

The European Union Gas and Electricity Directives

by

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1. Introduction

The Council of Ministers adopted a Directive concerning common rules of the internal market in electricity in December 1996, 96/92/EC and on gas, 98/30/EC in June 1998. These were superseded by Directives 2003/54/EC (electricity) and 2003/55/EC (gas) of June 2003. Under Article 26 of the 1996 Electricity Directive:

‘The Commission shall review the application of this Directive and submit a report on the experience gained on the functioning of the internal market in electricity and the implementation of the general rules mentioned in Article 3 in order to allow the European Parliament and the Council, in the light of experience gained, to consider, in due time, the possibility of a further opening of the market which would be effective nine years after the entry into force of the Directive [2006] taking into account the coexistence of systems referred to in Articles 17 and 18.’

While Article 25 of the 1998 Gas Directive required:

‘The Commission shall review the application of this Directive and submit a report on the experience gained on the functioning of the internal market in natural gas and the implementation of the general rules mentioned in Article 3 in order to allow the European Parliament and the Council, in the light of experience gained, to consider, in due time, the possibility of provisions for further improving the internal market in natural gas, which would be effective 10 years after the entry into force of the Directive.’

Directives 96/92/EC and 98/30/EC were repealed in July 2004 and replaced by 2003/54/EC and 2003/55/EC, which retained the commitment to a review in 2006 in Article 28 (electricity) and Article 31 (gas):

‘3. The Commission shall, no later than 1 January 2006, forward to the European Parliament and Council, a detailed report outlining progress in creating the internal electricity market. The report shall, in particular, consider:

- the existence of non-discriminatory network access;
- effective regulation;
- the development of interconnection infrastructure and the security of supply situation in the Community;
- the extent to which the full benefits of the opening of markets are accruing to small enterprises and households, notably with respect to public service and universal service standards;
- the extent to which markets are in practice open to effective competition, including aspects of market dominance, market concentration and predatory or anti-competitive behaviour;
- the extent to which customers are actually switching suppliers and renegotiating tariffs;
- price developments, including supply prices, in relation to the degree of the opening of markets;
- the experience gained in the application of the Directive as far as the effective independence of system operators in vertically integrated undertakings is concerned and whether other measures in addition to functional independence and separation of accounts have been developed which have effects equivalent to legal unbundling.

Where appropriate, the Commission shall submit proposals to the European Parliament and the Council, in particular to guarantee high public service standards.

Where appropriate, the Commission shall submit proposals to the European Parliament and the Council, in particular to ensure full and effective independence of distribution system operators before 1 July 2007.

When necessary, these proposals shall, in conformity with competition law, also concern measures to address issues of market dominance, market concentration and predatory or anti-competitive behaviour.’

This report reviews the operation of the Directives and is intended to contribute to discussion on the future of European Union policy in this area.

While the Directives are complex and place numerous requirements on Member States, at their heart is an objective to transform the electricity and gas industries from a monopoly basis to one operated on competitive principles by making wholesale and retail competitive markets. This paper focuses therefore on the extent to which competition has been introduced. It analyses for each country how far efficient markets have been created and where this has not happened what factors have prevented this. It also examines what the costs of creating markets are and whether operation of the electricity and gas wholesale and retail activities on market principles is sustainable.

2. The Directives

2.1. The 1996 Electricity Directive

The 1996 Directive established rules in four areas: generation; retail supply; transmission and distribution; unbundling; and regulation. It also had potentially significant implications for ownership and international trade.

2.1.1. Generation

There were two options that Member States could adopt for the construction of new power plants: tendering and authorisation. Under tendering, the electricity system would continue to be centrally planned. An official body would establish the amount of capacity that needed to be built and the specifications bidders would need to meet. It would invite tenders for this, with the lowest bid winning. Although this was not stated in the Directive, winning bidders would inevitably be given a long-term power purchase agreement (PPA), which would provide the guarantees of volume and price of sales that would allow finance for the construction of the plant to be obtained.

Under authorisation, anyone could build a plant whenever and wherever they wanted provided it complied with planning law and its specifications, in terms of factors such as safety and the commercial credentials of the company. Capacity need would play no part in whether a plant was authorised.

From the point of view of competition, authorisation was clearly the Commission's preferred option since a free market requires free entry and exit.

2.1.2. Retail supply

The Directive required Member States to open their retail market for large users and distributors. By February 1999, about 26 per cent (40GWh/year) of the market had to be open, by February 2000, about 28 per cent of the market had to be open (20GWh/year) and by February 2003, about 33 per cent of the market had to be open (9GWh). Member States had some discretion over how this was interpreted and consumers could include retail supply companies.

2.1.3. Transmission and distribution

To enable generators and retailers to get their power to final consumers there were measures to ensure all competitors would be able to get non-discriminatory access to the network. There were three options: negotiated third party access (TPA); regulated TPA; and the Single Buyer.

Under negotiated TPA, retailers and generators had to negotiate with the network owners for access to the network. Network owners could refuse access on grounds of lack of capacity and indicative access prices had to be published, but the actual prices were the subject of negotiation. The 'explanatory notes' state the network operators would not be obliged to build new capacity in response to a request for access if there was insufficient capacity.

Under regulated TPA, access to the network has to be granted at published tariffs. As with negotiated TPA, the network owner can refuse access on grounds of lack of capacity, but the explanatory notes do not make it clear whether the network owner had to build new capacity to satisfy a request for access that could not immediately be complied with.

The Single Buyer option was not very clear and was not adopted by any country. In its original conception, the Single Buyer was expected to require a central agency to be responsible for the purchasing of the country's electricity using some form of competitive process. The Directive stated (Article 2 (22)):

'[The single buyer] is responsible for the unified management of the transmission system and/or for centralised electricity purchasing and selling.'

The Single Buyer provisions were muddled and it is not clear how the Single Buyer option would have worked in practice.

2.1.4. Unbundling

To guard against the risk that integrated companies would use their ownership of the network to unfairly give advantage to their generation and/or retail businesses, there were measures that required some corporate separation of the network and retail/generation activities.

Transmission and distribution system operators (TSOs and DSOs) had to be designated who would determine access to the networks. The TSOs and DSOs could be part of companies with other interests in the electricity sector, for example as generators or retailers but had to operate on objective and non-discriminatory procedures that did not favour, for example, power plants owned by them. Network companies had to prepare separate accounts for their network activities to demonstrate that any generation or retail activities were not being unfairly subsidised by their network activities.

The issue of how far integration of generation and retail should be allowed is not discussed.

2.1.5. Regulation

A sector regulator was not required but an independent authority had to be designated to resolve disputes between companies in the sector, for example, on network access.

2.1.6. Ownership

The Commission has no jurisdiction over ownership and the Directive was necessarily silent on whether privatisation should take place. However, the Directive meant that countries with dominant national ownership would inevitably have to move to privatisation. In France, Italy, Ireland and Greece, the electricity industry was dominated by a single nationally-owned company and if the spirit of the Directive was to be followed, and competitive markets introduced into retail and generation and network functions unbundled, new private companies would have to be brought in. If the markets were not to be truly competitive, no company would have a dominant position so any remnant nationally-owned companies would have to have a market share of perhaps no more than about 25 per cent.

For countries with a high level of local public ownership, such as Sweden and the Netherlands, privatisation did not seem such an inevitable consequence. Experience in Norway appeared to show that a large number of companies in local public ownership could be the basis of a competitive market.

2.1.7. International trade

Little was said on trade other than on reciprocity. The Directive allowed a country to prevent companies from countries with retail markets that were not as fully open from competing in that market. The provisions were confusing and it is not clear how enforceable they were.

2.2. The 1998 Gas Directive

The 1998 Gas Directive was essentially comparable to the Electricity Directive imposing responsibilities in construction of major gas facilities; transmission and distribution; unbundling; and regulation.

Because of the intrinsic differences between gas and of electricity, especially that the location of gas production facilities is determined by physical resource location, there was no equivalent to the tendering procedure for new production facilities and no equivalent to the Single Buyer option.

For retail supply, the Directive required that 20 per cent of the market be opened immediately, 28 per cent five years later (2003) and 33 per cent 20 years after the entry into force of the Directive (2018). There was scope for countries with emergent gas industries (Portugal and Greece) and countries with only one supplier (Finland) to derogate from some of the provisions of the Directive.

2.3. Assessment of the 1996 and 1998 Directives

The Directives were criticised as leaving integrated companies too many ways to get round the provisions that aimed to ensure non-discriminatory access to the networks. Integrated companies needed to do no more than make an accounting separation between their network and their retail and import/production activities and the negotiated TPA option together with the provision to allow

refusal of access on grounds of system security were seen as providing companies with ample scope to avoid opening their networks. There was no requirement for a sector regulator. Without the constant surveillance of a properly resourced sector regulator, it seemed unlikely that market abuses of competing companies would be picked up sufficiently reliably to allow competition.

However, if creating competition was the priority, the Directive was deficient in four other areas: provisions to break up dominant companies; provisions to require creation of a wholesale market; retail market opening; and regulation.

2.3.1. Breaking up dominant companies

Of the 14 Member States (excluding Luxembourg), in electricity generation: six were effectively monopolies (Belgium, France, Greece, Ireland, Italy and Portugal); four were effectively duopolies (Germany, Spain, Denmark and the UK); and only four had potentially competitive structures (Austria, Finland, the Netherlands and Sweden). In many of these countries, the retail sector was equally concentrated and, as argued below, without a competitive generation sector, retail competition made no sense. A similar situation existed in the gas sector. There was nothing in the Directives that required countries to create a competitive field of companies in generation or retail.

2.3.2. Wholesale markets

While the Directives went to great lengths to try to ensure producers/importers had access to the network, there were no provisions to ensure that competitive producers/importers had a reasonable prospect of finding a market for their power. For example, in a country with a dominant generator/retailer, even with regulated TPA and ‘authorisation’, it was highly unlikely that new generators would come into the market because there was nobody to sell their power to. Particularly for countries with monopoly or duopoly generation sectors, the chances of a new company being able to enter the market appeared minimal.

In theory, the ideal answer would have been a ‘Pool’ type market which all producers/importers had to bid into. If a producer/importer could provide energy at below the Pool price, the Pool would buy their output at prices that would allow them a profit. Even a voluntary market, such as existed for electricity in the Nordic countries would have held out some hope that competitive new entrants would be able to sell their power.

2.3.3. Retail market opening

The provisions on market opening were also very limited. No more than a few thousand of the very largest consumers would be given choice even six years after the Directive was passed and countries could meet the requirements partly by allowing distribution companies to shop around for their energy supplies.

2.4. The 2003 Directives

Most countries adopted the more liberal options within the Directives and opened their retail market further than was required and by 2001, the Commission was keen to introduce new Directives that accelerated market opening, that dealt with the criticisms on network access and regulation and took away the less liberal options. Again, the new Directive established rules in four areas: production/import; retail supply; transmission and distribution; regulation; and unbundling. It also had important provisions on security of supply.

2.4.1. Electricity generation

Under the new Directive, authorisation would be the rule for new generating capacity although tendering would be allowed for certain special cases. For example, if it seemed likely that the market-driven system would not result in sufficient generating capacity being available, Member States could launch a tendering procedure to provide the additional capacity needed. Member states could also use tendering to promote ‘infant’ technologies and to meet environmental objectives.

2.4.2. Retail supply

The new Directive pre-empted the review of retail competition required in 2006 under the old Electricity Directive. It required that all non-residential electricity and gas consumers be allowed to

choose their retail suppliers by 2004 and that residential consumers should be allowed retail competition by 2007.

2.4.3. Transmission and distribution

The negotiated TPA option, which had not been adopted to any significant extent, was withdrawn and regulated TPA was the only option. In addition, the tariffs or at least the methodologies for calculating the tariffs had to be approved by a regulatory body. The Single Buyer option for electricity was withdrawn.

2.4.4. Unbundling

The unbundling requirements were substantially strengthened so that for integrated companies that were TSOs or DSOs a full legal separation between their TSO or DSO activities and their activities in generation or retail was required. This meant that the DSO and the TSO activities had to be carried out by legally separate companies, although an integrated company could still own a TSO or DSO company as well as, say, a generation company. Note that, as previously, the TSO or DSO is not necessarily the owner of the transmission or distribution assets. The key point is that the TSO and DSO determine the usage and the development of the network.

As with the 1996 Electricity and 1998 Gas Directives, the new Directives are totally silent on the issue of how far integration of retail and production/import should be allowed.

2.4.5. Regulation

The provisions on regulation were much stronger. Member states were required to designate a sector regulator that had to have a minimum set of competences, for example, on the setting of network charges. It also committed the Commission to set up a European Regulators Group for Electricity and Gas, which would encourage cooperation between regulatory bodies. The Directive requires that: 'National regulatory authorities shall contribute to the development of the internal market and of a level playing field by cooperating with each other and with the Commission in a transparent manner' (Article 23 (12)).

2.4.6. International trade

International trade in electricity assumed a much more prominent role in the new Electricity Directive and promoting construction of interconnectors between national systems seemed to become an end in itself, rather than a means, for example, to enhance security or to promote competition. For example, Member States were required to report on: 'any practical measures taken at national level to ensure a sufficient variety of market actors or practical measures taken to enhance interconnection and competition' (Article 23 (11)).

2.4.7. Security of Supply

The earlier Directives contained little explicit discussion of security of supply containing only requirements on the TSOs to safeguard the transmission system. All other aspects were to be dealt with under 'public service obligations' to be decided by national governments. For example, it allowed Member States (Preamble (13)) to impose public service obligations 'to ensure security of supply and consumer and environmental protection, which, in their view, free competition, left to itself, cannot necessarily guarantee.' There was no recognition that a free market in electricity generation might not provide sufficient generating capacity.

The 2003 Directives acknowledged there was a risk that relying on market signals might not be enough to ensure there was sufficient generating capacity. Paragraph 23 of the preamble of both Directives states:

'In the interest of security of supply, the supply/demand balance in individual Member States should be monitored, and monitoring should be followed by a report on the situation at Community level, taking account of interconnection capacity between areas. Such monitoring should be carried out sufficiently early to enable appropriate measures to be taken if security of supply is compromised.'

Article 22 of the Electricity Directive states:

‘However, Member States should ensure the possibility to contribute to security of supply through the launching of a tendering procedure or an equivalent procedure in the event that sufficient electricity generation capacity is not built on the basis of the authorisation procedure.’

There is no comparable provision in the Gas Directive.

2.5. Assessment of the 2003 Directives

Several Member States have been slow to meet the terms of the Electricity and the Gas Directives and, in October 2004, the Commission sent formal warnings to 18 of the 25 Member States warning them about their failure to comply with the requirements of the Directives. By May 2005, ten Member States still had not complied fully.

The 2003 Electricity and Gas Directives tried to address the criticisms to the earlier Directives on access to the network through new measures on unbundling and regulation and by withdrawal of some of the less liberal options on access to the network. However, on breaking up the dominant companies and wholesale markets, it was still not explicit.

2.5.1. Breaking up dominant companies

The Directives speak of the need: ‘to reduce the risks of market dominance and predatory behaviour’ (Preamble (2)). They require Member States to: ‘provide, by 31 July of each year, in conformity with competition law, the Commission with a report on market dominance, predatory and anti competitive behaviour.’ For electricity: ‘This report shall, in addition, review the changing ownership patterns and any practical measures taken at national level to ensure a sufficient variety of market actors or practical measures taken to enhance interconnection and competition. From 2010 onwards, the relevant authorities shall provide such a report every two years’ (Article 23 (8)). For gas: ‘Where appropriate, this report may include recommendations and measures to counteract negative effects of market dominance and market concentration.’ (Article 31).

The Commission is also required to play a role. Article 27 (1(a)) for electricity requires the Commission to submit an annual report to the European Parliament that would, amongst other things, cover: ‘the experience gained and progress made in creating a complete and fully operational internal market in electricity and the obstacles that remain in this respect, including aspects of market dominance, concentration in the market, predatory or anti-competitive behaviour and the effect of this in terms of market distortion.’ and Article 31 (1(a)) for gas requires the Commission to submit an annual report to the European Parliament that would, amongst other things, cover: ‘the experience gained and progress made in creating a complete and fully operational internal market in natural gas and the obstacles that remain in this respect including aspects of market dominance, concentration in the market, predatory or anti-competitive behaviour’

It is debateable how far these provisions require the Commission and the national regulatory authorities to break up dominant companies and how far it just requires them to take measure that mitigate the effects of their dominance. The wording suggests that national authorities, who have to ‘review changing ownership patterns’, are required to more actively break-up dominant positions than the Commission, which merely has to report on ‘aspects of market dominance’. Neither national authorities nor the Commission is required to ensure there is a competitive field of companies.

2.5.2. Wholesale markets

While the new Directives are somewhat more explicit about wholesale markets, they do not seem to be a priority. The Electricity Directive states (Preamble (5)) ‘(t)he main obstacles in arriving at a fully operational and competitive internal market relate amongst other things to issues of access to the network, tariffication issues and different degrees of market opening between Member States.’ While the Gas Directive states (Preamble (6)) ‘The main obstacles in arriving at a fully operational and competitive internal market relate to, amongst other things, issues of access to the network, access to storage, tariffication issues, interoperability between systems and different degrees of market opening between Member States.’

The Preamble (22) for the Electricity Directive states ‘(n)early all Member States have chosen to ensure competition in the electricity generation market through a transparent authorisation procedure.’

While measures to ensure new entrants are able to acquire generating capacity is clearly a necessary condition for a free market, it is hardly a sufficient condition. Without a means to sell power produced, being able to build plant and to access the network will not be an incentive for generators to enter the market.

2.5.3. Retail market opening

Encouraged by the measures Member States had taken to open their markets more fully than was required by the 1996 and 1998 Directives, the new Directives were much more aggressive on market opening. The ability to choose electricity and gas suppliers was not presented, as might have been expected, as an economically advantageous option for consumers, but as a fundamental right under the Treaty (Preamble 4 of both Directives):

‘The freedoms which the Treaty guarantees European citizens — free movement of goods, freedom to provide services and freedom of establishment — are only possible in a fully open market, which enables all consumers freely to choose their suppliers and all suppliers freely to deliver to their customers.’

Whether or not this is the case is a matter for interpretation of the Treaty, but surely the more important issue is whether consumers want this freedom and whether it is a freedom that will bring them economic advantages. If it is not a freedom that consumers want and if it will disadvantage them, it would seem hard to justify introducing competition.

Implementing consumer protection is devolved to Member States and, in Annex A of both Directives, a list of measures Member States must enforce is given. Most of these are the sort of consumer protections that would be expected for most goods, for example, consumers must be able to ‘receive transparent information on applicable prices and tariffs and on standard terms and conditions, in respect of access to and use of electricity services’. However, no mention is made on pricing policy. For example, there is no requirement that tariffs should reflect costs or that companies should not discriminate between classes of consumer, for example, by offering large consumers disproportionately better terms than small consumers. The implicit assumption seems to be that the operation of the market will prevent such abuses.

2.5.4. Security of supply

The provisions on security for electricity are entirely misguided. They require national authorities to monitor the supply and demand balance sufficiently far in advance to take remedial measures if a shortage appears probable, most likely, commissioning the construction of additional capacity to meet the shortfall. If we assume that even if short lead-time options are used this will require Member States to forecast supply and demand six years or more ahead. This is to allow time for: the tendering procedure to take place; the successful bidder to obtain necessary planning consents; the detailed design and procurement of the equipment to be carried out; and the plant to be built and commissioned. The winning bid will have to be given a long-term power purchase agreement to underwrite the investment so it can be financed at a reasonable cost. This mechanism will not work for a number of reasons:

- In a market where power plants are built by ‘authorisation’ procedures, it is impossible to forecast how much capacity will be built. In Britain, a total of about 40GW of projects have been announced all of which could be in service by 2010. Only a small fraction of these will actually be built. However, there is no way for a national authority to predict whether, say, 10 per cent of projects will be built (which might be too little) or 25 per cent will be built (which might be sufficient). Commissioning dates are commercially sensitive pieces of information as the commissioning of a significant size plant will affect the wholesale market price so an individual knowing a commissioning date could speculate on electricity futures markets very profitably;
- If there is this fall back position on security of supply, there will be no incentive to build speculative plants responding to market signals. The Commission recognises this risk in its notes on the Directive.¹ It states: ‘launching a tendering procedure constitutes an intervention

¹ Note of DG Energy & Transport on Directives 2003/54/EC and 2003/55/EC on the internal market in electricity and natural gas: Measures to secure electricity supply. 16.1.2004.

on the market from the part of the authorities; - such a procedure, as is the case with other interventions, distorts the investment signals that exist in the market and could lead to ‘a wait for the tender to be launched’ approach on the part of investors’. The Commission offers no ways to avoid this risk;

- Launching a tender would tend to alter the supply demand balance. Companies that were expecting to build a plant might decide not to proceed because the ‘tendered plant’ capacity would reduce the market price and hence profitability of new investment. Equally, owners of existing plants might decide to retire plant earlier than expected because the lower market price would reduce the profitability of existing plants; and
- A significant proportion of the winning bids will not be completed. When bids are submitted, the companies will only have some preliminary indications on finance, on whether planning permission will be granted and on the cost of equipment. When companies try to finalise these, there may be problems with planning and costs might be higher than anticipated, making it commercially difficult to proceed. These would be particularly likely for smaller, less experienced companies with fewer resources. Punitive conditions could be imposed on bidders to ensure they proceeded with their proposals but these would simply favour the large companies and would raise costs significantly.

2.6. The Energy Security of Supply Directive

The European Commission published a proposal for an electricity security of supply directive (COM(2003) 740 final 2003/0301 (COD)) in December 2003. The text was agreed by the European Parliament in July 2005.² It will enter into force in December 2007 and in 2009, the Commission will produce a report on its impact.

Overtly, this appeared to follow from the Commission’s 2001 Green Paper, ‘Towards a European strategy for the security of energy supply’. However, this was mainly concerned with import dependence, while the Draft Directive was more concerned with the technical security of the electricity system. The proposed Directive contained measures in three areas.

2.6.1. Network security

Article 4 requires Member States (or the competent authorities) to ensure that transmission and distribution systems are operated to an adequately reliable standard in co-ordination with neighbouring countries. This is to be done by regulatory authorities imposing performance standards on transmission (TSO) and distribution (DSO) system operators.

2.6.2. Maintaining balance between demand and supply

Article 5 covers the need to ensure there is sufficient generating capacity to meet demand. While it claims to be based on the presumption that the market will deliver sufficient investment, it places the burden on TSOs to ensure there is sufficient reserve capacity. Mention is made of interruptible supplies and demand management but the primary tool appears to be obligations on generators and establishment of an efficient wholesale market

2.6.3. Network investment

This article (Article 6) basically requires that Member States, through the regulatory authorities, ensure there is sufficient investment in the network.

2.6.4. Reporting

This is by far the most detailed measure containing five provisions (Article 7) and is particularly concerned with interconnector construction and operation.. It places detailed requirements on TSOs to submit plans for cross-border interconnections to the regulatory authority. The regulatory authority must in turn consult with the Commission before agreeing the plan with the TSO.

² The text can be found on the Commission website at http://europa.eu.int/comm/energy/electricity/florence/12_en.htm

2.7. Assessment of the Security Directive

The Commission's proposal seems a mixture of unnecessary and misguided provisions.

2.7.1. The Networks

The networks will remain regulated monopolies so, in some respects, little has changed. However, regulation has become more formalised with all countries being required to set up an autonomous regulatory body that either sets or oversees price-setting for monopoly activities. In addition, the Directives require that owners of the network have no effective connection with companies that produce or sell electricity. This requirement is likely to lead to separate ownership of the network.

It is difficult to predict how far these changes will affect the industry. However, an assessment of the 2003 blackout in North America blamed the event squarely on restructuring:

Deregulation and the concomitant restructuring of the electric power industry in the U.S. have had a devastating effect on the reliability of North American power systems, and constitute the ultimate root cause of the August 14, 2003 blackout.³

More formal regulation has often been accompanied by the introduction of incentive regulation. Under this, the regulator pre-approves operations & maintenance spending and investment for a period of usually five years and if the company believes it can make savings against these projections, it can keep the savings as extra profits. This gives companies an incentive to operate the networks more efficiently but it also gives them an incentive to make short-term cost reductions. To counter the risk that the savings will be at the expense of system reliability, regulators are introducing performance standards that network owners must meet. These raise a number of issues:

- Can performance indicators be an accurate enough measure of actual system reliability? In the UK, the regulator is now requiring network companies to install comprehensive system monitoring equipment to measure system reliability rather than partial performance indicators.
- Will under-expenditure show up as poor performance before lasting damage is done to the infrastructure? In the UK rail industry, train punctuality was at a historic high before a series of accidents from 1999 onwards revealed the neglect of the system. It is expected to be about 2013 before punctuality levels return to those achieved in 1999.
- Will the rapid turnover of ownership in the electricity industry mean that owners will sell their stakes before the consequences of their actions are apparent? In Britain, ownership of the Eastern distribution network changed five times in a six-year period.

The other issue is whether separating ownership of the network from commercial activities will break the connection between consumers and the network company. A frequent criticism of the UK rail system is that by creating a separate network company, the link between consumers and providers was broken and there is pressure for a vertical re-integration of the fragmented industry. The Directive and the accompanying literature do not address these issues, concentrating almost exclusively on the need for additional international interconnectors (see below).

2.7.2. Maintaining generation adequacy

The Commission does acknowledge now that it is not acceptable to rely on the assumption that market signals will be enough to ensure that just sufficient capacity is on line to ensure security of supply. As noted above, the revised Electricity Directive envisages the use of tendering procedures if it seems likely that the market alone will not provide sufficient generating capacity. As argued above, these proposals are misguided and will not work.

The Commission is also concerned in the security of supply directive about peaking capacity. It states in the Explanatory Memorandum to the proposed Security of Electricity Supply Directive:

‘A second issue however, is whether investors are prepared to invest in peaking capacity to cover the very highest periods of demand or incidents where a large proportion of other generation is not available. Some

³ J Casazza, F Delea, G Loehr (2005) ‘Contributions of the restructuring of the electric power industry to the August 14, 2003 blackout’ <http://www.pest-03.org/>

believe such investment will not occur because such events are infrequent and their occurrence is unpredictable. Accordingly there may be a case for governments to provide further measures, in addition to market mechanisms, to ensure adequate capacity is available. This may be achieved through a combination of setting targets for the level of reserve capacity or equivalent measures, for instance on the demand side, and by taking measures to ensure these targets are met, either through incentives or obligations on electricity undertakings.⁷

The measures on peaking plant are also misconceived. In a perfectly balanced system, peaking plant is a risky proposition. It will only be used in unusually cold conditions that might happen no more than, on average, once every ten years. If the rest of the power station stock could be guaranteed to be of optimal size, measures to smooth out the risk might be justified. But as argued above, the stock is likely to swing between under- and over-capacity. When there is over-capacity, the peaking plant will not be used regardless of the weather, whilst if there is under-capacity, having the right amount of peaking capacity will not help keep the lights on in a cold winter.

3. The Terms of the Electricity and Gas Directive Reviews

The Review envisaged under the 1996 Electricity Directive was general but focused on a decision, to be taken in 2006 on whether the retail market should be opened further than was required under the Directive (33 per cent). This approach had some merit in that it allowed some experience to be accumulated before Member States had to commit to finally breaking up the previous tried and tested industry structure. The Nordic countries and the UK were by then committed to introduce full retail competition within a year or two and by 2006 there would have been a good body of experience to assess to see whether mandating the opening of the electricity market to all consumers was justifiable.

The terms of the Review required under the 1998 Gas Directive were vaguer, speaking only of: ‘improving the internal market in natural gas’ and the timetable somewhat longer (2010).

The Reviews required under the 2003 Directives were much more detailed and the Commission more prescriptive on its contents and for gas, in particular, represented a significant speeding up as well as strengthening of the requirements. The Directives require the Commission to produce annual reviews of progress and also to provide the European Parliament and Council with a full review by January 1 2006 outlining progress with the Directives.

There were requirements on regulation, network access and international interconnectors. However, these are secondary issues. Effective regulation is required whether or not the industry is opened to competition, network access is only relevant if some form of competition is introduced and international interconnectors are a means to an end, for example, greater security of supply or reduced prices, not an end in themselves.

The key requirements were on retail markets and on industry structure. On retail markets, the review must assess: ‘the extent to which the full benefits of the opening of markets are accruing to small enterprises and households, notably with respect to public service and universal service standards’ and ‘the extent to which customers are actually switching suppliers and renegotiating tariffs’. On industry structure, for electricity, the review must determine ‘the extent to which markets are in practice open to effective competition, including aspects of market dominance, market concentration and predatory or anti-competitive behaviour.’ For gas, the review must evaluate ‘the experience gained and progress made in creating a complete and fully operational internal market in natural gas and the obstacles that remain in this respect including aspects of market dominance, concentration in the market, predatory or anti-competitive behaviour.’

While the terms of the review and the Directive are explicit on the requirements for retail competition, it says nothing about wholesale markets. The introduction of wholesale markets was the primary justification for the Directives because of the dominance in the overall price of electricity and gas of the wholesale price and, if wholesale markets are working well, there will be little scope for retail competition. The terms of the review and the Directive are also silent on the related issue of integration of production/import and retail supply. If this form of integration is allowed, any wholesale markets will inevitably become largely irrelevant and the industry will tend to move towards oligopoly because the barriers to entry for new players will be too high.

3.1. The Benchmarking reports⁴

Article 28 (1) (electricity) and 31 (1) of the new Directives require: ‘The Commission shall monitor and review the application of this Directive and submit an overall progress report to the European Parliament and the Council before the end of the first year following the entry into force of this Directive, and thereafter on an annual basis.’ This requirement is being met by the annual ‘Benchmarking’ reports published by the Energy & Transport Directorate-General, which cover both electricity and gas, which has been published since 2001 and which is now in its fourth edition. The report and its technical annexes attempts to provide indicators of progress with the main elements of the reforms required by the Directives and will form the basis of the review the Commission must send to the European Parliament and Council by January 1 2006.

⁴ http://europa.eu.int/comm/energy/index_en.html

The first point to make is that it is entirely inappropriate for the Directive to be reviewed by DG TREN. DG TREN promoted the Directive and cannot be seen as an independent commentator. If the European Parliament and the Council are to make an impartial evaluation, they need an independent assessment carried out, for example, by an auditing authority, not by a body with a vested interest in promoting the Directive. While there is much that is useful in the Benchmarking reports, they are clearly not an unbiased source of information. For example, on page 1 of the 2005 Benchmarking report, there is a Table showing the results of a study on labour productivity in gas electricity and water. The Benchmarking report states:

‘A recent report compiled for DG Enterprise on European productivity growth demonstrated the excellent performance of the utility sector as summarised in Table 1 below. This serves to underline the contribution of market opening to driving efficiency improvements in these sectors and the potential contribution from the energy sector towards the Lisbon objectives.’

This is blatantly untrue on a number of grounds. First, the report mixes three sectors, one of which remains entirely a regulated monopoly (water), one of which is beginning to be opened (gas) and one of which is somewhat further advanced yet ascribes the productivity gains to ‘market opening’. Second, the period covered is 1995-2001 and for most of that period, no reforms in gas had taken place and for electricity, the reforms only began in the latter part of the period. Third, and most important, labour productivity is a very poor indicator of efficiency. There are many ways in which statistics on labour productivity could be improved with no real improvement in the underlying efficiency of the sector. For example, outsourcing of labour, reducing RD&D activity, and changing generation technology from coal to gas-firing would all lead to significant increases in labour productivity but with no benefit to consumers. Reducing maintenance would also improve statistics of labour productivity in the short-term, but with potentially serious consequences for consumers in the long-term.

Claims on improved labour productivity resulting from liberalisation were examined in detail by Hall.⁵ He concluded:

- The data on employment shows that there **is** clear evidence of systematic links between sector liberalisation/privatisation and reductions in employment - the opposite of what the Horizontal Evaluation Report claims.
- Results from surveys suggest that observed gains in labour productivity from liberalisation and privatisation are a ‘one-off’ rise in productivity caused by labour-shedding, with no continuing benefit after the initial restructuring; and that deregulation may be linked to *lower* levels of productivity and with a *reduction* in research and development (R&D) and growth rates. These findings seriously undermine the case for liberalisation.

⁵ D. Hall (2005) ‘Evaluating the impact of liberalisation on public services: A critique of the European Commission 2004 report “Horizontal Evaluation Of The Performance Of Network Industries Providing Services Of General Economic Interest” EC SEC(2004) 866’, PSIRU, London. <http://www.psiru.org/reports/2005-03-EU-U-horizeval.doc>

4. The Nordic Region: Electricity

The Nordic region has the reputation as probably the most successful electricity industry reform (along with Britain). Much of this reputation is based on the apparent success of the Nord Pool in combining the national generation systems of the four Nordic countries into one market. The Nord Pool is probably the only wholesale market worldwide with adequate liquidity and which provides price signals that seem to reflect supply and demand (see Table 1). At the present time, around 30 percent of all electricity trading in the Nordic countries takes place via Nord Pool. It is therefore important to understand the basis of the Nord Pool, what has and has not been proven by experience to date and whether this experience is transferable.

Table 1. Generation market structure in the Nordic Region

	Wholesale market introduction	Integration of retail and generation	Top/top 3 generators' market share (%)	% of power traded in power exchange
Denmark	Nord Pool (voluntary power exchange) 1999	Little	(15/40)	34
Finland	Nord Pool (voluntary power exchange) 1998	Some	(15/40)	34
Norway	Nord Pool (voluntary power exchange) 1991	Partial	(15/40)	34
Sweden	Nord Pool (voluntary power exchange) 1996	High	(15/40)	34

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: The figures for power exchanges relate to the whole of the Nord Pool area.

4.1. Nord Pool

A spot market for power had been operating in Norway since 1971 through an organisation called Samkjoringen. This market for 'occasional power' was organised by the industry with 60 Norwegian members and was indirectly accessible by Swedish and Danish producers. This market was possible because Norway is almost 100 per cent hydro-electric, based on storage dams. It allowed generators to optimise their water resources. If they had more water in their dam than they were likely to be able to use, they could sell on the market and if their dam levels were low, they could buy. Prices on the market were therefore based on the 'opportunity cost' of the water rather than the actual marginal cost of generation, which with hydro plants is effectively zero.

In 1992, this market became the basis of the Norwegian reforms by being opened to the demand side, both retailers suppliers and end-users. Statnett, the grid company spun off from Statkraft took over the operation of the system, which was renamed Statnett Marked AS. The main part of the market is the day-ahead market, but there is also a futures market and other trading instruments.

There is considerable variation between the countries on the extent to which national markets participate in Nord Pool. A report for the Finnish ministry of trade and industry found that from 2000-2003 about 40-47 per cent of Norway's electricity was traded on the Nord Pool day-ahead market.⁶ For Sweden, the figure was about 18-26 per cent, while for Finland, the figure was only 12-18 per cent (no figure was given for Denmark, but geographical considerations and the degree of interconnection suggest it will be at the lower end of the range).

In 1996, the market was renamed Nord Pool when Sweden joined, followed by Finland in 1998, Western Denmark in 1999 and Eastern Denmark in 2000. Nord Pool is jointly owned by Statnett in Norway (50 per cent) and Svenska Kraftnät in Sweden (50 per cent). The long-standing trade between Nordic countries has allowed the countries dependent on hydro-power (Norway and Sweden) to have

⁶ P Lewis, T Johnsen, T Närvä & S Wasti (2004) 'Analysing the relationship between wholesale and end-user prices in the Nordic electricity market' Finnish Ministry of Trade and Industry (http://www.vaasaemg.com/pdf/466696_SahkonhintaselvitysKTM2004ENG.pdf)

access to thermal power resources in dry years and those dependent on thermal power to have access to cheap hydro-power in wet years.

Prices were relatively stable in most years after 1992 although there were sharp price increases in 1994 and 1996, which seemed to have little to do with hydrological conditions and much more to do with strategic gaming by the generators.⁷ However, there has been a negligible amount of new capacity built since 1992, particularly in Norway, Sweden and Finland, and the adequacy of supplies has relied on a surplus of capacity at the time of the reforms, low demand growth and adequate precipitation.

The Nordic region's 'luck' ran out in 2002. A price spike occurred in autumn 2002 against the background of an extremely dry year in the Nordic area. Aggregate inflow to Norwegian reservoirs in the second half of 2002 was only 56 per cent of normal. This was the driest autumn since the inflow statistics was established in 1931. In addition to the dry weather conditions, the autumn of 2002 was colder than normal. These conditions led to a rapid withdrawal of water from hydropower reservoirs. As scarcity increased, spot and future prices rose gradually. From the beginning of August 2002 to mid-January 2003 wholesale electricity prices increased by more than 600 per cent from around €15 to €100 per MWh.⁸ By November 2004, water levels had finally recovered to the norm and prices had fallen.

Particularly in Norway, where spot prices are closely linked to final prices, the price spike resulted in huge retail price increases and pressure for political action. A combination of increased imports from Denmark and Finland and reductions in demand allowed the crisis to pass without serious supply disruption although a relatively dry winter in 2003 meant prices remained relatively high until higher rainfall allowed prices to fall.

Criticism continued in 2005. Kredittilsynet, an independent Norwegian government agency that supervises enterprises and markets, and Norway's economic crime investigator, Okokrim, found that Nord Pool's rules had been breached by Morgan Stanley in December 2002. Nord Pool chose not to fine Morgan Stanley but decided to change its rule breach procedures.⁹ The Swedish Financial Supervisory Authorities, Finansinspektionen, which published a report in May 2005 which stated that states that the players in the market do not always receive the same information at the same time and that in many utilities, there are holes in the "Chinese wall" that is supposed to divide the financial trading business from the production unit.¹⁰ In June 2005, the Finnish generation company, PVO, called for an inquiry into Nord Pool on grounds that 'this system is out of date and needs to be changed'.¹¹

Nordel,¹² the organisation responsible for grid security in the Nordic region remains optimistic for the future, stating that, for 2007, 'in a normal winter, peak demand will be handled without any certain difficulties. If a ten years winter occurs the power balance is expected to come under strain. The Nordic power system is dependent on import from Europe via strong interconnections.' However, 'if a year with an extremely low production in hydro or a combination of two dry years in succession occurs [as in 2002-2003], the result may be a very serious balance deficit. For part of the Nordel system, it is possible that market cannot solve the case and the situation will demand various forms of rationing or other measures to be carried out in the market.'

However, Nordel relies on price elasticity to balance supply and demand. In other words, a supply shortage would lead to high prices which would lead to industry economising or perhaps temporarily closing down and residential consumers economising. Particularly for Norwegian residential consumers, where electric space heating is the norm, this could be a very painful process.

⁷ A Midttun (1997) 'The Norwegian, Swedish and Finnish reforms' in 'European electricity systems in transition', ed A Midttun, Elsevier.

⁸ D Finon, T A Johnsen, & A Midttun, (2004) 'Challenges when electricity markets face the investment phase', Energy Policy, 32 (2004) 1355-1362.

⁹ Datamonitor, April 4, 2005.

¹⁰ http://www.fi.se/Templates/NewsListPage_878.aspx

¹¹ Utility Week, June 17, 2005, p 12.

¹² <http://www.nordel.org/Content/Default.asp?PageName=Home%20news>

As in other regions, generators are trying to integrate downstream to avoid the risks of the wholesale market and this will tend to reduce the significance of the wholesale market.

4.2. Investment in generation

The issue of adequacy of generating capacity is complicated for the Nordic region, partly by environmental issues and partly by the presence of electricity intensive industries there. It is clear that under any system of organisation, adding new generating capacity would be highly contentious. In all four countries, new coal-fired plant and new large scale hydro plant is not an option, as is nuclear in Norway, Denmark and probably Sweden. Even gas-fired plant is proving very difficult in Norway, while there is little development of renewables apart from in Denmark.

The very high per capita consumption of electricity reflects the high level of energy intensive industry in Norway, Sweden and Finland and space-heating in Norway. It is likely that if the price of electricity was to go up to levels in other European countries, some of this industry would relocate to developing countries with lower power costs. If Norway began to use some of its huge natural gas resources in Norway for domestic space heating, this would also reduce electricity demand. So the price mechanism and a policy decision in Norway to use natural gas (increasing their emissions of greenhouse gas) and a strong energy efficiency programme would free up a significant amount of generating capacity, perhaps avoiding the need for much new capacity in the region for some time. Whether the loss of energy-intensive industry was politically acceptable is difficult to know. Also, the decision to phase-out nuclear power in Sweden would, if carried through, remove about half their generation.

Nevertheless, it is clear that the apparent success of the Nord Pool has made it more difficult to build new plant. Much of the generating capacity is dependent on the Nord Pool price, which is set hourly to determine its income. In wet years, the wholesale price could be very low and a run of wet years could easily bankrupt a fossil-fuel fired plant. So investing in new generating plant would be a very big risk in the Nordic region unless, as is the case for the new nuclear plant being built in Finland, the plant can sell to captive consumers (in this case the owners of the plant) at predictable costs. The Finnish nuclear plant also has the advantage of being operated by a not-for-profit company and of having access to low cost capital from the industrial owners.

4.3. The retail market

Table 2. Electricity retail market structure in the Nordic Region

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Denmark	2003	67 / 5	5	0
Finland	1997	30 / 6	4	25
Norway	1991	44 / 4	19	2
Sweden	1996	70 / 4	10	39

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Compared to most of the rest of Europe, the retail market, as judged by switching rates, looks relatively healthy in Sweden and Norway in particular (see Table 2). The very high residential consumption of electricity in Norwegian households gives a much greater incentive to switch than exists in other countries. However, despite the relatively good switching rate in Sweden, the Regulator is far from satisfied. In its 2004 Market Report it stated:¹³

'[A] majority of domestic customers have still not actively made a choice of electricity supplier. Those who have changed to a different supplier are mainly companies and other customers with high electricity

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http://www.stem.se/WEB/STEMEx01Eng.nsf/F_PreGen01?ReadForm&MenuSelect=BFBB3A865FD5FC54C1256EF9004E77F6&WT=Energy%20markets

consumption. On the other hand, it is not entirely straightforward for a customer to change his electricity supplier. A large flow of information is necessary between several parties. If all particulars are not correct, the process will be delayed and the change may perhaps not be implemented at the intended time.

Shortcomings in the communication between the network owner and the electricity trader may result in the customer receiving incorrect bills. Customers also consider that it is difficult to make comparisons between the offers of different suppliers, particularly as regards prices. Moreover, consumers do not consider themselves to be sufficiently well informed of the conditions on the deregulated electricity market.’

In Finland, the EMA explained the low rate of switching by saying:¹⁴

‘Competition between suppliers for new electricity customers – or at least for small-scale customers – has been lessened. Customers are not eager to switch suppliers, or the price difference should be substantial. The prices at which local small-scale suppliers sell electricity to their traditional customers are so low that the customers are not at all encouraged to switch suppliers. Switching has also been curbed by the fact that the vendors with the lowest prices have not wanted new customers. The situation is different on the major customer side, where large amounts of electricity are used and even small price differences are significant from the point of view of the final bill.’

In Denmark, switching rates in the newly open residential market are even lower, at about 2 per cent.

The apparent success of the Nord Pool in providing price signals to final consumers means that when there is a shortage of capacity, final consumers will feel the impact very quickly and very directly. The price spikes in 1994, 1996 and 2002 led to serious political debate about the reforms especially in Norway where residential consumers and energy intensive industry was hard hit. It seems to be just a matter of time before another dry winter combined with demand growth not matched by new investment creates another price spike. Whether the pressure to introduce mechanisms that give much greater assurance that sufficient capacity is available remains to be seen.

4.4. Corporate changes

In the immediate aftermath of the creation of the Nordic market in the late-90s, it appeared that the region would see significant entry from other parts of Europe and the world. E.ON, EDF, TXU and RWE all took significant positions in Sweden and Finland. However, of these, only E.ON remains and it appears E.ON will be forced out of Finland. In Denmark, the market is concentrating very rapidly with Elsam emerging as the dominant company, although it will probably be taken over by the Danish gas company or Vattenfall (see Table 3).

Table 3. Large electricity companies in the Nordic Region

	No 1 company (f foreign h home) N = >50% national ownership	Other significant Nordic companies	Other significant foreign companies
Denmark	Elsam (h)	DONG, E2, Vattenfall	
Finland	Fortum (h) N	Vattenfall	E.ON
Norway	Statkraft (h) N		
Sweden	Vattenfall (h) N	Fortum, Statkraft	E.ON

Source: Author’s research.

In Sweden, the Regulator reported a rapid concentration of the market:

‘When the electricity market was deregulated, seven companies accounted for 90 percent of the power generated in Sweden. Today, three companies account for 86 percent. Vattenfall alone accounts for 46 percent of electricity generation in Sweden.’¹⁵

In Finland, the open market (excluding that supplied by manufacturing industry’s own plants) is dominated by Fortum, which has strengthened its position since the reforms. Norway has succeeded in keeping out foreign companies, although there has been significant merger and acquisition activity amongst the locally-owned companies.

¹⁴ http://www.energiamarkkinavirasto.fi/files/Emv_vuosikertomus2003.pdf

¹⁵ STEM (2004) ‘The energy market’ Swedish Energy Agency, Stockholm (http://www.stem.se/WEB/STEMEx01Eng.nsf/F_PreGen01?ReadForm&MenuSelect=D0365D7F9A1E1665C1256DE500428A73&WT=News.New%20publications)

Overall, the Nordic market seems to be moving towards an oligopoly of the four ‘national champion’ companies, Vattenfall, Fortum, Statkraft and Elsam. Whether there will be any incentive for these companies to compete hard against each other remains to be seen.

One factor that should not be ignored in explaining the relatively good experience, compared to other regions of Europe, is the continuing dominance of public ownership. All the ‘national champions’ are publicly owned except Fortum which is still majority public-owned. It seems likely that privately-owned profit-maximising companies would have exploited the opportunities that the market gives them to withhold power, as they have done in Britain and California, to force up prices for their own benefit.

5. The Nordic Region: Gas

While the electricity markets in the Nordic region are comparatively well developed, the gas markets are not. Norway is a major producer of natural gas, but all the output is exported. Sweden uses only minimal quantities of natural gas (less than 2 per cent of primary energy needs) and cannot be evaluated as a market. For Finland, gas makes up only about 11 per cent of primary energy needs and all its gas requirements are imported from Russia, so at present, Finland is exempted from the Gas Directive (see Annex 1).

Only in Denmark are there both conditions for a market and a significant quantity of gas is used (about 23 per cent of primary energy needs). Denmark is a significant producer of gas, exporting about 40 per cent of its production. However, while Denmark has complied reasonably well with unbundling requirements, the market is heavily dominated by the national gas company DONG and there is minimal competition yet at the wholesale and retail level (see Tables 4 and 5).

Table 4. Gas retail market structure in the Nordic Region

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Denmark	2004	65 / 4	3	4

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Table 5. Large gas companies in the Nordic Region

	No 1 company (f foreign, h home). N = >50% national ownership
Denmark	DONG (h)
Finland	Gasum (h) N

Source: Author's research.

6. Southern Europe: Electricity

6.1. Electricity wholesale markets

Experience with electricity wholesale markets in Southern Europe (see Table 6) is either poor (Spain and Italy) or non-existent (Portugal). By January 2005, after only nine months of operation, two investigations had been launched by the regulatory body, AEEG, into unusual price movements in Italy. The Regulator, AEEG, found evidence of collusion between ENEL and Endesa Italia to fix prices on the Italian power market. The case was handed over to the Antitrust Authority, AGCM, in April 2005 for valuation and potential prosecution.

Table 6. Generation market structure in Southern Europe

	Wholesale market introduction	Integration of retail and generation	Top/top 3 generators' market share (%)	% of power traded in power exchange
Italy	January 2005 (part opening in April 2004)	Partial	55/75	5
Portugal	Mibel (voluntary power exchange) due 2005	Full	65/80	-
Spain	Pool Omel. Mibel voluntary power exchange due 2005	Full	40/80	100

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Notes:

1. The Italian market opened partially in 2004.
2. The Spanish Pool is a compulsory market so effectively all power passes through it although hedging contracts may mean that most if not all of the power may be bought and sold at prices not related to the Pool price.

In Spain, March 2005, the Regulator, CNE sent a report to the Spanish Economy Ministry confirming the existence of widespread price-fixing and profiteering by utilities in the daily generation pool that had existed since at least June 2004.¹⁶ The report said that In January 2005 alone, utilities had obtained unjustified income in some plants "of more than 100 per cent of their estimated variable costs." On some days as much as 2,000MW of combined cycle generation was withdrawn from the market to push up prices by an average of 10MWh, the CNE said.

The European Commission is sceptical about whether the Iberian wholesale market, MIBEL, would integrate Portugal into the much larger Spanish market. It said:

'on the basis of the in-depth investigation carried out by the Commission, it appears (1) that the relevant market is currently national in scope and (2) it is highly unlikely that, notwithstanding the political agreement reached by the governments of Spain and Portugal, it will become Iberian in scope in the near future.'

The high level of integration of generation and retail means that it is highly unlikely that wholesale markets will be heavily used. Generator/retailers will be much more likely to generate for their own consumers rather than supply power to the wholesale market that might allow independent retailers in. Independent generators will find, as in Britain, that they are vulnerable to the price fluctuations that are inevitable in such 'thin' markets.

6.2. Investment in generation

Italy, Portugal and Spain seem to be entering a chaotic phase of over-investment in new gas-fired combined cycle generation similar to those that happened in Britain in 1991 and 1997. As was the case in Britain, this seems to be the result of companies jockeying for dominant positions in their markets. The result in Britain of these 'dashes for gas' was the early retirement of serviceable plant,

¹⁶ Power in Europe, 11 April 2005, p 1.

the bankruptcy of a number of companies and the passing on of the cost of some high-cost generation to small consumers. So while investors did pay some of the cost of this wasteful investment, small consumers also paid and will continue to pay because of the risk premium to the cost of capital that will attach to any future generating plant not very fully insulated from the market.

6.3. The electricity retail market

There is no experience of retail competition for residential consumers in this region, except in Spain, where competition was introduced in 2003 (see Table 7). Switching rates in Spain in 2003 were even lower than in most other European countries.

Table 7. Electricity retail market structure in Southern Europe

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Italy	2007	35 / 6	-	Not known
Portugal	2007	99 / 3	1	33
Spain	January 2003	85 / 5	0	8

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: Competition for small and residential consumers was not available in 2003 in Italy and Greece.

6.4. Corporate changes

In Italy and Spain, there is clear dissatisfaction in some quarters, notably the regulators, about the highly concentrated structure (see Table 8). In Spain, Endesa and Iberdrola seem to have consolidated their position and only regulatory action has prevented even greater concentration by blocking mergers between Endesa and Iberdrola in 2000 and between Gas Natural and Iberdrola in 2003. However, there is still pressure for mergers and takeovers amongst the three Spanish-owned companies and the gas companies (Repsol and Gas Natural) with Endesa and Gas Natural a possible collaboration.

Table 8. Large electricity companies in Southern Europe

	No 1 company (f foreign, h home). N = >50% national ownership	Other significant home companies	Other significant foreign companies
Italy	ENEL (h)	ACEA, Hera, AEM, ASM Brescia, AEM Torino	Endesa, EDF, Electrabel, Verbund
Portugal	EDP (h)		Endesa
Spain	Endesa, Iberdrola (h)	Union Fenosa	EDP, ENEL

Source: Author's research.

In Italy, the monopoly power of ENEL has been reduced, but it is still dominant in generation and there must be doubts about the political will of the government to further break it up. The sector is in a state of turmoil at the moment with a number of foreign companies, such as EDF, Endesa, Electrabel and the Verbund attempting to establish strong positions, while the former municipal companies are also trying to transform themselves by a process of merger and privatisation into significant players. At this stage, it is impossible to predict how the sector will evolve.

In Portugal, there still seems some reluctance to break up the former state-owned monopoly despite part privatising it and it still totally dominates the home market.

7. Southern Europe: Gas

Portugal was granted derogation from the requirements of the Gas Directive because of the immaturity of the gas market there. Portugal is therefore not discussed in detail here.

7.1. Gas wholesale markets

Neither Italy nor Spain has a competitive wholesale gas market yet. Italy has introduced a gas release programme for the dominant company, ENI, to encourage new entrants into the market but the regulator's 2005 annual report stated: 'the entry of new operators to the market through gas release programmes has not yet resulted in the benefits of competition being passed on to consumers.' Spain also introduced a gas release programme, which operated from 2001 to January 2004 and resulted in six new entrants acquiring gas from the largest company, Gas Natural. This reduced Gas Natural's share of the available gas from 85 per cent in 2002 to 40 per cent in 2003 although in 2004, its share increased again to 45 per cent. Most of the rest of the market (28 per cent) was held by the two large electricity companies, Endesa and Iberdrola. It remains to be seen whether a competitive wholesale gas market will now develop.

Serious problems were experienced in 2004 in Italy because insufficient gas had been contracted. The Regulator reported in its 2005 Annual Report:

'The warnings voiced for some time now by the Authority regarding the inadvisability of continuing to fear an excess or "bubble" of gas were confirmed, unfortunately, in the crisis of March this year. At that time, as a result of a tail-end of wintry weather conditions – albeit after a winter that was not particularly cold – a number of emergency procedures had to be called into play, eating into strategic reserves and calling into play the interruptibility clauses in a number of contracts.'

To deal with this problem, the Regulator proposed:

'To this end, an independent system operator needs to be set up as soon as possible, as has been done for the electricity sector, to engage in transport and storage activities and in the development of systems for the intake of gas at our borders.'

7.2. Gas retail markets

The gas retail markets in Spain and Italy have been open since 2003, but annual switching rates in Spain are only 5 per cent (see Table 9). In Italy, the annual switching rate for small consumers in 2003 reported in the 2005 Benchmark report was 35 per cent. This is hard to reconcile with the statement in the Regulator's 2004 Annual Report: 'More than a year since the momentous date in January 2003, residential customers have made no significant switch from one supplier to another, and have thus not benefited from any real reduction in prices.' And in the 2005 Annual Report: 'sales companies linked to distribution companies continue to predominate at the local level, sometimes operating through customer communication instruments designed to obstruct transparent competition.'

Table 9. Gas retail market structure in Southern Europe

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Italy	January 2003	63 / 5	-	Not known
Spain	January 2003	80 / 4	5	19

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

7.3. Corporate changes

In both countries, the industry was dominated by one integrated company before liberalisation, ENI in the case of Italy and Gas Natural in the case of Spain. In both cases, the transmission network is being separated, in Enagas in Spain and SNAM Rete in Italy, but the two largest companies still dominate wholesale and retail markets directly and through subsidiary companies (see Table 10).

Table 10. Large gas companies in Southern Europe

	No 1 company (f foreign, h home). N = >50% national ownership	Other significant home companies
Italy	ENI (h)	ACEA, Hera, AEM, ASM Brescia, AEM Torino
Spain	Gas Natural (h)	Endesa, Iberdrola (h)

Source: Author's research.

8. Central Western Europe: Electricity

8.1. Electricity wholesale markets

The wholesale markets in the Netherlands and Germany are now well established and more liquid than others in Europe, apart from Nord Pool (see Table 11). However, liquidity in the Amsterdam spot market is falling partly due to the withdrawal of the trading companies. As elsewhere, there is a trend to greater integration of generation and retail and this will limit the significance of the wholesale markets.

Table 11. Generation market structure in Central Western Europe

	Wholesale market introduction	Integration of retail and generation	Top/top 3 generators market share (%)	% of power traded in power exchange
Austria	Voluntary power exchange, EXAA, March 2002	Low high if Energie Austria allowed	45/75	2
Belgium	Voluntary power exchange, BELPEX, planned for 2005	Partial	85/95	-
France	Voluntary power exchange, Powernext December 2001	Full	85/95	2
Germany	EEX (voluntary power exchange) 1999	High	30/70	8
N'lands	APX (voluntary power exchange) 1999	Partial	25/80	15

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

8.2. Investment in generation

There is very little new generating capacity under construction in the region and most of the plant likely to come on-line is renewable plant commissioned under government calls for tenders, which will be insulated from the market.

8.3. The electricity retail market

Table 12. Electricity retail market structure in Central Western Europe

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Austria	October 2001	67 / 4	1	2
Belgium	March 2003 ²	90 / 2	19	<10
France	2007	88 / 1	- ²	9
Germany	1999	50 / 3	Not known	20
N'lands	July 2004	88 / 3	Not known	18

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Notes

1. Competition for small and residential consumers was not available in 2003 in France.
2. Full retail competition was introduced in the Flanders region of Belgium in March 2003, but will not be introduced to Brussels and Wallonia until 2007.

There is little or no experience of retail competition for small consumers in Belgium, France and the Netherlands, although the Dutch Regulator has reported serious logistical problems for those small consumers that have tried to switch (see Table 12). In Germany, switching rates appear to be low despite the market being open for six years, while in Austria, the Regulator has reported that the retail companies show no interest in trying to attract new consumers from outside their home territories.

8.4. Corporate changes

There are major differences in the region in how the government views the sector (see Table 13). The Austrian and German governments seem strongly motivated to create/retain national champions. This was illustrated by the lack of opposition by the German government to the takeover of the largest gas company, Ruhrgas, by E.ON, one of the two large electricity companies so that in both gas and electricity, there is effectively a duopoly position for RWE and E.ON. In Austria, the creation of Energie Austria (which would dominate generation and retail) is being strongly promoted by the government despite the strong misgivings of the Regulator.

Table 13. Large electricity companies in Central Western Europe

	No 1 company (f foreign, h home). N = >50% national ownership	Other significant home companies	Other significant foreign companies
Austria	Verbund (h) N (Energie Austria)	EnergieAllianz	EDF, GDF, RWE
Belgium	Electrabel (f)		Centrica, GDF
France	EDF (h) N	Electrabel	Endesa, ENEL
Germany	RWE, E.ON (h)		Vattenfall, EDF
Netherlands	Electrabel (f)	Essent, Nuon, Eneco, Delta	E.ON

Source: Author's research.

In France and Belgium, there appears to be little will to break up the dominant positions of EDF and Electrabel respectively. In the Netherlands, the government seems more concerned with separating the network activities from generation and retail than with creating competitive fields in generation and retail. A Dutch national champion, perhaps through merger amongst the four remaining Dutch companies could still emerge.

9. Central Western Europe: Gas

9.1. Gas wholesale markets

A number of gas ‘hubs’ have developed (places where infrastructure meets and gas can be traded), for example at Zeebrugge in Belgium and Bunde-Oude on the Dutch-German border, but so far the liquidity at these hubs is very low and the price signals are not reliable

9.2. The gas retail market

The gas markets of France and the Walloon and Brussels regions of Belgium are not yet open for residential consumers, while the Dutch and Belgian markets have only been fully open since January 2004 and July 2003 respectively. Annual switching rates for residential consumers in Belgium and the Netherlands are less than 5 per cent. In theory, the German and Austrian gas markets have been fully open since 1999 and 2002 respectively, but in practice, almost no consumers are switching supplier (see Table 14).

Table 14. Gas retail market structure in Central Western Europe

	Retail competition introduction	Top 3 retailers’ market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Austria	2002	90 / 3	0.5	Not known
Belgium	July 2003	95 / 3	4	5
France	2007	91 / 2	-	3
Germany	1999	10 / 0	0	Not known
N’lands	2004	87 / 3	Not known	31

Source: Author’s research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market’ {COM(2004)863 final}, Brussels.

Notes

1. Competition for small and residential consumers was not available in 2003 in France.
2. Full retail competition was introduced in the Flanders region of Belgium in July 2003, but will not be introduced to Brussels and Wallonia until 2007.

9.3. Corporate changes

Prior to the Directives, France, was supplied by single nationally-owned company, Gaz de France (GDF), while Austria, Belgium and the Netherlands were dominated at the wholesale end of the market by single companies, OMV, Distrigaz, and Gasunie, respectively, with a large number of retail and distribution companies, often under local public ownership. The largest shareholder, with 31.5 per cent is the Austrian government through its holding and privatisation agency, OIAG. The Abu Dhabi government agency, IPIC owns 17.6 per cent of the shares. Germany had a more complex structure although the largest company, Ruhrgas had about 70 per cent of the market with much of the rest held by RWE and its affiliates. Distribution was carried out by a large number of local, often publicly owned, companies.

Table 15. Gas companies in Central Western Europe

	No 1 company (f foreign, h home). N = >50% national ownership	Other significant home companies
Austria	OMV (h)	EconGas
Belgium	Distrigaz (f)	
France	GDF (h) N	Total
Germany	Ruhrgas/E.ON (h)	RWE, Wintershall
Netherlands	Gasunie Trade & Supply	Essent, Nuon, Eneco, Delta

Source: Author’s research.

GDF remains intact, although the network is expected to be legally separated into an ‘Infrastructures’ branch (see Table 15). It is expected that the French government will begin to sell shares in the

company in 2005, but it will retain the majority holding. OMV also remains largely intact, with only a legal separation between its network and its competitive activities. Distrigaz has split off its network activities into a separate new company Fluxys, but the majority shareholder with 63.5 per cent in both Fluxys and Distrigaz is the French company, Suez-Electrabel, the dominant Belgian electricity company.

Gasunie was previously owned by the Dutch state (50 per cent) and by Exxon-Mobil and Shell (25 per cent each). On July 1 2005, Gasunie was formally split into two companies, a network company that will continue to be known as Gasunie and a purchasing and sales company for natural gas, Gasunie Trade and Supply. The Dutch state bought out Shell and Exxon-Mobil's holding in the network company, while the ownership of the purchasing and sales company remains unchanged. The Dutch government has expressed a wish that the Trade and Supply company be split into two competing companies, one owned by Exxon-Mobil, the other by Shell, but there are no firm plans for this to happen.

The German gas market is dominated by Ruhrgas, which was taken over by one of the two dominant German electricity companies in 2002, E.ON, while the other large electricity company, RWE, is one of the other major players in the gas industry. The networks are only separated on an accounting basis and distribution continues to be carried out by a large number of local companies.

10. The UK: electricity

For a number of reasons, the UK needs to be considered separately and not as part of a regional electricity market. It is an island system with few international connections and its island status makes it unlikely that there will be a significant expansion of these. A connection to Republic of Ireland has been mooted but would have a negligible impact on Britain because of the small size of the Irish system, while a connection to the Netherlands is planned but would be equivalent to less than 1 per cent of British installed capacity and would have little impact.

The ‘British Model’ also provided the inspiration for the Directives and, with the exception of Norway (which has not followed the Commission’s implicit preference for privatisation), Britain has far more experience with a liberalised electricity industry structure than any other European country. As a result, the requirements of the Electricity Directives had been implemented long before the Directives were introduced, with the exception of the recommendation that the capacity of international interconnections should be equivalent to 10 per cent of national capacity.

10.1. Electricity wholesale markets

The Power Pool operated from 1990-2001 (see Table 16) and was an ambitious attempt to minimise barriers to entry for new competitors and to force generators to compete for their market on an hour-by-hour basis. It suffered from a combination of poor design, inadequate software, severe market concentration and government measures aimed at giving transitional protection to the British coal and nuclear industries. These meant that it was not possible for the Pool to be a major price setting arena and a decision was taken to abandon it before the basic concept of a universal Pool market had been tested.

Table 16. Generation market structure in Britain

Wholesale market introduction	Integration of retail and generation	Top/top 3 generators’ market share (%)	% of power traded in power exchange
Power Pool 1990, NETA 2001	Full	20/40	2

Source: Author’s research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market’ {COM(2004)863 final}, Brussels.

The new design, NETA and from April 2005 BETTA, is based on an optional spot market and is very much less ambitious. The liquidity of the spot market is far too low for it to play a major role in setting wholesale prices. How far this low liquidity is due to the design details and how far it is due to the decision to allow integration of generation and retail, which gives integrated companies an incentive not to offer power to the spot market is not clear.

Table 17. Generating capacity in Britain

Company	Capacity (%)
British Energy	11558 (16)
Scottish & Southern	8555 (12)
Powergen (E.ON)	8037 (11)
NPower (RWE)	8035 (11)
Scottish Power	5927 (8)
EDF	4823 (7)
International Power	3723 (5)
Centrica	2878 (4)
BNFL	2668 (4)
Plant for sale	9426 (13)
Total capacity Britain	71867

Source: Department of Trade & Industry (2004) ‘Digest of UK Energy Statistics’, The Stationery Office, London, and author’s calculations.

Note: Includes only plant larger than 1MW

Regulatory action did lead to the break-up of the two dominant generation companies that were created in 1990, but the decision to allow integration of generation and retail meant that the duopoly generation structure was quickly replaced with an oligopoly of integrated companies. A brief period when new independent power generators entered the market in 1997/98 was quickly ended when the wholesale price collapsed in 2001 and all independent generators except International Power (a daughter company of National Power) failed (see Table 17). There is now little prospect of new entry by generators unless they are subsidised and/or contracted long-term to one of the integrated companies.

10.2. Investment in generation

Investment in generation has been extremely uneven since 1990. There were two huge bursts of orders in 1991 and 1997/98 followed by periods of little or no orders. Britain now appears to be in a transitional phase as the overcapacity that existed in 2002, owned by independent generators is bought at low prices by the integrated companies. As a result, the only capacity under construction now is a small amount of on-shore wind. It remains to be seen what proportion of the large amount of projects that have been announced but on which no construction work has taken place will be built. Unless construction starts soon, especially on the large amount of renewable projects that exist, Britain will miss its targets on greenhouse gas reduction and may begin to run short of capacity in only a few years.

10.3. The electricity retail market

While the retail market is widely seen as one of the few healthy retail markets in Europe, based on the high level of switching amongst small consumers (see Table 18), a more detailed analysis of the retail market for household consumers shows at least seven major problems:

1. High prices for residential consumers, especially the poorest, compared to industrial consumers;
2. Unethical selling practices;
3. High cost of switching;
4. Logistical problems for consumers trying to switch;
5. Use of demand profiling rather than electronic meters;
6. Inability of small consumers to identify the cheapest supplier; and
7. Switching seems to be reaching a plateau.

Table 18. Electricity retail market structure in Britain

Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
1998/99	60 / 6	22	50

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

The result is that small consumers are paying for the price reductions that large consumers have seen and high additional 'transaction' costs, such as marketing and registration costs are being borne by consumers, further increasing prices. There is strong evidence that even the small consumers that switch are not benefiting because they are unable to identify the cheapest deal. Despite the relatively high switching rates, the number of net switchers is reaching a plateau at 40 per cent and it seems likely that suppliers will be able to assume that at least 60 per cent of their residential consumers will not switch and can be regarded as captive. On this basis, far from being a success story, retail competition has so far failed to bring benefits to small consumers in Britain.

10.4. Corporate changes

Almost alone amongst the European Union countries, the British government has shown little or no interest in preserving or even promoting 'national champion' companies in this sector (see Table 19). Most of the privatised companies have changed hands more than once and from 2001 onwards, the

three largest European electricity companies (EDF, RWE and E.ON) have taken an increasingly dominant position in Britain. The three remaining British companies are small by comparison and it will be surprising if, over the next 5-10 years, one or more of these companies does not fail or is taken over by one of the big three. Scottish Power bought a large electric utility in the USA, Pacificorp, but in 2005 it was in the process of selling it again. When this sale is completed, probably in early 2006, it is expected that Scottish Power will be taken over. E.ON is frequently mentioned as the most likely buyer although a merger with SSE has also been mooted. It seems extremely unlikely that any new entrants will enter so the sector seems likely to concentrate further leaving three or four companies with dominant regional market positions and no incentive to compete against each other.

Table 19. Large electricity companies in Britain

No 1 company (f foreign)	Significant home companies	Other significant foreign companies
RWE (f) or E.ON (f)	SP, Centrica, SSE	EDF

Source: Author's research.

11. The UK: gas

As with electricity, the British gas market must be considered as a separate market. Until 1998, Britain was effectively a gas island with no connections to mainland Europe and until 2002, Britain was more than self-sufficient in gas. This meant that Britain had the means to control supplies of gas and could price gas in a different way to mainland European markets (the indexation to oil was much less important). Gas production from national fields is declining sharply now and imported supplies via pipelines and via liquefied natural gas (LNG) will take a growing share of Britain's gas needs in the next few years. This means that in a few years, Britain will be more fully integrated into European markets and it might be possible to consider it as part of an international market.

11.1. Gas wholesale markets

A wholesale market has existed for about ten years, based on a notional National Balancing Point on the National Transmission System. The market is usually regarded as liquid, although volumes are not easy to find. The current detailed arrangements, known as the New Gas Trading Arrangements, have been in place for about five years and served as the model for the equivalent electricity market (NETA/BETTA). Government and regulatory action to break the market power of the previous monopoly company, British Gas, mean that the market is fragmented with no company controlling more than 25 per cent of the market and five companies having at least 5 per cent of the market.

11.2. The gas retail market

For most purposes, the gas and electricity retail markets for residential consumers have merged with all significant suppliers offering gas and electricity as a 'dual fuel package' (see Table 20). However, while the previous electricity distribution structure was regional with 14 separate companies retailing electricity, for gas, there was only one company, British Gas, which was fully vertically integrated. The retail division of British Gas was spun off as a separate company in 1997 as Centrica, although in Britain, it is allowed to continue to trade as British Gas. It still holds about 60 per cent of the residential gas market, with the rest of the market going to the five major electricity companies: RWE/NPower, E.ON/Powergen, EDF, Scottish and Southern, and Scottish Power. Centrica only holds a small percentage of the industrial market, in which a significant proportion is held by the oil and gas majors. For an analysis of the problems with the gas retail market see section 10.3.

Table 20. Gas retail market structure in Britain

Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small consumers switching in 2003	Market share of foreign companies
1996-98	82 / 6	13	27

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

11.3. Corporate changes

The nationally-owned company, British Gas was privatised in 1986 and over the following 15 years, under pressure from the Regulator and the government, it has been broken up (see Table 21). In 1997, the retail division was spun off as Centrica, which is allowed to trade in Britain as British Gas. The parent company, BG plc, which trades outside Britain as British Gas, spun off the network company, Transco, as a separate company, Lattice, in 2001, but in 2002, it merged with its equivalent in the electricity sector to form National Grid Transco (NGT). The Regulator has required NGT to split the local gas distribution system from the national gas transmission system and divide the country into eight regions. In 2004, NGT sold off three of these regions, some to electricity distribution companies, and more regions are likely to be sold. BG plc has no strong role in the upstream gas sector of Britain.

Table 21. Large gas companies in Britain

No 1 company (h home)	Significant home companies	Other significant foreign companies
Centrica (h)	SP, SSE	EDF, RWE, E.ON + Oil majors

Source: Author's research.

12. Peripheral countries: electricity

Greece and Ireland are both relatively small markets that, at present, cannot easily connect to the major European mainland markets. As a result it is difficult to see how genuinely competitive markets could be developed.

12.1. Electricity wholesale markets

None of these countries has a wholesale market and, while a wholesale market in Ireland has been proposed, it is hard to see how this can avoid becoming a very concentrated market with little scope for competition (see Table 22).

Table 22. Generation market structure in the peripheral countries

	Wholesale market introduction	Integration of retail and generation	Top/top 3 generators' market share (%)
Greece	None	Full	100/100
Ireland	None	Full	85/90
Northern Ireland	None	None	Not known

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: No power exchanges exist in these countries.

12.2. Investment in generation

Reflecting the lack of competition in these markets, a relatively large amount of new generation is under construction or planned, mostly gas-fired plant exploiting the large new gas import facilities brought on-line in the past few years.

12.3. The electricity retail market

Retail competition for residential consumers is not yet open in any of these countries (see Table 23). While the generation market is so narrow and generation is either integrated with retail (ESB) or contracted long-term, it would make no sense trying to introduce retail competition for small consumers.

Table 23. Electricity retail market structure in the peripheral countries

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	% small commercial /residential consumers switching in 2003	Market share of foreign-owned companies
Greece	2007	100 / 1	-	0
Ireland	February 2005	88 / 4	1	12
Northern Ireland	2007	Not known	-	Not known

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: Retail competition for residential consumers was not in operation in Ireland in 2003, so it is assumed the quoted figures apply to small commercial consumers.

12.4. Corporate changes

Their geographically isolated position makes these countries relatively unattractive to new entrants because they will inevitably remain separate markets unable to profit from synergies with other markets (see Table 24). In Northern Ireland, the very lucrative long-term contracts given to AES and BG mean these companies will probably remain, unless the regulator succeeds in renegotiating these contracts to much more favourable terms for consumers. The most likely outcome for Ireland is that it will fall into a duopoly of ESB and Viridian based on their effectively captive retail markets.

Table 24. Large electricity companies in the peripheral countries

	No 1 company (h home). N = >50% national ownership	Other significant foreign companies
Greece	PPC (h) N	-
Ireland	ESB (h) N	Viridian
Northern Ireland	Viridian (h)	BG, AES, ESB

Source: Author's research.

Note: In all three cases, there are no significant home companies except the dominant one.

13. Peripheral countries: gas

Greece was granted derogation from the requirements of the Gas Directive because of the immaturity of the gas market there. Greece is therefore not discussed in detail here. For Northern Ireland, an old manufactured gas network existed, primarily in Belfast but was allowed to fall into disuse around 1980. A natural gas pipeline from Scotland to Northern Ireland has been completed and it is anticipated that small consumers in Belfast will soon be able to buy natural gas. However, no markets exist yet

13.1. Gas markets

No wholesale market exists in Ireland yet and retail competition for small consumers is expected to be introduced in 2005.

13.2. Corporate changes

The main company in the gas sector is the state-owned Bord Gais, which has begun to move into the electricity retail (with 7 per cent of the free market by the start of 2005) and generation sectors.

14. The CEE countries: electricity

14.1. Electricity wholesale markets

In the three countries with wholesale markets, the liquidity is minimal and it seems highly unlikely that they are providing valid price signals either to consumers or investors (see Table 25).

Table 25. Generation market structure in Central Eastern Europe

	Wholesale market introduction	Integration of retail and generation	Top/top 3 gens' market share (%)	% power traded in power exchange
Czech Rep	OTE (voluntary power exchange) 2002	High	65/75	1
Hungary	None	Low	30/65	-
Poland	Polish Power Exchange 1999	Low	15/35	1
Slovak Rep	None	Low	75/85	-
Slovenia	Borzen 2001	Low	70/95	2

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

14.2. The electricity retail market

Retail competition exists for large consumers and amongst large consumers, who might be expected to take advantage of the scope to negotiate better terms, few consumers have switched (see Table 26).

Table 26. Electricity retail market structure in Central Eastern Europe

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	Market share of foreign-owned companies
Czech Rep	2006	46/ 5	Not known
Hungary	2007	56/ 7	97
Poland	2006	32/ 3	17
Slovak Rep	2005	84/ 4	28
Slovenia	2007	71/ 6	20

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: Competition for small and residential consumers was not available in 2003 in any of these countries.

14.3. Corporate changes

The corporate structure is not conducive to competition (see Table 27). Three of the countries (Czech Republic, Hungary and Slovenia) have dominant companies that the governments seem willing to allow to retain that position so they become 'national champions'. If these companies are privatised, the governments will be under pressure to privatise them intact to maximise the sale price. Where privatisation has taken place, mostly through sale of regional distribution companies, the three largest European utilities, EDF, RWE and E.ON have been dominant, while ENEL bought a majority stake in the strongest Slovak generation company. This pattern of three Western European companies dominating is similar to the gas sector where E.ON, RWE and GDF have been most active.

Table 27. Large electricity companies

	No 1 company (f foreign, h home). N >50% national ownership	Significant foreign companies
Czech Rep	CEZ (h) N	E.ON
Hungary	MVM (h) N	EDF, E.ON, RWE
Poland		RWE
Slovak Rep	SE/ENEL (f)	EDF, E.ON, RWE
Slovenia	HSE (h) N	

Source: Author's research.

15. The CEE countries: gas

The CEE countries have made much less progress towards opening their gas markets than they have with electricity and most countries are still dominated by effective monopolies, although there has been considerable take-over activity with the major companies from France and Germany particularly active.

15.1. Gas wholesale markets

In all five countries, there is a dominant company that effectively controls all the gas coming into the system. No gas release programmes are in place.

15.2. The gas retail market

None of the CEE countries allow residential consumers choice of gas supplier yet (see Table 28)

Table 28. Gas retail market structure in Central Eastern Europe

	Retail competition introduction	Top 3 retailers' market share (%) / No retailers with more than 5%	Market share of foreign-owned companies
Czech Rep	2007	59 / 7	Not known
Hungary	2007	62 / 7	69
Poland	2007	65 / 6	<5
Slovak Rep	2007	100 / 1	49
Slovenia	2007	86 / 4	0

Source: Author's research and European Commission (2005) Report from the Commission on the Implementation of the Gas and Electricity Internal Market' {COM(2004)863 final}, Brussels.

Note: Competition for small and residential consumers was not available in 2003 in any of these countries.

15.3. Corporate changes

While there has been little progress in introducing competition yet, there have been major changes of ownership (see Table 29).

Table 29. Large gas companies

	No 1 company (f foreign, h home). N >50% national ownership	Significant foreign companies
Czech Rep	RWE	E.ON
Hungary	MOL (h)	GDF, RWE, E.ON, ENI
Poland	PGNIG (h) N	
Slovak Rep	SPP (GDF/E.ON) (h)	
Slovenia	Geoplin	

Source: Author's research.

16. Skills, security of supply and employment

The electricity and gas industries depend heavily on a highly skilled and experienced workforce to maintain security of supply. In many cases the skills required by these two industries are specific to the sectors and the industries therefore bear a particular responsibility in training and recruitment. The gas industry is much worse documented than the electricity industry in terms of skills and employment and the following covers only the electricity industry. A priority for the Commission will be to ensure that the gas sector is much better documented in this respect than at present.

The training responsibilities range from:

- Short-term training programmes to maintain and enhance skills amongst existing employees;
- Re-skilling programmes in areas where new skills are needed and existing employees can be re-deployed;
- Re-training programmes to allow employees who cannot be re-deployed within the company to find new employment outside the industry.

The industries also have a responsibility to maintain primary recruitment from newly qualified students. Without this, for example, university course in electrical engineering may be lost.

The responsibility is a long-term one and while neglect of training and education will not generally result in an immediate deterioration in service quality, in the long-term it will and rebuilding a skilled and experienced workforce will be a lengthy and expensive process.

The previous method of organisation of the industry, as a regulated monopoly, allowed companies to meet this need for skills for a number of reasons:

- Companies had monopoly rights, other companies in the sector were regarded as colleagues rather than competitors and this allowed national co-operative training regimes to be established;
- Company profits were more or less regulated and reductions in spending on training could not be kept as extra profits; and
- The ownership structure of the sector was very stable encouraging companies to pursue long-term strategic policies with respect to skills.

These conditions were all removed by the requirements of the Directives. Companies are now in competition with each and have strong incentives not to carry out policies that could benefit their competitors (the 'free-rider' problem). Even the regulated monopolies (the network companies) are increasingly regulated using 'yard-stick' methods (comparing the performance of the different companies to establish objectives for the poorer companies), which gives them an incentive to appear more efficient than their rivals.

Consumer prices are increasingly set by the market, and reductions in costs for companies operating in the competitive parts of the industry can be kept as extra profits. Prices for the network companies are often set using incentive regulation, under which cost reductions can be kept by companies as extra profits.

Ownership of the sector has become unstable with ownership of companies changing frequently through mergers and take-overs. Short-term ownership of such a business leads to a risk that companies will make imprudent short-term cost cuts, selling the company on before the impact is apparent. Takeovers also place pressures on the new owners to make immediate cost-savings to justify the takeover to their shareholders and to credit rating agencies.

The Directives are silent on training and education and the Benchmarking Reports contain no indicators on training and recruitment. The most recent Benchmarking Report led with productivity measures. Labour productivity measures are highly misleading in this industry (an electricity industry using hydro-electric power will appear more productive than one using coal) and are easily manipulated. Labour productivity is a very poor indicator of efficiency. There are many ways in which labour productivity could be improved with no real improvement in the underlying efficiency of the sector. For example, outsourcing of labour, reducing RD&D activity, and changing generation

technology from coal to gas-firing would all lead to significant increases in statistics of labour productivity but with no benefit to consumers. Reducing maintenance would also improve labour productivity in the short-term, but with potentially serious consequences for consumers in the long-term.

From a consumer point of view, productivity measures are irrelevant, consumers want an electricity supply that is affordable and reliable, they do not want reductions in the number of person-hours required to supply a kWh.¹⁷

16.1. Employment in the electricity sector

There are a number of factors that could lead to real and apparent reductions in employment in the electricity sector. The most important include:

- Efficiency improvements. Technological improvements and improved practices have taken place throughout the history of the electricity industry. In the past few decades, as demand growth has slowed, these improvements have increasingly led to declines in employment in the sector when efficiency improvements (typically 1-2 per cent per year) exceed demand growth;
- Changes in generation technology. Different generation technologies have differing employment requirements, for example, a coal fired power station may need hundreds of employees to run, while hydro-electric and gas-fired power stations are generally highly automated. The trend in many countries in the past decade to replace coal generation with gas generation has therefore tended to reduce employment;
- Out-sourcing of non-core activities. Companies have sought to reduce their costs and improve their apparent labour productivity in the past decade by out-sourcing especially ‘non-core’, relatively low-skill activities, such as catering and cleaning. This does not necessarily lead to a reduction in employment, simply a relocation of employment from the utility to the contractor. Note that if the contractor operates in several sectors, this may mean that the jobs will no longer show up in the official statistics as being in the electricity sector. How far such changes actually led to cost reductions and how far any cost reductions were achieved by improved efficiency of contractors rather than simply worsening the conditions of employment of those involved is not clear;
- Out-sourcing of more central activities. Some utilities have tried to reduce costs by contracting out activities such as maintenance, and design and construction of new facilities to specialist companies or to equipment vendors. As above, while this may not lead to an overall loss of employment, it may mean that there will be an apparent loss if the jobs are re-classified to another sector;
- Reductions in R&D. Since liberalisation, there has been a dramatic reduction in R&D in most countries often leading to the closure of R&D facilities and a loss of employment;
- Mergers and takeovers. Mergers and takeovers may lead to economies of scale, for example merging of administrative functions, leading to job reductions; and
- Short-term cost-cutting. Many activities in the sector, such as maintenance, can be reduced in the short-term with no immediate impact on system reliability, but leading to loss of jobs and increased profits.

Thomas & Hall¹⁸ found that out-sourcing was potentially very damaging in the electricity sector:

¹⁷ For a detailed critique of the use of productivity indices, see D. Hall (2005) ‘Evaluating the impact of liberalisation on public services: A critique of the European Commission 2004 report “Horizontal Evaluation Of The Performance Of Network Industries Providing Services Of General Economic Interest” EC SEC(2004) 866’, PSIRU, London. <http://www.psiru.org/reports/2005-03-EU-U-horizeval.doc>

¹⁸ S Thomas & D Hall (2003) ‘Restructuring and outsourcing of electricity distribution in EU’ report commissioned by the Energeia Foundation, Italy. http://www.psiru.org/reports/2003-05-E-distriboutsources.doc#_Toc40506036

‘The outsourcing activities of the electricity distribution companies risk incurring the problems of outsourcing without the prospect of benefit to the business.’ And ‘Despite little benefit, outsourcing in electricity distribution does risk the negative effects on the public service, responsibility for the core business, training of skilled workers etc – and the cases in the previous section gave evidence of this happening. Some of the areas of work commonly outsourced - the maintenance of the network itself, customer service call-centres - are central competences of an electricity distribution company; inadequate monitoring of contractors means that public service obligations cannot be effectively transmitted to the outsourced contractor.

Overall, more than 300,000 jobs have been lost in the industry since 1990. The impact of the Directive on employment in the sector depends on when the requirements were implemented, for example, the UK electricity sector was effectively liberalised in 1990, while the French industry has only recently begun to be heavily. Where the reform process involves privatisation, the impact on employment is likely to be particularly strong. Hall found that: ‘positive human resource policies and industrial relations are facilitated by public ownership’ and ‘the employment consequences of privatisation on the UK model are severe, and should be carefully evaluated in any consideration of this option’.¹⁹

It is illuminating to look at the figures on a regional basis.

16.1.1. The Nordic Region

Apart from Britain, the Nordic countries were the first in Europe to liberalise their electricity industries, in 1991 in Norway, the mid-1990s for Sweden and Finland and about 2000 for Denmark. Reported employment in the sector has fallen by about 36 per cent (about 34,000 employees) in the past 15 years, from 1990-2004, but generally the process has taken place at a reasonably steady rate (see Table 30).

16.1.2. Southern Europe

The Southern European countries have seen a similar percentage reduction in employment to that of the Nordic region (about 61,000) from 1990-2002 (see Table 31). How far the sharp drop from 1997-98 and increase from 1998-99 represent real trends rather than anomalies in data collection is difficult to determine.

16.1.3. Central Western Europe

Employment in the sector has fallen by about 24 per cent (94,000) from 1994 to 2003 (see Table 32). Job losses in Germany have been particularly high, perhaps reflecting company mergers and a trend away from coal-fired generation, whilst losses in France have been relatively limited.

16.1.4. The UK

Employment in the UK electricity industry has fallen by about 60 per cent (about 85,000) from 1990-2003 with most of the reductions taking place from 1991 to 1998, since when, the picture has stabilised somewhat (see Table 33).

16.1.5. The peripheral countries

In the republic of Ireland and Greece, employment fell by about a quarter from 1994 to 2004 (about 13,000 jobs) with the heaviest losses around the time of the passing of the first electricity Directive (see Table 34).

16.1.6. The CEE countries

Data from the CEE countries are sparse and difficult to interpret (see Table 35).

¹⁹ D Hall (1997) ‘Restructuring and Privatisation in the Public Utilities – Europe’ in ‘Labour and Social Dimensions of privatisation and restructuring – public utilities (water, gas, electricity)’ ed Loretta de Luca (ILO, Geneva, 1998)

16.2. The impact of liberalisation

There have been few detailed studies of the impact of liberalisation, but a rigorous Austrian study compared experience in a number of foreign service sectors with that of Austria.²⁰ Some of the main conclusions of the study were:

- Extensive staff retrenchment in all sectors. In most sectors reviewed, staff retrenchment amounted to up to 50 percent in the first ten years after liberalisation/privatisation;
- Reduction of labour cost through income cuts and changes in pay structures. Bonuses and extra payments as well as company benefits (sickness benefits) and company pensions are cut and in many sectors, newly recruited workers are forced to accept inferior collective agreements;
- Flexibilisation, condensation and lengthening of working hours. Additional working hours and overtime increase (to balance staff retrenchment and income losses);
- Flexibilisation and individualisation of employment relationships. Outsourcing and hiving-off result in enterprises not subject to collective agreement regulations;
- Changes in working conditions. Work intensity and performance requirements are considerably increased;
- Effects on personnel policies. Basic and advanced training possibilities deteriorate; skill building options are limited to the core staff. Measures aimed at promoting women appear to be more rhetorical than real; and
- Deteriorating conditions for collective workers' representation. The collective representation of workers is curtailed.

These conclusions strongly suggest that any cost reductions resulting from liberalisation have more to do with the worsening of the conditions of employment in the sector than efficiency improvements.

A study carried out by ECOTEC for the European Commission also found serious adverse effects on employment in the electricity sector.²¹ The report said that: 'liberalisation has clearly accelerated the pace of change and associated job losses.' The study also noted: 'a more or less significant shift in the nature of employment relationships away from full-time, open ended employment, to so-called non-standard employment, e.g. part-time, fixed-term and temporary employment.'

A report by Fairbrother,²² commissioned by the social partners, Eurelectric and EPSU, found that:

'the European electricity industry faces a looming skills deficit, in different employment areas and across the occupational span of the industry. Two aspects are especially notable. First, the deficit is emerging in the context of a decline in technically and technologically essential employment (craft and engineering). In part, this is reflected in the aging profile of the industry. Second, there is a growing shortfall in meeting the new skills (sales, trading, commercial activities, and customer oriented skills) that are integral to the emergent European industry. One consequence of these two related developments is the need for long-term training planning. Central to addressing these issues should be a commitment to the 'management of change'.'

A second report by Fairbrother,²³ also commissioned by the social partners, Eurelectric and EPSU found that before liberalisation, women were significantly under-represented in the industry and that liberalisation would not, by itself improve the situation and could make it worse:

'The electricity industry workforce is predominantly male and middle-aged. Overall, there appears to be a problem developing in terms of recruitment, retention and the conduct of the electricity business in the emerging circumstances, because of the age bulge in the industry. In the context of restructuring, the socio-demographic composition of the workforce is likely to shift in marked ways over the next few years. There are two dimensions to this profile: an age or generational dimension and an uneven pattern of female

²⁰ R Atzmüller & C Hermann (2004) 'The Liberalisation of Public Services and Its Effects on Employment, Working Conditions and Industrial Relations' Working Life Research Centre, Vienna.

²¹ ECOTEC (2000) 'The Effects of the Liberalisation of the Electricity and Gas Sectors on Employment', final report to the European Commission, C1713.

www.europa.eu.int/comm/energy/electricity/publications/doc/ecotecfinalreport.pdf

²² P Fairbrother, D Hall, S Davies, N Hammer, D Stroud, & S Thomas (2003) 'Future skills needs in the European electricity industry' A Report for EPSU, EMCEF and EURELECTRIC.

²³ P Fairbrother, S Davies, N Hammer, M Jephcote, A Parken & D Stroud (2005) 'Equal opportunities and diversity: Changing employment patterns in the European electricity industry' A report for EPSU, EMCEF and EURELECTRIC.

employment, both within companies and between the EU countries. Of note, there is markedly less female employment in the EU-15 when compared with the Central and Eastern European countries. These features raise important questions for the focus and approach to training as well as for emergent distortions in the skills profile of the overall workforce.'

16.3. Assessment

There is now clear evidence that liberalisation of the electricity sector is not only seriously detrimental to the conditions of employment for those in the industry, it will also, in the long-term be harmful to the electricity industry because of cut-backs in training and R&D. There is little doubt that these same factors will apply to the gas industry.

The Commission needs to ensure that the data to allow the situation to be monitored must be collected, especially for the gas sector where data is particularly sparse. It needs to address low level of employment for women in the sector. It may also be necessary to revise the Directives placing responsibilities on companies to carry out training and to ensure that cost reductions are not carried out at the expense of the conditions of employment of the workers.

Table 30. Employment in the electricity sector in the Nordic region

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Denmark	11750	11688	11595	11471	11242	9423	9397	9279	9394	8734	9124	8392	8576	8579	8480
Finland	20703	20784	20216	18123	16848	16462	16399	15949	15599	14996	14731	14622	14182	13742	13300
Norway	23000	21000	21000	22000	22000	22000	21000	21000	18000	18000	20000	15776	14898	14313	13370
Sweden	38500	35000	32000	29000	29000	29000	28000	27000	27000	27000	27000	27000	27000	25000	24500
Total	93953	88472	84811	80594	79090	76885	74796	73228	69953	68760	70855	65790	64656	61634	59650

Sources: Data compiled by EPSU from a variety of sources.

Table 31. Employment in the electricity sector in Southern Europe

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Italy	110562	107976	105732	104234	100312	94561	90606	85939	83400	92151	88957	83600	82030	81000	80000
Portugal	20165	18920	18082	17034	16826	16472	16182	15594	15053	13404	13198	11567	10284	9000	7416
Spain	52639	51960	51662	48143	47951	45342	43464	41178	31149	29256	29111	28387	29600		
Total	183366	178856	175476	169411	165089	156375	150252	142711	129602	134811	130906	123554	121914		

Sources: Data compiled by EPSU from a variety of sources

Table 32. Employment in the electricity sector in the Central Western Europe

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Austria	30410	29815	29220	28625	28030	27425	27063	26503	25308	24024	23561	22312	22473	21086	20560
Belgium		18082	17697	17414	17012	16722	16342	16018	16039	15843	15307	13848	13638	13000	
France	120263	119589	118551	118395	117965	116909	116919	116462	114872	116516	117744	115677	113682	110089	109463
Germany		217600	210200	204400	196300	187900	178900	171100	160426	151076	137197	130507	131573	131373	126728
N'lands					38000	37000	35000	32000	31000	29500	28000	27000	28200	27700	26540
Total					397307	385956	374224	362083	347645	336959	321809	309344	309566	303248	

Sources: Data compiled by EPSU from a variety of sources

Table 33. Employment in the electricity sector in the UK

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
UK	144200	140200	134100	121900	111000	94570	84445	82135	70239	68131	72289	68402	62052	58660	

Sources: Data compiled by EPSU from a variety of sources

Note: Includes Northern Ireland

Table 34. Employment in the electricity sector in peripheral countries

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Greece					38000	37000	35000	32000	31000	29500	28000	27000	28200	27700	26450
Ireland	12000	11500	11200	10800	10500	10300	9800	9200	9240	9319	9318	9384	8866	8831	8831
Total					48500	47300	44800	41200	40240	38819	37318	36384	37066	36531	35281

Sources: Data compiled by EPSU from a variety of sources.

Table 35. Employment in the electricity sector in the CEE countries

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Czech R	45000	45000	45000	43000	42000	41000	36000	34500	33000	32000	31000	30000	27000	22893	
Hungary						33700	31800	29400	29624	26669	23888	22168		23000	
Poland														99200	
Slovak													23000	16519	16400
Slovenia			7679		7113	7020		7030		6682	6516	6395		6486	6389

Sources: Data compiled by EPSU from a variety of sources.

17. Will competition work?

The intuitively plausible premise that competitive markets would be more efficient than monopolies neglects the special characteristics of electricity and gas, which have long been known but which the advocates of competition chose to ignore or assumed they were no longer valid. Special factors for electricity include:

- Inability to store power. Most products can be stored. This allows consumers and producers to smooth out demand and price peaks by drawing down stores when prices are high and building stores when prices are low;
- Need for supply and demand to match at all times. In an electricity system, supply and demand must always match if the whole system is not to collapse. Without control over producers, a system operator does not have the tools to ensure security of supply. A free market implies free entry and exit and does not oblige producers to offer their products to the market;
- Lack of substitutes. For most products, there are ready substitutes that can be used if supplies are scarce or prices are high. The threat of switching to substitutes acts as a discipline on producers on price and availability. For many uses, electricity has no ready substitutes and even where substitution is theoretically possible, consumers are generally locked in to electricity by the equipment they use;
- Vital role in modern society. Modern society is now dependent on reliable supplies of electricity for it to function. A failure of the electricity system will lead to immediate and serious welfare and economic impacts, as the blackouts of 2003 amply demonstrated. For most products, a market failure can be mitigated by use of substitutes and stores but this is not possible for electricity. As a result, the demand for electricity cannot easily be influenced in the short-term by price changes;
- Electricity is a standard product. In an interconnected network, electricity is a standard product. Switching to another supplier cannot produce ‘better’ electricity, so markets are purely price driven and will be exploited by those who have most to gain by cheaper power (large users) as well as the skills and negotiating power to get the best deal. If the market is functioning well, prices will inevitably be driven down to the short-run marginal cost, too low a level to justify new investment; and
- Environmental impacts. The environmental impact of electricity generation must be added to the traditional list of special features. Electricity generation plays a key role in greenhouse gas emissions and attempts to deal with climate change have to focus on the electricity sector (and transport). The market will not deliver the necessary emissions reductions and market mechanisms are no more than one of many tools that will have to be used, not the complete answer.

Pipeline natural gas is also a standard product and introducing natural gas has been a major element in many countries’ attempts to reduce greenhouse gas emissions. However, some of the characteristics and their requirements are somewhat less stringent. Natural gas can be stored, albeit at significant cost and some short term imbalance between supply and demand can be accommodated. In the long-term, gas can be substituted in many uses by oil or coal, but this often requires replacing the equipment. For residential users, the substitutes are mostly significantly less convenient than gas. The substitutability of natural gas is therefore generally only long-term and gas plays a vital role in the countries where it is widely used.

These factors mean that free wholesale and retail markets in electricity and gas are not feasible.

17.1. Are economically efficient wholesale markets possible?

This is perhaps the key question. For electricity, generation makes up the largest element of retail bills, typically more than 50 per cent, and it was the idea that generation could be transformed from a monopoly to a competitive market that promised reductions in prices. The other key assumed advantage was that it appeared that investment risk would be transferred from consumers, where it generally falls in a monopoly market, to the shareholders of the generation companies. If a generator

makes a bad investment, the market will ensure that the additional costs are borne by shareholders. It was assumed this would act as a discipline on utilities to invest only in profitable options.

On theoretical grounds, these assumptions are questionable. One of the key justifications for nationalisation of utilities was of economies of scale and the efficiency of planning. Generating technologies, especially the more complex ones often need a base of skills to operate them that is relatively insensitive to whether there is one plant or ten plants. A large central utility would avoid duplication of facilities and would ensure that wasteful unnecessary investment was not carried out.

The assumption that consumers pay for unwise investments in a monopoly system is only valid if regulation is not effective. In a properly regulated system, 'prudence' checks on investments should be carried out by regulators and if utilities are investing inefficiently, the regulator will not allow the utility to pass on the unnecessary costs to consumers. Some risk will still fall on consumers, for example, if a fossil fuel price increases and the generator could not reasonably have expected the price increase, the regulator should pass through the price increase to consumers.

The wholesale price of gas also makes up about half the retail price of gas for small consumers. However, while the production of gas has generally not been integrated into its transport and retail, the need for long-term commitments, as with the construction of a power plant is important. Unlike oil, gas cannot be produced speculatively with confidence that any cargos produced can be sold to a world market at a standard price. Gas fields are very expensive to develop and require expensive dedicated infrastructure to bring the gas from the field to the market, for example, long distance pipelines or LNG terminals. Making that investment would be extremely speculative if a credible contractual long-term commitment to take the gas does not exist.

However, the supposed superiority of markets assumed that competition would be a 'free good', in other words that the costs of introducing and operating a competitive market would be negligible. It also assumed that creating a free market would not compromise security.

17.1.1. Costs of competition

The clearest cost of competition is the risk premium on investment. Building a power plant is a risky venture however the industry is structured:

- The equipment is technologically demanding and unless its construction and operation is well managed could be vulnerable to construction cost over-runs or unreliability;
- Power stations are capital intensive so if there is no market for its power, the owners still incur the financing charges, which could be up to two thirds of the cost of power in the case of renewables, large scale hydro-electric and nuclear power;
- Fossil fuel prices are unpredictable and unexpected rises or falls in fuel prices may make a power plant uneconomic, whether or not it is fossil-fuel fired. For example, a rise in gas prices relative, say, to coal, could make a gas-fired plant uneconomic, while a fall in fossil fuel prices could make a nuclear plant uneconomic.

Similar factors apply to natural gas.

In a monopoly market, even if the sector is well regulated, some risk falls on consumers who generally pay if the generator's costs are higher than forecast. As a result, investment in a power station was a low risk to the owners of the generating company and the real annual cost of capital was perhaps 6-8 per cent. Even in the imperfect markets created in Europe, investing in new generation is a large risk. Almost all the independent generators in Britain failed financially while the two large privatised generators there, National Power and Powergen, were so weakened by poor investment decisions that they were taken over. In Britain, even for a power plant with a long-term power purchase agreement, the real cost of capital is at least 15 per cent. So while shareholders pay if an investment fails, consumers always pay through the higher cost of capital. If we assume that repaying the capital accounts for about a third of the cost of power from a power plant, increasing the cost of capital by a factor of 2-2.5 will increase the overall generation cost of electricity by 33-50 per cent.

For gas, similar considerations apply. A company signing a long-term contract to buy gas faces a risk that it has over-estimated its market and a risk that the contract price will prove higher than the short-

term market price. Both risks have been clearly demonstrated in Britain. The collapse of the North Sea gas price in the mid-1990s left British Gas over-contracted for gas bought on take-or-pay contracts that it could not sell or could only sell at a loss. It had to write-off about £1.5bn on these contracts. This resulted in the break-up of British Gas, but also meant that small consumers paid a high price for the gas as British Gas passed on some of these costs to them. The collapse of the gas price also left a number of retail/generators with expensive gas contracts. The power produced under these contracts was allocated to the residential market as discussed in section 18.3.8.

There are also the costs of designing and operating the market. In Britain, in 2003, the National Audit Office found that the cost of development and of running NETA for the first five years totalled about £770m or about £30 per consumer.²⁴ Since then substantial additional funds, not publicly accounted for yet, have been spent dealing with the problems thrown up by NETA and by expanding the system to include Scotland under the BETTA arrangements.

It seems highly implausible that the operation of competition through improving efficiency and discipline on investment decisions could be so effective as to pay for these extra finance and transaction costs.

17.1.2. Risk to security of supply²⁵

The supposition of those advocating markets was that market signals from the wholesale price would stimulate just enough investment to ensure security of supply. Apart from the obvious assumption that the wholesale market will provide coherent and timely price signals, this supposition is based on the assumption that there will be free entry and exit for generators/gas wholesalers.

Neither assumption stands up to examination. Because of the need for supplies to balance at all times, the impossibility of storage, and the inelasticity of demand, prices will inevitably be highly volatile. If there is a shortage of capacity, the price will be bid very high to ensure demand is met, while if there is a surplus, generators will bid down to their marginal cost just to ensure they receive some income. For generators with a relatively inflexible fuel supply contract the effective marginal cost could be near to zero. The response of the market advocates is that this demonstrates the need for demand side signals, in other words, that if the wholesale price goes very high, this should be passed on visibly to consumers so they will be forced either to economise or pay very high prices. However, while some measures to reduce peaks can be very cost-effective, passing on punitive prices to consumers seems a retrograde and probably politically unacceptable step. It would effectively transform a reliable, predictably priced commodity into one in which prices could go very high at times when electricity is needed most, for example, on a cold winter evening.

Similar considerations apply for natural gas.

Prices will therefore be volatile and unpredictable and this is the experience with other commodities. It seems highly unlikely that investors would base the investment of perhaps €1bn in a facility taking up to six years from commitment to first power on such transitory signals. In a free market, there is free entry and exit. This means all investors will see price signals and, if the market responds to these signals, there will tend to be over-investment as investors respond to the signals. This will eventually result in low prices, followed by market exit as loss-making plants are closed, resulting in prices rising again. This 'hog cycle' is well known from other commodities. However, it hardly provides a stable basis for manufacturing industry if the price of one of its key inputs and costs fluctuates so widely.

The Commission appears to be concerned about the risk of shortage of capacity and introduced measures in the 2003 Electricity Directive requiring governments to monitor generating capacity and commission the construction of additional power plants if a shortage seems likely. No comparable provisions for gas were introduced. The measures for electricity are well-meaning but entirely

²⁴ National Audit Office (2003) 'The New Electricity Trading Arrangements in England and Wales' Report by the Comptroller and Auditor General HC 624 Session 2002-2003: 9 May 2003

²⁵ For the European Transmission System Operators' (ETSO) review of generation adequacy, see <http://www.etsonet.org/upload/documents/Generation%20Adequacy%20Report%20Publication%20Version.pdf>

misguided. With free entry, as is implied by the ‘authorisation procedure’ in the Directive, there will inevitably be a large number of potential projects that could be on-line in, say, five years, few of which are actually under construction. Generating companies will have a range of options that they can activate according to market conditions. Predicting whether there will be a shortage of capacity in such a situation would be impossible because it will not be possible to know what proportion of the projects will be activated. If the government were to identify a possible shortage of generation and commission construction of apparently sufficient new plant, this new capacity could be matched by retirement of existing plant that will be made uneconomic by the construction of new plant and any plant shortage would not be alleviated.

If generation and retail are separated, while this would make the industry more competitive, it would tend to lead to the conditions that resulted in the Californian crisis of 2001. In a de-integrated structure, generators have no responsibility to final consumers and would make better profits from the high prices that would result from power shortages. So there would be a positive disincentive on them to invest and an incentive to withdraw capacity from the market temporarily or permanently. Allowing integration of retail and generation would make give generators an incentive to ensure there was enough capacity for their consumers to be supplied reliably and affordably, but at the expense of competition.

The measures that would give greater assurance of capacity adequacy and price stability, such as restrictions on entry and exit, restrictions on bidding behaviour or allowing integration of generation and retail would so severely compromise the market as to make the assumption that the market would lead to efficiency unsustainable.

For gas, integration of production and retail are less likely. Gas production is likely to remain in the hands of the oil and gas majors, who have shown little inclination to integrate downstream into retail, except for the large consumer and power station markets, which are purely cost driven markets. There is a risk that retailers will contract conservatively for gas preferring to buy a relatively small amount of gas so that they are not left with ‘stranded’ supplies. This appears to be happening in the Italian market (see section 18.10.5) where in 2004, insufficient gas had been contracted, resulting in serious problems in meeting demand. Unless there is a central authority charged with ensuring enough gas has been contracted, it is difficult to see how this problem can be solved because in a free market, no single retailer has any responsibility to ensure security of supply. Any central planning would be at the expense of the market and would negate the major objective of the Gas Directive.

17.2. Will retail competition lead to a fair allocation of costs?

If the competitive model of electricity and gas is working as planned, retail competition should have little or no impact on prices. Charges for use of the network will be the same for all competing retailers, while if the wholesale market is competitive and transparent, the wholesale price should be very similar for all suppliers. In a monopoly market, the retail element of the bill, reading meters, sending bills etc, is typically less than 10 per cent of the total bill for residential consumers, so, if prices reflect costs, which they should do in an efficient market, there should be only minimal differences between the prices charged by the different suppliers.

However, if, as argued above, an efficient wholesale market cannot be created and there is no reliable reference wholesale price, the onus will fall on final consumers to impose competition on the companies by switching supplier to the cheapest option frequently enough to force suppliers to charge prices that reflect only their costs.

17.2.1. Social equity

While it plausible to assume that medium and large consumers will have the incentive and resources to negotiate low prices, there is absolutely no evidence that small consumers have the incentive to switch or the resources to identify the best deal. In most countries of the European Union with retail competition, switching rates are less than 5 per cent per year. In Britain, the market where retail competition seems to be working best judged by the criterion of switching rates, it is clear that consumers either cannot identify the cheapest deal or their criterion for choice of supplier is not price. Two thirds of consumers that have switched have moved to a company that has consistently been

amongst the most expensive suppliers. Whichever the case, the result will be that small consumers are exploited because of their lack of cost-sensitivity. Suppliers will offer their best prices to the cost-conscious large consumers. This behaviour has been clearly demonstrated in Britain where large consumers have seen price reductions at the expense of small consumers.

The group of consumers likely to do worst from this are poor consumers. In a free market, no company should be obliged to supply a particular set of consumers, nor are they required to offer cost-reflective prices. Competing companies will see little incentive to compete over poor consumers who may use little electricity, may have difficulty paying their bill and will be less likely to buy other products from their electricity supplier. As a result, even if regulation requires companies to offer a supply to any consumer asking for it, poor consumers will tend to be offered high prices.

Any regulatory measures that try to address these problems in a competitive structure, for example, by capping residential power prices or by requiring poor consumers to be served at non-discriminatory prices, are likely to compromise the market so much as to make the assumption of the efficiency of markets invalid.

17.2.2. Transaction costs

As with the wholesale market, the implicit assumption of the Commission is that retail competition is a free good. This is clearly not the case. The technical costs of switching (re-registering consumers) are high and, unfairly, must be borne mainly by the consumers that do not switch. There are also marketing costs, which are very high and again are spread across all consumers whether or not they switch. A comprehensive review of the costs of retail competition for electricity²⁶ found that each residential consumer is paying about £15-20 per year for the option of being able to switch, whether or not they took up the opportunity. The main costs are the cost of re-registering supplier and the marketing costs of the retailer. If, as the British regulator is encouraging consumers to do, more consumers switched, these costs would increase.

17.3. Is an oligopoly dominated by integrated generator-retailers inevitable?

With the Electricity Directive in its present form, there is intense pressure from the electricity industry to allow integration of retail and generation where it is not allowed. From a corporate point of view, an integrated structure is less competitive and therefore less risky. Owners of power stations will prefer to sell their power to a final consumer who is likely to switch rarely than to sell it to a spot market where the price and volume might change every 30 minutes. Policymakers will see, as was probably the case in Britain, that integration offers greater assurance of security of supply, albeit at the expense of competition. Vertical integration therefore seems inevitable.

There are also commercial 'synergies' with the gas industry and in most countries, the electricity and downstream gas industries are converging with most electricity companies now moving into gas supply either by taking over or merging with existing gas companies or competing for final gas consumers through 'dual fuel' offers.

The high costs and risks, even of imperfect markets strongly favours large companies, while many governments are reluctant to let such a key industry be taken over by foreign companies who cannot so easily be influenced and who will have less commitment than to their home market.

As a result, far from creating a large competitive field of companies, in most of the countries in Europe the Directive has resulted in markets dominated by one or two national champions and one or two of the handful of dominant international companies, often integrated into gas supply. Despite the obvious risks of such oligopolised markets, the Commission seems content to allow the industry to fall into a privately owned oligopoly in the complacent belief that it can deal with an oligopoly. Perhaps it also hopes that these large dominant companies will be successful outside Europe bringing additional revenue and profits back to Europe.

²⁶ D Maclaine (2004) Doctorate Thesis, SPRU, University of Sussex.

18. Consequences of the Directives and alternatives

18.1. Problems

Operation of the Directive has resulted in at least six significant problems that amendments to the Directive must address:

- The Directive does not allow national authorities to control entry and exit from the electricity industry and relies on market forces to ensure supply and demand match closely enough to guarantee security of supply. For gas, contracting for gas must be subject to public scrutiny to ensure adequacy of supplies. The evidence to date suggests that investment in the electricity sector will be highly cyclical leading to capacity shortages at times and wasteful capacity surpluses at other times. For gas, companies will not have the market security to make long-term purchases and the incentive will be to err on the low side to prevent any risk of being left with unsaleable gas;
- Opening the gas and electricity market to retail competition for all consumers opens small consumers to exploitation by the retailers because small consumers do not have the resources, the incentives and the negotiating power to ensure that they get as good a deal as large consumers;
- The Directive has led to serious loss of employment and loss of skills in the electricity industry and is likely to lead to a similar result in the gas industry as the impact of the Directive is felt. Without a flow of new recruits and training for existing employees to develop and strengthen their skills, the reliability of the network energy industries will be damaged;
- The adoption of incentive regulation and the corporate instability of the sector, with many companies subject to mergers and takeovers, often more than once, leads to a risk that the industry will be exploited for short-term profit at the expense of long-term supply security;
- Environmental objectives have become a much higher priority since the Directives were first conceived. Market forces alone will not allow objectives on reductions in, for example, greenhouse and acid gas emissions to be met. If low carbon generation is to be expanded, it will have to be given special protection in the market and as low carbon sources increasingly dominate new generation, there will be little scope for the market; and
- Lack of democracy in the sector. The replacement of public control and, in some cases, public ownership by market forces and private ownership has reduced the democratic control over a vital public service: in the Commission's jargon, a service of general economic interest. Regulatory bodies are seldom representative and are made up mainly of the business community rather than a broad church of business, trade unions, consumers and other interest groups.

18.2. Alternatives

18.2.1. Generation and gas supply adequacy

For the electricity generation and gas wholesale sectors, the Directive should be amended to require that accountable public authorities ensure that sufficient generating capacity is available and sufficient gas has been contracted. Such a duty is not compatible with free markets in electricity and gas, because in a free market, entry and exit cannot be controlled. The Single Buyer option for electricity, which existed in the 1996 Electricity Directive, albeit in a rather garbled and confused version, seems to offer a way of meeting such an obligation. Under the Single Buyer, competitive pressure on generators and gas wholesalers could still be exerted. For example, where new capacity or new gas supplies are required, there could be a competition to build the new capacity or contract for gas with the contract going to the company that offered the best terms. Existing generating capacity could be contracted for limited periods of time and would have to re-bid regularly to ensure the power supplied was produced at the lowest available cost.

18.2.2. Retail competition

Retail competition for small consumers clearly imposes more costs than could possibly be recovered by the operation of competition and it opens small consumers up to exploitation and higher than justifiable prices. The earlier versions of the Directives only required the retail markets to be opened for large consumers. The Directives should be amended to allow Member States to restrict retail competition to a third of the market, as under the first Electricity Directive. If retail competition for small consumers is not adopted, a properly regulated tariff must be introduced that does not allow the risk that small consumers would subsidise large consumers.

18.2.3. Skills and employment

The Commission needs to ensure that the detailed data on employment is collected to allow the situation for skills to be monitored, especially for the gas sector where data is particularly sparse. It needs to address low level of employment for women in the sector. It may also be necessary to revise the Directives placing responsibilities on companies to carry out training and to ensure that cost reductions are not carried out at the expense of the conditions of employment of the workers.

18.2.4. Network reliability

The regulatory regimes being introduced give strong corporate incentives for cost-cutting and puts pressure on regulators to impose cost reductions even where the long-term impact on reliability will be detrimental. A much better balance needs to be developed that still encourages companies to improve their efficiency, as they have done throughout the history of the electricity and gas industries, but requires companies to demonstrate that cost reductions will not adversely affect system reliability.

18.2.5. Sustainability

The Directive must acknowledge that much of the new generation investment (including demand side measures) in the electricity industry will be the result of public policy objectives, not market forces. The Single Buyer option is well suited to ensuring that small electricity generation sources, such as renewables and cogeneration are exploited to the optimal extent.

18.2.6. Democratic control

The role of the Regulator will be crucial in such a system. Most countries of the European Union now have well-resourced regulatory bodies, generally with a good level of competence in the sector. However, such regulators have seldom been selected on broad democratic criteria. They have generally drawn from a very narrow business-oriented community with a strong competition agenda. The regulatory bodies need to be opened up to much wider participation bringing representatives of the full range of interests, including environmentalists, consumer organisations and trade union representatives. Only in this way can they become the legitimate representatives of the public.

19. Annex 1: National Experiences: Western Europe

19.1. Austria

19.1.1. The Regulator

The regulatory body for electricity and gas, E-Control was set up in 2001.²⁷

19.1.2. The industry structure: electricity

Under Austrian law, electric utilities have to be at least 51 per cent publicly-owned although there have been political moves to relax or remove this restriction.

The Verbund is the largest company in Austria. It generates more than half of Austria's electricity, mostly from hydro-electric plants through its AHP-Verbund and ATP-Verbund subsidiaries. APG-Verbund operates and maintains most of the Austrian 220/380 kV high-voltage grid and parts of the 110 kV grid with the exception of the control areas of Tiroler Regelzone AG (TIRAG) and VKW Übertragungsnetz AG accounting for 80 per cent of transmission. The Verbund was part privatised in 1988, but 51 per cent of the shares are still owned by the Austrian government. Of the private holding, about 27 per cent is held by three regional utilities EVN, WienStrom and Tiwag. EnBW sold its 6.33 per cent share of the Verbund in November 2004. Most of the other main companies are locally owned, although several are forming alliances to become more competitive. EnergieAllianz is an alliance formed through the setting up of joint ventures between the regional energy suppliers EVN AG (10 per cent owned by EnBW), Wien Energie GmbH, Energie AG Oberösterreich, Burgenländische Elektrizitätswirtschafts-AG (Bewag) and Linz AG fuer Energie, Telekommunikation, Verkehr und Kommunale Dienste. Majority holdings in these companies are held by local or regional authorities.

A proposal was made in 2002 to create Energie Austria by merging the EnergieAllianz and the Verbund in a series of operational joint subsidiaries, creating a utility that would be amongst the ten largest in Europe and which would have about 80 per cent of the Austrian market. The generation subsidiary (two thirds owned by Verbund) including international trade and the subsidiary selling to large customers (two thirds owned by EnergieAllianz) would be the main elements. Small consumers would continue to be supplied by individual members of EnergieAllianz. The members of Energie Austria would have a combined market share of 53 per cent (59 per cent if market shares for cross holdings are included) in sales to final consumers. Energie Austria would parallel a similar organisation in gas, EconGas. The Regulator's, E-Control, Market Report for 2004 was pre-occupied with the impact of Energie Austria and EconGas. It stated:²⁸

‘At the same time, however, the part-merger of EVN AG, Wien Energie GmbH, Energie AG Oberösterreich, BEWAG, Linz AG and Verbund to form Energie Austria resulted in a marked reduction in the number of suppliers in the wholesale and large-scale consumer markets. As with the gas sector when EconGas was formed, the transaction significantly increased concentration in the upstream and retail electricity markets. There is now a fully horizontally and vertically integrated group in Austria, exercising considerable market power, in the shape of the line-up of Energieallianz, EconGas and Energie Austria.’

Negotiations were slow and the plans controversial because of the market power Energie Austria would have and the Verbund have seemed reluctant to complete the deal. A Cartel Office investigation found the merger would be an obstacle to competition but the Economic affairs minister Martin Bartenstein was pressing for conclusion to the negotiations in April 2005 by summer 2005. His priorities were the creation of a strong internationally-active wholesale organisation, Energie Austria and he saw Energie Austria as assurance that the country's hydro resources would remain under Austrian ownership.

The main foreign companies are RWE, EDF and GDF. RWE owns 49 per cent of the holding company (Kärntner Energieholding Beteiligungs GmbH) that owns 63.85 per cent of Kelag, an

²⁷ <http://www.e-control.at/>

²⁸ http://www.e-control.at/pls/econtrol/docs/FOLDER/INTERN/ADMINISTRATION/DATEIEN/PUBLIKATIONEN/MARKTBERICHT/EC_MB_04_ENGL_1502_KORR.PDF

electricity supplier in the province of Carinthia. EDF and GDF hold 20 per cent and 5 per cent blocking minority stakes in Energie Steiermark AG (ESTAG), the rest of the shares being held by the province of Styria. In February 2004, the supervisory board sacked the management board reportedly because they believed a bid for 49 per cent of the stock of the Graz municipal utility was over-priced. The future of EDF's holding is also in doubt because of the preparations for its part-privatisation.

19.1.3. The industry structure: gas

OMV is the dominant company for the wholesale and network parts of the business. In 2003, a new entity, EconGas was created to market gas. Its main shareholders are OMV (50 per cent), EVN (15.7 per cent), Wien Energie (15.7 per cent) and OOe Ferngas (15.55 per cent). In July 2005, EconGas announced plans to start selling gas in Germany and Italy. A number of the other suppliers are forming alliances to allow them to compete with Econ Gas. At the retail level, 12 out of 17 of the main electricity retailers also offer gas.

19.1.4. The electricity wholesale market and new generating capacity

The EXAA (Energy Exchange Austria) entered operation in March 2002.²⁹ In the week beginning April 9, 2005, the average daily volume on the EXAA spot market was 4400MWh, representing about 2 per cent of Austrian electricity demand. The Austrian electricity regulator, E-Control, estimated in its 2004 annual report that about 2.5 per cent of Austria's electricity demand was traded on EXAA. It seems that most Austrian companies use the Leipzig power exchange in Germany rather than EXAA.

There is very little new capacity under construction in Austria with 230MW of wind power at various stages of construction by BEWAG and a hydro plant of 450MW expected to be complete by 2008 built by Vorarlberger Illwerke and EnBW. It is not clear how this project will be affected by EnBW's withdrawal from Austria.

19.1.5. The gas wholesale market

The creation of a national gas market is not possible at present because of the lack of interconnections between the Tyrol and Vorarlberg and the rest of Austria (the Eastern control area). Gas can only enter Tyrol and Vorarlberg from Germany. OMV controls over 90 per cent of the available. A very limited gas release programme was introduced by the Regulator as a condition for allowing the creation of EconGas, but the amounts of gas involved are small. Two auctions had taken place over the two years to the end of 2004, but each auction only involved the equivalent of about 2 per cent of Austria's gas consumption and it was not clear whether the gas released would be sold in Austria. A hub exists at Baumgarten but the Regulator's annual report on competition reported that no turnover is yet being recorded on this market.

19.1.6. The retail market: electricity

The retail market was fully opened to competition in October 2001. However, the European Commission's 2005 Benchmarking Report stated that in 2003, only 1 per cent of small commercial and residential consumers switched supplier and since market opening in 2001, only 3 per cent had switched. E-Control reported in its 2004 Market Report that switching rates in 2004 were lower than in previous years. It stated that during the first two years of electricity liberalisation 1.5 per cent of all residential consumers switched, while almost all large consumers either changed suppliers or renegotiated their agreements. The report also said:

'the incumbents are making little effort to break into domestic markets outside their home territories. Shrinking advertising budgets, both in the electricity and the gas industry, likewise, point to a lack of commitment to expansion at home. Electricity and gas advertising is primarily aimed at image maintenance rather than informing consumers about product quality or prices. Heavy reliance on doorstep selling by new suppliers has also cut into their advertising expenditure. When marketing their product ranges to small consumers most energy companies are opting for a multiutility approach, at least as far as power and gas are concerned.'

²⁹ <http://www.exaa.at/cms>

‘The energy prices paid by both large and small electricity consumers have risen over the past year. Apart from higher wholesale prices and the increased cost burden imposed by the new Green Electricity Act, reduced competitive intensity probably played a part in the price rises.’

E-Control also reported:

‘wide differences in the margins between electricity purchasing and selling prices in the small consumer segment. While some companies’ energy charges are well above the wholesale price level, the margins of some nationwide suppliers are considerably tighter, if not negative. The rising wholesale prices seen over the past two years have resulted in a marked improvement in companies’ results – especially those of electricity companies with low generating costs.’

The high rate of ‘churn’ amongst large consumers and the large margin between electricity buying and selling price suggests that the inertia of small consumers is being exploited by the companies to increase their profits.

In April 2005, the Regulator announced reductions in grid rates of 12-15 per cent for Styria and an average of 11 per cent for Upper Austria from June. This may moderate pressure on consumer prices.

19.1.7. The retail market: gas

Retail competition for residential consumers was introduced in October 2002. The retail gas market suffers from many of the same problems as the electricity market, with very low annual switching rates (less than 1 per cent) and a dominant company, EconGas, which has 70 per cent of the market in the Eastern control area.

19.1.8. Investment, market abuses and market failures

Generation

The Austrian electricity system is heavily dependent on hydro-electric resources, which make up about half Austria’s generation. Price signals are heavily dependent on rainfall. High prices do not necessarily reflect a capacity shortage and, equally, low prices do not necessarily imply an underlying adequacy of capacity. For example, in August 2003, the Regulator reported: ‘energy capability factor for run-of-river power stations hit a historic monthly low of 0.62. In other words, only 62% of the power that would have been generated under average water flow conditions was actually being produced.’³⁰ This coincided with wholesale pressures in other countries of Europe, such as France. As a result, prices on the EXAA showed very high levels, peaking at €300/MWh in August compared to the annual average of €30/MWh, itself a 30 per cent increase on the previous year.

The network

The technical director of Verbund subsidiary, Austrian Power Grid, Heinz Kaupa, forecast in February 2005 that under current policies, blackouts in Austria were likely because the Austrian grid was not designed to deal with the power flows the competitive market was leading to. Kaupa reported “near blackouts” in 2005 when storms overtaxed high voltage lines necessitating unusual emergency measures to sustain grid functions. A particular problem was cross-border power flows to and from the new UCTE member countries to Austria’s north, east and south. In UCTE’s system adequacy report of 2005³¹ report noted the weakness of links between North and South Austria. This weakness is a problem because the North has a surplus of generation capacity while the South is short.

Final consumers

In September 2004, economic affairs minister Martin Bartenstein ordered E-control regulator Walter Boltz and federal cartel office chief Walter Barfuss to investigate suspicions of tariff collusion. The minister distrusted the industry generally and the EnergieAllianz members in particular, noting near simultaneous rate increases which he viewed as unjustified.

³⁰ E-control (2004) ‘Annual Report and Accounts’.

³¹ http://www.ucte.org/pdf/Publications/2005/SAF_2005-2015_final.pdf

19.2. Belgium

19.2.1. The Regulator

There is a national regulatory body, CREG³², and three regional bodies. VREG³³ covers the Flemish region, CWAPE³⁴ the Walloon region and IBGE-BIM³⁵ the Brussels region. The federal authorities are the competent body for electricity and natural gas tariffs, the high voltage electricity grid with a voltage of over 70 kilovolt (kV), the storage and transport of natural gas, the production of electricity (with the exception of the production of electricity from renewable energy sources and combined heat and power systems) and nuclear power. The regions are the competent bodies for the distribution of electricity via networks with a voltage of less than or equal to 70 kilovolt (kV), the distribution of natural gas, the production of electricity from renewable energy sources and combined heat and power systems, rational use of energy and social public service obligations.

19.2.2. The industry structure: electricity

The dominant company in Belgium is Electrabel. The ownership of this company is complex, but the largest shareholder, with 50.8 per cent of shares is Tractebel, the energy division of the Suez Lyonnaise (98 per cent owned by Suez Lyonnaise). 4.7 per cent of the shares are owned by municipalities and the rest of Electrabel's shares are traded on the stock market. Suez acquired its stake by taking over 60 per cent of Societe Generale Belgique in 1998. In August 2005, Suez launched a takeover bid for the 49 per cent of the shares it did not own and the takeover is expected to be completed in November 2005. Electrabel has interests in Italy through its joint venture with the Rome municipal company, ACEA, and through its share in a generation company, Interpower, spun off from ENEL in 2002, in France, Spain and Portugal through interests in generation plants. Its majority owner, Suez, has 57.2 per cent stakes in the Belgian gas company Distrigaz and the gas network company, Fluxys.

Electrabel owns over 85 per cent of the generation capacity in Belgium. Much of the rest (8.5 per cent) is held by the publicly owned company Société de Production d'Electricité (SPE). This company is controlled by a consortium of municipal companies. In October 2001, EDF agreed to take a 10 per cent stake in the company with an option to buy up to 49 per cent of the shares, but this deal was broken off in 2003 and in 2005, the French national gas company, GDF, and the British gas company, Centrica took a 51 per cent stake with the remainder staying in the hands of the municipal companies. A report commissioned from London Economics by CREG³⁶ on the generation market suggested that ideally Electrabel should be broken up so that there were seven or eight generators. However, it was acknowledged this was not feasible under Belgian expropriation laws and Electrabel stated they would not voluntarily break themselves up. London Economics recommended further auctions of existing capacity to encourage new entrants. This of course would only temporarily redistribute generating capacity rather than creating new capacity.

The distribution sector is controlled by about 30 local companies that are either 'pure' public companies, or 'mixed' companies jointly owned by municipalities and Electrabel. Electrabel supplies the largest consumers directly and this accounts for 41 per cent of the market, most of the market that was open to competition at the start of 2003. In practice, only 2-5 per cent of such consumers had switched away from Electrabel. The rest of the market (59 per cent) is supplied largely by municipal companies.

In 2001, there were eight independent municipally owned utilities 'intercommunales pures,' 16 utilities partially owned by Electrabel, 'intercommunales mixtes,' eight 'regies,' run directly by the relevant local authority and three private companies. Generally these companies supply gas and cable television in their franchise areas as well as electricity. The largest companies are the mixed companies, which supply about 85 per cent of the market not directly supplied by Electrabel. The

³² <http://www.creg.be/indexie6.html>

³³ <http://www.vreg.be/>

³⁴ <http://www.cwape.be/>

³⁵ <http://www.ibgebim.be/>

³⁶ Power in Europe, 25 October, 2004, p 3.

mixed companies also supply 85 per cent of the gas, 53 per cent of the cable television and 10 per cent of the water.

In January 2003, Electrabel was attempting to buy part of the electricity and gas retail supply businesses of five out of the six 'mixed' distributors in Flanders: Imewo, Gaselwest, Iveka, Intergem and Iverlek. This move was investigated by the European Commission, but it was referred back, on request by the Belgian authorities to Belgian competition authorities.

Under the Directive, the distribution system operators must be independent, both legally and in terms of management, from generators and retail suppliers. The municipalities will be majority shareholders in these distribution system operators (51 per cent to 70 per cent). However, Electrabel will continue to be responsible for network management. The distribution system operators must be independent from Electrabel. This activity will therefore be integrated into three separate regional subsidiaries. Three legal structures Electrabel Netmanagement Flanders, Electrabel Netmanagement Wallonia and Electrabel Netmanagement Brussels are being set into place to this end.

The three parts of Belgium, Flanders Brussels and Wallonia, are proceeding at a different rate towards opening the retail market, with Flanders opening to full retail competition in July 2003, but Wallonia not expected to open fully until 2007 and as a result there has been little corporate movement there yet in the retail sector.

The main development in Flanders has been the entry of the British company, Centrica, which formed a new company, Luminus, in partnership with the six 'pure' companies in the region in 2003, giving it 20 per cent of the retail market in Flanders. The network assets will continue to be managed by the original companies and are not part of the joint venture.

The transmission system is owned and operated by Elia, which is designated as the Belgian transmission system operator (TSO). This company was created in 2001 and was then owned by CPTe, a joint venture between Electrabel (91.5 per cent) and SPE (8.5 per cent). In 2002, 30 per cent of this company was bought by a consortium of municipalities, Publi-T. It is planned that CPTe will sell a further 40 per cent of the shares to the market, leaving 30 per cent with CPTe and Publi-T.

19.2.3. The industry structure: gas

The industry structure for gas is very similar to that for electricity, with one company, Distrigaz, dominating the wholesale part of the market, controlling more than 90 per cent of the available gas and a large number of local distribution companies, often responsible for both gas and electricity (see above). Distrigaz has split off its network activities into a new company Fluxys, but the majority shareholder with 63.5 per cent in both Fluxys and Distrigaz is the French company, Suez-Electrabel, the dominant Belgian electricity company.

19.2.4. The electricity wholesale market and new generating capacity

A spot market, BELPEX, is expected to be introduced in 2005. In the interim, auctions of some of Electrabel's capacity have taken place. In December 2003, the first auction took place when seven companies bought packages from 5MW to 100MW for periods of three months to a year.

There is little new capacity under construction in Belgium. A 385MW CCGT plant developed jointly by Electrabel and RWE was in testing phase in April 2005, 90MW of wind power developed by NUON was under construction for completion in 2006 and a 120MW gas-fired cogeneration plant for completion in 2005 was being built by Essent. A consortium known as C-Power has approval to build 216MW of off-shore wind power provisionally expected to be completed in 2007.

19.2.5. The gas wholesale market

Belgium has no indigenous gas production and imports its gas mainly from European producers. It also has an LNG terminal. There is a gas hub at Zeebrugge, but so far the liquidity is very low and the price signals are not reliable

19.2.6. The retail market: electricity

In Belgium in 2004 Electrabel accounted for 65.8 per cent of the retail market and the captive market for 17.3 per cent (residential consumers in Wallonia and Brussels). The new entrants were Luminus (7.6 per cent), RWE (2.9 per cent), Nuon (2 per cent), EDF (1.4 per cent), SPE (1.4 per cent) and others with 1.8 per cent. For gas, a similar picture emerged with Suez's Distrigaz supplied 50.2 per cent, Electrabel 24.3 per cent and the captive market was 12.9 per cent. The remaining 12.6 per cent supplied by non-Suez new entrants was split among Centrica affiliate Luminus (4 per cent), Gaz de France (GDF) (3.2 per cent), Germany's Wingas (2.2 per cent), BP (1.6 per cent) and others with 1.6 per cent.

In the Flemish region, which opened to full retail competition in March 2003, the Flemish Regulator reported that, by the end of March 2005, amongst residential consumers, only three companies, Electrabel (69 per cent), Luminus (19 per cent) and Nuon (7 per cent) had market shares greater than 3 per cent and that 11 per cent of consumers had changed supplier in the two years since market opening, 5 per cent in the previous 12 months.

For the Walloon region, the regulator, CWAPE, recommended in October 2004 that the market be fully open from July 1, 2005, but the Walloon government decided that opening should not be until January 1 2007. It said it needed time was needed to organise IT systems and install new metering.

19.2.7. The retail market: gas

As for electricity, the gas market is opening at different times in the three regions of Belgium. The Flemish region has been open to competition for all consumers since July 2003, and, according to the Flemish regulatory body, VREG, there were ten active suppliers in the region, including Luminus, GDF (France), and Essent and Nuon (Netherlands) as well as Belgian companies.

19.2.8. Investment, market abuses and market failures

Generation

Until the wholesale market is opened, it will be difficult to identify market abuses

Final consumers

The Flanders Regulator, VREG, warned consumers that companies were putting misleading pricing information on their web-sites, for example, basing calculations on proposals for reductions in local network tariffs that have not yet been approved by the federal regulator and failure fully to reflect recent energy price increases.

19.3. Britain

19.3.1. The Regulator

The Regulatory body for the British electricity industry (England, Wales and Scotland) is the Energy Markets Authority, which operates through the Office of Gas and Electricity Markets (Ofgem). This was produced from the merger of the gas (Ofgas) and electricity (Offer) regulatory bodies, established in 1986 and 1989 respectively, in 2001.³⁷

19.3.2. The industry structure: electricity

Since its privatisation in 1990, the British electricity sector has seen a huge amount of restructuring, in the generation, distribution and retail supply sectors. In 1990, there were three main generators, National Power, Powergen and Nuclear Electric; 12 regional distribution/retail supply companies; two fully integrated Scottish companies, Scottish Power and Scottish Hydro; and a transmission company covering England and Wales. The latter three companies are the only ones of the 18 companies created in 1990 to have survived as independent companies. The industry is now dominated by six companies with strong generation and retail supply businesses. These are: NPower, a successor company to National Power owned by RWE (Germany), Powergen (owned by E.ON of Germany), EDF (France), the two Scottish companies (Scottish Power and the successor to Scottish Hydro, Scottish & Southern Energy) and the retail division of the privatised gas company, Centrica, which trades in UK as British Gas.

There have been three major trends in the British electricity industry since 1990:

- Take-over of companies by foreign companies. Initially, US companies were the main purchasers, but most have left and much of the industry is owned by three mainland European companies;
- A split of the regional companies into separate distribution and retail supply companies; and
- Integration of retail supply companies into generation companies;

Of the twelve regional companies in England and Wales privatised in 1990, in seven cases, the distribution and retail businesses are under separate ownership. British regulation requires that owners of distribution and retail businesses make a full split between the two businesses in all aspects except ownership.

Table 36. Generating capacity in Britain

Company	Capacity (%)
British Energy	11558 (16)
Scottish & Southern	8555 (12)
Powergen (E.ON)	8037 (11)
NPower (RWE)	8035 (11)
Scottish Power	5927 (8)
EDF	4823 (7)
International Power	3723 (5)
Centrica	2878 (4)
BNFL	2668 (4)
Plant for sale	9426 (13)
Total capacity Britain	71867

Source: Department of Trade & Industry (2004) 'Digest of UK Energy Statistics', The Stationery Office, London, and author's calculations.

Note: Includes only plant larger than 1MW

NPower has taken over three retail supply businesses, Powergen has taken over three retail suppliers and one distributor and EDF has taken over three retail suppliers and three distributors. The two Scottish companies remain fully integrated in Scotland, but are likely to have to divest their transmission businesses. Scottish Power owns an English distribution/retail supply company, while

³⁷ <http://www.ofgem.gov.uk/ofgem/index.jsp>

Scottish Hydro has merged with an English distribution/supply company and has taken over a retail supply business and is now known as Scottish & Southern Energy (SSE). Scottish Power bought a large electric utility in the USA, PacifiCorp, but in 2005 it was in the process of selling it again. When this sale is completed, probably in early 2006, it is expected that Scottish Power will be taken over. E.ON is frequently mentioned as the most likely buyer, although a merger with SSE has also been mooted. In September 2005, E.ON acknowledged that it intended to bid for Scottish Power.

In September 2005, there was also speculation about a merger or takeover of Centrica, with Norsk Hydro, Gazprom, GDF and BG mentioned as possible bidders.

The six integrated generator/retailers own 53 per cent of the generating capacity in Britain (see Table 36). Of the remainder, 20 per cent is owned by the two nuclear companies (British Energy and BNFL) neither of which can play a significant role in price-setting, while a further 13 per cent is owned by companies trying to sell their plants. Much of the plant for sale is likely to be bought by the six integrated companies, so their grip on the market is much stronger than it appears at first sight and likely to get stronger.

19.3.3. The industry structure: gas

Up to 1986, the British gas industry was dominated by a nationally-owned *de facto* monopoly, British Gas. It was privatised intact and large users were given choice of supplier. However, British Gas's dominance over the market meant that few new entrants came in. However, since 1993, it has lost market share and has been progressively de-integrated into a number of entirely separate companies. In 1993, the British government required it to progressively reduce its market share in the industrial market and it was replaced largely by oil companies with North Sea production interests. It also required British Gas to make a fuller internal split between its network and its retail/wholesale activities.

From 1996-98, retail competition for small consumers was phased in and in 1997, British Gas decided to separate off its heavily loss making retail division. British Gas became BG plc and included the distribution and transmission network activities (Transco), the global oil and gas exploration & production business and foreign investments in gas utilities. Outside Britain, BG continued to trade as British Gas. The much smaller retail division, which had a small production division, but no network interests became Centrica although it was allowed to continue to trade as British Gas in Britain. It tried to develop as multi-service company including telecoms, banking, road-side vehicle recovery and electricity, but these activities have now largely been sold and Centrica is now primarily a gas and electricity retailer. Its main competitors in the household sector are the electricity retailers. The industrial market is dominated by oil companies and a few of the electricity retailers, while Centrica has only a small share of the market for large users.

In 2001, BG floated off the Transco network division as a separate company, Lattice but a year later, it merged with the National Grid Company to become National Grid Transco (NGT). The Regulator is requiring NGT to separate the distribution and transmission sectors. The distribution network was split into eight regional businesses and in June 2004, four of these were sold. The Scottish and the South of England distribution networks were sold to a consortium known as Scotia Gas Networks led by Scottish and Southern Energy in partnership with the Ontario Teachers Pension Plan and Borealis Infrastructure Management. The Wales and West distribution network was sold to a consortium known as MGN Gas Networks led by the Australian based Macquarie European Infrastructure Fund. The North of England distribution network was sold to a consortium known as Northern Gas Networks (NGN) led by the Hong Kong based Cheung Kong Infrastructure Holdings Led and including United Utilities, the company that owns the North East England electricity network. NGT will retain the distribution networks in London, Eastern England, the West Midlands, and the Northwest.

Overall, the electricity and gas retail businesses are converging at all levels except production.

19.3.4. The electricity wholesale market

A pool-type market, the Power Pool, operated from 1990-2001 in England & Wales and was then superseded by the New Electricity Trading Arrangements (NETA). Part of the NETA arrangements is

a spot market operated by UKPX, a subsidiary of the APX group.³⁸ No market existed in Scotland until April 1, 2005, when the NETA arrangements were expanded to include Scotland as the British Electricity Transmission and Trading Arrangements (BETTA).

Under the Pool, all generators wishing to operate their power plants had to submit a successful bid to the Pool for every 30 minute period. The bids were sorted by price and the cheapest ones chosen until demand was satisfied. The Pool price was set by the highest successful bidder and was paid to all successful bids. Retailers were required to buy all their requirements from the Pool and paid the Pool price (plus the cost of ancillary services). However, there were no restrictions on bilateral contracts between generators and retailers, which could effectively mean the Pool price was irrelevant to them. Under a contract for differences, the difference between the Pool price and the contract price would be reimbursed between the two parties and, while both generator and retailer would nominally have to go through the Pool to buy and sell power, they were indifferent to the Pool price.

There were consistent abuses of the wholesale market under the Power Pool. The initial structure of just two competing generators, combined with a poor design of market, especially a capacity payment mechanism that was easy to manipulate was a particular problem. As a result of price manipulation, in 1994, the Regulator required these two generators to sell 6000MW of their plant to reduce their market share. He also required them to ensure that the Pool price remained on average at or below a specified level for the following two years.³⁹ When the government's 'Golden Shares' in the regional companies expired in 1995, the two large generators tried to buy regional distributor/retailers but were prevented by the government. Dissatisfaction with the results of the Pool continued and in 1997, the government, in agreement with the Regulator announced the abandonment of the Pool and preparations to introduce a new form of market began. It is not possible to estimate precisely what proportion of electricity sales actually took place at Pool or Pool-related terms, but it seems likely it was less than 5 per cent.

The government and the Regulator decided to replace the Pool by a new market design based around an optional spot market, NETA. The introduction of this market was delayed by practical difficulties and it did not enter into operation until 2001. The government expected that no more than about 10 per cent of wholesale trades would take place in the daily spot market. In fact, the figure is much lower than this, and usually about 1 per cent of electricity consumption is accounted for by spot market trades. It is not clear how the European Commission derives its estimate of about 10 per cent of power being traded in the power exchange. With such minimal liquidity, the spot price is clearly unlikely to offer meaningful price signals for investment in new generating capacity.

Pressure for the two large generators to be able to integrate into retail intensified and in 1998, the government gave way allowing them to buy existing regional retail businesses. The 'price' for this was that they had to sell a further 8000MW to third parties to further reduce their market power.

The Regulator's dissatisfaction with the conduct of the generators during the period that NETA was being developed continued and in January 2000, he proposed a modification to the licenses of the eight main generation companies. This clause, the Market Abuse Limitation Clause (MALC), would oblige generators to undertake not to indulge in 'abuse of substantial market power in the setting of wholesale electricity prices'. Six of the eight companies targeted agreed to this clause, but two, the US company AES and the privatised British nuclear company, British Energy, were unwilling and asked, as is their right when their licenses are amended, for a Competition Commission Inquiry to adjudicate whether the new clause was justified. While the Competition Commission was carrying out its inquiry, the Regulator used the clause in July 2000, to oblige a generator, Edison Mission, to return a 500MW generating unit to service that it had mothballed in March of that year. The Regulator argued that the withdrawal of the plant had forced up the Pool price by 10 per cent.

Following the introduction of NETA, the apparent wholesale market price of electricity fell by about 40 per cent. As a result, all the generators that were not integrated into retail fell into severe financial

³⁸ <http://www.ukpx.co.uk/>

³⁹ S Thomas (1996) 'The development of competition' in ed J Surrey 'The British electricity experiment: Privatisation, the record, the issues, the lessons' Earthscan.

difficulties and at one point, about 40 per cent of generating capacity was owned by companies that were financially distressed. Only one significant independent generator, the privatised nuclear company, British Energy, survived albeit with major government subsidies and support. There is no evidence that the integrated companies manipulated the spot price to force the independent generators out of the market in 2002, but they would clearly have been happy with the result. Since then, most of the plant owned by independents has been bought by the integrated companies and the spot price has risen sharply.

At the beginning of April, the BETTA arrangements were introduced and while there were no major problems, it is too early to tell whether they will have a significant impact. The Government does not expect dramatic benefits, indeed, the higher transmission charges that will result for Scottish generators may inhibit development of renewables.

19.3.5. The gas wholesale market

The New Gas Trading Arrangements, the gas wholesale market was the model for the electricity wholesale market (NETA/BETTA). The market is said to be the only liquid gas wholesale market in Europe, but details of the prices and volumes bought and sold in each of its parts are difficult to obtain.

19.3.6. New generating capacity

The situation with new capacity is particularly difficult to evaluate. Power UK⁴⁰ lists about 300 generation projects of significant size that have been announced by the developers, but only about 20 per cent of these have planning approval and on only about 5 per cent has construction started so there is huge uncertainty about the amount of capacity likely to come on-line in the next 5-10 years (see Table 37). About a third of the capacity will be categorised as ‘renewable’ (mainly off-shore and on-shore wind) and will not have to compete in the market.

Table 37. New generation in Britain - MW (no of plants)

	Commissioned 1/1/2004-1/1/2005	Under construction	Approved	Total
On-shore wind	175 (3)	398 (8)	624 (23)	1197 (34)
Off-shore wind	120 (2)		857 (8)	977 (10)
Biomass/waste		44(1)	169 (8)	213 (9)
Gas	1723 (4)		3588 (6)	5311 (10)
TOTAL	2018	442	5238	7698

Source: Power UK, January 2005.

About 2000MW of new capacity was completed in 2004 largely accounted for by two large, long-standing gas-fired plants (1620MW) finally being completed. Very little plant is under construction. Much of the ‘approved’ capacity awaiting construction start is accounted for by five large gas-fired plants with a total capacity of 3570MW. Increases in gas prices and the difficulty of getting power purchase contracts have reduced the incentive to build these plants. Whether or not there is a surplus or shortage of capacity will depend largely when if at all these plants are built.

This situation illustrates the lack of realism in the Directive’s requirements on governments to monitor the adequacy of generating capacity. Paragraph 23 of the preamble states:

‘In the interest of security of supply, the supply/demand balance in individual Member States should be monitored, and monitoring should be followed by a report on the situation at Community level, taking account of interconnection capacity between areas. Such monitoring should be carried out sufficiently early to enable appropriate measures to be taken if security of supply is compromised.’

If we assume that governments need to look five years forward to allow ‘appropriate measures to be taken’, any authority would see that by 2010, only 442MW of new capacity is reasonably certain of being added. However, at least 5.2GW of capacity plus any projects that have applied for planning permission and receive it soon enough to be on-line by 2010. So anywhere between 0.5GW and, say

⁴⁰ Power UK, January 2005.

7.5GW of new plant could be added by 2010, at the lower end probably leading to a plant shortage and at the upper end a plant surplus.

19.3.7. New gas supplies

Britain is in the midst of a transition away from self-sufficiency in natural gas to being a major importer of gas as production from its gas fields declines. In 1998, the first trading connection between Britain and mainland Europe (landing at Zeebrugge, Belgium) was completed and links to Norway and the Netherlands have been strengthened subsequently. However, the main increase in import capacity in the next few years seems likely to come from new liquefied natural gas (LNG) terminals.

A new terminal owned by NGT on the Isle of Grain (Thames Estuary) was opened in July 2005, while two new terminals both sited at Milford Haven (South Wales) are expected on-line in 2007. The Dragon terminal at Milford Haven is being developed by a consortium of BG, Petroplus (Netherlands) and Petronas (Malaysia). The South Hook terminal at Milford Haven is being developed by Qatar Petroleum and Exxon and could be the largest LNG terminal in the world if expansion plans are carried through. A fourth terminal at Canvey Island (Thames Estuary) that would come on-line around 2010 is also being discussed. By 2012, Britain could receive about 40 per cent of its gas as LNG.

19.3.8. The retail market: electricity

For retail supply, the 14 privatised businesses are in the hands of just five companies. The only significant new entrant to the sector has been Centrica (trading as British Gas), which has a market share of about 25 per cent in the residential part of the market. The apparently high switching rate, estimated as 22 per cent for small and residential consumers in 2003 is the highest reported amongst the Member States and is one of only two countries to exceed the level of 15-20 per cent switching that the Commission regards as necessary for a well functioning market.⁴¹ However, more detailed examination of the experience in Britain reveals at least seven major problems:

1. High prices for residential consumers, especially the poor, compared to industrial consumers;
2. Unethical selling practices;
3. High cost of switching;
4. Logistical problems for consumers trying to switch;
5. Use of demand profiling rather than electronic meters;
6. Inability of small consumers to identify the cheapest supplier; and
7. Switching seems to be reaching a plateau.

1. High prices for residential consumers especially poor consumers

From 1990-98, small consumers remained captive to their local retailer, while large and medium (from 1994 onwards) consumers were able to choose supplier. It became clear in 1998 that the price reductions received by large consumers were largely at the expense of small consumers. The Regulator published data showing that retailers were systematically allocating their expensive wholesale power purchases to the captive market and their cheap power purchases to the competitive market. The impact of this segmentation of contracts was that small consumers were paying 30 per cent more for the generation element of their bill than large consumers.⁴² If generation cost had been equalised over all consumers, prices for small consumers would have come down by about 7.5 per cent.

The Regulator claimed that the introduction of competition for all consumers would prevent this exploitation because small consumers would switch to the cheapest supplier forcing companies to

⁴¹ The Commission shows Norway and Belgium as having annual switching rates greater than 15 per cent but since only one region of Belgium is open for competition for small consumers, Belgium must be discounted.

⁴² Other elements of the electricity bill such as distribution and the retailer's costs would, legitimately, be higher for residential consumers than for large consumers, but the cost to generate a kWh is the same whether it is for a small consumer or an aluminium smelter.

offer competitive prices. However, it actually made the relative position of small consumers worse. The National Audit Office in an investigation into NETA found:⁴³

‘Prices paid by industrial and commercial customers have fallen sharply since NETA was implemented. Consumers who switch supplier can see substantial reductions. However, prices that domestic consumers pay for electricity have not fallen much since NETA was implemented, although they have fallen broadly in line with the trend in suppliers' overall costs since 1998. The prices that industrial and commercial consumers pay for electricity have fallen by 18 per cent since the start of NETA, and by 30 per cent since April 1998. Prices for domestic consumers have fallen little since the start of NETA but by 8-17 per cent since April 1998, reflecting the much higher costs of supplying domestic consumers which have been rising due to new environmental costs and the substantial costs of processing changes of supplier.’

Since retail prices are now unregulated, the suppliers charge what the market will bear, and clearly, residential consumers, for whom electricity is often only a small part of their expenditure and who have little confidence in their ability to play the market to their advantage, will bear higher prices than large consumers.

However, for about 15 per cent of the population, energy purchase is a major element of their expenditure. About 15 per cent of the UK population suffer fuel poverty, in other words, they spend more than 10 per cent of their disposable income on energy. Such consumers often have difficulty paying their bill and in the early 1990s, consumers that had difficulty paying their bill had little option but to pay by pre-payment meters (PPMs). About 15 per cent of the population pay for their power using PPMs. While electricity tariffs were regulated, the Regulator could control tariffs so that such consumers were not disadvantaged. However, competing retailers are unlikely to find such consumers attractive to compete for and, now tariffs are unregulated, retailers can charge a premium rate for PPMs.

Table 38. Energy prices for consumers in London (May 2005)

	Direct Debit	Standard credit	PPM gas	PPM electricity	PPM total
British Gas (Centrica)	587	640	402	267	669
London Electric EDF	586	628	381	272	653
Npower (RWE)	556	598	404	300	704
Powergen (E.ON)	565 (525)	586	381	260	641
Scottish Power	569 (500)	603	366	262	628
Scottish & Southern	588	621	398	264	662
Average	575	612	389	271	660

Source: http://www.energywatch.org.uk/help_and_advice/saving_money/

Notes

1. Assumes annual consumption of 3,300kWh of electricity and 20,500kWh of gas.
2. Dual fuel offers are not available for PPM consumers.
3. Figures in brackets are for internet only consumers. Internet terms are not available for standard credit or pre-payment meter consumers.

In May 2005, for consumers in London (assuming an average level of consumption), all six major suppliers offered their lowest prices for Direct Debit (DD) consumers - likely to be the richest consumers - buying a ‘dual-fuel’ package of gas and electricity (see Table 38). The best deals were only open to consumers who signed up through the internet. Standard credit consumers buying a dual fuel package (who pay quarterly in arrears) paid on average 6 per cent more than DD consumers, while PPM consumers paid on average about 15 per cent more than DD consumers and about 8 per cent more than standard credit consumers. In the worst case, NPower (RWE) charged PPM consumers

⁴³ National Audit Office (2003) ‘The New Electricity Trading Arrangements in England and Wales’ Report by the Comptroller and Auditor General HC 624 Session 2002-2003: 9 May 2003

25 per cent more than it charged DD consumers. There is no evidence that these higher charges reflect higher costs.

If we look at the picture nationally (See Table 39), focusing on dual fuel offers paying by Direct Debit, it is clear that the incumbents for gas and electricity, British Gas and the local electricity company, are invariably expensive suppliers. Scottish & Southern and British Gas were expensive in all regions in May 2005, but the other four major suppliers are all cheapest supplier in at least three regions. Internet offers (only available for Direct Debit consumers) are invariably about 10 per cent cheaper than the next cheapest offer, again reinforcing the impression that the companies are targeting the richer consumers. Scottish Power acknowledged this policy when it announced it would be targeting 'profitable' customers.⁴⁴

Table 39. Dual fuel offers in Britain (May 2005)

Region	Cheapest	Internet	Most expensive	British Gas	Incumbent
London (EDF)	556 (RWE)	500 (SP)	588 (SSE)	587	586
Seaboard (EDF)	551 (RWE/E.ON)	500 (SP)	582 (SSE)	581	579
SWEB (EDF)	579 (RWE)	528 (SP)	606 (BGT)	606	604
Scottish Power (SP)	589 (E.ON)	536 (E.ON)	613 (SSE)	604	601
Manweb (SP)	550 (EDF)	505 (SP)	580 (BGT)	580	558
North Scotland (SSE)	583 (E.ON)	524 (SP)	620 (SSE)	596	620
Southern (SSE)	558 (SP)	515 (SP)	611 (SSE)	590	611
SWALEC (SSE)	591 (SP)	542 (SP)	636 (SSE)	626	636
NORWEB (E.ON)	550 (EDF)	509 (SP)	580 (BGT)	580	563
E Midlands (E.ON)	544 (RWE)	499 (SP)	573 (BGT)	573	566
Eastern (E.ON)	543 (RWE)	496 (SP)	573 (BGT)	573	555
Midlands (RWE)	559 (SP)	506 (SP)	583 (SSE)	580	573
Yorkshire (RWE)	554 (EDF)	504 (SP)	583 (BGT)	583	570
Northern (RWE)	553 (EDF)	504 (SP)	594 (SSE)	588	584
Average	561	512	594	589	586

Source: http://www.energywatch.org.uk/help_and_advice/saving_money/

Notes

1. Assumes annual consumption of 3,300kWh of electricity and 20,500kWh of gas.
2. All offers are dual fuel offers paying by Direct Debit.
3. SP = Scottish Power, SSE = Scottish & Southern Energy, BGT = British Gas Trading/Centrica.
4. The 'incumbent' is the previous home electricity supplier.

2. Unethical selling practices

Since the opening of the retail market for small consumers, there have been continual cases of companies being fined by the Regulator for mis-selling. For example, 'slamming' (changing a consumer's supplier without their consent) or preventing consumers from switching has been common. In 2004, Powergen (E.ON) was fined £700,000 for unfair practices and Scottish Power and NPower (RWE) were both fined £200,000 for mis-selling. Although this is fewer fines than in previous years, this probably reflects the fact that most companies are now no longer competing strongly to attract new residential consumers and are no longer employing the door-step selling that led to many of these problems to as great an extent as previously.

3. High cost of switching

Under the Directive, companies cannot charge consumers directly for switching (Annex A)⁴⁵. Of course, this does not mean that there is no cost and in practice, the cost is borne by all consumers. Ironically, the costs incurred by the small number of consumers that do switch generally to find a cheaper supplier are borne primarily by those that do not switch and who gain no benefit. This might

⁴⁴ Birmingham Post, August 11, 2005, p 23.

⁴⁵ Annex A states: '(Consumers) shall not be charged for changing supplier.'

stimulate the market but it goes against the laws of economics, which say that the prices consumers pay should reflect the costs they incur.

Maclaine,⁴⁶ in the only attempt to systematically estimate the total cost of switching found that the total cost paid by residential consumers was about £430m per year or more than £16-17 per consumer in 2002, assuming a switching rate of 20 per cent per year. This included:

- £121m for capital and operating costs of the switching systems;
- £100m for trouble-shooting for solving problems experience in switching suppliers (at least 1 in 100 transfers go wrong);
- £126m acquisition costs, for example, through door-step selling, advertising etc;
- £83m in customer costs. While consumers are not charge directly for switching, they must spend their own time searching, filling in forms etc.

If we look at Table 23, it is clear few consumers would be able to recoup these extra costs by switching. These costs are now clearly reflected in bills. In 1991, when consumers were captive to their local supplier, the Regulator estimated that 5 per cent of consumers' bills were accounted for by retail suppliers' costs. Now the figure is 30 per cent. If we assume that an average bill is £250 per year, the additional supplier's costs would amount to about £60, so the costs estimated above would appear, if anything, to be an underestimate.

In May the British energy minister, Brian Wilson, said: "The benefits of price falls must not be restricted to those who switch, not least because if everyone starts to switch, the costs of administering this will outstrip the savings."

4. Logistical problems of switching

As noted above, a significant proportion of transfers go wrong. Since those estimates were made in 2002, the problems appear to have got worse and in the year ending September 30, 2004, the auditors Pricewaterhousecoopers found the problems had increased by 25 per cent in the systems that make retail competition work.⁴⁷ The volume of non-significant errors increased from six million to approximately eight million. So it does not seem that the problems, which are still occurring six years after competition was introduced, can simply be dismissed as teething problems.

5. Use of demand profiling rather than electronic meters

When retail competition was introduced in Britain for small consumers, the Regulator was optimistic that electronic meters would become economically feasible for residential consumers. Such meters would allow consumers' consumption to be read every 30 minutes rather than every three months so that each retail supplier's demand for wholesale power could be estimated accurately for each settlement period of the wholesale market. It would also allow consumers to receive price signals so they could reduce consumption at times when prices were high.

This proved unrealistic and, as with every other country that has introduced retail competition for residential consumers, demand profiling was adopted to allocate each three months' of consumption to each 30 minute period. Demand profiling assumes that small consumers' demand patterns follow standard curves. Whilst this method is cheaper than electronic meters, it is unsatisfactory because it is no more than a guess and does not allow price signals to be passed on to consumers.

6. Inability of small consumers to identify the cheapest supplier

The Commission's and the British Regulator's assumption is that when consumers switch, they move to the cheapest supplier. This is clearly not true. In April 2004, Ofgem found that by the end of 2003, 39 per cent of electricity consumers were no longer with their incumbent supplier. At that time, Centrica (trading as British Gas), offering electricity as part of a dual fuel package had gained a market share in electricity of nearly 25 per cent in the residential sector, accounting for about two thirds of the switchers. This is despite the fact that in all regions of Britain, it had been consistently

⁴⁶ D Maclaine (2004) Doctorate Thesis, SPRU, University of Sussex.

⁴⁷ 'BSC Auditor's Report for the year ended 30 September, 2004' by Pricewaterhousecoopers.

amongst the most expensive, if not the most expensive supplier (taking the price of the package as a whole).

In a detailed behavioural study, Waddams-Price found that, amongst a sample of about 400 consumers who switched supplier, 42 per cent of those switching ended up paying more, 14 per cent were paying the same, while only 44 per cent actually made savings.⁴⁸ These figures should be seen in the light of the reasons consumers express for switching. Ofgem found in 2004, that 65 per cent of consumers that switched said that their main motivation was cost-saving.⁴⁹

7. Switching seems to be reaching a plateau.

In the two years after retail competition was introduced to May 2001, net switching (that is, consumers no longer with their local supplier) reached about 27 per cent but in the following two and a half years to October 2003, only 12 per cent more consumers switched. In the year to October 2003, the net switching percentage increased by only 4 percentage points. This suggests that, perhaps 60 per cent of consumers will never switch. These consumers will be highly profitable because they will not be price sensitive. The incentive to target the 'switchers', who are likely to switch again long before the costs of acquiring them have been paid off, will be low and it seems likely that marketing and promotion activity will decline.

19.3.9. The retail market: gas

For residential consumers, the gas and electricity markets have essentially merged with all significant retail suppliers offering gas and electricity, generally as a 'dual fuel package'. The problems raised are discussed in detail in the previous section.

19.3.10. The electricity network

The most important factor behind the price reductions from 1990-2002 accounting for about two thirds of the 30 per cent real reductions that small consumers experienced in that time (nearly all the rest was accounted for by the removal of a nuclear subsidy in 1996) was reductions in network charges. These price reductions were primarily possible because the industry was privatised for only a small fraction of its accounting value in 1990. Effectively this mean that the asset base was reduced by about two thirds overnight and as network charges were set on a rate-of-return on assets basis from 1995 onwards, this led to large price reductions over the following five years, for example of about 45 per cent for distribution and about 30 per cent for transmission. These price reductions are of course only temporary and prices will have to rise again as the written down assets are replaced by new assets purchased at full cost.

A report by the House of Commons Trade & Industry Committee⁵⁰ found 'there is a danger that there is currently insufficient investment in the network to replace in a planned and orderly way equipment which is reaching the end of its life.' As a result, it is expected that capital expenditure by network owners would double, raising prices to consumers by £1bn per year. The Chair of the Committee said 'the supply system had been "gold-plated" before privatisation but companies had been living off that cushion for too long.'⁵¹

A blackout occurred on August 28 in London during the evening rush-hour at 18.10. It lasted only 30 minutes but trapped about 250,000 commuters in the subway and rail services. The immediate cause appears to have been the installation of an incorrect fuse at a sub-station.

⁴⁸ Waddams-Price, C (2004) 'Spoilt for Choice? The Costs and Benefits of Opening UK Residential Energy Markets'. CCR Working Paper 04-1. Also published as [University of California Energy Institute Working Paper CSEM WP-123](#)

⁴⁹ Ofgem (2004) 'Domestic competitive market review', Ofgem, London.

⁵⁰ House of Commons Trade and Industry Committee (2004) 'Resilience of the National Electricity Network' Third Report of Session 2003-04 HC 69-1.

⁵¹ Guardian 'Electricity users may face £1bn penalty', 11 March 2004.

19.3.11. The gas network

As with electricity, a major element of the reductions in the price of gas that took place in the ten years from about 1992 were the result of the low sale price for British Gas, and as with electricity, these price reductions will be temporary and were paid for by tax-payers/gas consumers whose asset was sold at significantly less than the asset value. The gas network was entirely in the hands of one company until 2004. It remains to be seen how good the performance of the new owners of the distribution network will be.

In August 2005, Transco was fined £15m for its failure to replace corroded pipes to a house in Scotland, which led to an explosion that killed four members of a family. The fine is the largest ever in Britain for health and safety offences.⁵² Transco (through NGT) no longer owns the Scottish gas distribution network.

⁵² Guardian 'Transco fined £15m for gas pipe error that killed family' August 26, p 2.

19.4. Denmark

19.4.1. The Regulator

The Danish Energy Regulatory Authority (Energitilsynet)⁵³ was established in 2000 and covers electricity and gas.

19.4.2. The industry structure: electricity

Denmark comprises two separate electrical systems of comparable size but with no direct connection. The Western part of the system, Jutland and Fyn, is synchronised to the UCTE system that covers most of Europe including Germany and France, while the Eastern part, the Island of Zealand, is synchronised to the Nordel system that includes the Scandinavian countries. There are DC links between the West and Sweden and between the East and Germany that allow both parts of Denmark to trade in both the UCTE and Nordel systems. The sector has historically been almost fully owned by local authorities. For generation and transmission, the western part of the country was dominated by Elsam while the east was dominated by Elkraft, which were both not-for-profit co-operatives. Elsam became a public company in 2000, but the shares are still held by the 60 grid companies in the region. There has been a great deal of consolidation in generation and two companies, Energi E2 (4700MW) and Elsam (4000MW) now dominate the market.

Elsam has moved into eastern Denmark taking an 87 per cent stake in the largest distributor, NESAs, which has a 36 per cent stake Denmark's second largest generator Energi E2. In 2004, DONG, the nationally owned Danish natural gas company emerged as a potentially important new entrant into the electricity sector. It was competing with Vattenfall to take over or merge with Elsam and held a 24 per cent stake in Elsam by February 2005. Vattenfall had secured a 35 per cent stake in the company. The Danish Finance Minister, Thor Pedersen, was reported to support the DONG bid on the grounds that a 'domestic solution' was preferable to an 'international solution' and that 'It is a strange point of view that it would be of interest to let the Swedish state control Danish power production,'. How far this was on supply security and how far this was on national champion grounds is not clear. In June 2005, Vattenfall and DONG reached an agreement under which DONG would buy out Vattenfall paying for its shares with some of Elsam's assets, including some power plants. These included about 2GW of fossil-fuel plants, about 300MW of wind power and some international wind projects. In May 2005, Elsam chief executive Peter Hostgaard-Jensen has resigned in protest at the planned division of assets.

DONG also announced in February 2005, an agreement with the City of Copenhagen to purchase multi-utility Kobenhavns Energi's electricity activities and, under a further conditional agreement, said it would also buy Kobenhavns Energi's 34 per cent stake in Energi E2. DONG agreed to buy a further 6 per cent equity in Energi E2 from a number of Danish municipalities. It also held the balance of the shares (13 per cent) in NESAs.

The TSO function has been separated as Eltra for the west, Eltra being owned by the 44 distribution companies in its region. Elkraft Transmission owns the system for the east with Elkraft System as the system operator. From 1 January 2005, the two Danish system operators in the electricity area (Elkraft System and Eltra) and the system operator in the gas area (Gastras) were merged to form a state-owned company, Energinet.dk.

19.4.3. The industry structure: gas

The dominant company is the state-owned company, DONG, which controls about 85 per cent of the available gas, while the top three retailers account for 65 per cent of the market. From 1 January 2005, the two Danish system operators in the electricity area (Elkraft System and Eltra) and the system operator in the gas area (Gastras) were merged to form a state-owned company, Energinet.dk.

19.4.4. The electricity wholesale market and new generating capacity

Denmark has been a member of Nord Pool since 1999.⁵⁴ However, because Western Denmark is not synchronously connected to the Nordel system, it contributes relatively little to the market about 5 per

⁵³ <http://www.energitilsynet.dk/>

⁵⁴ <http://www.nordpool.com/>

cent of Nord Pool spot market turnover is for Western Denmark. For a fuller assessment of the Nord Pool, see section 6.

No large new plants are under construction and the only significant project is a government organised call for tender for two blocs each of 200MW of off-shore wind. Those tendering include Elsam and E2. Further calls for tender for off-shore wind are expected in late 2005.

19.4.5. The gas wholesale market

There is no significant wholesale market for natural gas, although a gas release programme was agreed in 2003 which was expected to see about 7bcm of gas released over a five-year period from 2005 onwards (equivalent to about a quarter of Denmark's annual needs. It remains to be seen how far this will stimulate competition.

19.4.6. The retail market: electricity

From January 1, 2003, all consumers in Denmark have been able to choose their electricity supplier. In 1999, there were 78 retail suppliers, with the three largest, NESA, Kobenhavns Energi, and SEAS, accounting for about a third of the market.

The Benchmarking Report shows that 5 per cent of small and residential consumers switched in 2003, while the Danish national statistics⁵⁵ show that only about 2 per cent of residential consumers switched in 2003.

19.4.7. The retail market: gas

From 1 January 2004, all customers have been free to choose their natural gas supplier. The Regulator estimated that only 4 per cent of small gas consumers switched supplier in 2004.

⁵⁵ www.danskenergi.dk

19.5. Finland

19.5.1. The Regulator

The Energy Market Authority, EMA, (*Energiamarkkinavirasto*)⁵⁶ was set up in 1995 and was expanded to cover gas as well as electricity in 2000. However, until the new Directives were introduced, it had been a very small body operating *ex post*. It did not set network tariffs, but only became involved if there was a formal objection. For the future, it will set the network tariffs and this will require a significant increase in capability.

19.5.2. The industry structure: electricity

The generation structure is unusual in Finland, comprising essentially two parallel but connected systems, one supplying the public system and the other supplying a 'club' of industrial consumers. The largest company is Fortum. This was formed from the merger in 1998 of the state-owned electricity company, Imatran Voima Oy (IVO), and the state-owned oil and gas company Neste. It has been part-privatised and in June 2005, the government sold a further 7.2 per cent of the shares to reduce its holding to 51.7 per cent. The Neste oil company is now being spun-off again by distributing shares to the shareholders of Fortum.

There are about 120 companies involved in electricity generation, but much the largest is Fortum with about 40 per cent of capacity. Industrial consumers own most of Pohjolan Voima (PVO), the second largest generator with about 20 per cent of capacity and industry also directly owns a significant amount of generation. PVO is a not-for-profit organisation that sells electricity to its shareholders so plays only a limited role in the market.

In retail, there are about 100 companies selling electricity but since liberalisation in 1997, there has been considerable merger and takeover activity with Fortum and Vattenfall moving into the sector buying local companies. Only 14 companies have more than 50,000 customers. The company for Helsinki, Helsinki Energy, which is owned by the city of Helsinki, is also a significant generator is one of the largest distribution companies. Vattenfall began to move into Finland from 1995 onwards. In 1995, it acquired two regional electricity companies, a further two were acquired in 1999, and two more in 2000. It has 350,000 customers, a market share of about 15 per cent. Two other companies, TXU (USA) and E.ON have been significant in Finland. TXU owned some generation through taking a 14.7 per cent stake in PVO and traded on the Nord Pool but its European operations collapsed in 2002 and its generation in Finland was sold back to PVO.

E.ON had 360MW and 350,000 customers in Finland in 2003. It took a 34 per cent stake in Espoon Sähkö from the city of Espoo and in 2002, it raised its stake to 62 per cent by taking over Fortum's shareholding and by 2003, its holding was 66 per cent and the company name was changed to E.ON Finland. However, in 2005, Fortum exercised an option from a deal in 2002 when it sold a German company to E.ON to buy E.ON's shares, despite an agreement with the city of Espoo that it would not buy back the shares before 2009. In April 2005, it was not clear whether Fortum would be able to acquire E.ON Finland.

Fortum is now moving into downstream gas. Fortum got approval from the European Commission to raise its stake in Finnish natural gas company Gasum Oy to 31 per cent from 25 per cent in December 2004. The decision modified its ruling in 1998 to clear the tie-up between Neste and Fortum subject to an explicit 25 per cent limit on Fortum's stake in Gasum.

The transmission network was demerged from Fortum and PVO in 1997 as Fingrid. Its ownership is 12 per cent Finnish government and 25 per cent each for Fortum and PVO with the rest held by insurance companies.

19.5.3. The industry structure: gas

The largest gas company in Finland is Gasum Oy, whose main owners are Fortum, the part privatised electricity company (31 per cent), Gazprom, the Russian gas supplier (25 per cent, the Finnish State (24 per cent) and Ruhrgas, the largest German gas company now owned by E.ON (20 per cent).

⁵⁶ <http://www.energiamarkkinavirasto.fi/index.asp?languageid=246&start=1>

Gasum imports all the gas and sells to distributors and large final consumers, while gas is distributed by a number local distribution companies.

19.5.4. The electricity wholesale market and new generating capacity

Finland has been a member of Nord Pool since 1998.⁵⁷ The EMA reported that in 2001, the electricity trade by the Finnish actors through the Nord Pool accounted for approximately 18 per cent of the total electricity consumption in Finland. For a fuller assessment of the Nord Pool, see section 6.

New capacity in Finland is dominated by the 1600MW Olkiluoto 3 nuclear plant on which construction was expected to start in April 2005. No other plant is under construction.

19.5.5. The gas wholesale market

The Gas Directive allows Finland to deviate from the regulations concerning the deregulation of the natural gas market while the country has only one significant supplier of natural gas, Russia and is not connected to the natural gas network of any other EU Member State. Due to this, the Finnish natural gas market has not been deregulated to any significant extent.

19.5.6. The retail market: electricity

All consumers have been free to choose their electricity supplier since 1997, although until load-profiling was introduced in September 1998 (which avoids the requirement to install hourly electronic meters) it was not economically viable for small consumers to switch. The Benchmarking Report states that only 4 per cent of small and household consumers switched supplier in 2003. The EMA explained this low rate of switching by saying:⁵⁸

‘Competition between suppliers for new electricity customers – or at least for small-scale customers – has been lessened. Customers are not eager to switch suppliers, or the price difference should be substantial. The prices at which local small-scale suppliers sell electricity to their traditional customers are so low that the customers are not at all encouraged to switch suppliers. Switching has also been curbed by the fact that the vendors with the lowest prices have not wanted new customers. The situation is different on the major customer side, where large amounts of electricity are used and even small price differences are significant from the point of view of the final bill.’

The high levels of prices in Nord Pool in 2002 was reflected in higher retail prices but when the Nord Pool prices fell, retail prices did not. The EMA reported:⁵⁹

‘This winter, the level of wholesale prices on the power exchange has been lower than last year, but decreases in retail prices have been waited for in vain. From the beginning of 2004 to the beginning of March, the public list prices have remained unchanged, and the price pressure is being relieved by the fact that some major suppliers have announced that they will lower their electricity prices at the beginning of April, 2004.’

A report commissioned by Finland’s ministry of trade and industry and published in May 2004 into electricity market competition came to similar conclusions.⁶⁰ It said that deregulation “has neither led to extensive competition amongst suppliers, nor extensive benefits for customers.” Customer awareness, prices, service quality, additional offerings, environmentalism, equality and fairness “have apparently not fared particularly well as a result of deregulation, except perhaps for the largest or most active customers. As a result of the situation, customers are mostly rather negative towards the state of competition in Finland at present.

19.5.7. The retail market: gas

Only very large consumers of gas (5mcm per year) are able to choose their gas supplier.

⁵⁷ <http://www.nordpool.com/>

⁵⁸ http://www.energiamarkkinavirasto.fi/files/Emv_vuosikertomus2003.pdf

⁵⁹ EMA, Annual Report 2003 (<http://www.energiamarkkinavirasto.fi/data.asp?articleid=660&pgid=130>)

⁶⁰ P Lewis, M Pakkanen & M Muroma (2004) ‘The Electricity Customer’s Lot: The status of the deregulated Finnish electricity market - Consequences for the customer’ Finnish Ministry of trade and Industry (http://www.vaasaemg.com/pdf/466695_KuluttajajasahkoKTM2004ENG.pdf)

19.6. France

19.6.1. The Regulator

The French Regulator, Commission de régulation de l'énergie (CRE),⁶¹ was established in 2000 and was expanded to cover gas as well as electricity in 2003.

19.6.2. The industry structure: electricity

The dominant company in France is Electricité de France (EDF). EDF was founded in 1946 as a nationally-owned, fully integrated electric utility with monopoly powers in generation, transmission and distribution. The new Chirac government announced in May 2002 that it would sell a minority holding shares in EDF although by 2005, these plans had not been realised partly because of practical difficulties and partly due to opposition. In April 2005, the French government planned to sell about 30 per cent of the shares in autumn of 2005. However, in September 2005, the Finance Ministry said that no more than 15 per cent of the shares would be sold, with 15 per cent of these reserved for EDF employees.

There were a number of exceptions to this monopoly. In generation, the national coal company, CDF, and the national rail company, SNCF, owned some capacity (about 2600MW and 600MW respectively). There is also a long-established (1933) company, CNR, owned by local authorities, created to exploit the resources of the Rhone River, including about 3000MW of capacity. In distribution, a number of municipal companies continued after nationalisation and today, there are 170 municipal companies that distribute electricity to about 1.5 million consumers. The most important companies are in Strasbourg, Metz and Grenoble. Historically, these companies have had little discretion over their wholesale electricity purchasing and retail pricing, and they are not allowed to extend their activities to other sectors.

In June 2002, Electrabel (Suez) bought an 11 per cent stake in CNR and now handles its output and sales. It bought further tranches of shares and by January 2004, its holding was 48 per cent. Suez has signed a 5-year contract to take all the power from the SNCF generation plant (SHEM) and in March 2005, bought 40 per cent of the stock, the rest remaining with SNCF, at least until 2007 when Electrabel has an option to buy a further 40 per cent. Electrabel's objective was to get at least a 10 per cent share of the French electricity market.

SNET, the company set up to handle power sales from CDF was initially 51 per cent owned by CDF, 30 per cent by Endesa and 18.75 per cent by EDF. Endesa subsequently increased its stake and in September 2004, it raised its holding to a majority 65 per cent buying shares from CDF, leaving 16.25 per cent with CDF and 18.75 with EDF. In 2005, Endesa announced it was planning to build 2000MW of gas-fired plant in France through SNET.

EDF and ENEL were reported to be close to an agreement regarding ENEL's market entry into France in April 2005. The agreement is aimed at removing the 2 per cent voting cap EDF is tied by in Italy, a tie that has been ruled to be illegal by the European Commission. Key components of a deal are thought to be: a 10 per cent ownership stake in the Flamanville EPR that EDF plans to build; acquisition of the 18 per cent stake EDF holds in Snet (Endesa willing); and the sale of sites on which to build new CCGTs. ENEL would be able to buy power from EDF at market prices until the new plants are operational. In total ENEL's business in France would be of about the same size as EDF's in Italy, should EDF move to a 40 per cent ownership stake in Edison.

In return for allowing the take-over of the German utility, EnBW, the European Commission required that EDF auction the equivalent output (virtual capacity) of 6000MW of capacity, 42TWh or about a third of the French market that is open to competition. But these auctions this do not give potential new entrants sufficient access to competitively priced wholesale power, nor does it allow long-term planning. It seems likely therefore that the French market will be dominated by EDF, Electrabel, Endesa and perhaps ENEL. The national gas company, Gaz de France, could enter building gas-fired power plants, but its future, like that of EDF is made uncertain by the plans to part-privatise it.

⁶¹ <http://www.cre.fr/>

However, it has been released from provisions that restricted it to sell only gas and it has one CCGT plant under construction (788MW, Dunkirk).

The network is owned by the Gestionnaire du Reseau de Transport d'Electricité (RTE), created in 2000 from the transmission division of EDF, which still owns it. Whilst RTE is not legally separate from EDF, since 2000 it has been fully independent in terms of management, accounting and finance. In September 2005, EDF announced it would be turned into a separate company, 100 per cent owned by EDF, to comply with the Electricity Directive. The new company would be known as RTE EDF Transport. There was speculation that this would allow the French government to take a direct stake, perhaps 49 per cent, in RTE EDF Transport for example, through its Caisse des Depots et Consignations.

19.6.3. The industry structure: gas

The industry structure in the gas sector parallels that in the electricity sector with one large company, Gaz de France (GDF) dominating the market. It was fully nationally owned until July 2005 when 22 per cent of the shares were sold by initial public offer (IPO). GDF remains a fully integrated company without a full legal separation between its network activities and its retail and wholesale businesses. There is limited competition in retail to large consumers with TotalElfina having most success while BP and Ruhrgas (E.ON) are also attempting to enter the market.

19.6.4. The electricity wholesale market and new generating capacity

Powernext,⁶² the French spot market, started operation in December 2001 but volumes remain low and the Benchmarking report showed that in 2003, trade on Powernext accounted for only about 2 per cent of French electricity demand. Powernext reported that its day-ahead traded volumes increased by 90 per cent in 2004 compared to 2003, going from 7.48TWh to 14.18TWh, but this still represents less than 5 per cent of national electricity demand. In March 2005, the daily average was about 50GWh, still about 5 per cent of demand.

Since the start of 2004, one plant has come on-line, a 260MW CCGT built by a consortium led by EDF and a 788MW gas-fired plant built by GDF is due on-line in the first half of 2005. No other plant is under construction. The main capacity additions in the next few years are from three calls for tenders run by the Industry Ministry for renewables. This will include 1000MW of on-shore wind, 500MW of off-shore wind and 250MW of biomass and biogas.

19.6.5. The gas wholesale market

France produces only very small quantities of natural gas (about 3 per cent of requirements) importing the rest mainly from Norway, Russia, Algeria and the Netherlands. It imports about 25 per cent of its gas as LNG, mainly from Algeria, although it imports some NG from Nigeria on behalf of Italy. There is no effective wholesale gas market in France.

19.6.6. The retail market: electricity

EDF is the dominant retailer and distributor. For distribution, there are a number of independent municipal companies, but these are generally small and only account for about 5% of consumers. Similarly for retail supply, EDF dominates except in areas served by municipal companies. Amongst large consumers, by the end of 2003, only about 22 per cent had switched from their local retailer.

From July 1, 2004 the French power market has been open to all commercial consumers, representing 68 per cent of the market (2.3 million customers using 295TWh across 4.5 million sites). By January 1, 2005, about 77,600 sites across France had moved off the regulated power tariff of which, only 22,000 had moved to another supplier, the rest re-negotiating their terms with EDF, so only about 0.5 per cent of the market opened from July 2004 had moved away from EDF in the first six months. The retail market for small consumers is not expected to be open until 2007.

⁶² <http://www.powernext.fr/index.php?newlang=eng>

19.6.7. The retail market: gas

The retail market for small consumers will not be open until 2007 and the European Commission reports in its Benchmarking Study that only 5 per cent of large consumers switched in 2003. Commercial consumers have been able to switch since July 2004 but no data is available on switching rates although it seems likely the rate is very low.

19.6.8. Interaction with the gas sector

The dominant company in the gas sector is Gaz de France (GDF), which like EDF is state-owned but is due for partial privatisation in 2005. Earlier proposals for a merger between EDF and GDF appear to have been dropped. However, GDF appears keen to enter the electricity market both in France, selling 'dual-fuel' packages to small consumers and outside France. Its target is to operate at least 2500MW of generation in France and it already has an 800MW plant in Dunkirk.

19.6.9. Investment, market abuses and market failures**Generation**

An unusual series of events during the first week of March 2005 led to very high spot market prices and forced France to import from all possible sources including Spain and the UK, constraining the German interconnections and triggering further. Very cold weather, unusually high demand, a 12 per cent reduction in nuclear availability due to maintenance and a strike at Snet's Gardanne power plant in Provence contributed to the situation. While the circumstances were clearly exceptional, the apparent vulnerability of the French system, which is normally thought to have overcapacity, was surprising.

19.7. Germany

19.7.1. The Regulator

A law establishing a regulatory body for the electricity industry in Germany was voted through the Bundestag in April 2005 and the law is expected to take effect in mid-2005. It will be based in the former posts and telecoms regulator RegTP.⁶³ It will be renamed the Federal Network Agency (Bundesnetzagentur), to reflect its role of regulating access to the electricity, gas, telecommunications, post and railway networks. It began hiring energy staff in mid-2004. Previously, the sector had been regulated by the Federal Cartel Office (Bundeskartellamt), which will continue to have jurisdiction over some contract matters in the electricity sector.

19.7.2. The industry structure: electricity

The dominant companies in Germany have always been the regional companies that dominate generation and that own the regional transmission grids. In 1990, at the time of unification, there were eight network companies in the West and the network in the East was merged into one company, VEAG, owned by the network companies from the West. In the past nine years, there has been considerable merger activity amongst these companies and they are now controlled by just four companies. The two largest companies are E.ON and RWE, which are about equal in size. E.ON was created by the merger of Preussenelektra and Bayernwerk, then the second and third largest companies, in 1999, while at about the same time, RWE (then the largest company) merged with VEW, another of the network companies. Two more network companies, Badenwerk and EVS, merged in 1997 to form EnBW and this company is now controlled by EDF, which owns 34.5 per cent of the shares until December 2004, when it raised its stake to 39 per cent. The Swedish company, Vattenfall now controls the other three network companies, BEWAG, HEW and VEAG in Vattenfall Europe. The two largest companies control about 60 per cent of the generation market and about 60 per cent of retail supply to final consumers. There are a large number of other companies.

The distribution sector is complex, with some sources suggesting there are about 1200 distribution companies. There are about 900 distribution system operators (DSOs). In the retail market, only RWE has a direct market share of more than 5 per cent (with about 14 per cent). However, the Benchmarking Report is based only on non-consolidated, direct market shares. In a report produced for the European Commission, Oxera⁶⁴ estimated that the market share of RWE was about 30 per cent and even higher if the market shares of the former VEW and RWE controlled municipal companies are taken into account. E.ON sells electricity to only a few large industrial customers, but it also owns shares in many regional suppliers. On this basis, the Oxera report estimated E.ON's share of the national market at about 32 per cent not taking account of E.ON-owned municipal utilities.

19.7.3. The industry structure: gas

Germany's natural gas sector comprises over 700 companies, with a handful of domestic producers and importers and a large number of wholesale transport companies and regional and local distribution companies. However, Ruhrgas (E.ON), with about 50 per cent of the available gas dominates the market. Ruhrgas also controls almost all storage facilities and high pressure transmission pipelines in Germany. It was taken over by E.ON, one of the two largest electricity companies in 2003 and the conditions for allowing the take-over imposed by the German Kartellamt included the sale of its stakes in a number of German gas companies. These included its stakes in EWE (North Germany) and VNG (East Germany), and also it was required to auction a significant proportion of its gas import contracts to reduce its dominance of wholesale gas supplies. Ruhrgas's main competitors are Wingas, a company jointly owned by BASF and Gazprom and affiliates of RWE, the other large electricity company.

⁶³ <http://www.regtp.de/>

⁶⁴ Oxera (2001) 'Electricity liberalisation indicators in Europe' Report for DG TREN.

19.7.4. The electricity wholesale market and new generating capacity

There were originally two power exchanges, EEX (based in Frankfurt) and LPX (based in Leipzig). These merged in 2002 to form the European Energy Exchange (EEX) based in Leipzig.⁶⁵ EEX claimed that in 2004, about 12 per cent of Germany's electricity demand was through the EEX.

From January 2004 to April 2005, a total of 2.1GW of large plant was brought on line, comprising a 1056MW pumped storage plant (Vattenfall) and three gas fired plants owned by Stadtwerke. About 1GW of gas-fired plant is under construction mainly as small units owned by Stadtwerke. However, the main capacity additions are likely to come from off-shore wind and eight schemes with a total capacity of 2.3GW have planning approval. Two large CCGTs have been approved, a 1200MW plant owned by EnBW and an 800MW plant owned by the Norwegian company, Statkraft, one of its first investments outside the Nordic region.

19.7.5. The gas wholesale market

Germany produces about 20 per cent of its gas requirements from its own fields with Russia, Norway and the Netherlands the main suppliers, all via pipelines. There is a trading point at Bunde, but it is not clear how liquid this market is.

19.7.6. The retail market: electricity

After retail competition was introduced for all consumers in 1999, the pre-tax price of electricity came down by about 15 per cent by 2002, but only about 5 per cent of small consumers switched supplier.

19.7.7. The retail market: gas

While the gas market has been open since 1999 and no gas retailer is reported to have a market share of more than 5 per cent, almost no small consumers have switched and from 1999-2003, only 7 per cent of large consumers switched supplier.

19.7.8. Investment, market abuses and market failures

Wholesale prices

In August 2005, the Cartel Office, prompted by an association of industrial energy consumers (VIK), lodged a complaint against RWE and three other German power companies for using CO2 emissions certificate trading as an excuse to charge higher rates. The Chairman of the German power exchange, EEX, rejected the allegations.⁶⁶ The Environment Minister, Juergen Trittin, wrote to the four major companies at the same time asking for information on their emissions certificate trading operations.⁶⁷

The network

The German network is divided into four regions, corresponding to the home territories of RWE, E.ON, EnBW and Vattenfall (Germany) for generation capacity balancing purposes. This is thought to lead to a higher reserve capacity requirement (each region has to have its own reserve capacity, which in turn, inflates the spot market price and inhibits competition across regions.

Final consumers

In January 2005, the head of the FCO was quoted as saying that⁶⁸:

‘He did not accept that cost increases justified price hikes; wage and capital costs had not increased and the lion's share of fuel was procured from German domestic sources. The largest companies had rationalised, making cost savings running into billions of Euros. “There are virtually no companies practising an aggressive price policy or even trying to penetrate the market.” Even ENBW had dropped its challenging price strategy. “It almost looks as though competitive forays into the so-called home markets of other incumbents are consciously avoided. That has the same effect that demarcation arrangements had during the times when such agreements were allowed,”’

⁶⁵ http://www.eurexchange.com/about/company_info/subsidiaries/sub_eex.html

⁶⁶ World Markets Analysis ‘Power Exchange EEX Rules Out Accusation of Price Manipulations by Germany's Dominant Utilities’ August 23, 2005.

⁶⁷ APX ‘German cartel office launches probe into alleged overpricing at RWE, E.ON, August 22, 2005.

⁶⁸ Power in Europe, 31 January, 2005, pp 1-2.

19.8. Greece

19.8.1. The Regulator

The Regulatory Authority for Energy (RAE) was set up in 1999 and covers electricity and gas.⁶⁹

19.8.2. The industry structure: electricity

Until 2001, the then fully-state-owned Public Power Company (PPC) had complete monopoly control of the Greek electricity industry. In 2001, Greece finally transposed the 1996 Electricity Directive into Greek law, converted PPC to a Societe Anonyme and began to sell shares. The most recent share sale in 2003 reduced the government stake to 51.5 per cent, a level which the government says it will not go below.

19.8.3. The electricity wholesale market and new generating capacity

The PPEC has 95 per cent of the generating capacity, so clearly no wholesale market can exist.

Only one plant is under construction in Greece, a 390MW CCGT owned by Hellenic Petroleum and expected to enter service at the end of 2005, but there is a long list of plants with a total capacity of about 3.1GW, mostly CCGTs of about 400MW that have approval from the Regulator. Most are being built by Greek interests but two plants are by a consortium led by ENEL. It is not clear what proportion of the plants with RAE approval will be built.

19.8.4. The retail market: electricity

In theory, large consumers can switch, but in practice, the switching rate has been minimal.

19.8.5. Interaction with the gas sector

Natural gas is a relatively new entrant to the Greek energy economy with little gas going to final consumers. Greece has derogation from the Gas Directive.

19.8.6. Investment, market abuses and market failures

The continuing de facto monopoly status of PPC means that these have not emerged as issues yet.

⁶⁹ <http://www.rae.gr/index.html>

19.9. Ireland

19.9.1. The Regulator

The Commission for Energy Regulation (CER) was established in 1999 to regulate the electricity industry and was expanded to cover the gas industry in 2002.⁷⁰

19.9.2. The industry structure: electricity

The industry is dominated by the publicly owned Electricity Supply Board (ESB). This operates three main divisions, ESB Power Generation, ESB Customer Supply (retail) and ESB Networks (transmission and distribution). ESB Networks is in the process of being legally separated from the rest of the business. There are no immediate plans to privatise any of these divisions.

However, in February 2005, the Minister for Communications, Marine and Natural Resources, Noel Dempsey, called for bids from consultants to carry out a review of the country's electricity sector, with particular reference to the dominance of ESB.

19.9.3. The industry structure: gas

The industry structure for gas is similar to that for electricity with a nationally owned company, Bord Gais, the dominant integrated company. The TSO and DSO functions in Bord Gais are only unbundled at a management level.

19.9.4. The electricity wholesale market and new generating capacity

There is no effective wholesale electricity market in Ireland with almost all the plant owned by ESB or contracted to them, so the effective market share in generation for the ESB is higher than the 85-90 per cent quoted by the EU. Viridian has built a 343MW gas-fired plant near Dublin with a second 400MW unit starting construction in 2005, and there is a link (287MW) to the Northern Ireland grid, which might provide some marginal competition to ESB. ESB may also be forced to sell or lease some of its plants to new entrants to increase the number of competitors. In the longer term, the link to Northern Ireland might be strengthened and the EC would like a link to the England & Wales grid to be built, but these, especially the latter are some years away.

Entry has been through annual Virtual Independent Power Producer auctions, where ESB is required to sell the output of about 270MW of capacity. This is expected to be a temporary feature until new power plants are built by companies other than ESB.

Relative to its system size, a large amount of new generating capacity is in the pipeline for Ireland. 120MW of wind power (Airtricity) and 100MW of peat-fired plant (ESB) have been brought on-line from January 2004 to April 2005. 700MW of plant is under construction. This includes a 150MW peat plant owned by ESB, a 400MW CCGT plant built by a consortium, Tynagh and a 150MW CHP plant. The latter two plants are contracted to ESB under state-guaranteed contracts for ten years, so almost all the output of the new capacity will be bought by ESB. A 400MW plant built by Viridian (Northern Ireland) has approval, as has an on-shore wind-farm of 300MW to be built by the national peat-mining company, Bord na Mona.

19.9.5. The gas wholesale market

Ireland was, for a long time, self-sufficient in gas from the Kinsale gas field off the south coast. However, production is declining steeply and only accounts for about 16 per cent of demand. Two gas pipelines from Britain now provide most of the supplies. No natural gas wholesale market exists yet.

19.9.6. The retail market: electricity

In theory, the retail market was fully opened in February 2005, but the reality is that there are no significant competitors to the ESB for residential consumers, but the Regulator, the Commission for Energy Regulation (CER) is not expecting competition for at least 2-3 years, when alternatives to the ESB have established themselves in the industrial sector. The most likely entrants are the national gas company, Bord Gas, and the privatised company from Northern Ireland, Viridian. The main barrier to

⁷⁰ <http://www.cer.ie/>

competition is that ESB owns nearly all the generation and has long-term contracts for the output of the new generators.

19.9.7. The retail market: gas

Full market opening is expected in October 2005 and although the European Commission reports that there are four retailers with at least 5 per cent of the market, in 2003, only 1 per cent of large consumers switched supplier.

19.9.8. Investment, market abuses and market failures

The continuing de facto monopoly status of ESB means that these have not emerged as issues yet

19.10. Italy

19.10.1. The Regulator

The regulatory body, the Autorità per l'energia elettrica e il gas (AEEG) has been fully functional since 1997 and covers electricity and gas.⁷¹

19.10.2. The industry structure: electricity

Generation

Prior to liberalisation, the dominant company was the state-owned ENEL, which then owned about 80 per cent of generation, the transmission network and much of the retail/distribution business. The other important players were the municipal companies that supplied and distributed to some urban areas and in some cases owned their own capacity. ENEL has been partly broken up and privatised with sales of 32 per cent in 1999, 6.6 per cent in 2003, 16.4 per cent in 2004 and it is expected that a further 10-11 per cent will be sold in September 2005 leaving the Italian government with only 30 per cent of the shares (10 per cent with the Cassa Depositi (CDP)).

The government required ENEL to sell of 15,000MW of its capacity in three packages. The government placed limits on the extent to which municipal utilities could own this capacity, so that publicly owned companies could only take a minority stake. The first, Elettrogen, with 5418MW, was sold in July 2001 to a consortium led by the Spanish utility Endesa (45 per cent) that included AEM Brescia (15 per cent), the municipal utility, with the balance being held by the largest Spanish bank, Santander Central Hispano. Subsequently, Endesa raised its stake to a controlling 51 per cent, buying 5.7 per cent of the shares from the Spanish bank and changed the name to Endesa Italia.

A second tranche of 7008MW, known as Eurogen, was sold to a consortium, Edipower, dominated by Edison (Italy) and EDF (France) in March 2002. Edison had the largest share with 40 per cent. Other members were AEM Milano (13.4 per cent), AEM Torino (13.3 per cent), the Swiss utility Atel (13.3 per cent), Unicredit (10 per cent), Royal Bank of Scotland (5 per cent) and Interbanca (5 per cent). Under the consortium agreement, the banking partners will not have rights to the capacity. Therefore, Edison will get direct control of 3,500MW, while the Milano and Torino groups and Atel (in which EDF holds 20 per cent) will gain control of another 1,150MW each. Edison, then the second largest generator in Italy with a controlling interest in over 10,000MW of capacity had been acquired in 2001 by Italenergia Bis (IEB), a partnership of Fiat (38.6 per cent) and EDF (18 per cent) although EDF had an option that seemed to require it to buy the outstanding 82 pct it did not own.

However, the Italian government invoked the reciprocity clause of the 1996 Electricity Directive to limit EDF's voting rights in Edison to 2 per cent. EDF already supplies about 15 per cent of Italy's power through imports but the Italian government claimed the French market was effectively closed to foreign companies. EDF attempted to remove these restrictions on its voting rights but in April 2005 IEB was subject to a number of takeover offers. Endesa offered to buy 100 per cent of the shares in IEB in a deal that would also see its municipal partner ASM Brescia taking 20 per cent of Edison. AEM offered to buy a 40 per cent stake in Italenergia with the expectation that other municipal companies would take further stakes, notably Enia, the new municipal resulting from the merger of TESA from Piacenza, AMPS from Parma and AGAC from Reggio Emilia.

In April 2005, EDF and ENEL signed a Memorandum of Understanding under which ENEL will be able to buy electricity from EDF and re-sell it on the French market. ENEL is seeking to obtain a 35 per cent stake in the French energy group SNET, the use of EDF power plants, the takeover of distribution networks in France, the purchase of power generation plants EDF is selling abroad and participation in the commercialisation of the EPR (European Pressurised water Reactors) nuclear power plant. This agreement may allow the Italian government to lift the restrictions on EDF's voting rights in Edison.

In May 2005, EDF and AEM Milano announced an agreement to take over Edison. EDF will end up with 50 per cent of Edison, while AEM and any future partners are expected to hold up to 40 per cent.

⁷¹ <http://www.autorita.energia.it/>

The balance will remain quoted. This agreement is contingent on the Italian government lifting the restriction on EDF's voting rights and was widely seen as a necessary pre-condition to the flotation of 30 per cent of EDF's shares in the last quarter of 2005.

The final tranche, Interpower, comprising 2611MW of plant was sold in November 2002. Ownership of the new company was split equally between Energia Italia and a consortium of Electrabel and ACEA. The main shareholder in Energia Italia is the de Benedetti family's Cir holding. Energia Italia is 62 per cent controlled by Energia, which in turn is 74 per cent controlled by Cir with the largest Austrian electricity company, the Verbund, holding the balance. The municipal companies based in Genoa (Amga SpA) and Bologna (Hera SpA) own much of the 38 per cent balance of Energia Italia. The Electrabel ACEA joint venture is 70 per cent owned by Electrabel and 30 per cent by ACEA, but for the purchase of Interpower, the ownership will be split 50-50.

Overall, the generation sector appears to be in a transitional phase with nine generation companies. However, a consolidation down to perhaps no more than three or four generators seems likely. ENEL, Endesa and EDF/Edison are the obvious candidates. However, Electrabel, Atel and Verbund are also candidates especially if EDF does not take control of Edison. The municipal companies are likely to play an important role as partners in the new groupings.

Distribution/retail

Significant changes have been required to the distribution sector. In any municipality, only one distribution company would be licensed. Previously, most Italian cities were served by a local independent distribution company and by a company controlled by ENEL. All non-ENEL distribution companies serving more than 300,000 end users were given 180 days to create joint stock companies into which the distribution assets would be transferred. In cities where a non-ENEL distributor served more than 20 per cent of consumers, ENEL was required to transfer its distribution assets and personnel by March 31, 2001

Several of the municipal companies began then to convert to public companies. However, in all the municipal companies, the public still has a majority stake. For foreign companies attempting to enter the Italian market, a collaboration of some sort with a municipal company would be very attractive, offering access to final consumers.

ACEA (Rome) is the largest municipal utility with 1.5 million electricity customers. ACEA's most important recent strategic move was a joint venture with Electrabel, the Belgian utility controlled by the French group, Suez. Hera is the second largest municipal utility, based in Bologna, serving 135 towns and cities in the Emilia Romagna area. It was created in September 2002 merging 11 municipal utilities. In June 2003, 39 per cent of the shares were sold off by initial public offering (IPO). Through stakes in Energia Italia, it took part of the Interpower company sold off by ENEL in November 2002. AEM (Azienda Energetica Municipalizzata) Milano now has about 0.8 million consumers and is the third largest municipal utility. It sold 49 per cent of stock in the company in July 1998. Motor Columbus and Itالenergia both own about 5 per cent. In November 2002, it had about 1150MW of generation. It was part of the consortium led by Edison that took over Eurogen giving it control of 1150MW of generating capacity. ASM Brescia is the fourth largest municipal utility and was first listed on the stock exchange in July 2002 after 20 per cent of the stock was sold. It holds 15 per cent of the shares in Endesa Italia, the company that bought 7000MW of plant from ENEL (as Elettrogen).

AEM Torino supplies heat and power to about 0.5 million consumers. It is currently 69 per cent owned by the city after a sale of shares in November 2000. It was part of the consortium that purchased Eurogen giving it control of 1150MW of capacity. Apart from its Eurogen holding, it had about 500MW of capacity in 2002 which it expects to increase to 1500MW. In 2005, the merger between it and the Genoa based municipal company, Amga, was announced and was expected to be completed in summer 2005.

Transmission

Operation of the transmission sector was separated off as Gestore della Rete di Trasmissione Nazionale (GRTN) a public body controlled by the Ministry for Economic Affairs and Finance.

Ownership of the transmission assets was through Terna, partly still owned by ENEL. ENEL is required to reduce its holding in Terna to no more than 20 per cent by July 1, 2007 and it began selling shares in June 2004. In April 2005, it was announced that Terna would merge with GRTN by June 2005.

19.10.3. The industry structure: gas

The dominant company is the former integrated monopoly company, ENI, and its affiliate companies. The company controls almost all of Italy's natural gas production. An ENI subsidiary, SNAM Rete Gas S.p.A. (SNAM), owns and operates the domestic natural gas transportation system. Another ENI subsidiary, Stoccaggi Gas Italia S.p.A. (Stogit) manages most of the natural gas storage facilities in the country. Finally, ENI subsidiary Italgas controls a quarter of the retail gas distribution market. ENI owns just over 50 per cent of SNAM but it must reduce this stake to 20 per cent by 2007. In August 2005, the Regulator said it wants ENI to cut its stake in Stogit to no more than 20 per cent

19.10.4. The electricity wholesale market and new generating capacity

The Italian power exchange, IPEX, partially opened in April 2004 and opened with full demand side participation in January 2005.⁷² The Benchmarking Report suggests that about 0.5 per cent of electricity was traded in a power exchange, but does not specify which year the data applies to. Since the market was not fully functional until January 2005, this figure is probably not representative.

Italy appears to be entering a period of large new investment in generation (similar to the UK in 1990-92 and 1997-98) as the competing companies vie to reach dominant positions (see Table 40). Nearly all of this capacity is gas-fired combined cycle plant. A total of about 6GW of new or converted capacity was bought on-line in the 15 months from January 2004, 11GW of new or converted plant is under construction and due on line in the next two years and 9GW of plant has been approved by the Industry Ministry to be on line probably in the next five years. Given that the capacity under conversion was probably not economically useable, this means that essentially 25GW of new capacity could be on-line by about 2010, potentially turning Italy's shortage of power to a surplus. Of course, in practice, the new capacity is likely to render some of the existing capacity uneconomic and any surplus could be wiped out by plant retirements. There is also a huge amount of capacity for which applications have been made to the Industry Ministry, which could be added to this list.

Table 40. New generation in Italy (MW)

	Commissioned 1/1/2004-31/4/2005	Under construction	Approved	Total
Enipower	1030 (1140)	3683	1830	6543 (1140)
Edison	0	2720 (1410)	0	2720 (1410)
Endesa	1200 (800)	(400)	800	2000 (1200)
Energia	0	750	750	1500
ENEL	(1100)	0	390 (380)	390 (1480)
Electrabel/ACEA		400	400	800
Others	200 (1160)	958 (780)	4400	5558 (1940)
TOTAL	1730 (4200)	8511 (2590)	8570 (380)	18811 (7170)

Source: Power in Europe, April 11, 2005.

Notes:

1. Figures in brackets are plant converted from oil to combined cycle gas-firing, generally with an increase in capacity.
2. Companies listed are those with the largest stake.
3. Includes only plants over 50MW.

Much the most aggressive new entrant is the power generation division of the Italian national oil and gas company, ENI, accounting for 30 per cent of the new capacity. Edison has about 16 per cent and Endesa about 12 per cent, while Energia, the company jointly owned by the de Benedetti group and the Verbund also has a significant amount of capacity.

⁷² <http://www.mercatoelettrico.org/GmewebItaliano/Default.aspx>

19.10.5. The gas wholesale market

Italy imports about 84 per cent of its gas needs. Its main supplier is Algeria, with other imports coming from Russia, Norway and the Netherlands. It receives a small proportion of its gas as LNG, but there are plans to build new LNG terminals to allow imports from a number of other countries such as Qatar and Egypt.

There is a virtual hub, similar to the UK NBP, known as PCV. Italy has introduced a gas release programme for the dominant company, ENI, to encourage new entrants into the market but the regulator's 2005 annual report stated: 'the entry of new operators to the market through gas release programmes has not yet resulted in the benefits of competition being passed on to consumers.'

Serious problems were experienced in 2004 in Italy because insufficient gas had been contracted. The Regulator reported in its 2005 Annual Report:

'The warnings voiced for some time now by the Authority regarding the inadvisability of continuing to fear an excess or "bubble" of gas were confirmed, unfortunately, in the crisis of March this year. At that time, as a result of a tail-end of wintry weather conditions – albeit after a winter that was not particularly cold – a number of emergency procedures had to be called into play, eating into strategic reserves and calling into play the interruptibility clauses in a number of contracts.'

To deal with this problem, the Regulator proposed:

'To this end, an independent system operator needs to be set up as soon as possible, as has been done for the electricity sector, to engage in transport and storage activities and in the development of systems for the intake of gas at our borders.'

19.10.6. The retail market: electricity

Retail competition for residential consumers is not available yet. The Commission shows in its Benchmarking Report that by the end of 2003, only about 15 per cent of large consumers had switched supplier since market opening in 1999.

19.10.7. The retail market: gas

The gas retail market has been fully open since January 2003. However, the Regulator's 2004 Annual Report stated that: 'More than a year since the momentous date in January 2003, residential customers have made no significant switch from one supplier to another, and have thus not benefited from any real reduction in prices.' And in the 2005 Annual Report, the Regulator stated that: 'sales companies linked to distribution companies continue to predominate at the local level, sometimes operating through customer communication instruments designed to obstruct transparent competition.'

19.10.8. Investment, market abuses and market failures

Generation

Italy has been chronically short of generating capacity for many years. High demand and tight supply conditions in Italy in July and August 2003 forced interruptions to large supply contracts. On 5 August, the grid manager reported that demand was 4,000MW higher than on the equivalent day in August 2002. In addition, GRTN was faced with plant breakdowns and lines out for maintenance work. "These three critical factors caused an emergency in the electricity system," said GRTN. As in July, the grid manager cut interruptible supplies in order to keep the situation under control and was able to avoid switching off power to household users. That GRTN coped thanks to an extra 300MW imports from France and 200MW from Switzerland and Slovenia highlighted the narrow margins within which it has been forced to operate.⁷³

Legislative Decree 379 of 19 December 2003 introduced new rules for the remuneration of electricity production capacity. Its purpose, especially in light of the blackouts of June and September 2003, was to guarantee adequate production capacity and reserves in order to satisfy national demand.

In February 2005, the Italian Antitrust Authority (AGCM) published a report that was highly critical of the continuing dominance of ENEL despite attempts by the government over five years to reduce

⁷³ Power in Europe, September 1, 2003, p 18.

its power.⁷⁴ Overall, it still had 55 per cent of the generation market. It was particularly critical of ENEL's continuing dominance in some regions. If the country is divided into the North, the South, Sicily and Sardinia, ENEL, for example, it set the wholesale market price 100 per cent of the time in the South in the period April to September 2004. Endesa was dominant in Sardinia. However, the report did not recommend further break-up of ENEL's generation capacity. It stressed further national and international connections and encouragement of new entrants in regions where ENEL (or other generators) were dominant.

By January 2005, two investigations had been launched by the regulatory body, AEEG, into unusual price movements. The Regulator said the second inquiry launched in January 2005 'will test if there is a need for new controls to limit the powers of dominant electricity suppliers, at either the regional or national level'. ENEL, with about 50 per cent of the market seems to be clearly implicated.⁷⁵ AEEG found evidence of collusion between ENEL and Endesa Italia to fix prices on the Italian power market. The authority said the case would be handed over to the AGCM for valuation and potential prosecution.⁷⁶

The network

The summer of 2003 was difficult for the Italian electricity companies as high temperatures and high demand led to service interruptions in June 2003 that required government emergency measures. On June 26, a sudden blackout affected 7.3 million people. The regulator's preliminary investigation revealed that ENEL had over 2,000MW of capacity out of action for maintenance work that had gone on for longer than it should have.

On Sunday September 28 2003, there was a major system-wide blackout. The blackout began at 3:25 a.m., hitting all of Italy except the island of Sardinia, affecting more than 50 million people. The lights came back on in northern Italy by early morning and in most of Rome shortly after noon. Power was restored to the rest of Italy late Sunday. The immediate cause was initially thought to be the cutting of two lines from France to Italy, but subsequently, it became clear it was a failure of a power line at the Lukmanier pass in central Switzerland followed by a second failure at San Bernardino.

A report by European electricity grid operators' association UCTE has the Swiss authorities for the blackout. The report found that Swiss grid operator Etrans 'did not follow the September 2000 agreement with France and Italy that provides for exchange of information in emergencies'. A telephone call from Etrans to Italian counterpart GRTN, made ten minutes after a tree brought down a 380kV line in the Swiss Alps, 'lacked any sense of urgency' and left GRTN 'unable to defend' the Italian grid. The report did not cover wider issues such as Italy's dependence on power imports and under-investment in its national grid.

⁷⁴ <http://www.agcm.it/eng/index.htm>

⁷⁵ Utility Week, January 28, 2005, p. 12.

⁷⁶ Power in Europe, 25 April, 2005, p 18.

19.11. Netherlands

19.11.1. The Regulator

The energy regulator for the Netherlands Dienst uitvoering en toezicht Energie (DTE) was set up in 1998 and covers electricity and gas.⁷⁷

19.11.2. The industry structure: electricity

The Dutch electricity sector has historically been owned by local authorities. However, in the past 20 years, there has been a continual process of consolidation and in the past five years, some privatisation. In 1989, the Dutch government de-integrated the industry, with a separation of generation, transmission and distribution/retail. At that time, the industry had been consolidated into five main generation companies and about 60-70 distributors. However, generation operated through a co-operative pool rather than a competitive market and retail competition was allowed only for very large consumers, although with no wholesale market, there was little scope for retail competition.

By 1996, there were four generators and about 20 distribution companies. The Directive caused further consolidation and some privatisation of three out of four of the generators. In 1999, EZH was sold to the German company Preussenelektra (now E.ON), EPON was bought by Electrabel and UNA was bought by the US company, Reliant, who subsequently sold it to a Dutch distribution company, Nuon, in 2003. The fourth generator, EPZ, was vertically integrated into another Dutch distribution company, Essent. By then, there were only four strong distribution companies, Essent, Nuon, Eneco and Delta, all of which are still publicly-owned.

There has been significant take-over activity amongst the smaller retailers. In June 2005, Centrica bought Oxxio, a new entrant to the market in 2000, which has 400,000 electricity consumers and 140,000 gas consumers. At the same time, E.ON bought the retail business of NRE, NRE Energie, a company based in Eindhoven with about 275,000 consumers. The company was previously owned by the city of Eindhoven and 11 other local authorities. NRE's gas and electricity network business was sold Macquarie European Infrastructure Fund.

The transmission network is now operated by TenneT, which was taken over by the Dutch government in 2001. In 2005, the Dutch government introduced proposals to split distribution from retail but these were strongly opposed by the distribution/retail companies. The networks did not have to be sold to TenneT – and could for example interest pension funds, but TenneT would be the operator. Announcing its decision, the Dutch government said TenneT was in a better position to ensure security of supply than the private sector. In September 2005, the Dutch cabinet approved a draft law that would require the legal unbundling of the gas and electricity networks from the retail function. The newly created distribution and retail companies could remain under common ownership. The draft law required that no more than 49 per cent of the network company shares could be privatised but the retail companies could be fully privatised. The proceeds of such privatisations would be highly attractive to the public authorities that now own the companies.

19.11.3. The industry structure: gas

The industry was dominated until 2005 by Gasunie. Gasunie was previously owned by the Dutch state (50 per cent) and by Exxon-Mobil and Shell (25 per cent each). On July 1 2005, Gasunie was formally split into two companies, a network company that will continue to be known as Gasunie and a purchasing and sales company for natural gas, Gasunie Trade and Supply. The Dutch state bought out Shell and Exxon-Mobil's holding in the network company, while the ownership of the purchasing and sales company remains unchanged. The Dutch government has expressed a wish that the Trade and Supply company be split into two competing companies, one owned by Exxon-Mobil, the other by Shell, but there are no firm plans for this to happen. Retail and distribution is carried out primarily by the same locally owned companies as retail and distribute electricity.

There has been significant take-over and merger activity in this area, with Centrica acquiring Oxxio and E.ON acquiring NRE (see above). DONG, the Danish gas company bought the retail business of

⁷⁷ <http://www.dte.nl/nederlands/home/index.asp>

Intergas, which sells gas to about 150,000 customers and electricity to about 30,000 customers. Intergas Energie was previously owned by 22 municipal companies.

19.11.4. The electricity wholesale market and new generating capacity

The spot market is the Amsterdam Power Exchange, which has been in operation since April 1999.⁷⁸ An analysis by the DTE revealed that in 2003 the volume of trade on the APX (Amsterdam Power Exchange) had fallen by 15% compared with 2002 to 12 TWh (approximately 11% of the total Dutch power consumption). The number of active participants had fallen from 39 to 36 since the beginning of 2003.⁷⁹ This reduction with ten participants leaving was partly due to the departure of the US companies that had moved into European electricity markets, such as TXU, Aquila, Dynegy and Williams, but major Dutch companies such as Eneco and Electrabel Netherlands as well as the Norwegian company Statkraft. The new six new entrants were mainly financial organisations such as Morgan Stanley.

One plant, Rijnmond a 795MW gas-fired plant was completed in 2004. It is owned by Intergen, an IPP company that was sold by Shell and Bechtel to a 50/50 consortium of the Ontario Teachers' Pension Fund and a capital fund, American International Group. Statkraft (Norway) is rumoured to be interested in acquiring the plant. The power contract also changed hands in 2004 being bought by Eneco from Nuon. 220MW of off-shore wind has planning approval and could be on-line in 2006.

19.11.5. The gas wholesale market

Netherlands is a major exporter of natural gas. There is a virtual hub, similar to the UK NBP, known as TTF.

19.11.6. The retail market: electricity

Retail competition for small consumers was only introduced in July 2004 and there is little information yet on the extent of switching. A report by DTE shows there have been serious administrative problems with small consumers switching. More than 21 per cent of consumers switching had to wait more than 60 days for the process to be completed satisfactorily. The Benchmarking Report shows that only about 30 per cent of large consumers had switched since market opening.

19.11.7. The retail market: gas

The Dutch market has only been fully open since January 2004. Annual switching rates for residential consumers in the Netherlands are less than 5 per cent.

19.11.8. Investment, market abuses and market failures

Generation

Generating capacity margins are getting very tight in the Netherlands. In August 2003, reserves reached an all time low (90MW, normal level 1,400MW) as the result of hot, dry weather and high demand.

⁷⁸ <http://www.apx.nl/home.html>

⁷⁹ http://www.dte.nl/images/English%20version%20Liquidity%20study%202004%20Final_%20version%202_tc m7-10918.pdf

19.12. Northern Ireland

While Northern Ireland is politically part of the United Kingdom, policies followed on its electricity industry have been very different to those applied to the other component parts of the United Kingdom - England, Wales and Scotland. It is a small system (maximum demand about 1600MW). A 500MW DC connection was completed between Northern Ireland and Scotland in 2002. For the future, it is likely that Northern Ireland and the Republic of Ireland will merge their electricity markets.

19.12.1. The Regulator

The electricity regulator for Northern Ireland is the Northern Ireland Authority for Energy Regulation assisted by the Office for the Regulation of Electricity and Gas (Ofreg).⁸⁰ The Authority was set up in 2003 and replaced the single person regulator (Director General for Electricity and Gas) that was set up in 1992.

19.12.2. The industry structure: electricity

The Northern Ireland electricity industry was privatised in 1992. The former nationally owned integrated company, Northern Ireland Electricity was split into a transmission/distribution/retail company, Northern Ireland Electricity, and the four power stations were sold by auction to three companies, AES (USA), BG (the former privatised British gas company, which trades in Northern Ireland as Premier Power) and a consortium of employees. The generators were given long-term contracts of up to 30 years (for the 600MW Kilroot coal-fired plant owned by AES) for the output of the plants and only now, after considerable efforts by the Regulator is there some scope for new entrants. A new 400MW gas-fired power station built by the ESB was due to enter service in April 2005. The retail market is still dominated by NIE, which has diversified and is now called Viridian with NIE as its main business.

19.12.3. The electricity wholesale market and new generating capacity

The long-term contracts given to the privatised generators have meant there is little scope for wholesale competition. Development of the all-island market is being co-ordinated by regulators Ofreg and the CER (Republic of Ireland). The target date for the new wholesale market is July 2007.

The only major capacity addition likely in the next few years is the Coolkeeragh CCGT, 400MW, which was due on-line in early 2005. This is a joint venture between the owners of the existing plant at Coolkeeragh and the ESB.

19.12.4. The retail market: electricity

The Northern Ireland electricity market has been 35 per cent open to competition since April 2001. As a result, around 750 larger (mainly industrial) customers are eligible to purchase their electricity from a generator/supplier of their choice. It is planned to extend electricity market opening in Northern Ireland to all non-domestic consumers (60 per cent opening) from March 2005 and to all consumers by July 2007.

19.12.5. Interaction with the gas sector

Part of the deal under which BG purchased the Ballylumford power station was that BG would build a gas pipeline from Scotland to Northern Ireland to allow natural gas to enter the Northern Ireland market for the first time. This was completed in 1996 and the Ballylumford power station was converted to gas. From 1997 onwards, the natural gas network has been extended (based on the old manufactured gas network, which had lain unused since about 1980). The main company was another subsidiary of BG, Phoenix Natural Gas. Subsequently, BG sold its shares and the company is now owned by East Surrey Holdings. Natural gas in Northern Ireland is transported and sold by Phoenix Natural Gas Ltd, who has been granted an exclusive licence by the Government in order to allow them time to develop the network. However, larger gas customers will be able to choose their natural gas supplier within three years and domestic customers within eight years.

⁸⁰ <http://ofreg.nics.gov.uk/index.html>

19.13. Norway

19.13.1. The Regulator

The sector regulator Norges vassdrags- og energidirektorat (NVE) is a long established organisation (1921) that also has responsibility for monitoring reservoir levels.⁸¹

19.13.2. The electricity industry structure

Prior to liberalisation in 1991, the largest company was the government-owned Statkraft, which had about 40 per cent of generation, the rest being split between various municipal companies. The restrictions, which mean that any hydro-electric concessions revert to the Norwegian government after 60 years, remained in force. The transmission network was split off from Statkraft as Statnett, still fully government owned, but the rest of Statkraft remains intact. Retail/distribution was controlled by a large number of municipal companies. Since 1991, there have been a number of mergers amongst the municipal companies, for example, Lyse Energi was formed by the merger of five local companies and their generation assets. Foreign entry has been minimal with Fortum giving up attempts to increase its 34 per cent stake in the Hafslund company in May 2004.

19.13.3. The electricity wholesale market and new generating capacity

Norway was the founder member of Nord Pool, which was set up as a successor to a well-established market for 'occasional power' that had been in operation since 1971.⁸² For a fuller assessment of the Nord Pool, see section 6.

The only plant reasonably assured of being built is on-shore wind. About 100MW was completed in 2004, another 110MW is due on-line in 2005 and about 500MW has planning approval. Two gas-fired CCGTs Karsto (400MW) and Skogn (800MW) have approval but are far from certain to be built.

19.13.4. The retail market: electricity

The reforms put in place in 1992 in Norway allowed all consumers to have choice of retail supplier and the Benchmarking Report states that in 2003, 19 per cent of small and residential consumers switched supplier.

19.13.5. Investment, market abuses and market failures

Generation

The risk to investment created by the introduction of a wholesale market is compounded by the difficulty of identifying environmentally acceptable generation options. New hydro-electric schemes are proscribed by law and the use of fossil fuels would detract from Norway's ability to meet its Kyoto Protocol commitments. A plan has long been discussed to build gas-fired plants that would be connected to an old oil field where the carbon dioxide would be injected. This would be estimated to increase generation costs by 70 per cent and given that gas-fired plant without CO₂ removal would be significantly more expensive than the existing hydro plants, gas-fired plants are likely only to be built either without CO₂ sequestration or with government subsidies.

⁸¹ http://www.nve.no/modules/module_111/news_group_view.asp?iCategoryId=228

⁸² <http://www.nordpool.com/>

19.14. Portugal

19.14.1. The Regulator

The Regulatory body for electricity and gas Entidade Reguladora dos Serviços Energéticos (ERSE) was established in 1999.⁸³

19.14.2. The industry structure: electricity

The privatisation and splitting up of the Portuguese electricity industry began in 1992, at first attempting to follow the ‘British Model’. Prior to then, the industry was operated as a vertically integrated monopoly by the state-owned Electricidade de Portugal, now Energias de Portugal (EDP). However, while privatisation has proceeded in steps, so that the government now owns only 25 per cent of the shares, much of the electricity industry in Portugal is still owned by EDP. Iberdrola increased its stake in EDP from 5 per cent to 5.7 per cent in January 2005.

The dominant generator is CPPE with over 80 per cent of capacity, which is a wholly owned subsidiary of EDP. It also owns shares in of the other two main generators. It owns 40 per cent of TURBOGAS (60 per cent International Power), a 990MW gas-fired plant and 10 per cent of Tejo Energia, a 600MW coal-fired plant, owned 45 per cent by International Power, 35 per cent by Endesa and 10 per cent by EDF.

The dominant retailer/distributor is EDP Distribucao, also wholly owned by EDP. The transmission network was spun off from EDP in 2001 as REN, which is 40 per cent government-owned and 30 per cent by EDP.

19.14.3. The industry structure: gas

The sector is dominated by Gaz de Portugal (GDP), which is owned by the oil and gas company, GALP Energia, a company created in 1999 from the merger of Petrogal and GDP. Its main activities in the natural gas sector are the importation of natural gas, the development and maintenance of the high-pressure transport and distribution infrastructures. It also supplies regional distributors, large industrial customers (with an annual consumption in excess of 2mcm of natural gas) and the electricity production system. GDP owns the major regional and local distribution companies.

EDP tried to buy a majority (51 per cent) stake in Gaz de Portugal (GDP) in 2004 with the Italian oil company ENI taking the rest, but this was vetoed by the European Commission on competition grounds. In July 2005, EDP began an appeal against the decision, but the EC’s decision was upheld in September 2005.

EDP is looking at other ways to enter the gas sector, perhaps in partnership with Galp Energia, the owner of GDP. It is also buying stakes in gas distribution companies from GDP, for example, in 2005, it bought a 46.6 per cent stake in regional gas distributor Portgas. Portgas operates in the regions of Oporto, Braga and Viana do Castelo in northern Portugal. The other main shareholders are Endesa and GDF.

19.14.4. The electricity wholesale market and new generating capacity

An Iberian wholesale electricity market, MIBEL is expected to open in October 2005. However, the European Commission is sceptical about how far it can be assumed that the Portuguese wholesale market will become part of the much larger Spanish market. Power in Europe⁸⁴ reported that in its judgement against the EDP/GDP merger (see below), the European Commission stated:

“on the basis of the in-depth investigation carried out by the Commission, it appears (1) that the relevant market is currently national in scope and (2) it is highly unlikely that, notwithstanding the political agreement reached by the governments of Spain and Portugal, it will become Iberian in scope in the near future.” According to the Commission, several elements show that the effective integration of the Portuguese and Spanish wholesale electricity markets is “still far from certain and do not permit the assumption of an Iberian market in the short term”.

⁸³ <http://www.erse.pt/frontoffice/index.html>

⁸⁴ Power in Europe, 22 November, 2004, p 1.

EDP estimated that consumers would have to pay €2.6-3.2bn over 23 years in stranded cost payments CMECs, resulting from the recently approved compensation package removing long term power purchase agreements from the Portuguese electricity sector.⁸⁵

While there is considerable interest in building new gas-fired generating plant, plans are constrained by the availability of gas (see Table 41). The only new plant not being built by EDP is the Alqueva hydro-electric plant which was built by the publicly owned Empresa de Desenvolvimento e Infra-estruturas do Alqueva, S.A., (EDIA). However, seven companies are competing to build an 800MW gas-fired plant at Sines including EDP, GALP, Endesa and Gas Natural (Spain), where the gas network can only support one plant. Endesa (in collaboration with International Power (UK), Gas Natural and Iberdrola have also applied to build 800MW plants at other sites.

Table 41. New generation in Portugal (MW)

	Commissioned 1/1/2004-31/4/2005	Under construction	Approved	Total
EDP	800	588	170	1558
EDIA	240			240
TOTAL	1040	588	170	1798

Source: Power in Europe, April 11, 2005.

19.14.5. The gas wholesale market

There is no gas wholesale market in Portugal

19.14.6. The retail market: electricity

The retail market for residential consumers is not open yet. In the market for large consumers, the Benchmarking report states that only about 7 per cent of large consumers switched in 2003.

19.14.7. The retail market: gas

Small consumers are not allowed choice of gas supplier.

⁸⁵ Power in Europe, 22 November, 2004, p 19.

19.15. Spain

19.15.1. The Regulator

A regulatory body was set up in 1994 to regulate the electricity sector and was subsequently given responsibility for the gas sector. It is now known as the Comisión Nacional de Energía (CNE).⁸⁶

19.15.2. The industry structure: electricity

The largest company in Spain is Endesa. It was created in 1983 as a nationally-owned company from the merger of several companies and in 1988, the Spanish government began to sell off stock, 24.4 per cent in 1988, 8.7 per cent in 1994, 25 per cent in 1997 and 33 per cent in 1998. In 2004, it had 39 per cent of the generation and supplied 38 per cent of the electricity in Spain. The other major company, Iberdrola is privately owned, created from the merger of Iberduero and Hidrola in 1992, and had 28 per cent of generation and 36 per cent of retail supply. Other important companies in Spain are Union Fenosa (11 per cent of generation and 12 per cent of retail supply), Hidrocanabrico (7 per cent of generation and 6 per cent of retail supply) Gas Natural (3 per cent of generation and 2 per cent of retail supply) and Electra de Viesgo (3 per cent of generation and 1 per cent of retail supply). Union Fenosa tried to take over Hidrocanabrico in 2000.

Endesa, Iberdrola, Gas Natural and Union Fenosa are independent. A merger between Endesa and Iberdrola was proposed in 2000, but the conditions the government would have imposed to allow the merger were not acceptable to the two companies and in February 2001, the merger was abandoned. In 2003, an attempted takeover of Iberdrola by Gas Natural was unsuccessful, but in August 2005, Gas Natural launched a hostile takeover bid for Endesa, despite the market capitalisation of Gas Natural being only about half that of Endesa. The proposed deal would see some of Endesa's assets sold to Iberdrola. It remains to be seen whether the bid is successful and whether it will be acceptable to the Spanish and European Commission competition authorities.

Electra de Viesgo was sold by Endesa in 2001 and is now controlled by ENEL. EDF did try to take over Hidrocanabrico in 2001, but was blocked by the Spanish government. EDF indirectly owned 35 per cent of the company through its German subsidiary, EnBW, while the largest shareholder is the dominant Portuguese electric utility, EDP, which controls the company after taking over EDF's share in 2004 to give it 75 per cent of the shares. Union Fenosa is seen as a potential takeover target and many possible bidders have been mooted. In September 2005, ACS, Spain's largest construction and services group, agreed to pay €2.22bn for Banco Santander's controlling 22 per cent stake in Union Fenosa. It is not clear whether the new owners regard the acquisition as long-term or short-term move. If the Gas Natural takeover of Endesa is successful, it will put pressure on other energy utilities in the Iberian peninsula to increase their size to be able to compete effectively.

The network is owned by a long-established (since 1985) company, Red Electrica Espana (REE). The largest generators (Endesa, Iberdrola, Union Fenosa and Hidrocanabrico) each own 10 per cent of the shares, the government owns 31.5 per cent and the rest are traded on the stock market.

19.15.3. The industry structure: gas

The industry was dominated by one integrated company, Gas Natural, before liberalisation. Until about 2000, it controlled the network, and retail. In 2002, CNE forced Gas Natural to spin off 65 per cent of the shares of Enagas, the private company owned by Gas Natural that controls Spain's natural gas transport system. Gas Natural still owns 18 per cent of Enagas shares but this must be reduced to 5 per cent by 2007. Gas Natural still dominates wholesale and retail markets directly and through subsidiary companies. In 2003 a merger between GN and Iberdrola was blocked by the state, but as discussed above, in 2005, Gas Natural launched a takeover bid for Endesa.

19.15.4. The electricity wholesale market and new generating capacity

A 'pool-type' wholesale market, OMEL, was set up in 1999.⁸⁷ As this is a Pool-type market, it is difficult to know how much energy is bought and sold at Pool prices as opposed to hedging contract

⁸⁶ <http://www.cne.es/ingles/index.html>

⁸⁷ <http://www.omel.es/frames/es/index.jsp>

prices and therefore what the real liquidity of OMEL actually is. Endesa and Iberdrola control more than 60 per cent of buying and selling. This will be replaced by MIBEL, the Iberian market, which is expected to start operations in October 2005.

A particular issue has been the ‘stranded costs’ associated with the plants that existed before liberalisation -the difference between the full cost of generation from these plants and the revenues that would come from the market for the power they produce. These are called the Competition Transition Charges or CTC. These were adopted by the Spanish government in 1997 and approved by the Commission in 2000 and utilities will be allowed to recover about €12bn. Of this, around 51 per cent was expected to go to Endesa, 27 per cent to Iberdrola, and 13 per cent to Union Fenosa and about 40 per cent of this was associated with additional costs of nuclear plants and much of the rest with subsidies to Spanish produced coal. CTC payments are triggered if the Pool price exceeds €36/MWh. In 2005, the Pool price was about €55, so no payments were being made under CTC provisions.

As in Italy, Spain appears to be entering a period of large new investment in generation (similar to the UK in 1990-92 and 1997-98) as the competing companies vie to reach dominant positions (see Table 42). Nearly all of this capacity is gas-fired combined cycle plant. A total of about 3.6GW of new capacity was bought on-line in the 15 months from January 2004, 9.1GW of new or converted plant is under construction and due on line in the next two years and 2.4GW of plant has been approved by the Industry Ministry to be on line probably in the next five years. Of course, in practice, the new capacity is likely to render some of the existing capacity uneconomic and any surplus could be wiped out by plant retirements. There is also a huge amount of capacity for which applications have been made to the Industry Ministry, which could be added to this list, particularly for plant sited in the Madrid region.

Table 42. New generation in Spain (MW)

	Commissioned 1/1/2004-31/4/2005	Under construction	Approved	Total
Union Fenosa	2000	1200	1600	4800
Iberdrola	800	2000		2800
Gas Natural	800	2000		2800
Endesa		1096		1096
Others		2800	770	3570
TOTAL	3600	9096	2370	15066

Source: Power in Europe, April 11, 2005.

Union Fenosa seems to be the most aggressive player with more than 30 per cent of the capacity although it is trying to reduce its stake in some of these projects. Again paralleling the situation in Italy, the gas company, Gas Natural, is a strong new competitor with about 20 per cent and the two biggest generators, Iberdrola and Endesa are also building a significant amount of new capacity. Hidrocanabrico is conspicuously absent, while the ENEL Spanish venture, Viesgo only has plant (770MW) in the ‘approved’ category, but in April 2005, it announced that it would build two further gas plants with a capacity of 800MW.

There is also a large amount of renewables development and, for example, Iberdrola plans to have 5.5GW of renewables, nearly all wind, in operation by 2008. Viesgo also announced that it would invest €600m on renewables.

19.15.5. The gas wholesale market

Spain imports nearly all its gas. It imports from Norway via a pipeline from France and from Algeria via a pipeline under the Mediterranean. There are plans for further pipelines to France and Algeria. Spain also imports a significant proportion of its gas as LNG from countries such as Qatar, Oman and Nigeria with three terminals in operation and two further terminals under construction.

Spain does not have a competitive wholesale gas market yet. It introduced a gas release programme, which operated from 2001 to January 2004 and resulted in six new entrants acquiring gas from the

largest company, Gas Natural. Gas Natural was forced to sell on 25 per cent of its contracted gas to new entrants to promote competition. These included Endesa, Iberdrola and Union Fenosa. This reduced Gas Natural's share of the available gas from 85 per cent in 2002 to 40 per cent in 2003 although in 2004, its share increased again to 45 per cent. Most of the rest of the market (28 per cent) was held by the two large electricity companies, Endesa and Iberdrola. It remains to be seen whether a competitive wholesale gas market will now develop.

19.15.6. The retail market: electricity

Retail competition for residential consumers opened in January 2003. The Regulator reported⁸⁸ that: 'Low voltage consumers who had access to the market for the very first time last year (2003) have actually joined it at a rather slow rate.' By the end of 2003, only 110,000 residential consumers had begun the process of switching out of nearly 23 million consumers (0.5 per cent).

The utilities claim that the low level of interest in switching is because the incumbent utilities are required to supply power at tariffs set till 2010 that are below economic prices. This gives no scope for new entrants to undercut the existing suppliers and, the utilities claim, resulted in losses in the first quarter of 2005 by the utilities of €500m.

Large consumers are lobbying for an extension of the present regulated tariffs from 2007 to 2010 because they fear that opening the market will lead to price increases and price instability.

According to Omel, in 2005, Gas Natural was the fourth-largest player in Spain's deregulated electricity market behind Iberdrola, with 35 per cent, Endesa, with 34.7 per cent, and Union Fenosa, which has 8.9 per cent of the market.

19.15.7. The retail market: gas

The gas retail market in Spain has been fully open since January 2003, but annual switching rates for small consumers are only 5 per cent. The top three retailers' (Gas Natural, Endesa and Iberdrola) market share is 80 per cent.

19.15.8. Investment, market abuses and market failures

Generation

From the beginning of 2004 onwards, there has been increased action by the government and regulator because of perceived market abuses by the dominant companies going back several years. In 2004, Endesa, Iberdrola and Union Fenosa were fined €900,000 by the competition defence tribunal (TDC) for price fixing on 19, 20 and 21 November, 2001.

In March 2005, the Regulator, CNE sent a report to the Spanish Economy Ministry confirming the existence of widespread price-fixing and profiteering by utilities in the daily generation pool that had existed since at least June 2004.⁸⁹ The report said that In January 2005 alone, utilities had obtained unjustified income in some plants "of more than 100 per cent of their estimated variable costs." On some days as much as 2,000MW of combined cycle generation was withdrawn from the market to push up prices by an average of 10MWh, the CNE said.

As a result of these problems and continual disagreements between Endesa and Iberdrola, the government proposed a number of measures to deal with their market power. These included:

- Restrictions on cross-ownership of the top five companies. This would mean, for example, that La Caixa could not continue to hold shares in both Gas Natural and Endesa;
- Restrictions on companies with more than 10 per cent of the market, for example, preventing them from importing power;
- A maximum stake of 1 per cent in REE;
- Continuation of tariffs for large industrial consumers to January 2010; and
- Suspension of stranded cost payments (CTC) until January 2006.

⁸⁸ http://www.cne.es/pdf/PA004_04ingles.pdf

⁸⁹ Power in Europe, 11 April 2005, p 1.

There were unconfirmed reports that the government was contemplating excluding Endesa and Iberdrola from the Pool or at least not allow them to set the price.

A White Paper, commissioned from a team of independent experts in autumn 2004 by the Spanish government, is scheduled for publication in 2005. This is expected to lead to changes in the 1997 Electricity Law which transposed the 1996 Directive into Spanish law.

Early reports on the likely conclusions of the White Paper suggested the authors were considering removing a significant proportion of generating capacity from the Pool to prevent abuses and mitigate the dominance of Endesa and Iberdrola. As a minimum, plant covered by the CTC might be removed (about 60 per cent of capacity) and the output sold at regulated tariffs. Other proposals envisage withdrawal of all non-CCGT capacity (leaving only 10-15 per cent of current capacity) and limiting generators to no more than 10 per cent of the remaining Pool.

The network

The CNE was critical of utility spending on distribution networks in December 2004 following five blackouts in late November that hit Madrid, Barcelona, Seville-Huelva-Badajoz, and Malaga. The Chair of the CNE, Pedro Merono did not blame liberalisation, citing lack of investment and poor maintenance of aging lines. However, the Spanish industry ministry has asked the CNE to open proceedings against Endesa and grid company Red Electrica de Espana (REE) over a blackout in 2004 that affected one million people in Seville, Huelva and Badajoz provinces.

19.16. Sweden

19.16.1. The Regulator

The Swedish Energy Agency (Energimyndigheten) regulates the electricity sector in Sweden.⁹⁰ However, until the new Directives were introduced, it had been a very small body operating *ex post*. It did not set network tariffs, but only became involved if there was a formal objection. For the future, it will set the network tariffs and this will require a significant increase in capability.

19.16.2. The electricity industry structure

The largest company in Sweden is Vattenfall, which is fully owned by the Swedish state and owns 50 per cent of the generation capacity as well as much of the distribution network. The second largest company is Sydkraft, which was owned mainly by municipalities, but in 2001, the German company, E.ON, took a majority stake. In 2005, it owned 56.5 per cent of voting rights, the remainder being held by the Norwegian nationally owned company, Statkraft and the company is no longer listed on the Swedish stock exchange. In March 2005, Sydkraft was negotiating to sell about 500 MW of hydro plants in Sweden and Finland to Statkraft.

Birka, the third largest company, was formed from the merger of Gullspang (owned by the Finnish utility, Fortum) and Stockholm Energi (municipally-owned) in 1998. In 2001, Fortum bought out Stockholm City and in September 2002, renamed the company Fortum Sweden. Between them, these three companies account for 86 per cent of generation. They are also the dominant retail suppliers.

There are ten main generation companies in Sweden, but only the top three have market shares above 5 per cent. The other important company is Gräninge. Electricité de France (EDF) entered Gräninge as a share holder in May 1998. EDF held 36 per cent of the shares, but sold these to E.ON in 2003 and E.ON subsequently bought the rest of the shares.

In 1996, there were about 250 distribution companies, but by 2002, this number had fallen to about 130 and the three largest companies, Vattenfall, Sydkraft and Fortum Sweden, have a market share in distribution of about 60 per cent

19.16.3. The electricity wholesale market and new generating capacity

Sweden has been a member of Nord Pool since 1996.⁹¹ For an assessment of the Nord Pool, see section 4. No plant was under construction in Sweden in April 2005, but a 260MW gas-fired cogen plant has been approved for construction by Goteborg Energi and 186MW of off-shore wind (half for Vattenfall and half for Sydkraft/E.ON) has also been approved.

19.16.4. The electricity retail market

The retail market has been open to competition since 1996 and the percentage of small consumers switching or renegotiating their rates was more than 50 per cent in the period 1998-2001. Vattenfall has about 1.5 million consumers. The Benchmarking Report claimed that about 10 per cent of small and residential consumers switched supplier in 2003.

19.16.5. Interaction with the gas sector

Natural gas was introduced in Sweden in 1985 and all gas is imported from Denmark. Sydkraft (50 per cent of the market) and Goteborg Energi (18 per cent) are the largest companies and both are active in electricity.

19.16.6. Investment, market abuses and market failures

The network

On 23 September 2003, a six-hour blackout affected the Danish islands of Zealand and Bornholm, as well as large areas of southern Sweden. Supplies to two million homes and businesses in Sweden and

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http://www.stem.se/WEB/STEMEx01Eng.nsf/F_PreGen01?ReadForm&MenuSelect=BFBB3A865FD5FC54C1256EF9004E77F6&WT=Energy%20markets

⁹¹ <http://www.nordpool.com/>

Denmark were cut. The immediate cause appears to have been a valve failure at the Oskarshamn reactor which shut down the power station. Another nuclear station which should have taken over the power supply, was also shut down following the breakdown of its link to the electricity grid.

Further problems occurred on 6-7 December 2003 during several days of gale force winds and snow storms in southwest and southern Sweden. The power cuts in Sweden left more than 100,000 utility customers without supply, while 9,000 were still without supply 24 hours after the initial outages. The storms led to cuts for 48,000 consumers in Norway and 11,000 consumers in Denmark. A government inquiry was ordered focusing on the role of utilities and investigating whether poorly maintained production and transmission systems contributed to the blackouts.

In January 2005, a severe storm (Hurricane Gudrun) caused damage to the Swedish network leaving initially 400,000 households without power and a week later, about 50,000 households were still cut off. As a result of this, in April 2005, the Swedish government proposed new laws that would increase the obligations of companies operating electricity networks towards their customers. For example, consumers without electricity for more than 24 hours would automatically be paid compensation and there would be a legal obligation on companies to keep their regional level networks clear of trees.

20. Annex 2: National experiences: CEE countries

20.1. Czech Republic

20.1.1. The Regulator

The Czech Energy Regulatory Office, ERO (Energetický regulační úřad (ERÚ)) was established in 2001 and electricity and gas.⁹² There is also a competition authority, UOHS, which undertakes specific investigations.⁹³ The IEA in its 2005 review of Czech energy policy recommended that the Czech government: ‘should more explicitly establish the independence and authority of these two groups [the regulator and the competition authority]’.⁹⁴

20.1.2. The industry structure: electricity

CEZ owns 65 per cent of the generation plant and has about a 70 per cent share of the wholesale market. There have been attempts to increase the privately owned share of CEZ from the current 32 per cent for several years but the Temelin nuclear power plant has been seen to be an obstacle. 36 per cent of the shares were offered in January 2002 but none of the bidders met the government’s requirements.

There are eight distribution companies. There were proposals to merge CEZ with the eight distributors to make the company more saleable and to match the gas structure where Transgas was sold in 2002 to RWE as a vertically integrated company. CEZ would have taken a majority share in five companies and a blocking minority in the other three. The proposal was rejected by the Czech anti-trust authorities (UOHS) who ruled only four companies could be taken over. CEZ appealed the decision and in March 2003, the UOHS agreed the price for sale of the eight companies to CEZ, and CEZ took majority stakes in five companies and minority stakes in the other three. The five are Stredoceska energeticka (STE), Vychodoceska energetika (VCE), Severoceska energetika (SCE), Zapadoceska energetika (ZCE), and Severomoravska energetika (SME) and CEZ controlled companies account for two thirds of the electricity distributed and retailed in the Czech Republic.

E.ON is the largest foreign investor in the Czech electricity sector with controlling stakes in two of the distribution companies, Jihoceska energetika (JCE) and Jihomoravska energetika (JME) and minority stakes in others. The other distributor is Prazska energetika (PRE). The City of Prague acquired a 51 per cent stake in the Prague power utility PRE as part of a deal with Germany’s GESO AG which had held 16.49 per cent of PRE. The deal, reached between the City and three German companies - RWE, Ruhrgas, and Geso - established three holding companies PRE Holding (electricity), PP Holding (gas), and PT Holding (heat). In each company, the city has a 51 per cent stake. The power company CEZ sold its 34 per cent stake in PRE to the financial group J&T.

In summer 2002, CEZ announced it would sell 66 per cent of the shares in the transmission company (CEPS), but keep a blocking minority and this was done in 2003 with the majority stake going to the Czech government. Since then, CEZ has sold the rest of its shares in CEPS.

20.1.3. The industry structure: gas

The main Czech company in the natural gas sector 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 per cent of the shares) of Transgas to the German utility, RWE for \$3.64bn. The deal also gives RWE the shares in the eight distribution companies that were owned by the National Property Fund (typically about 50 per cent of the total). As a result, Transgas controls about 83 per cent of the retail market. Other shares in the gas distribution companies had already been

⁹² http://www.eru.cz/frameset_cz.htm

⁹³ <http://www.compet.cz/>

⁹⁴ International Energy Agency (2005) ‘Energy Policies of IEA Countries – The Czech Republic, 2005 Review’, IEA, Paris.

sold to various companies such as E.ON, GDF and Wintershall, creating a complex pattern of ownership. RWE is the largest shareholder in all cases holding more than half the shares in all except one case (see Table 43). There has not been even the most basic of unbundling of the gas transmission and distribution networks yet.

Table 43. Ownership of Czech gas distribution companies

Company	Owners (%)
JCP Jihoceska Plynarenska	RWE (47), Communes (34), E.ON (13), OF (6)
JMP Jihomoravska Plynarenska	RWE (50), E.ON (37), GDF (2), SPP Bohemia (2)
PP Prazeska Plynarenska	RWE (62), Communes (26), E.ON (12)
SCP Severoceska Plynarenska	RWE (51), VNG (26), Wintershall (20) GDF (1)
SMP Severomoravska Plynarenska	RWE (58), SPP Bohemia (20), Slovak Gas (9), E.ON (8), Communes (2), GDF (2)
STP Stredoceska Plynarenska	RWE (51), Wintershall (30), E.ON (14), Communes (2), GDF (2)
VCP Vychodoceska Plynarenska	RWE (50), SPP Bohemia (19), E.ON (17), Slovak Gas (10), GDF (3), Communes (1)
ZCP Zapadoceska Plynarenska	RWE (50), E.ON (44), OF (4), GDF (1)

Source: Author's research

20.1.4. Progress with electricity liberalisation

A wholesale market, OTE, was established in January 2002.⁹⁵ OTE's trades in 2002 accounted for slightly over 1 per cent of the country's electricity market. On April 20, 2005, daily volume in the day-ahead market was 844MWh, much less than 1 per cent of national electricity demand.

By 2004, 48 per cent of the market (about 3000 consumers) was open for retail competition. No estimates of the rate of switching were shown in the Benchmarking Report. The market for residential consumers is not expected to be open before 2006.

20.1.5. Progress with gas liberalisation

There has been little progress in introducing competition in the Czech gas market and with RWE in such a dominant position all through the gas value chain, it is difficult to see how meaningful competition could be introduced. No date has been specified for full market opening.

⁹⁵ <http://www.ote-cr.cz/pick.asp?arg=101>

20.2. Hungary

20.2.1. The Regulator

The Hungarian Energy Office, EH (Magyar Energia Hivatal) was established in 1994 and covers electricity and gas.⁹⁶

20.2.2. The industry structure: electricity

There are 12 generation companies in Hungary, ten owned by private investors (Electrabel, RWE, AES, ATEL (Switzerland), EDF, Croesus (an investment fund) and E.ON). However, MVM, the state-owned company, dominates generation in Hungary, with about half the capacity. MVM is increasing its share of the generation market by buying additional plant.⁹⁷ Government passed legislation in 1995 allowing it to sell 50 per cent plus one share in MVM, but attempts to privatise MVM have so far come to nothing. Members of the government coalition proposed in 2005 that the law be amended so that MVM would remain fully in government ownership. The system operator is Mavir. It was sold by MVM to the economy and transport ministry in December 2002. OVT, a subsidiary of MVM owns the grid. There are six main distributors in Hungary. Edasz is Hungary's second largest power supplier, with 22 per cent of the retail market for electric power and heat. E.ON owns all the shares. EDF owns 60 per cent of Demasz. Emasz is majority held by RWE and EnBW. E.ON owns Titasz and Dedasz. ELMU is majority owned by RWE and EnBW.

20.2.3. The industry structure: gas

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 per cent (plus 1) of the shares in MOL and this point was reached in 1998, by which time, international investors owned 52 per cent of the shares. Most of the remaining shares (16 per cent) 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 to veto with respect to major changes in the company.

In 2001, there were proposals to separate the gas and oil interests of MOL into individual companies and to offer 49 per cent 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. 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.

Table 44. Ownership of Hungarian gas distribution companies

Company	Owners (%)
DDGAZ	E.ON (41), RWE (41), MOL (17)
Degaz	GDF (72), MOL (27)
Egaz	GDF (64), MOL (35)
Fogaz	Communes (50), RWE (33), E.ON (16)
Kogaz	E.ON (31), EVN (31), Communes (10), MOL (7)
Tigaz	ENI (50), RWE (43),

Source: Author's research.

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

⁹⁶ <http://www.eh.gov.hu/home/html/index.asp?msid=1&sid=0&HKL=1&lng=2>

⁹⁷ For example, in August 2005, MVM agreed to increase its stake in the Vertes from 43 per cent to 83.5 per cent buying the shares from government institutions.

(retaining a Golden Share). For DDGaz, Degaz, Egaz and Tigaz, foreign investors now own at least 75 per cent of the shares, but for Kogaz and Fogaz, local government retains 50 per cent and 40 per cent of the shares respectively (see Table 44).

In the gas sector, MOL's main activities are in production, wholesale trade, foreign trade and transportation. At present, about 85 per cent 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.

The TSO is legally unbundled from MOL, but the DSOs are separated only at an accounting level.

20.2.4. Progress with electricity liberalisation

35 per cent of electricity market has been open since January 1 2003. The market was further opened in July 2004 to 67 per cent. The government plans to open the market fully by 2007. The Benchmarking Report shows that 19 per cent of large consumers switched supplier in 2003. There is no power exchange in operation.

20.2.5. Progress with gas liberalisation

The Hungarian Regulator reports that 67 per cent of the gas market was open from January 2004, representing 180,000 consumers. However, only 23 consumers, representing 5.2 per cent of national consumption, had entered the competitive market. Clearly, these are only the very largest gas consumers. No date has been specified for full market opening.

20.3. Poland

20.3.1. The Regulator

The Polish Energy Regulatory Office (URE) was established in 1997 covering electricity and gas.⁹⁸

20.3.2. The electricity industry structure

The distribution sector is being restructured ahead of privatisation. By March 2005, there were eight distribution companies. L-6 (market share 19 per cent) was created in January 2005 from the merger of six distribution companies in Eastern Poland. It is controlled by the Polish Treasury although there are plans selling shares in 2008. Enion (market share 16 per cent) was created in 2004 from the merger of five distribution companies in the South of Poland. It is also controlled by the Treasury but when it was created, the Treasury expected to begin selling shares within a year. Energa, formerly G-8, (16 per cent market share) was created in January 2005 from the merger of eight distribution companies in Northern Poland. It is controlled by the Treasury and like the other companies created is expected to be listed on the stock exchange in due course. Enea (14 per cent market share) was created at the beginning of 2003 from the merger of five distribution companies in Western Poland and, in May 2005, the Treasury announced it would begin selling shares in autumn 2005. EnergiaPro (11 per cent market share) was created from the merger of five distribution companies in South-West Poland in May 2004. No date has been set for its privatisation but CEZ (Czech Republic is rumoured to be likely to bid). Vattenfall began buying shares in GZE (10.5 per cent of the market), based in the Katowice province in 2000 (25 per cent) acquiring 75 per cent of the shares by February 2004. The Lodz Group (7.5 per cent market share) comprises two companies in the Lodz region. RWE bought 85 per cent of Stoen (5.5 per cent market share) from Warsaw in 2002.

The Polish government plans to allow the emergence of two large integrated generation/distribution companies owning, between them, about half of Poland's generating capacity. One would be based on the PKE generation company, which would own some heat plants and two brown coal mines and the other would be based on the other large publicly owned generator, BOT, also with power plants and brown coal mines. However, there have been difficulties in selecting which distribution companies might be taken over. The most likely distribution company to be taken over by BOT would be Enion while PKE might take over EnergiaPro. However, the government cannot impose such a take-over and neither BOT nor PKE would be able to own a distribution company with more than 15 per cent market share. In 2004, the government approved the strategy to privatise BOT and PKE but by May 2005, no timetable had been set.

The rest of the plants would be sold off individually. Bidders on the early offerings included Vattenfall, ENEL, Endesa, Iberdrola, CEZ, RWE and Electrabel. In 2005, the government invited bids for stakes in a number of coal-fired power plants including Kozienice (2800MW, about 12 per cent of Poland's installed capacity). Stakes would be at least 10 per cent with the balance of shares sold via public offering. The government also introduced proposals to phase out the long-term Power purchase agreements between generators and the transmission company, PSE. A voluntary power exchange, PPX, was set up in July 2000, modelled on the Nord Pool. An independent transmission company is being created from PSE (Polskie Sieci Elektroenergetyczne), the grid company created in 1990 but is expected to remain in public ownership.

20.3.3. The gas industry structure

Historically, the Polish natural gas industry has been dominated by the Polish Oil and Gas Company (POGC) also known as Polskie Górnictwo Naftowe i Gazownictwo (PGNiG). 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.

⁹⁸ <http://www.ure.gov.pl>

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 PGNiG 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 PGNiG 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. PGNiG is beginning to form joint ventures with Western companies, such as FX Energy (USA) and Eurogas to explore for and produce oil and gas. In July 2005, PGNiG was expected to be floated in late 2005 or early 2006.

The transmission system operator was legally separated as PGNiG-Przysyl, although all the shares were held by PGNiG. In April 2005, the shares were transferred to the Treasury and the company renamed Gaz-System and the assets were leased to Gaz-System. The DSO functions are separated at an accountancy level.

20.3.4. Progress with electricity liberalisation

Towarowa Gielda Energii SA,⁹⁹ the Polish Power Exchange, started operations in December 1999. The Benchmarking Report claims that about 1 per cent of Polish electricity demand was accounted for by trades in the spot market. For 20 April 2005, the daily volume was 4688MWh on the day-ahead market. Annual electricity demand in Poland is about 115TWh, so on that day, volume was about 1.5 per cent.

52 per cent of the retail market is open for competition, but in 2003, according to the Benchmarking Report, only 7 per cent of large consumers switched supplier. It is expected that all consumers will be able to choose their electricity supplier from January 2006.

20.3.5. Progress with gas liberalisation

The gas market is only 34 per cent open, so only a few large consumers can choose their supplier in theory. In practice, in 2003, the European Commission reported that no consumers switched supplier. No date has been specified for full market opening.

⁹⁹ <http://www.polpx.pl/>

20.4. Slovak Republic

20.4.1. The Regulator

The Slovak Regulator is Regulatory Office for Network Industries, RONI, (Úrad pre reguláciu sieťových odvetví (ÚRSO)), established in 2001.¹⁰⁰

20.4.2. The electricity industry structure

The main company in the Slovak Republic is Slovenske Elektrarne (SE), which owns about 85 per cent of the generating capacity, including the nuclear plants, which account for about a third of generation. The Energy Regulators Regional Association (ERRA),¹⁰¹ an association of energy regulators in Eastern Europe reported that: 'its position in the domestic generation market appears to be even more dominant than these data suggested because SE also acts as a reseller of power purchased from other sources.' In November 2005, ENEL bought a 66 per cent stake in SE, outbidding the Czech company, CEZ and the Russian company Inter RAO UES.

There are three distribution companies, Zapadoslovenské energetické závody (ZSE), Stredoslovenské energetické závody (SSE) and Vychodoslovenské energetické závody (VSE) covering the west, the centre and the east of the country respectively. Electricité de France (EDF) and RWE have each held 49 per cent stakes in SSE and VSE, respectively since 2002. Under privatisation agreements signed with EDF and RWE, they had the right to raise their shareholdings in the regional utilities if the government chose to sell its shares, but in February 2005, the Slovak government decided it would offer minority stakes in VSE and SSE via international tenders.

The third distributor, ZSE, was part privatised in 2002, with E.ON taking a 49 per cent stake. In 2003, E.ON sold 9 per cent to the European Bank for Reconstruction and Development (EBRD), but in September 2004, the Slovak government opened discussions with E.ON about doubling its stake to 81 per cent, a plan which was subsequently approved by the Slovak Cabinet but by April 2005, had not yet been completed. The transmission system operator is Slovenska Elektrizacna Prenosova Sustava (SEPS), which is fully state-owned by the national property fund.

20.4.3. The gas industry structure

Transmission, distribution and sale of natural gas in the Slovak Republic are carried out by Slovensky Plynarsky (SPP). Like Transgas of the Czech Republic, its major activity is transit of Russian gas to Western Europe, accounting for 45 per cent of its turnover with 70 per cent 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.

In March 2002, after a tender process in which only one bidder finally placed a bid, government decided to sell 49 per cent 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. The TSO and DSO functions of SPP are only separated from the commercial activities at a management level.

20.4.4. Progress with electricity liberalisation

One-third of eligible consumers' consumption was liberalised from January 2003, another third from January 2004 and it was planned that the rest of the market would be open from January 2005. The Benchmarking Report claimed that 10 per cent of eligible consumers switched supplier in 2003. There is no wholesale market and given SE's dominant position, it would make little sense to introduce one.

20.4.5. Progress with gas liberalisation

In theory, the gas market is 34 per cent open, but in 2003, the European Commission reported that no consumers switched supplier.

¹⁰⁰ <http://www.urso.gov.sk/>

¹⁰¹ <http://www.erranet.org/AboutUs/Members/List>

20.5. Slovenia

20.5.1. The Regulator

The Regulatory body is the Energy Agency of the Republic of Slovenia (Javna agencija Republike Slovenije za energijo) set up in 2001 and covering electricity and gas.¹⁰²

20.5.2. The electricity industry structure

The Slovenian electricity sector is composed of one generation company, five distribution companies and one transmission company. The generation plants are still publicly-owned, mostly in Holding Slovenske Elektrarne (SE), which includes the three largest hydro-electric plants and the largest thermal plants, but does not include the nuclear plant, Krsko (which accounts for about 20 per cent of Slovenia's electricity production), which is jointly owned by the Slovenian and Croatian government.

There are five distribution companies (Elektro Ljubljana, Elektro Maribor, Elektro Celje, Elektro Primorska and Elektro Gorenjska), all publicly owned. The publicly owned Elektro Slovenija (ELES) owns, operates and is the Transmission System Operator (TSO) for Slovenia.

20.5.3. The gas industry structure

The main gas company in Slovenia is 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 per cent owned by the state, 34.6 per cent owned by six of the regional distributors, with the rest owned by a range of shareholders including some of the other distributors.

In 1995 Italgas (part of Italian energy group ENI) bought a stake in one of the regional gas companies Adriaplin. Italgas now has 51 per cent with the remainder held by Austria's Steirische Ferngas and the Slovenian gas company Geoplin.

The TSO function of Geoplin is legally separate from the commercial activities, but the DSO functions are only separated at an accountancy level.

20.5.4. Progress with liberalisation: electricity

From 1 July 2004 onwards, all customers, except households, were considered to be eligible customers. The legislation classifies households as tariff customers until 1 July 2007. The Benchmarking Report claimed that 10 per cent of eligible consumers switched supplier in 2003.

A wholesale market, Borzen,¹⁰³ has been in operation since 2001, but the Benchmarking Report suggests liquidity in this is less than 5 per cent. Borzen reported that in 2004, the total volume of trading reached 281GWh, which is 2.22 per cent of the total consumption in Slovenia in 2004. Volume on 20 April 2004 in the daily market was 96MWh, much less than 1 per cent of demand.

20.5.5. Progress with liberalisation: gas

The Slovenian gas market is said to be 91 per cent open but the European Commission reported that, in 2003, no consumers switched supplier.

¹⁰² <http://www.agen-rs.si/sl/>

¹⁰³ <http://www.borzen.com/eng/default.asp>

21. Annex 3: Organisational opinions on the Directives

Presentations are collected on the European Commission's web-site under the Florence Forum (http://europa.eu.int/comm/energy/electricity/florence/12_en.htm) and the Madrid Forum (http://europa.eu.int/comm/energy/gas/madrid/10_en.htm)
