine Energie and Cartiere



Burgo (with an overall share of 5.2%); the first the suppliers for commercial and services clients are Gas Natural Vendita Italia, Sinergas and Begas Energy International (with an overall share of 1.8%); finally, the first three companies with at least one foreign shareholder selling to households are Gas Natural Vendita Italia, Sinergas and Libera Energia (with an overall share of 1.8%).

Regarding the degree of integration between supply and sale to the end-user market, there are 17 companies operating in both phases of the supply chain. The three leading companies are ENI, ENEL Trade and Edison; who together cover 87.6% of the gas produced or imported and 58.8% of the gas sold to end clients (net of self-consumption).

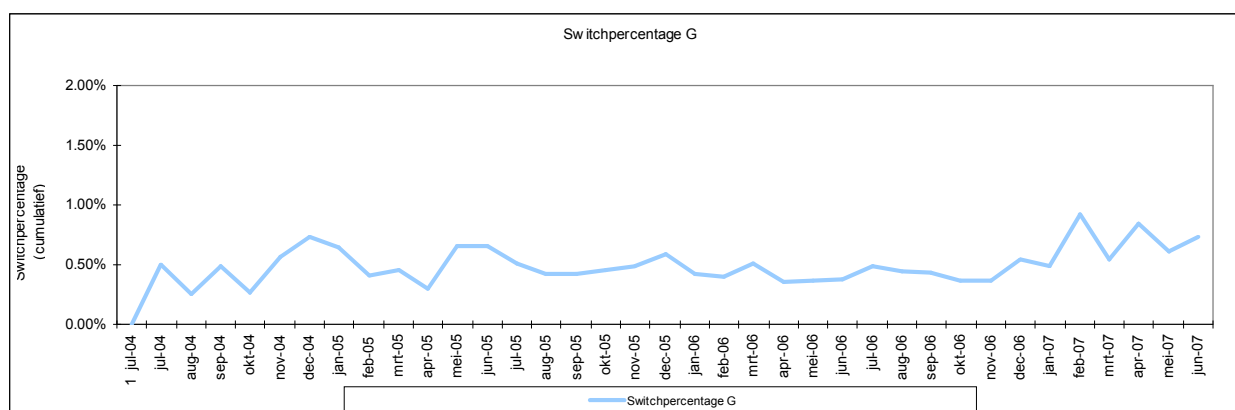
No data is available on switching for the year 2006 at 31/07/2007.

4.2.6 The Netherlands

The information contained in this section has been collected from the Annual Report by the Office of Energy Regulation (DTe, which has recently changed its name to “Energiekamer”) to the European Commission containing data from 2006.

Between July 2006 and June 2007 6.8% of all consumers switched gas supplier. This percentage is up from the previous 12 month-period. The figure below provides an overview of monthly switching rates since full liberalisation.

Development of monthly switch rates for gas since market liberalisation.



Source: Office of Energy Regulation (DTe).

DTe does not seem to offer detailed information on market shares.

4.2.7 Spain

The Spanish gas market started the process of liberalisation in 1998 and was fully opened to competition in January 2003, when all domestic gas customers became eligible.

By December 2007, about 90% of volumes were supplied in the liberalised market, and in terms of number of customers, 2,368,586 clients (37% of the total market) had switched from the regulated tariffs to the liberalised market. By 1st July 2008 regulated tariffs have been removed, and



customers that have not chosen any supplier in the competitive market are supplied by a designated supplier under a last resort tariff.

The switching rate was lower in 2006 than in previous years: 25,000 clients per month switched their supplier. The maximum rate was achieved in 2004, with 150,000 clients switching supplier in a single month.

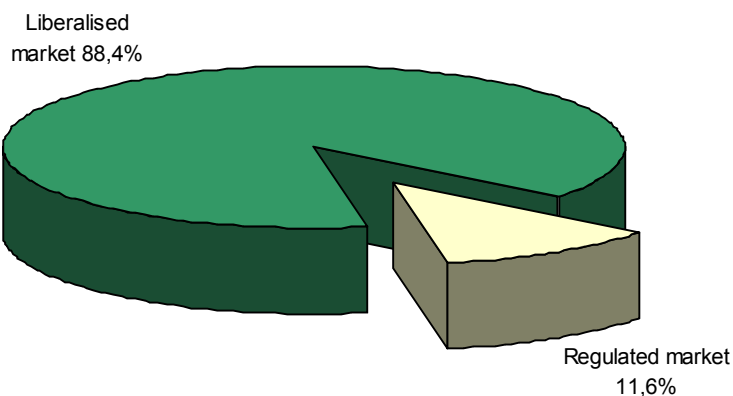
The procedure for customer switching is regulated under Royal Decree 1434/2002 of 27 December. The maximum period to complete the procedure is 15 days.

The *Comisión Nacional de la Energía* (CNE) publishes a quarterly report that monitors the natural gas market in Spain. The report contains information about the market share in the liberalised and in the regulated market.

The information detailed below refers to the report dated from December 2007.

The following figure shows the market distribution in 2007, when 88.4% of natural gas was consumed in the liberalised market and the remaining 11.6% in the regulated market (i.e. under regulated tariffs).

Market opening in terms of gas consumption.

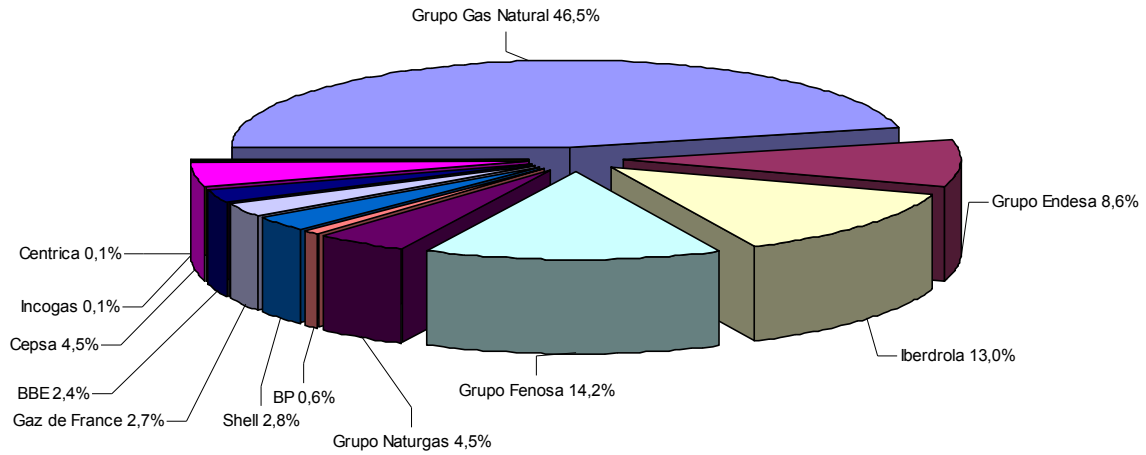


Source: CNE.

Market share by supplier in the liberalised market is shown in the next figure. The incumbent (Grupo Gas Natural) still enjoys the highest market share. Other majors players in the Spanish energy sector operate in the liberalised gas market, most of them from the power sector.

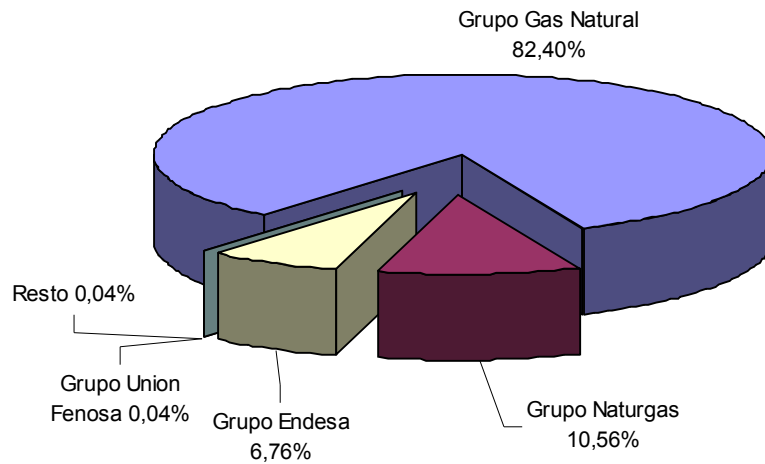


Market share in the liberalised market in 2007.



Source: CNE.

Market share in the regulated market in 2007.



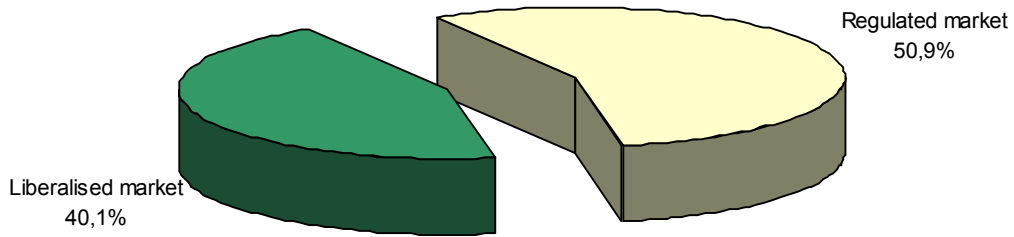
Source: CNE.

By end of 2007 the number of natural gas consumers was 6,737,358. 40.1% of them were supplied through the liberalised market, and the remaining 59,9% through regulated tariffs.

The following figure shows the percentage of customers in the regulated market and in the liberalised market.



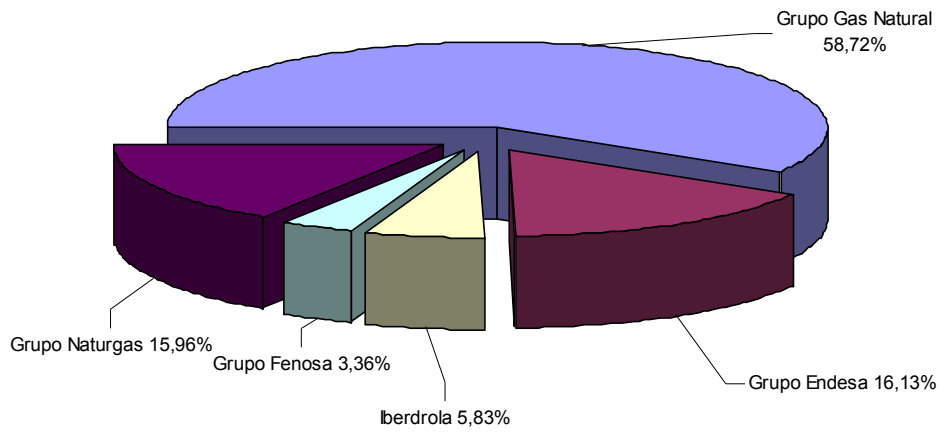
Customers share in 2007.



Source: CNE.

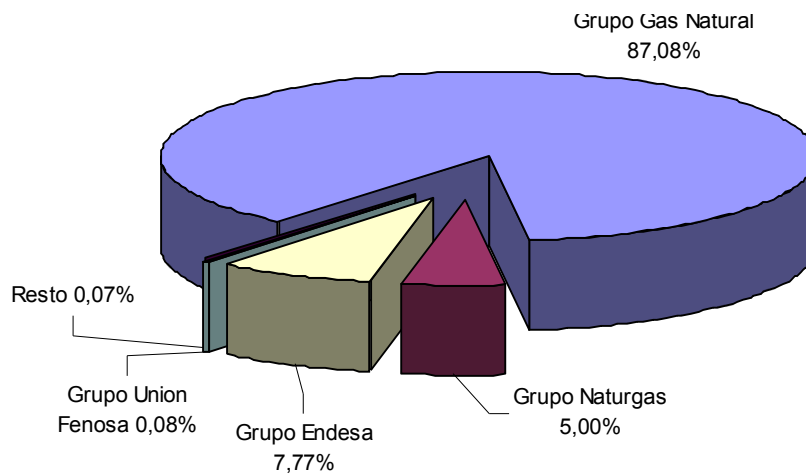
The following figures show the number of customers per supplier.

Customer shares in the liberalised market in 2007.



Source: CNE.

Customer shares in the regulated market in 2007.



Source: CNE.



4.3 Description of measures adopted to promote competition in the US.

The measures highlighted for Europe are related to entry barriers which were also observed in the US at the time of liberalisation. Although in the introduction of this paper it was stated that the development of competition in the US has required different measures, it is worth to briefly revise the US experience to understand the main differences and similarities between this process and the European initiatives, taking into account that the measures adopted in the US in the 1980's and early 1990's inspired the measures taken in Europe.

The US market differs from European national markets in two essential characteristics:

- The size of the market in terms of total consumption and number of agents: thousands of producers, more than 1,000 gas utilities and upwards of 1,000 gas-fired power plants. The market size, together with the available infrastructure, means that economies of scale can be realised by many players in the market.
- Access to large gas infrastructures based on “contract carriage” regime instead of “common carriage” regimes.

The main pieces of regulation issued by the Federal Energy Regulatory Commission's (FERC) to foster liberalisation of the gas industry were Orders 380 in 1984, 436 in 1985, 500 in 1987, and 636 in 1992. These Orders addressed to a large extent the issues of gas release, access conditions to infrastructures, ways to deal with economic and financial difficulties due to ToP clauses, and unbundling.

- **Gas Release Programmes.** FERC Order 380 released local distribution companies (LDCs) from their obligation under existing long-term supply contracts to pay pipeline companies for a certain amount of natural gas ("minimum bill") even if the gas was not received. This in turn allowed LDCs to purchase gas at more market-sensitive prices on the spot market.

During the perceived natural gas shortages of the 1970s, pipeline companies and LDCs had entered into long-term supply contracts with producers to ensure reliable delivery of natural gas supplies. When prices fell in the early 1980s, these long-term contracts were tied to much higher gas prices than available on the open market and required payment for a certain threshold quantity of gas whether or not the buyer took the full contract level (ToP provisions). Pipeline company revenues were protected somewhat by the minimum bill provisions in existing contracts with LDCs, which also required certain payments by resale customers regardless of the amount of gas delivered. Pipeline revenues were further protected by the special marketing programs approved by FERC in 1983 that allowed some industrial users to buy gas directly from producers for transport by the pipelines if the producer released the pipeline from an equal amount of purchase requirements under existing contracts. However, LDCs were still required to honor their take-or-pay provisions under the long-term contracts without mitigation. To correct this situation, FERC issued Order 380, which relieved LDCs of their obligations to purchase natural gas from pipeline companies.

Order 380 allowed LDCs to buy gas directly from producers on the developing spot market. In effect, alongside Order 436, this could be understood as a gas release



programme, with gas being released from the traditionally high-priced sales contracts, and replaced with spot gas moved initially under interruptible transportation contracts.

However, after Order 380, pipeline companies were still required to honor their long-term ToP contracts with producers for the volumes that covered commitments to LDCs. In addition, the DC Court of Appeals ruled in 1985 that the special marketing programs were discriminatory in that other customers were unable to purchase their own gas and have it transported by the pipelines. The intensifying ToP crisis led to further regulatory reform in Order 436, Order 500, and ultimately Order 636.

- **Access conditions to infrastructures.** FERC Order 436 provided incentives for interstate pipeline companies to offer transportation service to producers and end users as well as their regular local distribution company (LDC) customers. Pipeline companies who agreed to provide transportation service on a first come, first served basis to third party customers received blanket certificates ("optional expedited certificates") that allowed them to engage in transportation arrangements with shippers without prior authorization from FERC. New facilities would be considered in the public interest if the pipeline company assumed the risk for the project. In return for expedited certificates, a pipeline company had to allow its customers to convert their contracts from entitlements for gas purchases to equivalent levels of transportation service over a 5-year period. Customers who chose not to use transportation could continue to use resale service, whereby the pipeline companies purchase the gas from producers and then resell it to their customers after transport. Pipeline companies who decided not to offer open access transport could only provide resale service.

While Order 436 made it easier for LDCs and other companies to buy gas directly from producers and other parties, it led only to partial restructuring of the industry because pipeline companies were encouraged, rather than required, to provide open access service. Also it did not address other key elements of pipeline company services. For example, Order 436 did not provide similar incentives for pipeline companies to provide open access to storage facilities.

Take-or-Pay (ToP) payments increased for pipeline companies as fewer customers were buying gas from the pipelines, and pipelines were still liable to pay producers for previously contracted gas supplies.

- **Ways to deal with economic and financial difficulties due to ToP clauses.** FERC Order 500 in 1987 created a mechanism for pipeline companies to shift some of their liability under long-term contracts to producers, consumers, and downstream pipelines and clarified key issues that remained after Order 436. For example:
 - Established provisions for the pass-through of some ToP costs to customers other than through a rate case. Required a pipeline company to absorb between 25 and 50 percent of these costs in order to be allowed to bill a portion of these costs directly to customers. Pipeline companies choosing to recover a portion of their costs through a fixed charge could recover the remaining amount through a volumetric surcharge on each unit of gas sold.



- Required that producers offer ToP credits to pipeline companies for any natural gas transported for the producer.
- To avoid future ToP problems, FERC instituted a gas inventory charge to compensate the pipeline company for having to be ready to supply customers on demand.

Order 500 was revised a number of times and was finalized in 1989 with Order 500H, which pushed forward the final date for the pass-through of ToP liabilities.

Most companies reached settlements on their ToP contracts as soon as possible. Almost 80 percent of ToP liabilities had been voluntarily renegotiated as of late 1987. In most cases, state regulatory authorities allowed LDCs to pass through some of the pipeline-billed take-or-pay costs directly to retail customers.

- **Unbundling.** FERC Order 636, known as the “Restructuring Rule”, was issued on April 8, 1992, and was designed to allow more efficient use of the interstate natural gas transmission system by fundamentally changing the way pipeline companies conduct business. Whereas previous orders had encouraged pipeline companies to provide transportation service on a non-discriminatory basis, without favoring their own source of supply, Order 636 required interstate pipeline companies to unbundle, or separate, their sales and transportation services. The purpose of the unbundling provision was to ensure that the gas of other suppliers could receive the same quality of transportation services previously enjoyed by a pipeline company’s own gas sales. Unbundling increased competition among gas sellers and diminished the market power of pipeline companies.

The restructuring of the natural gas industry that began with Order 436 and was substantially completed with Order 636 has changed gas transportation patterns and rates. Increased competition among gas suppliers fostered by the new market flexibility has contributed to changes in regional production, transportation, and consumption patterns, and to greater efficiency in the use of the gas industry infrastructure.



5 Conclusions.

During the last two decades a clear movement from monopolies present in all the stages of the value chain to the introduction of competition between supply companies has been observed in the natural gas sector. However, few countries seem to have completed the transition yet.

This restructuring of the industry has been based the idea that it is possible and desirable to separate the transport, and sometime other infrastructure activities such as regasification and storage, from the commodity supplied. Once unbundled, the infrastructure usually remains a natural monopoly, and as such is regulated, while the commodity can be provided in competition.

The transition from monopoly to competition is conditioned by the characteristics of the market and it is therefore difficult to establish a pattern of measures that regulators should follow to successfully complete the transition. Nevertheless, observing the measures adopted in different European countries since the 1990s and the results achieved, certain common measures can be highlighted for Europe: effective unbundling, transparent regulated access conditions to essential infrastructures, capacity booking systems with a single balancing zone, gas release programmes. Finding ways to deal with economic and financial difficulties that might arise due to Take-or-Pay clauses could also necessary to ensure that market opening is not deterred by old contracts by incumbents.

Although the conditions prevailing in the US market were different from the conditions in European national markets, it is undeniable that the measures adopted by European regulators have been inspired by the US experience, and that many of the problems addressed in these markets were similar.

A preliminary analysis for Europe shows that the correlation between the key measures highlighted in this paper and the effective level of competition in each country is likely to be significant. Although the measures reported by national regulatory authorities to assess the level of competition are sometimes difficult to compare, it is quite straightforward that the markets that have gone further in their implementation, Great Britain and Spain, are the cases where liberalisation has already succeeded, while progress in the other markets seems to be slower.

In both Great Britain and Spain the initial regulatory moves to promote competition failed and pushed authorities to a series of actions to lower market entry barriers, notably in the areas of unbundling, transparent access rules and gas release programmes. Such actions led to a rapid liberalisation of the industrial markets that, once consolidated, allowed to introduce competition in the residential and commercial segments. This was also true for the US, where liberalization evolved rapidly after FERC Order 636 in 1992, addressing unbundling issues for interstate pipelines, but had not been satisfactory before..

While these are preliminary conclusions, they help to understand which are the main barriers to competition and what means could be employed to lower them. Interpretation of results should be done with caution and be analysed in the light of the prevailing conditions in each market.