Gas industry liberalisation, restructuring and employment in the European Union

by

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1 Introduction[1]

This paper examines the process of restructuring in the European gas industry that the passing of the European Gas Directive in 1998 has created. It focuses on the corporate dimension, especially the wave of mergers and take-overs that have been triggered, and it examines the policies that the key companies are following. The main sections are:

- Gas in the European energy economy and the global resource context;
- The EU Gas Directive and its implementation;
- Company structures and strategies;
- UK experience of gas market liberalisation;
- Restructuring in Central and Eastern Europe;

2 Gas in the European energy economy and the global resource context

2.1 Gas in the European energy economy

In all EU countries, the electricity industry is well developed and mature, with all potential consumers connected to the network and limited demand growth, but in several EU countries the gas industry is still immature (see Table 1). The UK and the Netherlands, because of their indigenous gas supplies, stand out as far more dependent on gas (both primary and delivered energy) than the other EU countries. The gas industries in Sweden, Portugal, Greece, Finland and Spain are little developed and discussing liberalisation in these countries makes little sense at this stage in their development. In addition, in Ireland and Denmark, relatively little gas is used by final consumers (most goes into power stations) and in these countries liberalisation must be a lower priority than extending the gas network.

Table 1 Gas as part of the energy supply mix

	Total gas demand MTOE	**Gas as % of primary energy**	**Final gas demand MTOE**	**Gas as % of final energy**
Austria	6.5	23	3.8	16
Belgium	13.4	23	10.8	26
Germany	71.5	21	51.7	24
Denmark	4.4	23	1.8	12
Spain	15.2	12	12.2	14
Finland	3.4	11	1.6	6
France	35.6	14	33.3	19
Greece	1.7	6	0.4	2
Italy	58.1	33	38.3	29
Ireland	2.9	20	1.1	10
Luxembourg	0.7	21	1.7	20
Netherlands	35.0	48	21.8	38
Portugal	1.0	5	1.7	8
Sweden	0.7	1	0.5	2
UK	94.8	41	59.5	37
EU15	**344.9**	**24**	**239.4**	**23**

Source: Eurogas : http://www.eurogas.org/site/ftp/Annual%20Report%202000.pdf

Notes:

1. Primary energy figures are for 2000, except for Portugal where they relate to 1998
2. Final demand figures are for 1999, except for Greece and Portugal, which are for 1998

[1] Tables with no source are drawn from the PSIRU database

Table 2 **Consumption of Natural Gas: 2000 (PJ)**

	Population (m)	Number of small consumers (m)	Demand						
			Residential	Cons/capita GJ	Commercial	Industry	Power Plant	Other	Total
Austria	8.2	1.3	101	12.3	0	134	48	0	283
Belgium	10.3	2.4	153	14.8	72	253	144	0	622
Germany	83.3	16.7	1040	12.5	120	1415	235	444	3250
Denmark	5.4	0.3	26	4.8	13	44	32	64	180
Spain	40.0	4.2	94	2.3	29	544	37	0	705
France	59.8	10.2	578	9.7	265	788	0	23	1655
Italy	57.7	14.7	747	12.9	211	1127	552	46	2682
Ireland	3.9	0.4	20	5.1	13	39	86	1	160
Netherlands	16.1	6.6*	387	24.0	278	707	218	3	1593
UK	59.6	20.7	1344	22.6	440	776	1164	65	3789
EU15	**369**	**70.8**	**4520**	**12.2**	**1445**	**5992**	**2657**	**703**	**15318**

Source: Eurogas : http://www.eurogas.org/site/ftp/Annual%20Report%202000.pdf

Notes:

1. The population figures are estimates for 2001.
2. The number of consumers is as of Jan 1 2001. The figure for Netherlands is all consumers.

Table 3 **The gas network in the EU countries**

	Total number of Consumers (m)	Total Demand (PJ)	Investment (mio Euro)	Investment/ Demand	Transmission Network (km)	Transmission/ Consumption	Distribution Network (km)	Distribution/ Consumer
Austria	1262	283	169	0.60	5213	18.4	24099	19.1
Belgium	2511	622	208	0.33	3731	6.0	47000	18.7
Germany	17400	3250	2617	0.81	57000	17.5	299000	17.2
Denmark	322	180	64	0.35	1415	7.8	16889	52.5
Spain	4203	705	967	1.37	11989	17.0	25033	6.0
France	10671	1655	1000	0.60	34232	20.7	159020	14.9
Italy	15630	2682	1820	0.68	30500	11.4	180000	11.5
Ireland	366	160	190	1.18	1199	7.5	6944	18.9
Netherlands	6638	1593	57	0.04	11600	7.3	117500	17.7
UK	21051	3789	1487	0.39	18600	4.9	260700	12.4
EU15	**80266**	**15318**	**8715**	**0.57**	**177925**	**11.6**	**1141200**	**14.2**

Source: Eurogas : http://www.eurogas.org/site/ftp/Annual%20Report%202000.pdf

Notes:
1. Investment figures are for 2000.
2. The transmission and distribution networks are as at Jan 1 2000.

Table 2 shows consumption by sector and illustrates the high use of gas in power generation in the UK and the high proportion of gas used in industry in Spain, Germany, the Netherlands and Italy. Table 3 shows the extent of the network and levels of investment. Countries like Spain, Ireland, and Germany, with high levels of investment per unit of gas consumption are expanding their networks. In countries like the Netherlands, the UK, Denmark and Belgium, there appears to be little system expansion. The data on consumption per km of transmission network give information on the physical size of the country and the penetration of natural gas. Small, densely populated countries such as the UK, the Netherlands and Belgium have a low figure on transmission network per unit of consumption, as do countries such as Ireland and Denmark, where consumption is dominated by a small number of large consumers.

2.2 The resource context

Gas is a finite natural resource, unevenly distributed often in politically unstable areas. It is therefore important to understand the resource context in order to determine whether a free market in gas purchasing is viable in the long term. Gas demand is growing rapidly in Western Europe, by 40% in the last decade, driven by the availability of cheap new supplies and by the environmental advantages of using gas rather than other fossil fuels for power generation. Supply to Europe is dominated by five producing countries, Norway, Netherlands, UK, Algeria and Russia. At present, supply appears to be plentiful and secure, and there is relatively little public debate in Europe about future sources of gas. Indeed, at a global level, proven reserves already been discovered are equivalent to 61 years of current consumption, and this seems to represent a very comfortable resource position (see Tables 4 and 5).

Table 4 World gas production and reserves (2000)

	Production bcm (P)	**Proven Reserves tcm (R)**	**R/P Years**
Russian Federation	545	48.1	84
Iran	60	23.0	*
Qatar	28	11.1	*
Saudi Arabia	47	6.1	*
UAE	40	6.0	*
USA	556	4.7	9
Algeria	89	4.5	51
Venezuela	27	4.2	*
Nigeria	11	3.5	*
Iraq	-	3.1	*
Turkmenistan	44	2.9	*
Netherlands	57	1.8	27
Norway	52	1.2	24
UK	108	0.8	7
Hungary	3	0.1	28
Total Europe	**288**	**5.2**	**17**
Total World	**2422**	**150**	**61**

Source: BP Statistical Review of Global Energy 2001

Note: For countries with more than 100 years of reserves, R/P is marked *.

However, reserves figures are not a reliable indicator of how much gas there is, generally representing an under-estimate. The key point is that proven reserves are defined as those which are virtually certain to be technically and economically producible: reserves that have a better than 90% chance of being produced. For mature gas provinces such as the British North Sea, which have been thoroughly explored and where there is a ready market for finds of gas, official reserves figures may be a reasonable estimate of the actual amount of producible gas. However, for countries that have not been well explored or where it would be difficult to bring the gas to market, even large finds of gas cannot be counted as reserves. Finds in some of the countries of the Former Soviet Union (FSU) cannot be booked as reserves because it is

not now feasible to bring them to market. Gas is not as transportable as oil and cannot be regarded as a global commodity. So it is necessary to examine the situation at a regional level. From a consumption perspective, the key regions are the FSU, Europe and North America. More than two thirds of the world's reserves are located in regions that could supply Europe by pipeline (Russia, the Middle East and North Africa). From a resource perspective, the FSU should have little problem meeting its demands for the foreseeable future (see Table 6). By contrast, for North America, where accessing the huge reserves of the FSU and the Middle East will not be easy, unless major new reserves are brought to market, there will be pressure on gas supplies within a year or two.

Table 5 World gas consumption and production (2000)

	Consumption bcm (C)	**Production bcm (P)**	**Proven Reserves tcm (C)**	**R/P**	**P/C**
UK	96	108	0.8	7	1.1
Germany	79	17	0.3	19	0.2
Italy	64	17	0.2	14	0.3
France	40	-	-	-	-
Netherlands	38	57	1.8	27	1.5
Visegrad	36	-	-	-	-
Europe	**459**	**288**	**5.2**	**17**	**0.6**
USA	654	556	4.7	9	0.85
N America	**768**	**759**	**7.3**	**10**	**1.0**
S & C America	93	96	6.9	72	1.0
Former Soviet Union	548	674	57	80	1.2
Middle East	189	210	53	*	1.1
Africa	59	130	11	86	2.2
Asia Pacific	289	265	10	39	0.9
World	**2404**	**2422**	**150**	**61**	**1.0**

Source: BP Statistical Review of Global Energy 2001

Table 6 Gas Consumption in Europe (bcm)

	1990	**1995**	**2000**
UK	52	70	96
Germany	60	74	79
Italy	43	50	64
France	29	33	40
Netherlands	34	38	38
Visegrad	31	33	36
Europe	**331**	**381**	**459**

Source: BP Statistical Review of Global Energy 2001

Note: The Visegrad region includes the Czech and Slovak Republics, Poland and Hungary.

For Europe, the concerns are more long-term. Output in the UK is likely to decline steeply soon, but reserves in the other two major producing countries, Norway and the Netherlands, are likely to support output at around current levels for more than a decade. However, if as seems likely, demand continues to grow rapidly, new supplies will be needed soon. Algeria has extensive reserves capable of supporting an increase in production but there are concerns about its political stability that militate against significantly increased reliance by Europe. The expense and difficulty of building new Liquefied Natural Gas (LNG) facilities to bring gas from further afield mean that these most of these supplies can probably only come from the FSU or new pipeline supplies from the Middle East. The East European countries, especially the Czech and Slovak Republics and Poland, are therefore likely to see major new gas pipeline construction over the next decade to bring these new supplies to Western Europe.

3 The EU Gas Directive and its implementation

3.1 Traditional utility structure

Since World War II, public utilities such as gas, electricity and water have generally been organised as regional or national monopolies. In some cases, the companies were fully vertically integrated, in other words, the service is provided by a single company responsible for all or most stages in the value chain of the product from production to delivery to final consumer, including ownership of the network. In other cases, the production and wholesale activity (including operating the national or regional network) was carried out by one set of companies, while the local distribution network and retail supply to final consumers was carried out by another set of companies. However, in this latter case, the local distribution companies were obliged to buy their wholesale supplies from a monopoly supplier. National monopoly companies were almost invariably nationally owned, while regional companies were often owned by local or regional public authorities.

Because of the difficulties of coordination, a monopoly system was regarded as the only feasible way to organise such a service reliably. However, this monopoly structure was regarded as having many advantages. For example, compared to a competitive market, it allowed scale economies to be maximised and it prevented wasteful duplication of facilities. It also allowed governments to achieve wider social and economic objectives. For example, the existence of a monopoly allowed the connection of new consumers to be cross-subsidised by existing consumers and government strategic decisions on technology (for example, adopting nuclear power) or procurement (for example, source of natural gas) could readily be carried through with any additional costs generally being paid by consumers.

However, by the 1980s, the prestige of 'market solutions' was rising, while monopolies, especially publicly-owned ones were regarded as inevitably inefficient. Scale economies were not seen as important and government strategic decision-making was regarded as having little value. In addition, new information technology allowed the coordination of complex systems in ways that previously were not feasible and competitive structures were becoming viable.

The Conservative Party programme of privatisation of British utilities that was undertaken between 1984 and 1994 saw the privatisation of the telecoms, gas, water, electricity, and rail industries. While sale of publicly owned utility assets to the private sector was nothing new, the UK privatisation programme saw the emergence of a new organisational model for utilities designed to facilitate the introduction of competition. The 'British Model' has evolved over time, but the main elements are:

- Creation of a wholesale market;
- Provision of choice to final consumers allowing them to choose their retail supplier;
- Third party access to the network so companies operating in the wholesale market and companies competing to supply final consumers will be able to use the network.

The changes require structural alterations to the industry to ensure that the retail and wholesale markets operate efficiently. To ensure fair access to the network for all companies, management of the network should be separate from the commercial activities. For example, a company that owns the network and supplies final consumers will tend to give itself priority in accessing the network so the two activities should be operated independently. To ensure that markets are operating efficiently and that the companies that own the network do not abuse their monopoly position, a regulatory body with powers to set prices for monopoly services and to ensure fair competition should be appointed. The 'British Model' formed the bases of the European Union's Electricity Directive of 1996 and Gas Directive of 1998.

3.2 Implementation of the Directive in theory

Despite the imminent need for new supplies of gas, European Union policy is more focused on liberalising the gas industry. The EU Gas Directive was passed in 1998 and should have

been translated into national law by each member states by August 2000. The Gas Directive follows closely the 1996 Electricity Directive. The main planks of these Directives are that:

- All consumers should be able to choose their retail supplier for gas and electricity;
- Single European wholesale markets for gas and electricity should be created;
- National gas and electricity industries should be re-organised to ensure non-discriminatory access to gas and electricity grids and distribution networks; and
- Independent national regulators should be set up with wide powers to set monopoly prices, ensure access to networks and monitor competitive markets.

The Gas Directive foresaw a phased opening of the gas retail market with 20% of the market to be open by August 2000, 28% by August 2003 and 33% by August 2008, at which point a review of policy would take place. However, by 2002, despite France and Germany still not having transcribed the Directive into national law, apparent progress with the Gas Directive had been quicker than had been expected (see Table 7) with all countries except France significantly ahead of the target market opening figures.[2] The European Commission put forward proposals to accelerate the opening to competition of gas and electricity markets.[3] In particular, it foresaw that all gas and electricity consumers would be able to choose their retail supplier by 2005. This was a target that 8 of the 11 relevant member states were, by then, already committed to meet. New proposals were put also forward that would guarantee a universal right to energy, protecting vulnerable consumers and strengthen the rights of all consumers on transparency of pricing and on complaints procedures.

Table 7 Gas market opening in EU countries as planned in 2001

	% open in 2001	100% opening
Austria	49	2001
Belgium	59	2005
Denmark	30	none
France	20	none
Germany	100	2000
Ireland	75	2005
Italy	65	2003
Netherlands	45	2004
Spain	72	2003
Sweden	47	2006
UK	100	1998

Source: EC: http://europa.eu.int/comm/energy/en/internal-market/library/report-en.pdf

3.3 Barriers to a competitive market

Creating a competitive market for a network delivered commodity such as gas requires a great deal more than simply removing the legal monopoly privileges for the incumbent supplier. For a network delivered commodity such as gas, there are a number of features that must be present to ensure efficient market operation. These include:

- Non-discriminatory access to the network;
- An effective, independent regulatory body to ensure owners of monopoly facilities do not abuse their market position and to ensure markets are operating efficiently;
- An efficient wholesale gas market that allows competitors access to gas supplies; and
- An efficient retail gas market that gives consumers a real choice of supplier and allows them to switch supplier cheaply and easily.

[2] The gas markers in Finland, Greece and Portugal are too immature for the Directive to apply.
[3] See http://europa.eu.int/comm/energy/en/internal-market/int-market.html

3.3.1 Network access

On theoretical grounds, the best solution is that the network be owned by a company with no commercial activities in the gas sector that would give them any incentive not to provide fair access to the network. UK experience in gas and electricity suggested this was necessary, yet in gas, only the UK expects to have an independent network operator. Some countries are merely imposing an accounting or managerial separation in integrated companies. Unbundling, as required by the directive, will probably not end vertical integration, which persists in many countries, with private and public sector companies owning stakes in production, supply and/or distribution. Indeed, the major companies such as Ruhrgas and GDF state their intention to operate at all levels in the gas chain.

3.3.2 Independent Regulation

Independent regulation is essential to ensure that owners of monopoly facilities do not abuse their market position and that markets are operating efficiently. All countries except Germany expect eventually to have independent regulatory bodies (often also dealing with electricity). Germany has argued that the federal competition body, the Kartellamt, rather than a sector specific regulator would be sufficient, but in April 2002, the German government indicated it might create a gas regulatory body. However, creating a regulatory body is not sufficient to ensure effective regulation. A regulator must have the technical and financial resources, and the political power to impose its decisions. The issue of independence is also important. The regulator must be independent of the companies it regulates, although avoiding 'regulatory capture' is not a trivial issue. How far the regulator should be independent of government is more difficult to determine. Regulatory decisions should not be subject to arbitrary political interference, but the regulator must be democratically accountable and, if the regulator is blatantly doing a bad job, government should have the power of dismissal. Even for a well conceptualised regulatory structure, it is likely to be perhaps five years or more before a new regulatory body has built up the expertise to be effective.

3.3.3 An efficient gas wholesale market

This is the area where least progress has been made. In Britain, it took 13 years from the privatisation of British Gas in 1999, for a wholesale gas market was created. This is still undergoing major modifications. A problem for Britain was that British Gas had contracted all Britain's likely gas needs for many years ahead, making it difficult and risky for new companies to enter the market. The problem was tackled in Britain by requiring British Gas to sell gas to competitors at the price it had paid. This was backed up by requirements on British Gas to reduce its market share in given markets to specified levels within a given period. This policy was effective only because the market share targets were backed up by powerful, but non-specific threats to British Gas of total break-up if it did not comply. However, the factor that broke up British Gas's powerful market position was the collapse of the UK gas price. This allowed new entrants to buy gas from new North Sea gas-fields at little more than half the price paid by British Gas and meant they could offer much lower prices than British Gas.

In terms of market opening, this was a lucky chance that should not be assumed will happen in other markets where the incumbent suppliers have long-term gas contracts. The EC identifies this as a problem and its data shows that in all countries except the two major producing countries (the UK and Netherlands), virtually all the countries' gas needs are covered by long-term gas import contracts (see Table 8). This is a particular problem where demand is not likely to grow so rapidly, for example Austria, Belgium, Germany and Italy. Whereas in countries such as Spain and Portugal where demand could grow rapidly, quickly diluting the impact of the long-term contracts, this will be less of a problem. 'Gas release' schemes similar to those imposed in Britain are being proposed, but it remains to be seen whether there will be the political will to make these effective.

3.3.4 An efficient gas retail market

If an efficient gas retail market is to emerge, the *de facto* monopolies of the incumbent companies must be broken. For medium and large consumers, especially power generators,

provided access to the network is available, and access to wholesale gas supplies is possible, British experience suggests this should be achievable, albeit not easily. On the supply side, oil companies may well hope to increase their scope downstream providing a market for the gas they produce or control. On the demand side, medium and large consumers have the economic incentive and the resources to shop around effectively for the cheapest gas. The EC has published figures that show that 90% of large users switch supplier in the UK. In the rest of the UK, switching rates are typically less than 20%, suggesting that competition is far from established yet even for large consumers (see Table 9).

Table 8 Coverage of demand by long-term contracts

	Consumption BCM	**Domestic Prod BCM**	**Long-term Imports BCM**	**% coverage of demand by imports**
Austria	7.3	1.8	6.8	93
Belgium	15.9	0	17.8	+100
Denmark	4.6	8.1	-	-
Finland	4.1	0	3.4	83
France	42.4	1.7	43.7	+100
Germany	83.3	18.7	75.9	91
Italy	68.8	15.9	55.7	81
Netherlands	40.9	61.4	8.2	20
Portugal	2.4	0	2.5	+100
Spain	18.1	0.2	20.3	+100
Sweden	1.0	0	1.1	+100
UK	97.2	110.1	1.6	2

Source: EC: http://europa.eu.int/comm/energy/en/internal-market/library/report-en.pdf

Table 9 Switching rates for large gas consumers

	% switching
Austria	<5
Belgium	<5
Denmark	0
France	10-20
Germany	<5
Italy	10-20
Netherlands	>30
Spain	5-10
Sweden	<5
UK	90

Source: EC: http://europa.eu.int/comm/energy/en/internal-market/library/report-en.pdf

However, for small consumers, the issues are much more complex. Even in Britain where retail gas competition has been in place for more than four years, British Gas still has two thirds of the market despite generally being the most expensive supplier in the market. Those that have switched generally buy their gas from their local electricity supplier. The lessons from this experience seem to be that small consumers have little interest in choosing their gas supplier; they lack the confidence to switch and cannot easily identify the cheapest option. They may be uncomfortable buying what they see as a key purchase from a company they have had long dealings with and which they trust. The issue of 'cherry-picking' – only targeting rich profitable consumers – has not been addressed in any convincing way. Such a situation invites the exploitation of small consumers and begs the question whether small consumers would not be better off being supplied by a properly regulated monopoly.

3.4 Implementation in practice

While progress in opening the retail market looks impressive (see Table 10), in practice, the actual achievements are less clear. The original market opening targets were modest. Opening one third (by volume of sales) of the gas market would require only that those that use gas in

power stations plus a handful of large gas users be given choice. Even opening up half the market would entail giving relatively few consumers choice. From a practical point of view, the logistics (for example, metering, switching procedures etc) of allowing a small number of consumers choice are much simpler than the massive IT systems required to allow millions of consumers choice. In addition, from a political viewpoint, a system that allows large users the benefit of choosing gas supplier, while leaving small consumers captive to their local supplier would be hard to sell to consumers. Large consumers could use their market power to lever good prices from gas suppliers, perhaps at the expense of small consumers.

Table 10 Options in the EU Gas Directive

	Network Access	Unbundling	Regulator
Austria	Neg. TPA	Accounting	Ministry
Belgium	Reg. TPA	Legal	Regulator
Denmark	Combination	Legal	Regulator
France	Combination	Accounting	Not established
Germany	Neg. TPA	Accounting	Kartellamt
Ireland	Reg. TPA	Management	Ministry
Italy	Reg. TPA	Legal	Regulator
Netherlands	Combination	Accounting	Regulator
Spain	Reg. TPA	Legal	Regulator
Sweden	Reg. TPA	Accounting	Regulator
UK	Reg. TPA	Full	Regulator

Source: EC: http://europa.eu.int/comm/energy/en/internal-market/library/report-en.pdf

Notes:

1. Under negotiated third party access, a company wishing to use the network must negotiate with the network owner. Under regulated third party access, a company wishing to use the network can demand access at published tariffs.

Even in countries, such as Germany, which are ahead of the targets for opening the market, when we examine the structure and the mechanisms, the scope for competition is limited. There is no independent regulator and regulation is through self-regulation backed up by the Kartellamt. There seems little political will to take ownership of the network away from the two or three dominant companies. New competitors do not have a right to demand access to the network, they must negotiate with the network owners, their competitors. In Britain and the Netherlands, there is a commitment to separate fully the network from commercial activities. In other countries, such as Italy, Belgium and Spain, separate companies are being created but still substantially owned by companies operating in the competitive areas. From the point of view of gas consumption, the key markets in the EU are the UK (discussed later), Germany, Italy, France and the Netherlands which between them account for 84% of EU gas demand and nearly all production (see Tables 11 and 12).

Table 12 EU gas demand (mtoe)

	1985	1990	1995	2000
Austria	4.5	5.2	6.1	7.1
Belgium/Lux	8.4	9.5	10.6	13.4
Denmark	0.6	1.8	3.1	4.5
Finland	0.8	2.3	2.9	3.4
France	23.3	26.4	29.6	35.6
Germany	49.2	53.9	67.0	71.3
Greece	0.1	0.1	-	1.5
Ireland	2.0	1.9	2.3	3.4
Italy	27.2	39.1	44.9	57.4
Netherlands	32.5	31.0	34.0	34.5
Portugal	-	-	-	5.4
Spain	2.1	5.0	7.5	15.2
Sweden	0.1	0.6	0.7	0.8
UK	46.6	47.2	63.5	86.1

Total EU	197.4	224.0	272.2	339.6

Source: BP Statistical Review of Global Energy 2001

Table 11 EU gas production

	1985	**1990**	**1995**	**2000**
Denmark	1.0	2.8	4.8	7.3
Germany	15.7	14.3	14.5	15.2
Italy	12.4	15.6	18.3	15.1
Netherlands	64.4	54.5	60.3	51.6
UK	35.7	40.9	63.7	97.3
Total EU	129.2	128.1	161.6	186.5
Norway	22.8	25.0	28.0	47.2

Source: BP Statistical Review of Global Energy 2001

3.4.1 Germany

Germany is the second largest consumer of gas in the EU obtaining its gas from Russia (37%), Netherlands (26%), Norway (14%) and most of the rest from indigenous sources. The gas industry is long established there. Much the strongest company in Germany is Ruhrgas with about 60% of the market. It was owned by BP and several other companies, but the large electric utility, E.ON has bought the BP stake and is trying to takeover the company. A decision by the federal government on the acceptability of this deal is expected this summer. The three other significant companies are RWE (the other large electric utility), BEB Erdgas (jointly owned by Exxon and Shell) and Wingas (a joint venture between BASF and Gazprom). These companies control the network. In April 2002, the German government indicated that it might consider creating a national gas regulatory body to take over the job previously done by the Federal Kartellamt.

3.4.2 Italy

Italy is now the third largest consumer of gas in the EU, with consumption more than doubling in the past 15 years. A third of consumption is in power plants and residential consumption is still developing. In 2000, Italian natural gas sources were estimated to be 21% domestic, 34% Algerian, 30% Russian, and 9% Dutch. It also now imports LNG from Nigeria, but because of the failure to build an LNG import terminal, this is imported through France. The dominant gas company in Italy is the part-privatised energy oil and gas company, ENI. This company is now being de-integrated into a network company, Snam Rete Gas Italia, a retail company, Italgas, while ENI dominates wholesale gas supply through domestic supply and imports. Significant new entry to the market will be needed if the Italian government's target that no one company will supply more than 50% of the market by 2003 is to be met. ENEL, the part privatised electric utility is now moving aggressively into the gas market acquiring gas distribution companies. The gas sector is regulated by the gas and electricity regulator, the Autorita per l'Energia Elettrica e il Gas.

3.4.3 France

France obtains its gas supplies mainly from Norway, Russia and Algeria with smaller quantities from the UK and the Netherlands. Paralleling the structure in electricity, Gaz de France (GDF) is the state-owned company that dominates the gas market owning most of the network and with a monopoly in import and distribution. Proposals to split up and privatise GDF are not well advanced and are subject to political opposition. The network, which is currently owned by the government and leased to the operators (GDF and TotalFinaElf, which operates a small part of the network) is being sold to the operators. The setting up of a regulatory body for the sector awaits the transcription of the EU Gas Directive into French law, a process that will not be completed before this year's presidential elections.

3.4.4 The Netherlands

The Netherlands was the first country in Western Europe to find large reserves of gas in the early 1960s. It remains an exporter of gas and its depleted gas fields give it huge potential to store gas, an important capability for Western Europe. The main company is Gasunie, currently jointly owned by Exxon (25%), Shell (25%) and the Dutch government (50%). Gasunie owns the network and dominates wholesale trading. Local companies, generally owned by local authorities carry out distribution although in recent years there has been consolidation into just a handful of distribution companies, also active in electricity, water etc. In April 2002, the government proposed the split of Gasunie into a government owned monopoly network company and two trading companies, one owned by Shell and the other by Exxon. The sector is regulated by the national gas and electricity regulatory body, DTe.

3.4.5 Other Countries

The Belgian industry is dominated by Distrigas (owned by Suez) which owns the network and dominates the wholesale market. This parallels the situation in the electricity industry where the dominant company, Electrabel, is also owned by Suez. The unbundling of Distrigas may lead to Shell selling its stake in the new TSO and going its separate way on trading.[4] In Spain, the main company is Gas Natural which owns the network as well as supplying most of the gas. Gas Natural is owned partly by the large Spanish oil company, Repsol (47%) and by La Caixa bank (26%). It plans to sell off 65% of its shares in the network company, Enagas.

3.5 Strategic Issues

While the Commission recognises some of the practical barriers to introducing a market, the bigger question, is a competitive gas market a better way than a monopoly to provide consumers with a supply of gas, is not addressed. It seems to be tacitly assumed either that operating a competitive market is cost-free or that any costs are inevitably much lower than the benefits. The traditional elements of energy policy, ensuring security of supply and meeting public service obligations seem to have a much lower policy priority.

3.5.1 Security of Supply

The period since the liberalisation of gas and electricity markets began has been one of almost unprecedented market stability for the major fossil fuels. However, it cannot be assumed that markets will always be so relaxed. The West European gas market appears to be at a turning point and reliance on imports from outside the Western Europe is likely to increase. UK production (the largest producer in Europe and the third largest producer worldwide) has probably peaked. Whatever depletion policy there was before privatisation has clearly been abandoned and Britain now has only seven years of reserves left at current levels of production. Although Dutch and Norwegian production probably can be sustained for a decade or more at present levels, output is unlikely to increase much. Demand is still growing rapidly so imports from outside the region must rise. Algeria and Russia could support significantly higher levels of production, but from a strategic point of view, it might be worthwhile to diversify sources. There are two main options, Liquefied Natural Gas (LNG) from countries such as Nigeria or the Gulf States or long-distance pipeline supplies from the Middle East. However, British experience suggests free markets have no appetite for strategic decisions. In a free market, a company with a diversified portfolio of gas contracts will not survive long against a company buying at the lowest price available regardless of the security of their supplies. It is difficult to see, in a competitive market, how the major investments that will be needed to bring these new gas supplies to Western Europe can be made.

3.5.2 Public Service Obligations

While the Gas Directive has provision for Public Service Obligations written into it, the fact is that a free market is incompatible with social equity provisions. Ensuring that poor

[4] De Financieel Ekonomische Tijd, November 28, 2001 Belgian Shell considering sale of stake in Distrigas.

consumers can receive an affordable supply of natural gas at prices comparable to those enjoyed by richer, more commercially attractive consumers cannot be reconciled with a free market. British experience shows that for small consumers, the cheapest prices are offered to rich consumers and those on pre-payment meters are now in a much poorer relative position than they were before competition was introduced. The trend across Europe is for multi-utilities to emerge offering consumers a 'package' of services including traditional utilities as well as financial services, cable TV etc.

3.5.3 Network expansion

For some countries in Europe, such as the UK and the Netherlands, the networks are complete and nearly all consumers that want a supply of gas are connected. However, in many other countries, natural gas has only become available in large quantities in the past 15 years, for example, Spain, Italy and even France and a large amount of investment is needed to connect these consumers. In Finland, Greece and Portugal, the consumer network is very limited. In the past, system expansion has been carried out, very effectively, by use of cross-subsidies from existing consumers. In a free market, this is not a viable process. System expansion will only take place for consumers that were immediately profitable, e.g., a power station rather than to consumers that, on equity grounds, had a strong case for access to supplies.

3.5.4 Costs of competition

For many goods, the costs of competition are small compared to the expected benefits and can be ignored, but for a network industry, the costs are substantial. In the past, this led people to assume that a monopoly structure was the cheapest way to run a network industry. It maximised scale economies and minimised duplication of facilities. Such benefits are routinely ignored or regarded as worthless now. While the benefits of competition are, in principle, easy to identify, the costs are diverse and not always obvious. For example, the costs of the computer systems built to allow small consumers to choose their electricity supplier was about £730m. In short, every consumer in Britain will have to pay about £30 over five years for the privilege of being able to choose electricity supplier whether or not they exercise that choice. Similarly, the software for the gas and electricity wholesale markets was immensely complex and costly. The inevitable counterpart to competition is risk and in capital intensive industries such as electricity and gas, this translates into a requirement for higher rates of return on capital. For example, traditional utilities could frequently make investments on the basis of making 5-10% real rate of return on capital. In a competitive market, the required return will be 15% or more, a cost that will inevitably fall on consumers.

4 Company structures and strategies

4.1 Mergers and takeovers and restructurings

Since the passing of the electricity and gas Directives, the EU's energy companies have been involved in a wave of restructuring of the electricity and gas sectors (see Table 13). The only restructuring formally required by the Directives is the unbundling of the Transmission System Operator (TSO), although an accounting separation is all that is obligatory but this has been only one aspect of the corporate restructuring. The most important element has been the mergers and takeovers in the German energy industry, which have consolidated the positions of RWE and E.ON, and which have had repercussions on gas and energy companies throughout Europe.

Gas and electricity companies are now beginning to operate in both sectors. The main example is E.ON's bid for Ruhrgas, but it can also be seen in the moves by Enel and ENI (in Italy) and Endesa and Iberdrola (Spain) to move into both gas and electricity. As a result of the opening of the market in the UK, gas and electricity suppliers now operate in both sectors, often offering joint packages. In some cases this gas-electricity combination already existed, for example in Fortum (Finland), formed from a merger of IVO and Neste in 1996, in Tractebel, owner of both Electrabel and Distrigas; and in the 'twinned' partnership between

Electricité de France (EDF) and GDF in France, which includes a high proportion of shared jobs. The largest companies are expanding into other utility sectors such as water and waste. RWE and E.ON are seeking to expand into water, RWE already has a strong position in waste management; ENI/Italgas is expanding into water, and Suez is already a dominant multinational in both water and waste (see Table 14).

Table 13 Gas companies by EU country

Country	TSO and owner	Supply and distribution
Austria	OMV	OMV,
		Regional utilities
		Ruhrgas
Belgium	Distrigas (Suez-Tractebel)	Distrigas
		Inter-municipal distributors (joint with Tractebel)
Denmark	Dong	Dong
Finland	Gasum	Gasum
France	GDF	GDF
Germany		Ruhrgas
		E.ON
		RWE
		Wingas
Italy	SNAM Rete	SNAM, Italgas (ENI)
		Enel, Montedison
Netherlands	Gasunie	Gasunie, municipal distributors
Spain	Enagas	Enagas
		Endesa
		Iberdrola
UK	Transco (Lattice)	Centrica
		Eastern (TXU), London (EDF), Powergen (E.ON), Innogy (RWE), Scottish Power, Scottish & Southern

Table 14 Connections with electricity and other sectors

Group		Gas operations	Electricity operations	Other utilities
E.ON	D	E.ON Energie *?Ruhrgas*	E.ON Energie	Water (Gelsenwasser), telecoms
RWE	D	RWE Gas	RWE Energie	Water (Thames Water); Waste (RWE Entsorgung)
GDF	F	GDF	*EDF*	
Suez/Tractebel	F/B	Distrigas	Electrabel	Water (Ondeo/Lyonnaise); waste (Sita), telecoms
Fortum	FIN	Gasum	IVO	
ENI	I	Italgas/Snam	Enipower	Water (Eniacqua)
Enel	I	Enel Gas	Enel	Telecoms (Wind)
Nuon	N	Nuon etc	Nuon	Water (Cascal)
Endesa	E	Endesa gas	Endesa	Telecoms (Auna), water (Interagua etc)
Iberdrola	E	Iberdrola gas	Iberdrola	
Centrica	UK	British Gas	Centrica	Telecoms (One-Tel)

While gas and electricity operations are being merged, other non-utility activities are being spun off. Both RWE and E.ON are divesting themselves of manufacturing operations, and the oil companies, which have often been closely linked to the downstream gas industry, appear to be withdrawing from involvement in the business of selling gas. The decision by BP to sell

its stake in Ruhrgas to E.ON is the strongest sign of this, and it will be interesting to see whether Shell and Exxon retain their ownership of their portions of Gasunie.

There now appears to be emerging a small number of companies, generally 'multi-utilities', that seem increasingly likely to dominate European, and perhaps global utility markets. The European Commission seems relaxed with this development despite the fact that there is a serious danger that a small number of companies could result in an uncompetitive oligopoly – the antithesis of what the Directives were overtly aimed at achieving (see Table 15).

Table 15 The 10 largest European energy companies 2000/2001

Rank	Company	Power sales in TWH	Gas sales in TWh
1	Gasunie		794
2	Snam		695
3	E.ON	318	350
4	Ruhrgas		582
5	Centrica	21	560
6	Gaz de France		522
7	Electricité de France	491	
8	RWE	255	220
9	Enel	244	
10	Vattenfall	141	

Source: Metz, personal communication

4.2 Incidental and international dimensions of restructuring

This restructuring arises partly from decisions where gas is not the primary consideration. The merger of the two German utilities, RWE and VEW, for example was principally driven by the electricity market considerations, but created a large gas company as a 'spillover' effect (see Figure 1). The same consequence can be seen with E.ON's takeover of Powergen – E.ON's new presence in the UK gas market is again a 'spillover' from an electricity takeover. In Italy, the Enel-Camuzzi merger was however driven by Enel's wish to establish itself in gas as well as electricity.[5]

An international dimension of the same approach can be seen in the deals made between ENI and Iberdrola (Spain). ENI has taken a stake in Iberdrola Gas in Spain, both directly and through its 33% holding in the Portuguese energy group Galpernergia. Iberdrola acquired 10 per cent of Enipower, ENI's generating company in Italy. To cement the relationship, ENI's gas subsidiary SNAM has been awarded a 15-year contract by Iberdrola for the supply of 1.5bn cu m of gas annually to two new generators in Spain.[6]

Table 16 Transmission grid companies owned by multinationals

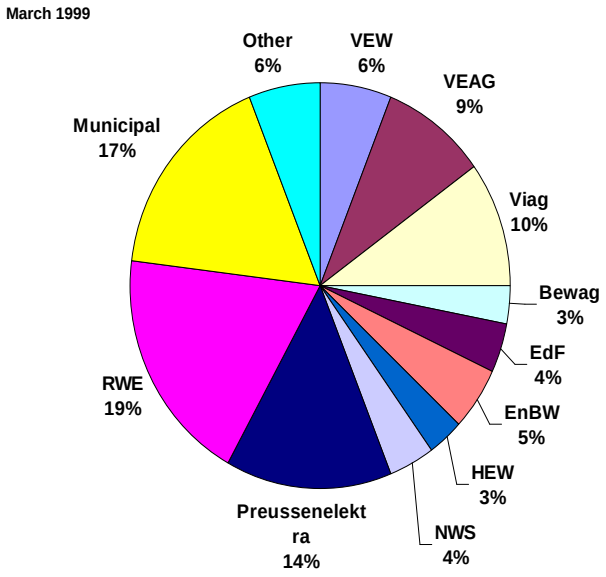
Country	Transmission company	Multinational shareholder	Home country	% shares owned	Date of purchase
Czech Republic	Transgas	RWE	Germany	97%	January 2002
Slovakia	SPP	Ruhrgas	Germany	49%	March 2002
		GDF	France		
		Gazprom	Russia		
Slovenia	Geoplin	Ruhrgas	Germany	5.2%	-

Takeovers of gas companies by multinationals from another EU country are less common with gas companies than in electricity. An exception is the bids by RWE for gas distribution companies in the Netherlands. The largest concentration of international takeovers is in fact in central Europe, where EU companies have successively taken control of the distribution

[5] Il Sole 24 Ore 17/10/01 "Enel acquires 40% of Camuzzi (All 'ENEL il 40% della Camuzzi)
[6] Financial Times, October 4 2000 'ENI blazes trail into Spain'.

companies of the Czech Republic and Hungary, and in the last few months have acquired the transmission companies of the Czech and Slovak Republics (see Table 16).

Figure 1 Germany electricity – liberalisation and concentration



Source: Bower et al, Energy policy, Oct 2001

4.3 Public sector presence

While the private companies are the driving force behind the restructuring, the public sector remains a presence, not only in the cases of the state-owned gas companies such as GDF. As a result of the changes brought about by the RWE-VEW merger, German municipalities, which held large stakes in VEW, now have a 20% stake in RWE Gas. In the Netherlands, one of the municipal energy utilities, Essent, has proposed a joint venture with a supply section of Gasunie, specifically to exploit international opportunities. Centrica (UK) has joined a 50-50 venture with a group of Belgian municipalities to form an energy supply company, Luminus, which will takeover the sales in Belgium and look to international expansion.

4.4 Employment impacts

This section looks at the impact on employment in different countries of the gas industry. As the Table 17 shows, the experience in the three largest countries appears to be very different (UK experience is examined in depth in section 5).

Table 17 Employment changes since 1997/98

	Before	Latest	Basis	Source
Germany	42,000 (1998)	36,000 (2001)	Sector (RWI est)	RWI
France	24825 (1998)	28105 (2000)	GDF (France only)	GDF
UK	31,222 (1997)	32,264 (1999)	Transco+Centrica (excluding international and AA)	Ecotec

4.4.1 France

In France, employment in GDF grew substantially during the 1998 to 2000, excluding impact from international expansion. Apart from reflecting demand growth and extension of the system, another important factor may have been the French move to a 35-hour week and the agreements on job protection and creation between the trade unions, and GDF and EDF.

4.4.2 Germany

In Germany, there was a fall of employment in the sector of 6,000 jobs, or 14%, in the 3 years up to 2001, which includes the liberalisation period. This is also the period of the mergers and takeovers that created RWE and E.ON, so the effects cannot be wholly ascribed directly to liberalisation. Cutbacks were also made in the public sector in preparation for liberalisation, e.g. GEW Cologne cut jobs from 3100 in 1994 to 2500 jobs 2001 (19%) specifically in order to prepare for market opening. Even so, the job losses in electricity were much sharper than in gas – a fall from 162,000 to 130,000 (20%) from 1998-2001. RWI estimates that the lower energy prices experienced from electricity liberalisation enabled German GDP to grow by an extra 0.14%, thus creating 20,000 more jobs than were lost in the restructuring.

4.4.3 Italy - Italgas

Italgas has a medium-term target of reducing employees by 6% per annum for the 3 years 2000-2003. It has already increased productivity sharply through increasing the client employee ratio by 25% in 4 years from 1996.

Clients per employee

1996	1997	1998	1999	2000
619	649	676	699	758

4.4.4 Belgium - Distrigas

Distrigas reduced staff by 131 (13%) over the three years from 1998, using the prospect of competition as justification: "Against this background and in order to guarantee its shareholders a return which is in line with that achieved in recent years, Distrigas again made considerable efforts in 2000 to improve its cost level and structure by renegotiating the long-term purchase contracts and engaging in more spot purchasing, and by improving productivity." Tractebel brought Electrabel and Distrigas into a new division, Electricity and Gas Europe including combining trading and purchasing activities. This restructuring, known as 'Transform 2003', is seen as creating job-saving synergies in similar ways to a merger. It envisaged a reduction of the workforce by 1,700 employees, and led to a major dispute with the unions. Strike action was announced, but the employers obtained a court injunction banning it on the grounds that it interfered with sub-contractors' right to work.

Employees (year ave, ftes) 1998-2001 = - 13%

1998	1999	2000	2001
1,011.2**	991.7**	979	880*

*New Distrigas and Fluxsys combined: Distrigas PR 27/02/20002

4.5 Profiles of selected gas and electric utilities

4.5.1 Ruhrgas[7]

Ruhrgas dominates the gas sector in Germany. Its activities outside Germany are concentrated in the Baltic region and central Europe. It has stakes in gas companies in Sweden, Finland, Latvia, Estonia, Poland, Hungary, Czech Republic and Slovenia. It has a 5% shareholding in the Russian company Gazprom (see below).

EURO Millions

Year			Sales	Profits	Employees	Paybill	Ave pay p.a.	Profits per employee p.a.
2000	Total		10,518.0	399.00	9,455	556.00	58,805	42,200
2000	Region	Germany:	9,184.0	347.00	2,581	231.00	89,500	134,444

[7] Ruhrgas is currently (May 2002) owned by a number of holding companies which are in turn controlled mainly by major oil companies – Exxon, Shell, BP. These holdings are now the subject of an agreed bid by E.ON, one of the two large German electricity companies. If the bid is allowed by the German Kartellamt it will mean that both electricity and gas in Germany and central Europe are dominated by the same two companies – RWE and E.ON.

The company states in its strategy document: “It is steadily developing into an integrated European gas merchant company, opening up new areas of business in midstream and downstream markets while also acquiring upstream participations. Its involvement thus ranges from gas transmission to regional and local distribution and also includes production. Downstream activities are focused on Europe, particularly Germany, while the company's upstream involvement includes Gazprom, the world's largest natural gas producer, together with gas fields in the British North Sea.” (Ruhrgas website)

In 2000, Ruhrgas AG bought gas under long-term contract from Russia (35%), Norway (26%), the Netherlands (16%) and the United Kingdom (6%) as well as from indigenous sources (17%). Some run until 2030, thus already covering a high percentage of the future gas requirements of Ruhrgas’s German and foreign customers. Ruhrgas is a member of the Ruhrgas/Gazprom/GDF consortium which bought Slovakia’s SPP transmission company in March 2002. Ruhrgas also holds a 5% stake in the Slovenian transmission company Geoplin. It has shareholdings in gas distribution companies in both Czech Republic and Hungary.

4.5.2 E.ON

EURO Millions

Year		Sales	Profits	Employees	Paybill	Ave pay p.a.	Ave profit per employee p.a.
2001	Total	79,664.0	3,553.00	151,953	6,909.00	45,468	23,382
2001	Energy	18,449.0	1,571.00	39,560	39,712		
2000	Total	93,240.0	6,802.00	186,788	36,416		

E.ON is one of the two large electricity companies in Germany and is also a large distributor of gas. It is actively expanding its electricity and gas interests throughout Europe. It has made a bid to buy control of Ruhrgas, which would make it the dominant gas company in central Europe. E.ON is itself the result of a merger between two large German groups whose subsidiaries included the energy companies Bayernwerk and Preussenelektra. E.ON is expanding by acquisition in electricity, most recently by buying the UK generator Powergen, as well as in gas. E.ON has held shares in Czech and Hungarian electricity and gas distributors since 1995. In the Czech Republic E.ON’s gas interests are concentrated in the same areas as its electricity interests.

4.5.3 RWE

EURO Millions

Year			Sales	Profits	Employees	Paybill	Ave pay p.a.	Ave profit per employee p.a.
2001	Total		62,878.0	2,238.00	169,979	7,189.00	42,293	13,166
2001	Sector	Energy	22,461.0	1,987.00	59,737	33,262		
		ofwhich gas	3,335					

External gas sales volume (m kWh)	2000/01	1999/2000	% Change
Private and commercial customers	30,853	16,346	88.7
Business customers	5,801	5,341	8.6
Key Accounts	18,555	665	2,690.2
Distributors/Energy utilities	55,333	–	
Gas trading	30,932	4,502	587.1
Total	**141,474**	**26,854**	**426.8**

RWE is one of the two large German electricity companies, and is also now the second largest gas distributor in Germany, as a result of the takeover of VEW and the absorption of gas company WFG. It supplies gas to approximately 1.7 million customers in Germany (220 TWh) and about 2 million customers abroad (60 TWh). It has expanded into the Dutch gas market by acquisition. In 2000 it bought N.V. Nutsbedrijf Haarlemmermeer (NBH), which

supplies the municipality of Haarlemmermeer. In April 2002 RWE Gas was given the go-ahead to buy 90% of Obragas, which serves the province of North Brabant in the south of the Netherlands. The company supplies 16 municipalities and about 188,000 customers with about 7.4 billion kWh of natural gas per year, with 2001 sales of approximately Euro 162 million. It also plans to buy Intergas N.V., Oosterhout. The net result will be to give RWE Gas a market share of about 7% in the Netherlands.

RWE has moved strongly into gas in Central and Eastern Europe (CEE). Its main presence in the region is through its purchase in January 2002 of 97% of the Czech transmission company Transgas, together with stakes of about 50% in each of the eight main gas distribution companies. It already has shares in some of the Hungarian gas distribution companies, covering over 20% of gas supplied, and has bought stakes in three gas distribution companies in Poland.[8] RWE has become a large multinational water operator by buying the UK company Thames Water. It is also the third largest waste management company in Europe.

4.5.4 Gaz de France

GDF is the French state-owned gas company, closely linked to the state electricity company, EDF, with which it shares a common and coordinated growth strategy (the two companies share many of their employees in France and often bid together in foreign projects). GDF serves more than 9.6 million customers in France and 1.5 million customers in other countries. Through its subsidiaries, the company is present in some 20 countries on all continents. Unlike many other gas companies, GDF has almost no natural supplies of its own. The company intends to increase its involvement in the production/upstream sector (abroad). GDF also intends promoting and developing business in cogeneration and NGV (Natural Gas for Vehicles), both in France and abroad.

EURO Millions

	Year		Sales	Profits	Employees	Paybill
	2001	Total	14,400.0	1,767.00		

It already has gas distribution operations in Germany – through 38% of Gasag, the Berlin gas utility, and EMB, a distributor in Potsdam, Brandenburg; and in Portugal, through Portgas, in the north of the country. In Austria, GDF and EDF own a joint 25% stake in the Estag holding company, a generator and distributor of electricity and heat and a distributor of natural gas, serving 500 000 customers in the province of Styria. GDF has also expanded in CEE, most recently as a partner in the Ruhrgas/Gazprom/GDF consortium which has bought a 49% stake in Slovakia's SPP. It also owns shares in distribution companies in the Czech Republic and Hungary (where GDF's investments coincide with EDF's investments in electricity).

4.5.5 ENI/SNAM/Italgas

Italgas

EURO Millions

Year	Sales	Profits	Employees
2000	3,215.00	433.00	11,027.00
1999	2,698.00	275.00	11,468.00

ENI is the semi-privatised Italian state energy holding company. It owns 100% of SNAM, the Italian gas transmission company, which has now spun off the transmission operator Rete Gas Italia. SNAM in turn owns 40% of the shares in the gas distribution company Italgas. Italgas is now a company floated on the stock exchange, 40% owned by SNAM/ENI. It distributes gas in 1,465 Italian municipalities. Italgas has been active internationally, especially in the Balkans. ENI has been present in the region since 1995 when it bought a stake in Slovenian distribution company Adriaplin. In the same year Italgas bought shares in the Hungarian distributor Tigàz. During 2000, Italgas won tenders for privatised concessions of gas distribution in Salonika and Thessaly, Greece. ENI also has an active presence elsewhere in

[8] Financial Times Deutschland February 19, 2002: RWE Gas strengthens presence in Poland.

the region most notably through a series of deals with Croatia for transit of Algerian gas. The group is expanding outside Italy through both Italgas and SNAM. Italgas' foreign operations in 2001 accounted for 36% by volume of the gas sold by the group: this includes a controlling share of a Hungarian regional gas distributor, Tigàz. Italgas wants to buy more gas distribution companies especially in Greece, Poland, Croatia and Turkey.

4.5.6 Suez/Tractebel/Distrigas

Distrigas was Belgium's gas transmission company, with a *de facto* monopoly of gas supply. It has a large transit business centred on the Interconnector hub at Zeebrugge. It is majority owned by Tractebel, the energy division of the Suez group. Tractebel also owns most of Electrabel, the electricity company which dominates electricity production in Belgium. Suez also owns stakes in many of the municipal gas distribution companies in Belgium. Distrigas has been split into two companies, new Distrigas and Fluxsys, to comply with the directive. Suez has brought Electrabel and Distrigas closer under the new division of 'electricity and gas Europe' (EGE). Tractebel has expanded in Europe in electricity through Electrabel, but not much in gas, though it is said to be interested in acquiring Polish gas distributors.

4.5.7 Endesa

At present Endesa has a 6% share of the domestic market in Spain for natural gas and 4.2% of the liberalized market. (Gas Natural has 75% of the total market). The Company wants to increase its share of the liberalized market to 15% by 2006. It claims it is already the second largest gas supplier in the Iberian peninsula, with over 4,000,000 customers in Spain and Portugal. Endesa Gas distributes in the regions of Aragon, Balearic Islands, Castilla-LE.ON, Extremadura, and Valencia, and is in the start-up phase for distribution in the Canary Islands. In Portugal, through its shares in the companies Portgas and Setgas, it distributes in the regions of Oporto and Setubal.

4.5.8 Iberdrola

Iberdrola embarked on the marketing and sale of gas to industrial customers in the liberalised market in October 2001, and that year it was awarded 25% of the gas from Algeria auctioned by the Government. By the end of 2001 it had secured a 2.5% share of the liberalised market, with a target to achieve a 20% share of the market by 2006. This process will receive a considerable boost this year, when the first combined-cycle plants of the company come into operation. These plants will become the major consumers of natural gas. The opening-up of the gas market to all customers as from January 2003 will also greatly enhance the development of Iberdrola in this sector.

4.5.9 Centrica

Centrica has expanded internationally by buying a 50% share in a management company, Luminus, in Belgium. It is the operator – but not owner – of electricity and gas production and networks, but Luminus makes the sales.

4.6 Oil and gas companies

The oil and gas companies can be divided into Gazprom and Western oil companies. Gazprom has a particular interest in investing in the West European gas industry, partly to help safeguard the market for its gas and partly to add value to its gas exports. Liberalisation of gas markets gives the Western oil companies, especially Shell, Exxon and BP to move downstream with their gas businesses.

4.6.1 Gazprom

Gazprom controls 23.5% of the world's proven gas reserves and accounts for about 8% of Russian GDP. The company is engaged in gas exploration, processing, transport, and marketing. Gazprom delivers natural gas to the Commonwealth of Independent States and Baltic states (the former USSR) and to some 25 European countries. In recent years, Gazprom formed a strategic alliance with the oil multinational Shell in order to gain easier to foreign credits. Similarly, it has signed an important deal with ENI and another one with Ruhrgas

(which currently owns 5% of Gazprom's capital after paying $660 million, and is now negotiating on the purchase of a further 1.5% stake).

Gazprom now owns part or all of the gas transmission companies in most states adjacent to Russia - in some cases by accepting shares in lieu of debt payments - and has established joint ventures elsewhere. It has a policy of seeking to extend its connections westwards; its pipeline through Poland is a key part of this plan. Gazprom is one of the companies which own the Interconnector pipeline linking Belgium and the UK.

It is expected that Gazprom will try to hold up Russia's ratification of the International Energy Charter Treaty, because it would weaken its grip on Russia's gas pipelines and on domestic and export markets. Gazprom says the charter would oblige it to open up its pipeline network, across Russia and into Europe, to lower-cost gas from Kazakhstan and Turkmenistan, although the energy charter secretariat disputes this analysis. It says that mandatory third-party access is explicitly excluded from the treaty and from a protocol on transit rules now being negotiated.

4.6.2 Western Oil Companies

Moving downstream would expand the scope of the Western oil companies and also help safeguard the markets for their gas reserves. In Britain, the oil companies now dominate retail gas supply to large consumers, but, despite rumours of possible takeovers of downstream companies such as Centrica, no significant moves have been made in Britain. In Germany, BP seems content to sell its share in Ruhrgas in exchange for E.ON's upstream oil and gas business. It will be interesting to see whether Exxon and Shell retain their interests in the BEB Erdgas in Germany and the daughter companies of Gasunie.

5 UK experience of gas liberalisation and privatisation

British Gas was privatised in 1986. It was the fully integrated monopoly gas utility that supplied gas to consumers in England, Wales and Scotland.[9] It was the second of the major nationalised British utilities to be privatised under the Thatcher programme of privatisation following the sale of British Telecom (BT) in 1984. British Gas did not conform to the stereotype of the inefficient unprofitable nationalised industry that the Thatcher government promoted. It was highly profitable and was generally seen by the public as an efficient company, its reputation built on the efficient introduction of natural gas to the network in the early 1970s, when it replaced gas manufactured from coal and oil. To understand developments in the gas industry, it is useful to split the subsequent time into four periods: the period of privatisation; 1986-93 when British Gas still operated as a *de facto* monopoly; 1994-96 when the British gas industry was being restructured into a competitive form; and 1997 onwards, the period when the gas industry began to operate in fully competitive mode.

5.1 The process of privatisation

With the privatisation of the telecoms industry in 1984, an explicit attempt to create competition was made by creating a new competitor to BT, Mercury. However, the privatisation of the gas industry had to be hurriedly done because the expected privatisation of British Airways had to be delayed unexpectedly. The Treasury had targets for income from privatisation and privatisation of the gas industry had to be brought forward to provide the expected government revenue.

Management of British Gas fought a successful battle to prevent the break-up of the company. There was public support for this campaign because of the good public image of British Gas. This meant that there was no scope to break up the industry to impose a competitive structure. There was scope for new companies to enter the market under negotiated Third Party Access (TPA) to the system under earlier legislation, but few believed this would be sufficient to

[9] In 1986, natural gas was not available in Northern Ireland.

stimulate competition against a company with such a dominant position. A new regulator, the Director General of Gas Supply, James McKinnon, assisted by the Office of Gas Supply (Ofgas) was appointed with a duty to promote competition. However, there was then little experience of independent sector regulation in Britain and Ofgas only had a handful of staff all drawn from the government ministry, Department of Energy. The public therefore had little expectation that the regulator would be a significant influence on the industry.

As with most British privatisations, the shares were sold by public flotation rather than by trade sale to an established company. The government took a Golden Share, which meant that the company could not be taken over without the approval of government. This model of privatisation meant that the government had to guess the value of the company rather than testing its value in the market place. However, it did mean that the company remained intact and in British ownership, and shares were sold to the general public. The industry was sold for £5.6bn in November 1986 and the price of shares on the first day of trading rose by a third, making huge profits for those allocated shares (the offer was over-subscribed by a factor of four).

5.2 1986-1993: Continued dominance by British Gas

The successful campaign to prevent the break-up of British Gas meant that British Gas management believed it could continue to operate as a *de facto* monopoly, making strategic national decisions on resource utilisation. In particular, it continued to buy sufficient gas to supply the whole UK market on long-term (length of field) contracts for gas from North Sea fields and it continued to operate its 'premium use' policy whereby gas was sold only to customers that put special value on gas, for example, residential consumers and industrial consumers that needed a very clean fuel. This was the continuation of the policy operated, with government approval, since the first deliveries of natural gas from British fields in 1970. Gas was sold for 'bulk heat' use under interruptible contracts at low prices. This allowed British Gas to balance the system reducing gas demand at peak times by cutting off interruptible consumers. However, this policy brought the privatised British Gas into conflict with its large consumers who were angry that 'premium' users were being charged a much higher price than interruptible consumers.

The Regulator became increasingly frustrated at what he saw as British Gas's attempts to block the introduction of competition, a process that it was his prime duty to promote. As a result of these factors, a series of inquiries by government regulatory authorities such as the Monopolies and Mergers Commission (MMC), the government antitrust authority, and the government's Office of Fair Trading led to the break-up of British Gas. British Gas was also set much tougher efficiency targets from 1993 onwards that led to substantial job reductions in the following four years.

In 1989, the MMC recommended that British Gas should:

- Publish price schedules for large consumers;
- Not price discriminate between customers or on the use the gas was to be put to;
- Contract for no more than 90% of the gas output of the UK Continental Shelf; and
- Publish more precise details on the costs competitors would pay to use its network.

However, the problem remained that because British Gas had long-term contracts for all the output of the British North Sea, it was difficult for competitors to obtain the gas supplies necessary to enter the market. To overcome this problem, Ofgas asked British Gas to release sufficient gas to competitors to allow them to acquire 30% of the firm contract market by October 1993. British Gas did this by 'swapping' gas, supplying competitors with gas to be repaid with new supplies later. At the same time, the privatisation of the British electricity industry had led to a new demand for natural gas for power generation. Up till 1990, gas use in power stations was not allowed, but in the 18 months after privatisation, 10GW of new gas-fired plant was ordered (known as 'the Dash for Gas'). This allowed oil companies an assured long-term market for gas to develop new fields to supply these power plants.

The Regulator (whose level of staffing was growing rapidly) set the price British Gas could charge itself and its competitors for monopoly services, such as use of the network. For the first 5 years after privatisation, real prices were required to fall by 2% a year. In retrospect, this was a very modest target given that most mature industries can reduce their costs at about this rate and given that private investors had acquired British Gas for only a small fraction of the value of the assets they had acquired. However, in 1992, the Regulator increased the rate of price reduction to 4% a year.[10]

In 1993, a second MMC report recommended a full corporate split-up of British Gas into a monopoly network company and a trading company as well as a requirement to further reduce market share in the industrial sector to no more than 40% for very large users and 55% for medium users. The government broadly agreed these recommendations. However, while it did not require separate ownership for network and commercial activities, it did enforce internal separation to such an extent that there was no incentive to keep the two businesses under common ownership. Government also required that retail competition be extended to all users in a process taking 2 years beginning in 1996.

5.3 1994-96: The break-up of British Gas

Three processes dominated the period from 1994-96. The first was the opening of the market for gas consumers using more than 2,500 therms per year, and the preparations for the introduction of competition for residential consumers. The latter was scheduled to begin in 1996 and be complete by 1998. The second was the impact on British Gas of the collapse of the North Sea gas price and the emergence of a surplus in its contracted gas volumes. These developments left British Gas oversupplied with gas, purchased at prices which new entrants could easily undercut: in short, 'stranded contracts'. The third was the internal adjustments to British Gas necessary to comply with the requirement that its monopoly businesses be run separately from its competitive businesses. In 1996, the stranded cost problem and the strictness of the internal separation meant that British Gas felt obliged to make the split complete spinning off the trading division into a separate company.

Introducing competition for the industrial market was achieved simply by requiring British to reduce its market share under threat of total break-up of the company. It had absolutely nothing to do with new entrepreneurial companies entering the market and out-competing British Gas. Industrial consumers are interested only in price so British Gas simply had to sell on gas to competitors at a price that would allow them to be undercut. Such an approach was no good for the residential market. Fortunately for the government, the 12 privatised electricity distribution companies were all keen to diversify into gas and these made up the field of competitors when competition began to open in 1996.

By 1994, a number of factors had led to a weakening of North Sea gas prices. These included:

- Over-stimulation of the exploration activity by government in 1987; and
- Delays in the building of power plants ordered in 1990 leaving gas with no market;

At that time, there was no pipeline gas connection between Britain and mainland Europe. This had the advantage of improving the security of supply to the UK because all gas produced had to go to the UK market. It also allowed Britain to price its gas with little indexation to oil (unlike the rest of Europe), reducing the vulnerability of gas consumers to oil price volatility. However, it meant that if supply exceeded demand, it was not easy to dispose of any excess and gas had to be sold at 'distress' prices.

When the 'Dash for Gas' was at its height in 1990, it was assumed that the gas price was the lowest it would ever be, but in 1995, the gas price collapsed to about half the 1990 level. This left British Gas with a large volume of gas contracted for more than 10 years forward at prices

[10] It was originally to be a 5% a year reduction but the government reduced the figure to 4% to compensate shareholders for the loss of market share British Gas was then being forced to suffer.

about double the market price. This left it very vulnerable to competitors who could easily undercut the prices offered by British Gas by contracting for gas at the new, much lower prices. It was this price collapse that really opened up the industrial market and British Gas effectively exited this market. British Gas had to make provisions to write off these uneconomic contracts and by 1996, the company was making a loss.

It was decided to make a split between trading and network activities in 1996, and in 1997 the company was split into Centrica, the company the sells gas to final consumers and the much larger BG plc that owned the network, up-stream gas activities and all activities outside UK.

5.4 1997 onwards: a competitive gas market

The split of British gas was little understood outside the industry. The retail company, Centrica, was allowed to continue to trade in the UK as British Gas, so consumers were not aware of any changes. However, the stranded gas contracts left it making heavy losses and to make the business viable it had to be given a gas field that was profitable enough to give it some chance of survival. The expectation amongst financial analysts was that Centrica would quickly be taken over. BG was not exposed to the stranded gas contracts and was a profitable business. Its main challenge was to meet the steadily toughening requirements on monopoly costs of the gas regulator. Confusingly, outside UK, BG was allowed to trade as British Gas.

BG's regulated UK pipeline business made up more than 75% of its turnover and more than 80% of its profits in 1997, but the business had no scope for growth (the network is complete in Britain) and was likely to come under increased regulatory pressure. This happened immediately when, in the 5-year review, the Regulator required that BG reduce its real prices by 21% in 1997 and by 2% a year for the following four years. This pressure soon led BG to consider further splits and in 2001, the UK network business was demerged again as Lattice. The Regulator now expects that Lattice will itself be split into 12 regional low pressure distribution businesses and 1 national high pressure transmission business. This parallels the structure in the electricity industry and, indeed, the companies that buy the regional gas networks may also have interests in operating the regional electricity networks.

The remaining activities of BG, international gas exploration and production and downstream gas activity outside UK, have expanded significantly since 1997, but BG is no longer in any sense a UK gas utility. It is competing with oil & gas multinationals and may well be a takeover candidate for one of these companies.

Centrica has done unexpectedly well since its creation. Building on the strength of the British Gas brand name, it has retained a high proportion of the residential gas market. This retention was unexpected because the stranded contracts problem meant that new competitors (the 12 electricity distribution companies) could buy wholesale gas at not much more than half the price Centrica was contracted for and offer a discount of perhaps 25% on Centrica prices while still making a good profit. It was assumed that if small consumers were offered a discount of this magnitude, a high proportion would switch. However, a combination of factors meant that only about 10% of consumers switched. These factors included:

- A lack of public understanding of how switching gas supplier was possible;
- Bad publicity resulting from unfair selling practices; and
- Unexpected brand loyalty to the British Gas brand name.

As Centrica wrote off its stranded gas contracts, its price of gas purchase fell and it now purchases gas at similar prices to its competitors. While this outcome is good for Centrica, it creates a problem for the regulator. Centrica still has a dominant market position in the residential gas market despite generally being the most expensive supplier in the market.[11] If small consumers are not prepared to switch regularly to the cheapest supplier in the market,

[11] Figures published by the Regulator show that in nearly every region of Britain, for residential consumers purchasing gas and electricity as a package, Centrica is the most expensive supplier.

they will be exploited by suppliers who will be able to make large profits from them. Centrica is now developing as a 'multi-utility' offering residential consumers a range of services including electricity supply, telecoms, credit cards and has even taken over the UK's largest road-side recovery organisation, the AA. While it is no longer in danger of bankruptcy (as it was for the first year or two after its creation), it could still be a take-over target for one of the developing international multi-utility companies, such as RWE or E.ON.

From a resource point of view, the situation of the UK is changing dramatically. A pipeline connection from Britain to mainland Europe was completed in 1998 so Britain can no longer price its gas independently and gas prices are already much more volatile than they were previously because of indexation to oil. The North Sea is now a mature oil and gas province. Oil production has already peaked and gas production will also decline, possibly quite steeply, in the next few years. For the first time, Britain will be exposed to any instability in Europe's gas suppliers, such as Algeria, Russia and, in the future, the Middle East.

5.5 Comparisons with other West European gas industries

A primary justification for the reforms of the gas industry is that the efficiency of the industry will be improved. It is therefore interesting to make comparisons between the liberalised British gas industry and the less liberalised European gas industries to determine whether such efficiency improvements actually exist. Inevitably, however, such comparisons are inconclusive for two reasons. First, the gas industries of Europe are difficult to compare because of the different geographical context. A large sparsely populate country will tend to be more expensive to supply than a smaller country and a country with an immature industry where the penetration of gas is low is likely to appear less efficient than one where the gas market is mature. Second, the employment policies of the gas companies will have an apparent effect on the productivity of the work-force. For example, the work-force of a company that sub-contracts a lot of its activities will appear more productive than that of a company that carries out most activities in-house.

Table 18 Productivity measures of European gas industries

	Number of consumers (m)	**Total Consumption PJ**	**Employees (number 2001)**	**Employees/ Th Consumer**	**Employees/ Consump'n**
Austria	1.2	283	2908	2.4	10.3
Belgium	2.5	622	4021	1.6	6.5
Germany	17.4	3250	41165	2.4	12.7
France	10.7	1655	28000	2.6	16.9
Italy	15.6	2682	30000	1.9	11.2
Netherlands	6.6	1593	9550	1.4	6.0
UK	21.0	3789	43138	2.0	11.4
EU15	**70.8**	**15318**	**166243**	**2.3**	**10.9**

Source: Eurogas : http://www.eurogas.org/site/ftp/Annual%20Report%202000.pdf

Table 18 shows there is a wide spread of productivity as measured by employees per thousand consumers with smaller countries, the Netherlands and Belgium, apparently the most efficient and France and Germany much less efficient. A similar picture emerges for employees per unit of gas consumption. In both cases, the British industry lies somewhere between apparently slightly less efficient than the Italian gas industry. This analysis is inevitably inconclusive, but it does suggest that there is no evidence that a privatised and liberalised industry is more efficient than a monopoly industry, whether publicly- or privately-owned.

5.6 Lessons from British experience

5.6.1 The creation of competition

It was not entrepreneurial companies entering the market that created competition in the gas market. For medium and large consumers, competition was imposed by a regulatory condition

on British Gas to lose market share under the threat of being arbitrarily broken up if it failed to comply. The collapse of the North Sea gas price in 1995 was an additional lucky chance that removed any market power from British Gas in this sector. To create competition, it was necessary to separate the network from the competitive activities to ensure that competitors could access the network on the same terms as British Gas and to ensure that British Gas did not cross-subsidise its commercial activities from its monopoly activities to allow it to undercut its competitors. Now that Centrica is effectively out of the medium and large consumer market, competition is working reasonably well for medium and large consumers with a good competitive field of suppliers and consumers switching supplier regularly on a price basis. The main gas suppliers are now the multi-national oil and gas companies.

The issues for small consumers are different. Small consumers have shown little interest in switching supplier even when big discounts are on offer. They may value brand name for such an important purchase above price or they may not trust their ability to keep on finding the cheapest deal in the market. If consumers do not switch on a price basis, there will be no competitive forces on the companies. More importantly, the social issues raised by liberalisation still have to be addressed. In a market in which no company is obliged to offer affordable terms to any consumer, what is to prevent companies from targeting only the profitable sections of the market, leaving poor consumers with an expensive service.

5.6.2 Employment issues

While British Gas was the dominant company in the British Gas industry (up to 1997), it was possible to track employment (see Table 19). However, a large number of companies are now present in the industry, many of which have the UK gas business as only one of many activities. Such companies are not required to publish statistics on employment in their UK gas business. For example, the gas retail companies are generally part of electricity companies, themselves owned by international groups such as EDF or Texas Utilities. However, in the period up to 1997, a number of factors became clear. First, privatisation itself did not lead to any major job losses in the industry. This was due to four factors that applied at least until 1993:

- The company was relatively efficiently run before privatisation;
- The company was floated rather than being taken over, so there was no pressure from shareholders to show efficiency improvements to justify the takeover;
- The prices it was allowed to charge for monopoly activities did not force it to make major efficiency improvements; and
- The company retained its *de facto* monopoly in commercial activities, so there was no pressure on it to reduce costs.

Table 20 Employment in Centrica 1999-2000

Average number of employees during the year	**2000**	**1999**
Energy supply (Great Britain)	**8 800**	7 285
Energy supply (North America)	**83**	–
Home services	**8 759**	8 386
Road services	**7 730**	2 145
Financial services	**1 961**	567
Telecommunications	**111**	–
Other businesses	**861**	1 217
	28 305	19 600
Great Britain	**27 936**	19 532
North America	**83**	–
Rest of Europe	**286**	68
	28 305	19 600

Source: Centrica Annual Report and Accounts (2000)

Once the monopoly on commercial activities had been broken and regulatory pressure on monopoly activities had increased, job losses were substantial and employment in the industry

fell by nearly a half in only four years. No reliable break-down exists of the causes of these job losses. Some were due to efficiency improvements, but others were the result of

Table 19 **British Gas – 1986-96**

	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991	1992	1993	1994	1995	1996
Turnover (£m)	7687	7610	7364	7526	7983	9491	10485	10254	10386	9698	8601	9453
UK Gas	7593	7421	7140	7169	7361	8135	8626	8376	8202	7526	6512	7081
E&P	94	189	224	357	622	978	980	995	1219	1161	1268	1491
Global Gas						378	879	883	965	1011	821	881
Operating Profit (£m)	706	1001	1053	1120	1095	1249	1268	1103	(310)	987	583	(182)
UK Gas	731	982	1029	1078	946	917	953	753	(732)	579	291	(492)
E&P	(25)	19	24	42	149	264	190	213	260	289	441	555
Global Gas						68	125	137	162	119	(149)	(245)
Pre-tax Profit (£m)	782	1062	1008	1054	1051	1556	1469	846	(613)	918	617	(237)
Exceptional Charge (£m)	0	0	0	0	0	0	0	320	1683	0	83	1138
Employment	91876	88469	84587	81832	80481	81805	84540	84023	79358	69971	55382	43106
R&D (£m)	76	74	77	80	75	86	90	89	80	75	66	54

Notes
1. Profits are calculated on a current cost accounting basis.
2. Employment is the average number of employees employed during the year in the UK and outside.
3. From 1991 onwards, the accounting year was changed to calendar year. There is therefore some overlap between the figures for 1990/91 and 1991.

Source: Annual Report and Accounts.

contractualisation, the reduction in activities that might be regarded as discretionary, such as R&D, while some were simply due to the loss of market share in the commercial activities. After the break-up of British Gas in 1997, employment levels stabilised albeit against a background of rapidly growing demand (see Tables 20, 21 and 22).

Table 21 Financial Results for BG plc – 1996-99 (£m)

	1996	**1997**	**1998**	**1999**
Turnover	4383	4300	4474	4787
Transco	3324	3071	3032	
BG Storage	192	172	157	
E&P	591	710	823	836
International Downstream	257	261	393	
Other	199	212	205	
Intragroup sales	(180)	(126)	(136)	
Operating Profit	787	1201	1570	1591
Transco	919	1007	1198	1160
BG Storage	46	32	33	(8)
E&P	(24)	118	161	220
International Downstream	72	27	64	
Other	(226)	17	114	
Pre-tax Profit	(295)	1235	1227	1202
Exceptional Charges	1138	0	0	0
Employment	22073	19705	18894	

Notes
1. Profits are calculated on a modified historical cost basis.
2. For 1997, BG paid £514m in Windfall tax.
3. Employment excludes discontinued operations, Centrica, and is the mean number during the year.
4. From 1999 on, it is not possible to break down activities into the same categories as previously except for E&P.

Source: Annual Report and Accounts.

Table 22 Financial Results for Centrica – 1997-2000 (£m)

	1997	**1998**	**1999**	**2000**
Turnover	7842	7481	7217	9933
Energy supply (UK)	7192	6784	6386	8390
Energy supply (USA)	-	-	-	267
Services	467	526	730	1211
Retail	183	169	83	-
Telecoms	-	-	-	1
Other		2	18	64
Operating Profit	(660)	214	428	522
Energy supply (UK)	(339)	248	461	544
Energy supply (USA)				8
Services	(82)	4	8	60
Retail	(47)	(31)	(25)	-
Telecom	-	-	-	(49)
Other		(7)	(16)	(24)
Pre-tax Profit	(623)	167	268	438
Exceptional Charges	835	211	136	14
Employment	15423	16427	19600	28305

Notes
1. Profits are calculated on a modified historical cost basis.
2. Centrica paid £192m (included in exceptional items) in Windfall Tax in 1997, included in exceptional charges.

Source: Annual Report and Accounts.

6 The Gas industries of Eastern Europe

6.1 Czech Republic

The main Czech gas company is Transgas, which is responsible for import and wholesale purchase, sales and distribution. Two thirds of its income comes from transit fees for piping Russian gas to Western Europe. There are eight regional distribution companies. Transgas was created in 1998 from the merger of two previous entities and was then fully state-owned. In January 2002, the Czech government agreed the sale (97% of the shares) of Transgas to the German utility, RWE for $3.64bn. The takeover was approved by the Czech competition office (UOHS) in May. The deal also gives RWE the shares in the 8 distribution companies that were owned by the National Property Fund, typically about 50% of the total (see Table 23).

Table 23 Ownership of Czech gas companies

Company	Sector	Parent Group	Percent
FGN	Gas	Ruhrgas	100
JCP Jihoceska Plynarenska	Gas distribution	Communes	33.99
JCP Jihoceska Plynarenska	Gas distribution	E.ON Energie	12.87
JCP Jihoceska Plynarenska	Gas distribution	Oberoesterreichischische Ferngas	5.55
JCP Jihoceska Plynarenska	Gas distribution	RWE	46.7
JMP Jihomoravska Plynarenska	Gas distribution	E.ON Energie	35.5
JMP Jihomoravska Plynarenska	Gas distribution	GDF (France)	2
JMP Jihomoravska Plynarenska	Gas distribution	Ruhrgas	1.19
JMP Jihomoravska Plynarenska	Gas distribution	RWE	50.11
JMP Jihomoravska Plynarenska	Gas distribution	SPP Bohemia	2.33
Linde Technoplyn	Gas	Linde	100
PP Holding	Gas distribution	Communes	52
PP Holding	Gas distribution	Ruhrgas	24
PP Holding	Gas distribution	RWE	
PP Prazeska Plynarenska	Gas distribution	Communes	25.6
PP Prazeska Plynarenska	Gas distribution	Ruhrgas	12.05
PP Prazeska Plynarenska	Gas distribution	RWE	61.73
Prometheus (Cz)	Gas	Prager Gaswerke	50
Prometheus (Cz)	Gas	RWE	50
SCP Severoceska Plynarenska	Gas distribution	GDF (France)	1.14
SCP Severoceska Plynarenska	Gas distribution	RWE	50.23
SCP Severoceska Plynarenska	Gas distribution	Transgas (Czech)	0.82
SCP Severoceska Plynarenska	Gas distribution	VNG	25.61
SCP Severoceska Plynarenska	Gas distribution	Wintershall	20.2
SMP Severomoravska Plyn	Gas distribution	Communes	2.08
SMP Severomoravska Plyn	Gas distribution	GDF (France)	1.9
SMP Severomoravska Plyn	Gas distribution	Ruhrgas	8.45
SMP Severomoravska Plyn	Gas distribution	RWE	58.14
SMP Severomoravska Plyn	Gas distribution	Slovak Gas	8.52
SMP Severomoravska Plyn	Gas distribution	SPP Bohemia	20.3
Sofregas (Cz)	Gas	GDF (France)	
STP Stredoceska Plynarenska	Gas distribution	Communes	2
STP Stredoceska Plynarenska	Gas distribution	GDF (France)	1.63
STP Stredoceska Plynarenska	Gas distribution	Ruhrgas	14.27
STP Stredoceska Plynarenska	Gas distribution	RWE	51.1
STP Stredoceska Plynarenska	Gas distribution	Wintershall	30.23
Transgas (Czech)	Gas	RWE	96.99
Transgas (Czech)	Gas	RWE	97
VCP Vychodoceska Plynarenska	Gas distribution	Communes	0.5
VCP Vychodoceska Plynarenska	Gas distribution	GDF (France)	3.15
VCP Vychodoceska Plynarenska	Gas distribution	Ruhrgas	16.52
VCP Vychodoceska Plynarenska	Gas distribution	RWE	50.05
VCP Vychodoceska Plynarenska	Gas distribution	Slovak Gas	10
VCP Vychodoceska Plynarenska	Gas distribution	SPP Bohemia	18.76
ZCP Zapadoceska Plynarenska	Gas distribution	E.ON Energie	43.98
ZCP Zapadoceska Plynarenska	Gas distribution	GDF (France)	0.9
ZCP Zapadoceska Plynarenska	Gas distribution	Oberoesterreichischische Ferngas	3.76
ZCP Zapadoceska Plynarenska	Gas distribution	RWE	50.11

Other shares in the gas distribution companies had already been sold to various companies, creating a complex pattern of ownership. In 2001, a new energy regulatory body was set up to oversee the liberalisation of the electricity and gas industries and to set prices for energy. Almost all (98%) of the Czech Republic's gas is imported with only 2% produced locally mainly by a British company, Medusa Oil and Gas. Imports are from Russia (78%), Norway (15%), Germany (6%) and the Slovak Republic (1%). Norwegian imports are expected to increase somewhat in the next few years.

6.2 Hungary

The dominant oil and gas company in Hungary is MOL, the largest company in Hungary in terms of sales. It was established from the consolidation of nine enterprises controlled by the state-owned OKGT into a single entity in 1991. Initially its shares were held by the State Privatisation and Holding Company (APV Rt). Since then shares in MOL have been progressively sold off, initially to the general public, but subsequently also to international investors. The 1995 Privatisation Act requires that the State retain 25% (plus 1) of the shares in MOL and this point was reached in 1998, by which time, international investors owned 52% of the shares. Most of the remaining shares (16%) were held by Hungarian private and institutional investors. MOL's business is approximately half gas and half oil. Government also holds a 'Golden Share' in MOL which gives it rights of veto over major changes in the company. Hungary is currently examining changes to its laws so that they will be compatible with the EU Gas Directive for its expected accession to the EU. The Hungarian Energy Office is a government body with broad powers of regulation over the electricity and gas industry.

Table 24 Ownership of Hungarian gas companies

Company	Sector	Parent Group	Percent
DDGAZ	Gas	MOL	16.77
DDGaz	Gas	Ruhrgas	41.21
DDGaz	Gas	WFG (RWE)	41.21
Degaz	Gas distribution	GDF (France)	72.4
Degaz	Gas distribution	MOL	27.18
Egaz	Gas distribution	GDF	63.93
Egaz	Gas distribution	MOL	35.46
Fogaz	Gas distribution	Communes	50
Fogaz	Gas distribution	Ruhrgas	16.3
Fogaz	Gas distribution	WFG (RWE)	32.7
Kogaz	Gas distribution	Bayernwerk (E.ON)	30.99
Kogaz	Gas distribution	Communes	9.76
Kogaz	Gas distribution	EVN	30.99
Kogaz	Gas distribution	MOL	6.59
MOL	Gas	State	100
Panrusgaz	Gas	Gazprom	31
Panrusgaz	Gas	MOL	50
Tigàz	Gas distribution	Italgas (ENI)	40
Tigàz	Gas distribution	RWE	29.69
Tigàz	Gas distribution	SNAM (ENI)	10
Tigàz	Gas distribution	WFG (RWE)	14.48

In 2001, there were proposals to separate the gas and oil interests of MOL into individual companies and to offer 49% of the shares to foreign investors. Companies such as Ruhrgas and GDF were keen to buy the shares but in February 2002, the Government announced the abandonment of the sale and that it would sell a majority of the shares in the new gas company to the national development bank (MFB). How far this represents a decision in favour of public ownership and how far it is simply a strategy to improve revenue from a later privatisation is not clear. In the gas sector, MOL's main activities are in production, wholesale trade, foreign trade and transportation. At present, about 85% of Hungary's gas needs are imported from Russia with the rest coming from indigenous production. Hungary has contracts for gas supply with Ruhrgas (Germany) and GDF (France) but these involve mainly swaps with Russian gas, not physical delivery. Russian gas is much the cheapest source of imported gas on offer and while there are investigations into imports from other sources, these are unlikely to represent a major proportion of Hungary's gas supplies.

Distribution of gas is handled mainly by six regional distribution companies, Tigàz (much the largest) Egaz, Fogaz, Degaz, DDGaz and Kogaz. It was decided in 1994 to fully privatise these companies (retaining a

Golden Share). For DDGaz, Degaz, Egaz and Tigàz, foreign investors now own at least 75% of the shares, but for Kogaz and Fogaz, local government retains 50% and 40% of the shares respectively (see Table 24).

6.3 Poland

Historically, the Polish natural gas industry has been dominated by the Polish Oil and Gas Company (POGC). This was established in 1976 and in the oil sector is responsible for exploration, development and production (E&P) of oil as well trade in oil and oil products. In the gas sector, it was established as fully vertically integrated monopoly responsible for the entire gas value chain from exploration in Poland to retail supply to final consumers. At a local gas distribution level, it operates through regional enterprises covered by concessions. The Energy Law of 1997 began to introduce liberalisation measures of the type that would be needed for Poland to join the EU. These included provision for Third Party Access (TPA) to the transmission system and the control of tariffs by the Polish Energy Regulatory Authority.

In 1996, it was changed to a joint stock company but all its stock was held by the state. An ambitious programme of restructuring and privatisation was planned, which would involve the divestment of 17 construction, repair, manufacturing, geophysical and drilling companies, the establishment of separate oil and gas companies. Little of this plan was carried out and the Treasury subsequently proposed that POGC be split into six entities, four regional distributors, a trade, transmission and storage company and an upstream company. This plan ran into opposition from other ministries and POGC independently carried out what it called a 'little restructuring', which involved the establishment of six regional transmission divisions, 23 independent gas distribution units and an upstream unit. POGC is beginning to form joint ventures with Western companies, such as FX Energy (USA) and Eurogas to explore for and produce oil and gas.

At present, Poland's imports of gas come almost exclusively from Russia, but POGC recently signed a letter of intent with the Dutch company, Gasunie for imports of gas from the Netherlands and it signed an agreement with Danish companies that would allow import of Norwegian gas through a new gas pipeline via the Baltic Sea. It is also considering imports of LNG from Qatar and Nigeria although this would require major investment in a new LNG terminal. However, demand is not increasing as rapidly as expected and the deal to buy Norwegian gas is being delayed.

For the future, the Yamal pipelines that will bring supplies of gas from Western Siberia to Western Europe will be crucial. Work on the first Yamal pipeline started in 1996 and gas deliveries to Germany and Poland began in 1999. It is expected to reach full capacity in 2003. A second pipeline has been under discussion for several years, but its route has not been established and demand for gas in Western Europe may not warrant its construction. Nevertheless, the Yamal pipelines will bring additional revenue to Poland and given the huge volumes expected to be transported (of the order of 10 times Poland's demand), it will be difficult to justify imports of gas from the West given the cheap and easy access to supplies from this pipeline.

6.4 Slovakia

Transmission, distribution and sale of natural gas in the Slovak Republic are carried out by Slovensky Plynarensky (SPP). Like Transgas of the Czech Republic, it major activity is transit of Russian gas to Western Europe, accounting for 45% of its turnover with 70% of Russia's gas exports to Western Europe passing through the pipeline. It transits twice as much gas as Transgas. Local gas production is small and the vast majority its needs are met by Russian gas. An independent Office for Regulation of Network Industries is being established to regulate the industry.

Table 25 Ownership of Slovakian gas companies

Company	Sector	Parent Group	Percent
Pozagas	Gas	GDF	30
Pozagas	Gas	State	70
Slovrusgas	Gas	Gazprom	50
Slovrusgas	Gas	Slovak Gas	50
SPP	Gas	Gazprom	16.33
SPP	Gas	GDF	16.33
SPP	Gas	Ruhrgas	16.33
SPP	Gas	State	51

In March 2002, after a tender process in which only one bidder finally placed a bid, government decided to sell 49% of SPP to a consortium of the French national gas company, GDF and the German gas company Ruhrgas (itself subject of a take-over bid by E.ON, the German utility). Once the stake has been acquired, the Russian gas company, Gazprom, will acquire up to a third of the consortium's shares. The acquisition will not only expand the scope of the three companies involved, it will also increase security of supply for Gazprom to its Western European markets (see Table 25).

6.5 Slovenia

The main gas company in Slovenia is the state-owned Geoplin, which owns the gas grid and is responsible for the purchasing and wholesale of natural gas. It also transits Russian gas to Croatia. 19 municipal organisations carry out distribution to final consumers. Geoplin is 24.5% owned by the state, 34.6% owned by 6 of the regional distributors, with the rest owned by a range of shareholders including some of the other distributors. In September 1999, a new Energy Law led to measures designed to liberalise Slovenian energy markets and to the creation of a Slovenian Energy Agency, which will determine consumer prices for gas and electricity. About 60% of Slovenia's natural gas comes from Russia, with the rest coming from Algeria via the Trans-Mediterranean pipeline through Tunisia and Italy.

In 1995 Italgas (part of Italian energy group ENI) bought a stake in one of the regional gas companies Adriaplin. Italgas now has 51% with the remainder held by Austria's Steirische Ferngas and the Slovenian state gas company Geoplin. The initial project for Adriaplin is development and expansion of a regional network, with focus on the municipal areas of Ljubljana and Maribor. It has access to both Algerian and - via Hungary - Russian gas. The deal gives Steirische Ferngas access to Algerian gas as well as Russian gas supplied via Hungary to Slovenia. Adriaplin has also bought Slovenski Plinovodi, a group based in Nova Gorica, Slovenia, which controls seven thirty-year gas distribution concessions and one concession for the purification of water from the urban network (see Table 26).

Table 26 Ownership of Slovenian gas companies

Company	Sector	Parent Group	Percent
Adriaplin	Gas	ENI-Italgas-SNAM	51
Adriaplin	Gas	Geoplin	
Adriaplin	Gas	Steirische Ferngas	15
Gazprom (Slovenia)	Gas	Gazprom	
Geoplin	Gas	Communes	
Geoplin	Gas	Ruhrgas	5.19
Geoplin	Gas	State	24.5
Slovenska Bistrica	Gas	CPL	
Slovenski Plinovodi	Gas	Adriaplin	100

6.6 Croatia

INA, the Croatian oil and gas company, has experienced the contradictions of energy reform. The new Croatian government has held down energy prices, and INA has made increasing losses. In 1998 INA successfully raised loans of USD$150m on the international market at favourable rates. In March 200 new management was appointed at INA.

In 1998 the major Italian gas group ENI/Italgas/SNAM signed a series of major deals with INA.

- Italgas – the Italian gas company, part of energy group ENI - signed an agreement for undersea pipeline supply of gas with INA. One motive was to provide an alternative to Russian gas from Gazprom. INA has used the deal to argue for developing a new power station as gas-fired instead of coal-fired.
- In 1998, ENI and INA also opened Ivana, the first offshore gas production platform located in the Croatian Adriatic. ENI's subsidiary Agip Croatia and INA have signed a Production Sharing Agreement.
- SNAM – another ENI group company - and INA signed a framework agreement to develop the GEA (Gas Energy Adriatico) project. The two companies will jointly develop a natural gas transmission system from Italy to Croatia, likely to be extended to other neighbouring countries, and will also co-operate in distribution. The US$ 300m pipeline will run for over 330 km, of which 130 km off-shore. ENI said that, as the pipeline would boost the Croatian gas industry and the use of gas in thermal plants, the company is ready to invest in the operation and management of combined cycle power stations.

7 Conclusions

7.1 Impact of Gas directive

The European gas industry is undergoing dramatic changes, most obviously because of the EU's Gas Directive of 1998, which requires Member States to restructure their gas industries so that they operate on competitive lines. Many of the strongest electricity companies are now entering the gas market. For example, E.ON, Germany's largest electricity company is attempting to take over Ruhrgas, Germany's largest gas utility. While it is early to assess the results of the Gas directive, the impact of the similar electricity directive is now fairly clear: concentration of companies on the one hand; some competition – and reduced prices – for industrial customers; but little competition, and no significant price reductions for domestic consumers. The Barcelona summit enshrined a temporary limitation of liberalisation which included a distinction between domestic consumers, which are allowed to remain excluded from liberalisation for the time being.

7.2 Immature gas systems

In seven of the EU countries (Denmark, Finland, Greece, Ireland, Portugal, Spain and Sweden) the gas industry is still immature and only a small proportion of consumers have access to pipeline gas supplies. The public policy priority in these countries is likely to be to expand the system to give consumers access to gas rather than to introduce competition, which can be expected to have positive effects on employment. However, the process of liberalisation and privatisation, and especially the trend to company mergers, threatens this process in two ways. Firstly, it is more difficult in a liberalised regime to provide incentives for companies to invest in extending the network beyond existing profitable customers. Secondly, the consolidation process, even in immature countries, is likely to lead to job-shedding.

7.3 Regulation and competition

Of the seven countries with reasonably mature gas industries (Austria, Belgium, France, Germany, Italy, the Netherlands and the UK), only the governments in the UK and, perhaps, the Netherlands seem committed to introducing a competitive structure. In the UK, ownership of the network has been fully separated from the competitive activities, the dominant company is being broken up and the Regulator has forced down the price of the monopoly activities. The reforms in Britain are widely regarded as being a success. However, closer examination suggests that there are still doubts as to whether retail competition for small consumers is really worthwhile and whether, in the long-term, gas supplies will be secure without the ability to make long-term strategic decisions of the type that are incompatible with a free market. In addition, while the efficiency gains resulting from privatisation are assumed to be large, there is little evidence from the available data that the British gas industry really is much more efficient than the monopoly, often publicly-owned utilities, such as those in the Netherlands and Italy.

One problematic issue identified by the Ecotec study was contracting-out, where both companies and unions said that they were concerned with the effects on employment, pay and conditions and quality of work. The question also arises as to whether there is a need for regulation of contracting-out in sectors which are considered services of general interest (SGEI) by the EU, and whether this regulation should be within an EU-wide, national, or sectoral framework.

7.4 Concentration and mergers

In other countries in Europe, the priority seems more on allowing large national companies to continue to have a secure home-base from which to launch international activities. The provisions of the Gas Directive will nominally be met, but the spirit of the Directive, introducing competition, is not. For example, in Germany and France, there seems little political will to break up the dominant companies that own the network and control 60% or more of the market, such as Ruhrgas and GDF. This largely parallels the situation for electricity where EDF, RWE, E.ON and Endesa are being allowed to retain and perhaps strengthen their market position in their home market.

As a result, 'national champions' such as GDF (France), Ruhrgas, E.ON and RWE (Germany), Italgas and SNAM (Italy) are aggressively moving to expand outside their national territories into other EU countries and Eastern Europe. The danger of this situation is that the European gas and electricity industries will be

dominated by an oligopoly of multinational companies that have little incentive to compete against each other and that cannot easily be regulated by national regulatory bodies.

This process holds negative consequences for employment in the gas industry, as concentration through mergers and acquisitions is invariably accompanies by significant job losses. This effect occurs not only from mergers between gas companies, but also from mergers which are 'cross-sectoral' (takeovers of gas companies by electricity companies) and internal company restructurings (such as Tractebel's).

7.5 Central and Eastern Europe

The situation is particularly dangerous for East European countries. Several of these countries stand to gain from the additional transit fees that increased Russian gas exports will provided, but there is pressure to privatise publicly owned utilities to provide government revenue. Privatisation revenue can be maximised by selling the industry as a near monopoly, as is the case in the Czech Republic. The benefits are thus experienced by the government through improved fiscal balances, and by the companies through more profitable operations, but the effects of these privatisations on employment are expected to be negative.

7.6 Positive employment policies

The comparative experience of countries suggests that positive employment policies at national level, and also at company level, make a significant difference to trends: the case of France illustrates this. While national policies depend on governments, and company policies from commercial considerations, the main general impact on employment stems from the consolidation which has been driven by the EU directives, and so an EU initiative on employment could be an appropriate innovation.