The European Union Gas and Electricity Directives

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The European Union Gas and Electricity Directives
Preface

The European Commission is regularly evaluating the internal market for electricity and gas. It will present a Progress Report to the European Parliament early in 2006. The Directorates of Energy and of Competition have launched a sectoral inquiry in response to claims that the market is not functioning, possibly due to market dominance and market abuse. The Commission has approached several stakeholders to present their views and to make proposals on how to go further with the internal market. To contribute to these discussions EPSU commissioned a report from Public Services International Research Unit of the University of Greenwich, Europe’s leading academic institution on the evaluation of the performance of public services, or services of general (economic) interest.

It is clear to all observers that the internal market for electricity and gas, contrary to claims made for it, is neither providing the benefits to Europe’s large industrial users, nor to domestic households. It runs into major problems. The security of supply directive was a quick fix in response to European and North-American black-outs. It recognised that the market will not provide amongst others for investment in peak capacity and grids. The PSIRU report describes the problematic nature of different wholesale markets, increased concentration and low levels of switching of domestic users. Steve Thomas, the author of the report also notes that in markets that are claimed to be working, such as the Nordic and UK ones, major snags are evident. The report details the lack of investment in networks and generation capacity, the lack of investment in training, research and development and qualified staff. These factors, alone, or in combination with each other, bring risks to a reliable, safe and affordable public service. UCTE, the organisation responsible for cooperation between system operators, argues that Europe urgently needs a long-term perspective and reliability philosophy, something that is apparently missing. The report raises the fundamental question of whether competition can work in particular in electricity, given the economic, physical and social constraints. The answer is a resounding NO, and many of the problems are inherent to competition in this industry. Other quick fixes will not help.

EPSU supports the findings of this report. While it appears natural to many readers that Europe’s energy unions are concerned about the loss of jobs (more then 300.000 over 10 years), increased outsourcing, pressure on pay and conditions and lack of investment in training, our concerns are more profound. The internal market for electricity and gas does not benefit domestic users. Price and switching are not the only criteria to judge. The current situation brings risks to Europe’s economic stability and growth, and endangers Europe’s competitive position.

EPSU is concerned that the European Commission is aiming to export its model to other countries. Examples are the South East European Energy Community, which includes the countries in the Balkans and Turkey. Internal market rules are also the topic of discussion between the EU and Ukraine, Moldova and Russia. We hope that the report contributes to a critical analysis of these developments. Is the internal market the most appropriate model?

Some of the findings such as the emerging skills gap and lack of investment in training are not just concerns of EPSU. They are shared by employers. The trade unions have discussed these issues with Eurelectric. They are also not unique to the European countries. The problem of attracting skilled staff is also an issue in other markets such as in the US and Australia. Immediate and urgent measures are needed to improve the situation. The Commission recognise that electricity and gas sectors need sufficient and qualified staff, and this should be part of the Directives. The problem of the impact of the internal market on the position of women in the sector is seldom referred to. This impact can be judged as negative. The internal market has done little to improve the situation for women.
It is easy to fall into the trap of arguing that the market does not work. It actually does work. Most problems were entirely predictable, and were predicted by EPSU in its 1999 report. But the market produces results that are sub-optimal from a macro-economic perspective and even negative considering it does not contribute to more social equity and a redistribution of wealth that benefits low income households. We can muddle through, or we can discuss if there are other ways to achieving safe, reliable and affordable energy services delivered under democratic control. We believe this discussion should be carried out on the basis of empirical analysis rather then ideological rhetoric. The rigorous reasoning of this study will contribute to this debate.

Jan Willem Goudriaan
EPSU Deputy General Secretary
Table 1  Wholesale electricity markets in the EU

<table>
<thead>
<tr>
<th>Wholesale market</th>
<th>Nordic</th>
<th>S Europe</th>
<th>C W Europe</th>
<th>UK</th>
<th>C E Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale market</td>
<td>Nord Pool</td>
<td>Italy and Spain</td>
<td>Austria, France, Germany, Netherlands</td>
<td>BETTA</td>
<td>Czech Rep, Poland, Slovenia</td>
</tr>
<tr>
<td>Liquidity</td>
<td>~30%</td>
<td>Low in Italy. Compulsory Pool in Spain</td>
<td>Some liquidity in Netherlands (but falling) and Germany</td>
<td>1-2%</td>
<td>1-2%</td>
</tr>
<tr>
<td>Market manipulation</td>
<td>A few concerns</td>
<td>Regulators in Italy and Spain investigating market manipulation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment</td>
<td>Little market-driven investment</td>
<td>‘Dash for gas’</td>
<td>Little market-driven investment</td>
<td>Feast and famine</td>
<td>Prior overcapacity</td>
</tr>
</tbody>
</table>

Table 2  Retail electricity markets in the EU

<table>
<thead>
<tr>
<th>Residential market open</th>
<th>Nordic</th>
<th>S Europe</th>
<th>C W Europe</th>
<th>UK</th>
<th>C E Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential market open</td>
<td>All countries</td>
<td>Spain only</td>
<td>Open Austria, part of Belgium, Germany and Netherlands</td>
<td>Open</td>
<td>Not open</td>
</tr>
<tr>
<td>Switching rate</td>
<td>Norway ~20%, Sweden ~10%, Finland, Denmark &lt; 5%</td>
<td>Negligible</td>
<td>Low</td>
<td>&gt;20%</td>
<td>n/a</td>
</tr>
<tr>
<td>Experience</td>
<td>Finland, regulator concerned about lack of price incentives. Sweden regulator concerned about low rate of switching, lack of information and practical difficulties</td>
<td>Little experience yet in Flanders and Netherlands. Switching rates minimal in Germany and Austria</td>
<td>Majority of switchers moving to the most expensive supplier</td>
<td>n/a</td>
<td></td>
</tr>
</tbody>
</table>

Table 3  Corporate changes in the EU electricity sector

<table>
<thead>
<tr>
<th>Dominant companies</th>
<th>Nordic</th>
<th>S Europe</th>
<th>C W Europe</th>
<th>UK</th>
<th>C E Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominant companies</td>
<td>DONG (D), Fortum (F), Statkraft (N), Vattenfall (S)</td>
<td>ENEL (I), EDP (P), Endesa (S), Iberdrola (S)</td>
<td>Verbund (A), Electrabel (B), EDF (F), RWE (G), E.ON (G)</td>
<td>EDF, E.ON, RWE, S&amp;SE, Centrica, SP, CEZ (C), MVM (H), SE/ENEL (Sk)</td>
<td></td>
</tr>
<tr>
<td>Entrants from outside region</td>
<td>E.ON (S)</td>
<td>EDF (I)</td>
<td>Vattenfall (G)</td>
<td>EDF, E.ON, RWE</td>
<td>EDF, ENEL, E.ON, RWE</td>
</tr>
<tr>
<td>Changes</td>
<td>Full unbundling of transmission, but consolidation in generation and retail</td>
<td>Unbundling of transmission. Endesa, EDP and Iberdrola consolidating in generation and retail, ENEL still dominant in Italy</td>
<td>Unbundling incomplete. Electrabel, EDF, RWE and E.ON dominant in home markets. Strong concentration in Austria and Netherlands, national champion still possible</td>
<td>Unbundling of transmission and distribution. Further consolidation likely with UK based firms under threat of takeover</td>
<td>CEZ and MVM may become national champions</td>
</tr>
</tbody>
</table>
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.
1. The Directives

1.1. 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.

1.1.1. 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.

1.1.2. 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.

1.1.3. 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.

1.1.4. 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.

1.1.5. 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.

1.1.6. 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.

1.1.7. 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.

1.2. 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.
1.3. 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.

1.3.1. 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.

1.3.2. 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.

1.3.3. 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.

1.4. 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.

1.4.1. 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.

1.4.2. 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.

1.4.3. 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.

1.4.4. 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.

1.4.5. 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)).

1.4.6. 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)).

1.4.7. 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.

1.5. 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.

1.5.1. 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.
1.5.2. 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.

1.5.3. 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.

1.5.4. 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 sizeplant 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. It states: ‘launching a tendering procedure constitutes an intervention 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.

1.6. The Energy Security of Supply Directive

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.

1.6.1. 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.

1.6.2. 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.

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

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

1.6.4. 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.

1.7. Assessment of the Security Directive
The Commission’s proposal seems a mixture of unnecessary and misguided provisions.

1.7.1. 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._

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.

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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).

1.7.2. 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 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.’

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.
2. 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 Directions 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.

2.1. The Benchmarking reports

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

http://europa.eu.int/comm/energy/index_en.html
will form the basis of the review the Commission must send to the European Parliament and Council by January 1 2006.

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. 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.

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3. 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>
<thead>
<tr>
<th>Wholesale market introduction</th>
<th>Integration of retail and generation</th>
<th>Top/top 3 generators’ market share (%)</th>
<th>% of power traded in power exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>Nordic Pool (voluntary power exchange) 1999</td>
<td>Little</td>
<td>(15/40)</td>
</tr>
<tr>
<td>Finland</td>
<td>Nordic Pool (voluntary power exchange) 1998</td>
<td>Some</td>
<td>(15/40)</td>
</tr>
<tr>
<td>Norway</td>
<td>Nordic Pool (voluntary power exchange) 1991</td>
<td>Partial</td>
<td>(15/40)</td>
</tr>
<tr>
<td>Sweden</td>
<td>Nordic Pool (voluntary power exchange) 1996</td>
<td>High</td>
<td>(15/40)</td>
</tr>
</tbody>
</table>


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

3.1. 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 retails 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. 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 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. 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. 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.

Criticisms continued in 2005. Kreditilitsynet, 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. 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. 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’.

Nordel, 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

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9 Datamonitor, April 4, 2005.
11 Utility Week, June 17, 2005, p 12.
12 http://www.nordel.org/Content/Default.asp?PageName=Home%20news
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.

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.

3.2. 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.
3.3. The retail market

Table 2. Electricity retail market structure in the Nordic Region

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


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 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

\(^{13}\) http://www.stem.se/WEB/STEMEx01Eng.nsf/F_PreGen01?ReadForm&MenuSelect=BFBB3A865FD5FC54C1256EF9004E77F6&WT=Energy%20markets

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.

3.4. 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).
Large electricity companies in the Nordic Region

<table>
<thead>
<tr>
<th></th>
<th>No 1 company (f foreign h home) N = &gt;50% national ownership</th>
<th>Other significant Nordic companies</th>
<th>Other significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Denmark</strong></td>
<td>Elsam (h)</td>
<td>DONG, E2, Vattenfall</td>
<td></td>
</tr>
<tr>
<td><strong>Finland</strong></td>
<td>Fortum (h) N</td>
<td>Vattenfall</td>
<td>E.ON</td>
</tr>
<tr>
<td><strong>Norway</strong></td>
<td>Statkraft (h) N</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sweden</strong></td>
<td>Vattenfall (h) N</td>
<td>Fortum, Statkraft</td>
<td>E.ON</td>
</tr>
</tbody>
</table>

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.’

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.

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.

4. 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 3 and 4).

<table>
<thead>
<tr>
<th>Table 3. Gas retail market structure in the Nordic Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail competition introduction</td>
</tr>
<tr>
<td>Denmark</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Table 4. Large gas companies in the Nordic Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 1 company (f foreign, h home). N = &gt;50% national ownership</td>
</tr>
<tr>
<td>Denmark</td>
</tr>
<tr>
<td>Finland</td>
</tr>
</tbody>
</table>

Source: Author's research.
5. Southern Europe: Electricity

5.1. 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 5. Generation market structure in Southern Europe

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


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. 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.

5.2. 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, 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.

5.3. 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>
<thead>
<tr>
<th>Table 6. Electricity retail market structure in Southern Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retail competition introduction</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Italy</td>
</tr>
<tr>
<td>Portugal</td>
</tr>
<tr>
<td>Spain</td>
</tr>
</tbody>
</table>


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

5.4. 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>
<thead>
<tr>
<th>Table 7. Large electricity companies in Southern Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No 1 company (f foreign, h home). N = &gt;50% national ownership</strong></td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
<tr>
<td>Italy</td>
</tr>
<tr>
<td>Portugal</td>
</tr>
<tr>
<td>Spain</td>
</tr>
</tbody>
</table>

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.
6. 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.

6.1. 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.’

6.2. 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 8. Gas retail market structure in Southern Europe

<table>
<thead>
<tr>
<th></th>
<th>Retail competition introduction</th>
<th>Top 3 retailers’ market share (%) / No retailers with more than 5%</th>
<th>% small commercial/residential consumers switching in 2003</th>
<th>Market share of foreign-owned companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>January 2003</td>
<td>63 / 5</td>
<td>-</td>
<td>Not known</td>
</tr>
<tr>
<td>Spain</td>
<td>January 2003</td>
<td>80 / 4</td>
<td>5</td>
<td>19</td>
</tr>
</tbody>
</table>

6.3. 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>
<thead>
<tr>
<th></th>
<th>No 1 company (f foreign, h home). N = &gt;50% national ownership</th>
<th>Other significant home companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italy</td>
<td>ENI (h)</td>
<td>ACEA, Hera, AEM, ASM Brescia, AEM Torino</td>
</tr>
<tr>
<td>Spain</td>
<td>Gas Natural (h)</td>
<td>Endesa, Iberdrola (h)</td>
</tr>
</tbody>
</table>

Source: Author’s research.
7. Central Western Europe: Electricity

7.1. 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 10. Generation market structure in Central Western Europe

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


7.2. 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.

7.3. The electricity retail market

Table 11. Electricity retail market structure in Central Western Europe

<table>
<thead>
<tr>
<th></th>
<th>Retail competition introduction</th>
<th>Top 3 retailers’ market share (%) / No retailers with more than 5%</th>
<th>% small commercial/residential consumers switching in 2003</th>
<th>Market share of foreign-owned companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>October 2001</td>
<td>67 / 4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Belgium</td>
<td>March 2003²</td>
<td>90 / 2</td>
<td>19</td>
<td>&lt;10</td>
</tr>
<tr>
<td>France</td>
<td>2007</td>
<td>88 / 1</td>
<td>.²</td>
<td>9</td>
</tr>
<tr>
<td>Germany</td>
<td>1999</td>
<td>50 / 3</td>
<td>Not known</td>
<td>20</td>
</tr>
<tr>
<td>N’lands</td>
<td>July 2004</td>
<td>88 / 3</td>
<td>Not known</td>
<td>18</td>
</tr>
</tbody>
</table>


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.

7.4. 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 12. Large electricity companies in Central Western Europe

<table>
<thead>
<tr>
<th></th>
<th>No 1 company (f foreign, h home). N = &gt;50% national ownership</th>
<th>Other significant home companies</th>
<th>Other significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Verbund (h) N (Energie Austria)</td>
<td>EnergieAllianz</td>
<td>EDF, GDF, RWE</td>
</tr>
<tr>
<td>Belgium</td>
<td>Electrabel (f)</td>
<td></td>
<td>Centrica, GDF</td>
</tr>
<tr>
<td>France</td>
<td>EDF (h) N</td>
<td>Electrabel</td>
<td>Endesa, ENEL</td>
</tr>
<tr>
<td>Germany</td>
<td>RWE, E.ON (h)</td>
<td></td>
<td>Vattenfall, EDF</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Electrabel (f)</td>
<td>Essent, Nuon, Eneco, Delta</td>
<td>E.ON</td>
</tr>
</tbody>
</table>

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.
8. Central Western Europe: Gas

8.1. 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 Bund-Oude on the Dutch-German border, but so far the liquidity at these hubs is very low and the price signals are not reliable.

8.2. 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 13. Gas retail market structure in Central Western Europe

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


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.

8.3. 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, Distigaz, 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 14. Gas companies in Central Western Europe

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

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.
9. 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.

9.1. 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>
<thead>
<tr>
<th>Table 14. Generation market structure in Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesale market introduction</td>
</tr>
<tr>
<td>Power Pool 1990, NETA 2001</td>
</tr>
</tbody>
</table>


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>
<thead>
<tr>
<th>Table 15. Generating capacity in Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
</tr>
<tr>
<td>British Energy</td>
</tr>
<tr>
<td>Scottish &amp; Southern</td>
</tr>
<tr>
<td>Powegn (E.ON)</td>
</tr>
<tr>
<td>NPower (RWE)</td>
</tr>
<tr>
<td>Scottish Power</td>
</tr>
<tr>
<td>EDF</td>
</tr>
<tr>
<td>International Power</td>
</tr>
<tr>
<td>Centrica</td>
</tr>
</tbody>
</table>
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.

9.2. 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.

9.3. 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 16. Electricity retail market structure in Britain

<table>
<thead>
<tr>
<th>Retail competition introduction</th>
<th>Top 3 retailers’ market share (%) / No retailers with more than 5%</th>
<th>% small commercial /residential consumers switching in 2003</th>
<th>Market share of foreign-owned companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998/99</td>
<td>60 / 6</td>
<td>22</td>
<td>50</td>
</tr>
</tbody>
</table>

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 last 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.

9.4. 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 17. Large electricity companies in Britain

<table>
<thead>
<tr>
<th>No 1 company (f foreign)</th>
<th>Significant home companies</th>
<th>Other significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWE (f) or E.ON (f)</td>
<td>SP, Centrica, SSE</td>
<td>EDF</td>
</tr>
</tbody>
</table>

Source: Author’s research.
10. 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.

10.1. 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.

10.2. 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 18. Gas retail market structure in Britain

<table>
<thead>
<tr>
<th>Retail competition introduction</th>
<th>Top 3 retailers’ market share (%) / No retailers with more than 5%</th>
<th>% small consumers switching in 2003</th>
<th>Market share of foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-98</td>
<td>82 / 6</td>
<td>13</td>
<td>27</td>
</tr>
</tbody>
</table>


10.3. 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 19. Large gas companies in Britain

<table>
<thead>
<tr>
<th>No 1 company (h home)</th>
<th>Significant home companies</th>
<th>Other significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centrica (h)</td>
<td>SP, SSE</td>
<td>EDF, RWE, E.ON + Oil majors</td>
</tr>
</tbody>
</table>

Source: Author’s research.
11. 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.

11.1. 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 20. Generation market structure in the peripheral countries

<table>
<thead>
<tr>
<th></th>
<th>Wholesale market introduction</th>
<th>Integration of retail and generation</th>
<th>Top/top 3 generators’ market share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>None</td>
<td>Full</td>
<td>100/100</td>
</tr>
<tr>
<td>Ireland</td>
<td>None</td>
<td>Full</td>
<td>85/90</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>None</td>
<td>None</td>
<td>Not known</td>
</tr>
</tbody>
</table>


Note: No power exchanges exist in these countries.

11.2. 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.

11.3. 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 21. Electricity retail market structure in the peripheral countries

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


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.

11.4. 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 22. Large electricity companies in the peripheral countries**

<table>
<thead>
<tr>
<th></th>
<th>No 1 company (h home). N = &gt;50% national ownership</th>
<th>Other significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greece</strong></td>
<td>PPC (h) N</td>
<td>-</td>
</tr>
<tr>
<td><strong>Ireland</strong></td>
<td>ESB (h) N</td>
<td>Viridian</td>
</tr>
<tr>
<td><strong>Northern Ireland</strong></td>
<td>Viridian (h)</td>
<td>BG, AES, ESB</td>
</tr>
</tbody>
</table>

Source: Author’s research.

Note: In all three cases, there are no significant home companies except the dominant one.
12. 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.

12.1. Gas markets

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

12.2. Corporate changes

The main company in the gas sector is the state-owned Bord Gáis, 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.
13. The CEE countries: electricity

13.1. 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 23. Generation market structure in Central Eastern Europe

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


13.2. 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 24. Electricity retail market structure in Central Eastern Europe

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


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

13.3. 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 25. Large electricity companies**

<table>
<thead>
<tr>
<th></th>
<th>No 1 company (f foreign, h home). N &gt;50% national ownership</th>
<th>Significant foreign companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Rep</td>
<td>CEZ (h) N</td>
<td>E.ON</td>
</tr>
<tr>
<td>Hungary</td>
<td>MVM (h) N</td>
<td>EDF, E.ON, RWE</td>
</tr>
<tr>
<td>Poland</td>
<td></td>
<td>RWE</td>
</tr>
<tr>
<td>Slovak Rep</td>
<td>SE/ENEL (f)</td>
<td>EDF, E.ON, RWE</td>
</tr>
<tr>
<td>Slovenia</td>
<td>HSE (h) N</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s research.
14. 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.

14.1. 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.

14.2. The gas retail market

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

<table>
<thead>
<tr>
<th>Table 26. Gas retail market structure in Central Eastern Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail competition introduction</td>
</tr>
<tr>
<td>Czech Rep</td>
</tr>
<tr>
<td>Hungary</td>
</tr>
<tr>
<td>Poland</td>
</tr>
<tr>
<td>Slovak Rep</td>
</tr>
<tr>
<td>Slovenia</td>
</tr>
</tbody>
</table>


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

14.3. Corporate changes

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

<table>
<thead>
<tr>
<th>Table 27. Large gas companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 1 company (f foreign, h home), N &gt;50% national ownership</td>
</tr>
<tr>
<td>Czech Rep</td>
</tr>
<tr>
<td>Hungary</td>
</tr>
<tr>
<td>Poland</td>
</tr>
<tr>
<td>Slovak Rep</td>
</tr>
<tr>
<td>Slovenia</td>
</tr>
</tbody>
</table>

Source: Author’s research.
15. **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 other 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

15.1. 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 & Hall\textsuperscript{18} found that out-sourcing was potentially very damaging in the electricity sector:

‘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’.\textsuperscript{19}

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

15.1.1. 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).

15.1.2. 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.

15.1.3. 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.

15.1.4. 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).

15.1.5. 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).


15.1.6. The CEE countries

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

15.2. 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.⁵⁰ 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.⁵¹ 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,⁵² 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’.’

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A second report by Fairbrother, 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 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.’

15.3. 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.

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Table 28. Employment in the electricity sector in the Nordic region

<table>
<thead>
<tr>
<th>Year</th>
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<th>Norway</th>
<th>Sweden</th>
<th>Total</th>
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</thead>
<tbody>
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Sources: Data compiled by EPSU from a variety of sources.

Table 29. Employment in the electricity sector in Southern Europe

<table>
<thead>
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<td>51662</td>
<td>175476</td>
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Sources: Data compiled by EPSU from a variety of sources

Table 30. Employment in the electricity sector in the Central Western Europe

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<th>Year</th>
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Sources: Data compiled by EPSU from a variety of sources

Table 31. Employment in the electricity sector in the UK

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<thead>
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<th>Year</th>
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<tr>
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Sources: Data compiled by EPSU from a variety of sources

Note: Includes Northern Ireland
### Table 32. Employment in the electricity sector in peripheral countries

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

### Table 33. Employment in the electricity sector in the CEE countries

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</tbody>
</table>

Sources: Data compiled by EPSU from a variety of sources.
16. **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.

16.1. **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.

16.1.1. 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.

16.1.2. 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 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 is 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.
16.2. 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.

16.2.1. 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.

16.2.2. 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 electricity, 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.

16.3. 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 ‘duel 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.
17. Consequences of the Directives and alternatives

17.1. 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.

17.2. Alternatives

17.2.1. 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.

17.2.2. 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.

17.2.3. 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.

17.2.4. 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.

17.2.5. 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.

17.2.6. 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.
**EPSU** the European Federation of Public Service Unions is a member of the ETUC. 8 million workers organised in their 216 trade unions are members of EPSU. These workers deliver services to the public in health and social services, local, regional and central government, and the utilities in energy, water and waste. EPSU organises workers in both public and private companies including large transnational companies.