

Current Developments and Problems of Electricity Regulation  
in the European Union and the United Kingdom

Gordon Mackerron  
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Abstract: This paper deals current developments and the problems of regulation in European electricity in general and -in somewhat more detail-, England and Wales in particular.

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OF ELECTRICITY REGULATION IN THE EUROPEAN UNION AND THE UK**  
**Gordon MacKerron**  
**July 1999**

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## **CURRENT DEVELOPMENTS AND PROBLEMS OF ELECTRICITY REGULATION IN THE EUROPEAN UNION AND THE UK**

**Gordon MacKerron<sup>(1)</sup>**

### **INTRODUCTION**

I am going to make the assumption –following advice- that you already know something about the way in which we organise electricity, first of all, in Europe, more widely and, secondly, in Britain, more particularly. My specialisation is much more in the economics and regulation of the British, or putting it more precisely and specifically, the English and Welsh electricity industry. We have a separate industry in Scotland and a completely separate one in Northern Ireland. I am going to talk a bit about current developments and problems of regulation in, first and briefly, European electricity and then, in somewhat more detail, the England and Wales electricity model.

### **I. THE EUROPEAN UNION EXPERIENCE**

#### **I.1 EUROPE-WIDE DIRECTIVES FOR ELECTRICITY DEVELOPMENT AND SUBSIDIARITY APPROACH FOR REGULATION**

We have passed, within the European Union, for the first time, a significant directive affecting the way in which electricity markets will develop in Europe, more generally. It is the Electricity Directive called 96/92. It attempts, in some ways, to be a comprehensive directive. It covers the generation of electricity, it covers transmission access, in some ways the most important issue – I think – and it covers, perhaps with more publicity, the issue of the retail sale of electricity.

In regulatory terms, the fundamental issue seems to me to be that there has, of political necessity within Europe, been an agreement that the regulation of this directive will have to be a matter, almost exclusively, for national governments. We have in Europe now a political principle we know as subsidiarity. It is a principle which simply says one should devolve, to the lowest level of political structure as possible, responsibility for implementing policies. There is an increasing resistance on the part of much of the public within Europe to supranational power, to international regulation and politics. A response of those in the political system who want to

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Besides a wide range of academic and other publications, Mr. MacKerron has made frequent radio and TV appearances, and has advised a wide range of mostly public sector institutions in the energy field (including the National Audit Office, the European Court of Auditors, DG XVII –Energy- of the European Commission, and the European Parliament). He has been a Specialist Adviser to the House of Commons Trade and Industry Select Committee in its inquiry into the proposed coal closures (1992/93) and for its inquiry into nuclear privatisation (1995/96). He also advised the electricity regulator, OFFER, in relation to the Government's nuclear review. He is currently Chairman of the Energy Panel in the Government's Technology Foresight Programme.

continue with Europe-wide developments has been to try, wherever possible, to devolve, first of all to national governments, and then where it seems appropriate, to regional or even local governments, responsibility for the regulation and implementation of policies of all kinds.

The problem that we have in the field of electricity is that the directive prescribes common rules for the whole of Europe, but the regulation of that directive is going to be almost exclusively a matter for the national administrations and the national regulatory agencies, and one's suspicion is that this will make for a very uneven form of regulation with particular results.

## **I.2 A MIXED PRIVATE-PUBLIC FORMULA FOR GENERATION**

Just let me outline very briefly what this Electricity Directive does. It has been implemented in all fifteen member states of the European Union, starting in February of this year with two exceptions, one of which is Greece, who have had a two-year period in which to adapt -the year 2001. Most of its provisions have to be implemented by the year 2003 and let me say briefly what they cover.

In the area, first of all, of generation, there is a possibility that when new generating capacity may be needed, member states are given two alternatives. They can take the relatively more liberal markets, that of licensing new generation. The intention there is that anybody who chooses to build new generation will have the freedom to do so, subject only to whatever the national licensing requirements may be, but these are meant to be technical and, in economic terms – relatively speaking- trivial requirements. But there is also another option -a feature of this electricity directive is that, at all points, it gives member states options.

The other option is then, a process of tendering whereby a continuing, often State monopoly utility, will make a decision about what new capacity is required, but it will no longer be a case that that utility will have an automatic right to own and construct that generation facility. It will need to conduct a tendering process of a relatively public and transparent kind in which the successful bidder will, in some public process, show that they can offer at the lowest possible price, the specified new capacity. This allows very considerable planning powers of a traditional kind to rest in the hands of a central, and probably State-owned utility. It allows the planning of generation to be a centralised matter, but the detailed implementation and cost minimisation aspects, will then be subject to a tendering process. So in that sense, it is not a very large liberalisation and not very much publicity has attended the generation part of the directive.

## **I.3 CHOICES ON THIRD-PARTY ACCESS TO NETWORKS**

The second part of Electricity Directive 96/92 consists of access to transmission, and for that matter distribution, and it deals with the terms on which third-party access will be allowed to the network system. Here member states are being given three particular kinds of choices. There can be what is called regulated access, negotiated access or something called the single buyer. It has taken a total of about seven years to get member states to agree to this.

Most of the argument has been around the idea of the single buyer which was an idea invented by Electricité de France (EDF) around 1991, on which they spent about five years fighting for very strongly and then decided to abandon. We have had an enormous battle over allowing for the possibility of the single-buyer model of transmission access. Now, every single member state in the European Union has said they do not wish to use the single-buyer model. They will use either regulated or negotiated access, which I think is a good thing because the single-buyer model is, by some long distance, the least liberal way of allowing people access onto the system. In the single-buyer model, a single, dominant national utility, will be responsible for procuring all generation and then selling it on to all final customers or at least, if not all final customers, certainly all small customers. There will be some provision –as we shall see later on- for large customers to have freedom of access. In practice, the issue for individual member states has been whether to apply the idea of regulated access or negotiated access.

Again, regulated access is the more liberal solution where you, in principle, allow anybody access to the transmission and distribution network on some terms that are common and agreed to apply to everybody. Or the less liberal approach of negotiated access, where everybody who wishes to have access to the transmission system must engage in a more or less private negotiation with the owner of the transmission network. It thus becomes extremely easy, in principle –certainly in practice, if not in principle- in negotiated access, for the owner of the transmission network to declare there is some insuperable technical problem -most likely it is going to be claimed to be congestion in the system- which will not allow people to get access when the owner of the transmission network decides, for some other market-based reason, that they do not wish other parties to have access.

At the moment, most of the member states within the EU are choosing between regulated and negotiated access. Greece has not yet decided. It thinks it might go for the single buyer but as it would be the only EU member country to do so, the chances of that seem to me to be relatively small. A majority of countries have in fact chosen regulated access, the more liberal solution. The French and others are choosing negotiated access.

#### **I.4 FREEDOM TO CHOOSE A RETAILER**

The third element of Electricity Directive 96/92 is the question of the retail supply of electricity. This has also had quite a lot of publicity as well. There is, in this respect, a common requirement across all the member states. The exact figures do not matter, but by the year 2003, approximately speaking, 33% of all retail sales of electricity, that is, the consumers with the largest amount, constituting roughly a third of the entire market, will have freedom to choose their supplier from anybody that will sell them electricity within the EU. The proportions will rise gradually and end up at 33%.

It was thought, at first, that some of the countries which have had more traditional, vertically-integrated structures would have difficulty in meeting this target of 33% by the year 2003. Anyhow, our early experience is that most countries, including those that seemed the least liberal in the first instance, will probably exceed this target and some may reach 50%. There are some

countries within the EU – of which the UK is one – which have already reached the position of 100%. In fact, we have reached it this year; so some countries will already more than meet the requirements.

### **I.5 ENVISAGED SHORTCOMINGS OF ELECTRICITY REFORM**

The regulatory problem that I think is most dominant in this development is the following: if you take a step back from the economics of regulation, and ask questions about what are the politics of electricity reform in the European Union. The politics of electricity reform are fundamentally driven by the requirements of large European industrial consumers and, within the field of large European industrial consumers, it is German industry, in particular, which has been the political leader. That is perhaps for two reasons: one is that German industry is, in any case, the dominant industry within the European Union. But secondly, and more importantly, German retail electricity tariffs are by some distance the highest in the whole of the EU. German industry feels itself to have been suffering very substantially in recent years, especially because of the need to absorb within the German economy, the relatively inefficient industry from the old GDR - German Democratic or East German Republic. German industry has been looking for all the possible advantages that it can get, has made alliances with other kinds of European industry and is very much being the driving force behind the directive.

My main worry from a regulatory perspective is the following: that the new generation system actually will not make a lot of difference. On the whole, in Europe, we still have surplus capacity in electricity industries, where we have not done very radical reform and there is not a very strong impulse to new investment; consequently, whatever happens here will not make a great deal of difference.

In the area of transmission, I think, it is very likely that the dominant incumbent utilities which are not yet much reformed -and I think Electricité de France (EDF) is the principal industry in this respect- will apply the principle of negotiated access and will make negotiations involve extremely high transaction costs, over extremely long periods of time, and it will be very difficult for people to get the kind of open access to the transmission system that they would wish. Moreover, because the prime regulatory authority for this will be the French Ministry of Industry -not the European Commission- the chances of the French regulatory system seriously intervening and preventing this kind of potential delay, seems to me to be quite slow. It means that the pace of genuine change will vary very much by Nation-State and, I suspect, in the case of France -Greece will probably be another one as well- it will be very slow.

Turning to the third issue -and that is the opening up of roughly one third of the market to competition- the main worry here, I think, is that those utilities, like EDF, which are worried about losing their market share, have already been engaged in a process of making some extremely attractive offers to French large industrial consumers, at very low and very attractive tariff rates, on relatively long terms, with some possibility of flexibility in price in later years, precisely designed to make sure that although, in principle, French industrial consumers will be able to choose their electricity supplier quite freely, in practice, they will remain with EDF. They will be very happy, they will get very low tariffs and will get better terms than they would have

done before. The result for these industrial consumers will be quite good, but because utilities like EDF will remain dominant in the French market, there is an extremely strong prospect of quite a large cross-subsidy taking place. So that in this particular case, French small consumers, mostly household consumers but also smaller industrial and commercial consumers as well, are likely to have loaded onto their market, relatively high costs to finance the way in which EDF will drive off foreign competition in this 33% of the market which is open to competition. There is no way in which the European regulatory system will be able to do very much about that if the national governments and national regulatory systems choose not to intervene themselves.

There is therefore, I think, a very strong chance -given the initial politics, which was the whole reform, fundamentally motivated politically by the needs of large industrial customers- that the large industrial customers will almost certainly end up significantly better off, irrespective of who actually supplies them. Certainly, for some countries, there is a real risk of an increased level of cross-subsidy, very much at the expense of household and small consumers, and very much to the advantage of industrial consumers.

## **L.6 IMPOSSIBILITY OF SUPRANATIONAL CORRECTIVE REGULATORY ACTION**

People ask: is there no kind of Europe-wide level of regulation that might correct for contradictions or abuses or difficulties of this kind? And the answer is: not to any very large extent. The only kind of serious regulatory agency for European directives of this kind is the Commission of the European Community. The problem for the European Commission is that it is -politically speaking- going through very difficult times. The possibility of the European Commission acting as an effective regulatory agency, and contradicting the interests of individual member states within the European Union is -I would say- historically, at the moment, at an all-time low level.

So while it is true, that certain directorates-general of the European Commission, for example, Directorate-General Four, which is responsible for competition policy, Directorate-General 17 which is responsible for energy policy, and the detailed implementation of this directive, while they both in principle have powers which allow them to intervene in some way, should there be significant abuses that result from this new directive, in practice, the chances of them being able to do so, in a politically likely way, are actually very small. So we have a major regulatory vacuum, a hole at the heart of the European enterprise in electricity. Nobody has thought about it very much yet, because this is the very first time that within the European Market as a whole, we have tried to apply common rules. We have had, until now, energy and electricity policy, devolved entirely as a member state responsibility, and this is the very first time that serious market rules are to be implemented across all member states. It is at the moment politically virtually impossible to think about supranational regulation to enforce it and so my fear about this, as an issue, is that industrial consumers will benefit very greatly but that will not be as a consequence of much greater efficiency. It will be mainly at the expense of smaller, especially household, consumers.

## II. THE UNITED KINGDOM EXPERIENCE

### II.1 MORE CONTRIBUTIONS FROM DOWNWARD TRENDS IN PRIMARY FUEL PRICES RATHER THAN FROM EFFICIENCY GAINS

One of the things where we have been very, very lucky in England is that we have done our privatisation at a time when world fossil fuel prices were falling very sharply. The largest single element of cost in our electricity industry, is the price of primary fuel, initially, coal and now, particularly gas. The price of both of these things has fallen continuously all through the 1990s. This has meant there has been a lot of economic rent that could be thrown around quite easily. We have been able to allow shareholders to make very large gains, while still reducing final consumer tariffs. Now, that has partly been, because the industry is more efficient. The dominant explanation for the ability to both pay shareholders much more money and to give consumers lower tariffs has been a very large amount of headroom opened up by these much lower fossil fuel prices.

Partly for that reason, domestic tariffs are still falling. We find that the regulator, despite the opening up of the small consumer market, is still price-regulating this market, at least until the year 2000. He is currently consulting about whether to continue to price-regulate this apparently open market well beyond the year 2000. I think, since he is worried about poorer consumers being charged more, almost certainly, he will do so. The regulator has already stated that, on average, the host distribution company must reduce its tariffs to all consumers by a minimum of 9% over two years, 1998 to the year 2000, which is relatively easy to achieve because there are price controls on transmission and distribution which require transmission and distribution charges to come down. Moreover, he already knows the details of some contracts signed for generation, in which the generation price is coming down as well. What makes it a sweeter pill for people to swallow is that every consumer will, at least, have a 9% reduction in tariffs for two years, even if they do not switch supplier. That is what might make it a politically much easier problem than it otherwise would be.

It is important to mention that part of the relative success of our experiment in Britain is that it has been largely financed by low coal and gas prices. If coal and gas prices had risen to the same extent that they had fallen, and at the same time we had privatised, we would have had a very much more political solution. We have been able to allow economic efficiency as our primary regulatory criterion because the underlying economic force was declining fossil fuel prices, which meant that the amount of available economic rent was actually rising very fast. That has been a way of lubricating the entire process.

Summing up, in general, consumers have benefited quite a lot since privatisation. If you ask how much of it is due to falling fossil fuel prices, or to effective regulation, or to competitive forces and efficiency, I have to answer you, number one cause, is falling fossil fuel prices; number two cause, is better regulation, reducing these prices; and number three cause, is better internal efficiency as a result of competition. That does not mean –I think- that internal efficiency as a result of competition is not important. I think it is, and it has mattered. But it has not been a

dramatic change. There has not been an enormous change in efficiency since 1990, certainly not nearly enough to bring about the tariff reductions that we have actually had. It so happens that we have had falling fossil fuel prices, improved regulatory control of monopoly price areas, and some improvements through efficiency and competition as well. But the above is the order in which, quantitatively, these benefits have been delivered to final consumers.

## **II.2 RE-SETTING CAPS TO DEAL WITH MISLEADING INFORMATION IN TRANSMISSION**

The transmission system –when we privatised our industry- was fairly comprehensive and slightly larger than we needed, so the scale of investment requirements in transmission, by comparison with countries like Argentina, is actually very small. Nevertheless, it is not trivial, and part of the transmission system is quite old –it is about 30 years old- and it needs replacement and substantial repair, such as to constitute essentially new investment. The way in which we handle investment is through price regulation. We have the rpi – x system. In 1990, the value of “x” was equal to zero, in other words, transmission charges could rise at the same rate as prices in general. In 1993, it was set at three. In a single year, in 1997, it was set at 20. At one moment in 1997, transmission charges had to fall, or transmission revenues, to be strictly accurate, had to fall by 20%, and then every year, to the year 2001, they will have to fall by another 4% which means that by the year 2001, transmission charges will only be 55%, in real terms, of what they were in 1990.

When it comes to resetting the “x” term in prices, the regulator invites the transmission company to estimate both in physical and financial terms, what investment requirements will be over the regulated period. He then says, “I will allow you a real rate of return on this investment”. One of the reasons why price-cap regulation in the end is actually quite a close relative of rate of return regulation is that, whenever you get into an issue of investment, you cannot avoid rate of return questions. So we have said, 7% is the allowed real rate of return on new transmission or distribution low-risk investment. Essentially what happens is, when the price formula is determined, part of that determination is the regulator’s view of the amount of necessary investment which is always less than the company says –it is part of the bargaining game between the two sides-, on which he then allows them a 7% annual rate of return and that is, in fact, the way in which the price-cap is determined, together with the consideration of operating costs and other revenues and costs.

The interesting story here –briefly- is that in this first resetting in 1993, the National Grid Company -the private company- said “we are going to have to do an enormous amount of investment in the next four years”. Although the regulator did not completely believe them, he believed them about 85%. He gave them a price control of three. They went away and said, that is absolutely great, and they made an enormous amount of money. They came back in 1996 and said, “we are going to have to do an enormous amount of investment in the next five years”. The regulator said, “I do not believe you at all. I am only going to allow you 10% of what you say you need and, to punish you for fooling me last time, I am going to make you reduce your prices by 20% overnight”. Interestingly enough, if they had disliked this so much that they thought it was unfair, they could have appealed to our Monopolies and Mergers Commission, which acts as a Court of Appeal, so they do have some recourse. Of course, in practice, the electricity regulator

had been in touch with the Monopolies and Mergers Commission and they said exactly what they intended to do. Although the National Grid Company could have made that appeal, and although it might have been successful, it actually calculated that, in practice, it would not be.

The 10% reduction was once and then, each subsequent year, there was going to have to be a further 4% reduction, each year until the year 2001. So the result was that, by the year 2001, the average level of transmission charge could only be 55% of what it was in 1990. In other words, it had almost halved. That does not actually suggest that there has been a doubling of productivity or efficiency in the industry. It actually suggests there is a lot of excess profit that was being made earlier on and has now been taken away. There has been improvement in efficiency and the “x” factor could have been “minus something” because of efficiency, but the greater part of this is something to do with excess profit levels that were initially allowed, and are now being taken away by effective regulatory action.

If you ask me, “has this really meant a really large change in their profits”, the answer is “No”. Their profits have now stabilised. They started rising very fast and after 1997 they have now stabilised, which suggests that it was actually a perfectly economically rational decision, even though it appeared like a kind of revenge at the time. One of the very interesting phenomena in England is that the regulator, of course, had never regulated before. It was a new activity. But the new companies which were immediately quite commercial were also very smart. I think it is fair to say very crudely that, for the first five years, the companies outsmarted the regulator and, since about 1995, the regulator has been getting his own back. It has taken about five or six years for the regulator to learn enough about the way in which the companies financially manipulate their negotiations with him, for him to get some control over the industry. So the price determinations that have taken place since 1995 have been quite stringent and relatively difficult for the companies. They have not gone bankrupt, they are still quite happy. They are making a normal level of return but they were previously making a very high level of return, in a very low-risk industry, in transmission and distribution and that was clearly not an acceptable long-term position.

### **II.3 THE GEOGRAPHY OF VERTICAL DE-INTEGRATION AND INTEGRATION**

One of the things I always like to say in meetings of this kind is that, the British government seems to have a belief that economic theory changes, as you move North from England to Scotland. South of the English-Scottish border, economic theory says that you pursue economic efficiency best in the electricity industry by vertical separation, preferably into four completely separate activities: generation, transmission, distribution and retail supply –that is something I am sure is not unfamiliar to you.

We have in England and Wales emphasised very much, in recent years, the separateness of supply, essentially the commercial activity in electricity where you buy electricity in bulk and then you sell it. It has a trading function; it has nothing to do with the physical business of generating or transmitting electricity. Economic theory in England says -where possible- each of these four stages should be vertically separated. Economic theory in Scotland seems to say, on the contrary, you should actually combine them all together. When we did our privatisation in

1990, in England we put an enormous amount of effort into separating these four stages and, in Scotland, we said, no, there is no point, let us just keep everything vertically integrated.

The problem that the Conservative Government faced at the time of privatisation was not to upset the Scottish political system. I do not make any apology for showing the interactions between the politics and the economics of this industry, because they have always been very tight and very close -I think- probably everywhere, and certainly for us. Not only was Scottish nationalism very important but so was support for relatively traditional social democratic politics, represented by the Labour party. Support for free market capitalism was much smaller in Scotland than it was in England. There were already two politically quite popular vertically-integrated utilities in Scotland, and the political calculation was –that if they got broken up- it would be politically, enormously unpopular. To give you another example from another industry, when we privatised the water industry in Britain, we privatised it in England but we left it in public hands in Scotland, because of the fear of the Scottish political reaction. Or, putting it crudely, people were even less likely to vote Conservative, if the same changes took place in Scotland as took place in England, and so they did not privatise it in the North. There were some technical reasons as well. Scotland is a smaller system; it had more nuclear power in it, but it would not have been a big problem to treat it the same as England if the politics had allowed us to do so. For that reason we did not.

Finally, I have to mention that we have a completely different model in Northern Ireland. Northern Ireland is a very complicated place for a variety of reasons. It has no physical electricity connection –yet, it will have- to Scotland or to England, and it operates another completely separate model. We are trying very hard to wean it away from the single buyer because when we are negotiating in Brussels and we say we want an open market, the French say, “what about Northern Ireland?” And we say, “well, that is a bit embarrassing”. I could talk more about Northern Ireland but it is only a market of one million people and it is completely geographically separate, subject to the very difficult politics of Northern Ireland. I would prefer not to deal with it at any great length but it is an embarrassment -I accept that that is true. To a significant extent, the experience of Scotland is an embarrassment to those who argue that it is very important to vertically separate these four stages.

We were relatively successful in the early years of privatisation in England and Wales in getting vertical de-integration. We certainly created immediately a separate transmission company: the National Grid Company which neither buys nor sells electricity, it simply makes a charge for the use of the transmission system and the charge is public and it is regulated, and it is universal. There has been confidence for some years on the part, both of potential generators and consumers, that they will not, in any way, be blocked from whatever commercial transactions they wish to make because of any difficulties in the transmission system. The transmission system has worked very well as a vertically separated entity. Nobody seriously suggests re-integrating transmission with the rest of the system.

#### **II.4 FREE (THOUGH COSTLY) CHOICE OF SUPPLIER**

Anyhow, we did not vertically de-integrate completely. We kept distribution and supply together, partly of course, because it always had been together. In other words, the local companies which owned the wires and had traditionally done all the retailing as well, continued to do so, at least at first.

In three stages, we have separated distribution and supply, if not quite institutionally, then at least, in principle. First of all, from 1990, we allowed customers of 1-Mw maximum demand to have a free choice of supply. Later, in 1994, we allowed customers with a 100-Kw maximum demand to have a free choice of supply, and by then that was about 50% of all electricity sales in kilowatt/hour terms. Recently, in 1998, ending in May of this year –only two months ago- we opened up the entire market to free choice of supplier, so every consumer now in England, Wales and Scotland –for that matter, 23 million consumers in all- can choose who sends them their bill. They may make savings, to some extent or other, by choosing to switch away from the host distribution company which traditionally had the monopoly franchise of retail sales and into some other supplier.

I should also mention that it has also been extremely expensive to open up a market to household supply competition. To develop the new software and data transfer systems that are necessary to allow all 23 million consumers to switch supply, if they wish, has already cost over one billion dollars. The regulator has made an announcement with which I personally am not in agreement, that over 95% of this cost is legitimately chargeable to consumers. Over the next five years, the consumers who are supposed to benefit from this new market –who may in some cases benefit from it to some significant extent- will all certainly have to pay more than a billion dollars in order to have the system set up. It is likely that richer consumers will make significant net gains over five years, even after they have paid for the billion dollars. It is also possible that some poorer consumers will make no net gains at all, in which case the question is raised politically: was it worthwhile, in the first place?

Coming back to the issue of integration, we have separated distribution and supply, but until now, in the regulatory process, we have issued a single license to the distribution companies, covering both distribution and supply. We also have available separate licenses for retail supply to other suppliers who want to compete, but the distribution companies have been licensed jointly. We are just reaching a point now where, starting from next year, the distribution companies which will still be doing distribution, of course, and will also be prominent in retail supply, will have to have separate licenses for the two businesses, but they will still be allowed to conduct the two businesses, in a sense, in parallel. They will not have to have physical separation of their businesses. They will be able to continue to work as they now do.

## **II.5 LIMITED AND CONTROLLED DISTRIBUTION-DRIVEN RE-INTEGRATION**

There is a real issue in the British regulatory system: whether or not there should not be further separation; whether, even if we allow the same companies to do distribution and retail supply, under the same ownership, we should require the companies to become physically separate and not have them united within the same company headquarters or company organisation. We have not really decided that yet. What has been more important in terms of vertical integration, has

been the very strong desire, of the generating part of the industry and the distribution part of the industry, to re-integrate as much as they can. They will re-integrate, of course, not fully, if we have generation, transmission, distribution and retail supply. We are clearly going to keep transmission entirely separate and everyone is going to have access to that, but the generators have wanted to get hold of distribution and supply, and the distribution companies have wanted to get hold of as much generation as possible. A very large part of the regulatory problem that we have experienced in England and Wales has been various regulatory attempts to stop the distributors getting hold of too much generation, and stopping the generators getting hold of any distribution or supply.

In the initial settlement of privatisation, we had the very unfortunate result, very well publicised, very well-known, that we had only two dominant fossil fuel generators and we had twelve distribution companies. It was perfectly clear that these two generating companies, because they had just been split from one large State organisation, also had intimate knowledge of each other. Most of the people who had worked for the State Corporation –the CEGB- moved into National Power or PowerGen. The amount of detailed cost and technical information available to each company about the operations of the other was enormous because, essentially, they were all the same people. It was, therefore, extremely easy for these two generators to operate in a collusive manner, without any very explicit arrangements between them. It is common place and true, that the two generators have acted very collusively in the wholesale market, and the wholesale market has been, in some ways, quite unsuccessful, in the sense that the price determined in the wholesale market has been very high, which has been a persistent theme of our system for the last nine years. Let me just give you a simple example in economic terms of why it is perfectly plain that our wholesale electricity price is too high; it also helps to explain the popularity of new investment.

In the last few years the average price determined in our electricity pool has been, in English currency terms, round about 2.5 pence per Kw/hour; sometimes it has gone to about 2.7, sometimes it has been around 2.3 but that has been roughly speaking, the average wholesale price. If you ask the question: what is the full cost of new entry into this industry as a generator? The answer is that it has been falling, but the full cost of new entry is now about 2 pence the Kw/h. You would normally expect, in any reasonably competitive market, that the new entry price ought to be an upper limit to the wholesale price and it clearly has not been. Because it has not been, these 2 pence per Kw/hour will reward any new investor with a reasonably good rate of return. If you can be paid round about 2.5 pence the Kw/h, you are then getting up to a real rate of return of 20% and more, so it is no great surprise to discover that, although we had a very large surplus of generating capacity when we privatised our industry, and although we then introduced more commercial risk to the investment decision, the answer was not that nobody wanted to invest, the answer was absolutely everybody wanted to invest, and we have now had, roughly speaking, 20Gw of new capacity installed in the last 10 years. That represents about one third of the size of the entire system, on top of a pre-existing surplus of capacity of a maximum demand. The principal explanation for the popularity of this new investment has been the inadequate competition in the generation market, keeping the level of wholesale prices well above the entry level for new investment, and thereby encouraging, almost certainly, an excessive level of new investment.

Let me come back to the story about vertical re-integration. Because we have been so worried about the power of the generating companies to keep up wholesale prices to levels above what we would expect in a competitive market, the one thing that we have been very keen to do –the regulator has been very keen to do- is to avoid allowing the generators to have any contact at all with distribution or supply companies. On the other hand, because the distribution companies have had such relatively poor bargaining power in the market, there has been a lot of allowance for the distribution companies to go into their own generation. The most enthusiastic participants of all, in this investment process which has yielded about 20 Gw, have been the distribution companies. Something like 10 Gw of new plant is now, at least partly, owned by the distribution companies and they allow themselves, as well as owning these plants, to sign power purchase agreements to take back the electricity from them. They very foolishly signed power purchase agreements over 15 years, both for quantity and for price. Fifteen years for quantity would have probably been okay, but they also fixed the prices at about 2.7 to 2.9 pence the Kw/h. Because they can now buy out of the pool at about 2.5 pence the Kw/h, the distribution companies are landed with essentially stranded contracts, at these really rather high prices which they were nevertheless willing to pay in the early 1990s, as a way of gaining some leverage over the major generating companies and of having some control over their own generation. Therefore, we began to allow some vertical re-integration to help the distribution companies counteract the power of the generators. The generators, however, continue to want to acquire distribution and supply companies.

## **II.6 REDUCING THE MARKET POWER OF DOMINANT GENERATORS THROUGH DIVESTITURE AND BY ALLOWING LIMITED RE-INTEGRATION**

The question is really, why shouldn't they? Provided the transmission system is kept opened to access and available to everyone, why should the generators not acquire distribution and supply? I think the answer to it is not that it is inherently undesirable to have a generating company owning distribution and supply. It might be undesirable to have it owning distribution, but now that we are separating off the licenses for distribution and supply, it is not clear why generators should not own electricity supply, should not be electricity retailers. The answer that I, at least, give to why we have not been willing to let them acquire distribution or supply, is simply that they already have too much market power. To allow them to own any other facilities in the industry, gives them even more market power.

What the regulator has been doing, and relatively successfully, as a way of trying to stop the generators from having too much market power, has been doing various kinds of bargaining deals that partly involve connections, alliances, with other parts of our regulatory system. It is important here to say that we have, in Britain, a quite long-established organisation which we used to call the Monopolies and Mergers Commission. It has been recently renamed the Competition Commission and has been given slightly enhanced powers under a new Competition Act which is, first of all, a well-respected institution and also one given quite a deal of power. There are a whole series of pieces of competition legislation that have evolved over the last thirty years.

Our electricity, gas, water and telecommunications Regulators would not have had as much success as they have in regulating their industries, had they not had available to them, the possibility of making alliances with these central, economy-wide pro-competition anti-monopoly regulators.

In the first instance, when the regulator wanted to reduce the market power of the generators in 1994, he made them a threat -as they say in the film “The Godfather”, he made them an offer they could not refuse-. He said to them: “I have no power to make you sell off any of your plants and I have no power to make you reduce the pool price, because the legislation says that generation is a competitive activity. On the other hand, both of you have a share in the electricity market, above 25%, and our General Competition legislation in Britain says that if you have more than 25% market share and if I, as your regulator, have grounds for thinking you are behaving anti-competitively, I can make a reference of you to this Commission, and the worst thing that they might do is to recommend that you be broken up. Now, would you like to risk being broken up or would you like to sell 6000 Mw of plant and freeze the pool price?”. And they said, “actually we would rather sell the plant and we will freeze the pool price because we do not want to go to the Competition Regulator who might produce an even worse result”. One of the ways in which we successfully reduced the market power of the generators was by threatening them with the wider regulatory system. They preferred to do what the electricity regulator wanted, even though he legally had no power to insist upon it, and they divested 6000 Mw of plant and they froze the pool price for two years.

We then reached a situation –much more recently in 1998- where we still thought the generators had too much market power. The pool price was still about the new entry price and the regulator again wanted to persuade the generators to sell more plant and reduce their market share yet again. There was no constitutional power to do so, but this time the deal was to do with vertical re-integration. Essentially the deal this time round was that both generating companies were required –asked- to sell 4000 Mw of plant each -another 4000 Mw each- in return for which they would be allowed to buy one -but only one- distribution and supply company. That is, in fact, the solution that we now have. We have allowed a small amount of vertical re-integration from generation through to distribution and supply, but only in return for the generators giving up more of their capacity. We will reach a point, I think, within the next two or three years, where this market power that the generators have had over the wholesale price will finally be broken. Because once these two companies have sold off a further 4000 Mw of plant, both of them will have a market share of well under 20%. There will then be at least five companies, each of which will make bids into our electricity pool. That should reduce the amount of market power they have and help the pool price to reduce itself to something close to the new entry level.

My own view is that, if we solve the problem of market power on the side of the generators, I would have no great objection to generating companies being involved in retail supply. I would not really want them to own distribution companies because that is a natural monopoly part of the industry. I think our long-term results in England will almost certainly be to permit generating companies to own retail supply companies, provided we can guarantee open access to the transmission and distribution network, and provided we can guarantee that no one company will have a dominant market position, whether through generation alone, or through integrating generation and retail supply. My own expectation is that we will allow that kind of integration

between the two essentially competitive elements of the industry, provided that we can keep entirely separate the issue of the transmission and distribution network.

## **II.7 GIVING UP THE “POOL”**

We are about to abandon our pool. As you may know we have a compulsory pool for electricity. Everybody who has a generating set of 100 Mw or more must make a bid, every day, up to 48 half hours for the following day, a price bid at which they will offer to run their generating set. Only if their price bid is accepted by the transmission company, which at present is both the system operator and the market operator –that is something that will change as well- only then will that generating set actually run. Because of the way in which we pay generators, is that everyone gets paid the system marginal price, or some supplement to that, depending upon other technicalities, but you do not get paid as bid, you get paid according to the marginal price. It means that if you have a very compelling reason to run your generating set, which might be because it is nuclear and you cannot make nuclear run up and down very quickly, or it might be for a contractual reason -you have an independent power project which is contracted to run all the time it is available- then you simply bid zero. If you bid zero, then your bid is inevitably accepted, but you get paid at the system marginal price. You may then have another contract, which might be a year or it might be fifteen years, which to some extent supersedes the pool price as well. So there are various forms of financial cover. That is the basis of our current system.

We are now proposing to move to a model that is very close to that of Norway. It happens to be the case that most electricity traded at the wholesale level in England now is subject to bilateral contract, something like 80%, maybe a little bit more, of all electricity traded, is a bilateral contract between a generator and usually a distribution company. It will usually be a one-year contract. It will be a hedging contract, a contract for difference, which will even out variations in the pool price, lead to a steady flow of cost for the distribution company and avoid the risks of fluctuations and high Winter prices, and so on and so forth. There will no longer be a reference pool price in our new system because there will not be a pool. We shall have to have other price disclosure mechanisms, which hopefully will work reasonably well. That same 80% of electricity will probably continue to be traded essentially in much the same way as it is now by bilateral contract.

The difference will appear when we come to short-term, daily, spot markets and, of course, we will no longer have central dispatch. Currently we have central dispatch, but will now have essentially self-dispatch. We will run a market –or so we propose- 24 hours before each trading period. It shall be a multilateral market, not a bilateral market. It will probably be a screen-based market and it will allow the demand-side to bid much more actively than is currently the case. Then we will run a market four hours before each trading period, which will be almost identical to the Norwegian or Nordic model, a balancing market in which the system operator will check whether the previous power exchange period has or has not physically balanced the system. Then, they will be the counterpart to every trade and their job for the last four hours will be to call up generating contract parties or to call on large consumers to load-manage, in order to physically balance the market each day, which is a fairly large change from our existing system.

I have already been asked the question on what difference this will possibly make. What is wrong with the existing system? What is wrong with the existing system -I think- is not so much that it is technically a bad form of market. What is wrong with the existing system is that it has been dominated by the generators because they have market power, not necessarily inherent in the pool system. The political conviction of the Labour Government has been that, if the market is reorganised in this way, it will induce the generators to burn less gas and to burn more coal. The labour government has a residual affection for the coal mining industry and is trying to support a slower rate of decline than would otherwise had been the case. I myself do not believe it will really make a lot of difference to the amount of coal that is burnt and the amount of gas that is consumed. But it is politically very important that we make the change, because the government has made a condition of allowing people to invest again in gas-fired generation.

At present, there is a temporary moratorium on the government approving new generation of a gas-fired type. A condition of resuming the approval for new generation for gas-firing is that this new market be established. Most of the people in that market would like to either build or buy from new gas-fired generation, so they have a very powerful impulse to make this new market work, because only when it works will the government start allowing them to invest in new gas-fired generation again. It is essentially entirely a politically-driven change in the market. I do not think it will make the market much worse, I am not clear whether it will make it much better, and it is certainly costing people quite a lot of time and effort. It is not a billion dollars worth, but it is tens of millions of dollars worth. And, in the end, it is a very political change. It is, incidentally, something of an embarrassment to the British consulting industry which has gone around the world telling people that the English pool is a great thing, when now it is the case that the English pool is being abandoned because –at least politically- it has been deemed to be a bad thing and that we need something closer to the Norwegian model.

Officially, the changes should be implemented by April of next year. In practice, it is taking a lot of time. There is an attempt for voluntary agreement in all parties in the market –and of course, all parties do not always find it easy to agree. The current estimate is September of next year, but there is also the suggestion that there might be an election in the Spring of 2002. If there are any residual doubts at all that the new market might lead to any perturbation, any possibility of price increases or black-outs or something politically unpleasant, it is now thought this may just be postponed for another six months, but it cannot start before September 2001. It may not start until the Spring of the year 2002, sort of April 2002. There is a very intensive process of negotiation currently going on between the generators and the distributors and the National Grid Company. One of the things we will do that is probably useful is we will not have the National Grid Company both as the system operator and the market operator. The National Grid Company, the transmission company, will remain the system operator but we shall have new actors as market operators. People who will run the power exchange will be somebody different.

## **II.8 REGULATION AND LOW-INCOME CONSUMERS**

As I said earlier on, over a period of eight or nine years, we have slowly been opening the retail supply market to competition. We planned, in April 1998, at one moment, to let all 23 million consumers have a free choice. In fact, there were very large technical problems. The technical

problems were also motivated, to some extent, on the part of the distribution companies, by a desire not to let the gas company compete in their markets, in the same way as they were now allowed to compete in gas markets. The upshot was that, instead of introducing competition fully, in April 1998, we only started it in September of last year and we only completed it in May of this year, so that most consumers have only had four or five months of free choice of supplier, unlike the gas industry. Remember that in Britain almost 90% of all households directly consume natural gas –and most of them use it for heating- so most people’s gas bills are about as big as their electricity bills in England, because electricity is not usually a heating fuel, it is gas that is the heating fuel, so both are important in the domestic market. So it took a very long time to introduce the above.

All the evidence that we have so far suggests -both in the gas market, which is also open, and the electricity market-, as you would expect from economic theory, that we are unpicking the cross-subsidies that previously existed within the domestic market, so that those consumers who are relatively wealthy, have high consumption, live in urban areas, have a bank account and are willing to pay on a monthly basis by a direct debit, are being offered extremely low prices. Those consumers who are relatively poor, have low consumption, live in rural areas and sometimes do not pay their bills on time, are being offered extremely poor deals. Well, you would expect that because the former category is very cheap to supply and are good customers from the point of view of the companies. The latter are expensive to supply and are bad customers from the perspective of the utilities. We have already got evidence from the gas market, that the difference in the price per therm –the unit we use in Britain for gas- is as much as 20% within the same area, between the tariff being charged to the best customers and the tariff being charged to the worst customers. One of the issues that our political system is just beginning to address - and it is already happening in electricity though to a lesser extent, because the total savings available to consumers in electricity happen to be smaller, for other reasons- is that essentially poorer people are now beginning to be charged more per unit for their electricity and gas than richer people.

It is the traditional answer of most economists that you should, wherever possible, deal with poverty through income supplementation of one kind or another, not through directly subsidising prices. We have had a quite strong tradition for some years in Britain not to interfere in individual markets, at the consumer level, to subsidise prices, with very minor exceptions. In cold weather, the State will make extra payments to old people, to encourage them to keep warm enough. We have a very high rate of excess winter deaths in Britain from hypothermia. Several tens of thousands. Much worse than any other European country. There has been half-hearted political commitment –some political commitment- to try and reverse that by making extra payments to old people in Winter. It is possible to imagine that something like that might be extended –direct income supplements- to help poor people overcome these effects, but it is also true that the British treasury is deeply opposed to such things. The British treasury is very powerful –as you probably know- in British economic and political life, and the British treasury will be strongly arguing for the electricity industry and the electricity regulatory system to sort out the problem for itself. In other words, almost certainly there will be a duty on the regulator, in some way, to intervene in the way in which prices are set for poorer consumers rather than some form of income subsidy. I have to say we have not really tested that to any large extent yet. My guess would be that the pressure will be on the electricity system and the regulator, to

find some not necessarily economically very efficient solution but one that will be socially more acceptable than continuing to have richer consumers paying less than poorer consumers.

In gas, we are finding in the area of the Southwest of England -where we first introduced gas competition for private consumers- that fixed charges are very small. They are not very significant and have been reduced in recent years, not for any economically very rational reason, but because people marketing electricity and gas discovered that consumers would rather pay more per Kw/h and have a smaller fixed charge, so the fixed charges are beginning to disappear as part of the competitive process. The main issue is: what is the cost per energy unit delivered? In the Southwest of England, between the worst tariff offered to someone who was in a pre-payment system and the best tariff being offered by another company to someone who was a direct debit customer, was 36% per unit of energy delivered. You have to remember that in Britain -where as you know if you have visited Britain, we have a rather long, cold and unpleasant Winter- the majority of the gas bill in this case is for heating. On the whole, poor people live in less well-insulated houses, with less efficient heating systems and actually purchase physically more energy than rich people, in absolute terms. Even rich people who live in quite large houses, with efficient heating systems, and good insulation properties, will absolutely use less physical energy than poor people. The political problem arises because the poor already buy more energy, in absolute terms, although their incomes are less. If they then start paying 20% more per unit of energy, then the poor person's energy bill may well be double that of the rich person's, and they might have four times lower income. That begins to be politically quite difficult to sustain and is an important additional factor.

On the other hand, it is true that a regulatory condition for every competitor in the supply market is that they must offer to supply everybody with a net market. You cannot in any way cherry-pick and say that I will choose to supply you but I refuse to offer you any terms at all. Of course, it does not mean that you have to offer the same terms or equally good terms to different categories of consumers. You can choose. On average, it is still true that pre-payment customers are being offered significantly worse terms than those who have either credit or direct debit tariffs. It is also true that some are being offered reasonably good discounts in some cases. I think there are two possible kinds of explanations: one is that pre-payment consumers are already paying somewhat more per Kw/h than other consumers, and that may sometimes reflect an excess over costs, in other words, they may be paying too much at the moment, relative to cost, so that it is possible to discount relatively easily and secondly -I think- some companies are trying very hard to show that they are treating all consumers well and are hoping to get some goodwill from the notion that they will treat pre-payment consumers relatively well. Anyhow, it remains true that in the market as a whole, pre-payment customers are being made offers that are much worse than those who do not have pre-payment meters.

Pre-payment customers are about 15% of all customers. Only about half of them are definitely poor customers. Some just choose pre-payment for other reasons and there are quite a lot of poor customers who are not pre-payment. Generally speaking, we can use pre-payment as a kind of proxy or index of poverty and, on the whole, they are not being given offers that are quite so good. In terms of why the discounts are better than people expected, I think part of it is, that a number of companies who are very keen to establish their market position, are willing to accept a zero margin or possibly some loss in the early years, in order to establish a large market share. The most prominent example of that is the off-shoot of British Gas, the company called Centrica.

Centrica is the major supplier of gas to the domestic market and for most of the last couple of years, the electricity companies have been selling gas in their home market. Now, a couple of years later, Centrica is being allowed to sell electricity in the home market of the electricity companies. It is putting a huge effort into gaining electricity customers and, in roughly the first six months of the new competitive market, Centrica have signed up one million electricity consumers. Their target for the first five years is now to sign up four million, which will be almost 20% of the entire electricity market by a new entrant. There will be only large new entrants. They are proposing quite a good deal in which they offer at least 12% reduction in electricity tariffs, and they promise that the electricity tariff, if you buy from them, will be less than your host distribution company, at least until the year 2001. Whatever tariff your host distribution company offers, Centrica say "we will charge you less". Mind you, since the regulator will stop free pricing by the host distribution company, the risk is not that great. If you ask me "can Centrica make money out of that level of discount? I must say "I do not remotely believe it can" but if you said to me "once it has four million consumers, will it make money over the next ten years? I would say, yes, almost certainly. I think there is a certain amount of loss leading going on, by those relatively few companies that really want to establish a large market share.

Overall and just by a way of conclusion, all of that may or may not be a good thing, socially and politically. There are very strong signs in our system that it is not going to be politically acceptable for long. The new Labour Government has given itself powers every five years to issue explicit instructions to our economic regulators for electricity and gas –they have actually now been merged into one office- to take account of specific social and environmental priorities. Almost certainly within –I would guess about a year- one of the first Acts that will be undertaken under this new utility regulation law will be to instruct the regulator to take such action, so as to ensure that relatively poor consumers do not systematically pay a lot more for their electricity or their gas, than richer consumers. That, of course, will interfere with the operation of the market. The market will not operate as well or as easily as if it were unrestricted but, nevertheless, it seems to me extremely likely to happen. And, by the way, it seems to me that we do have a serious dilemma here.

If you go back to my first theme about Europe more widely, if we open up an electricity market to competition only for large consumers, we run the general risk that all smaller consumers will be penalised. There will be a general cross-subsidy in favour of industrial consumers and against smaller consumers. Then we say, no, we must not stop with just industrial markets, we must open it up to the entire consumer market and then we avoid that problem. The answer is that we do, but then we make a fresh discrimination between relatively richer and better paying consumers and relatively poorer and less well-paying consumers. Then you have to ask the question, will your regulatory system be able to operate entirely according to the principles of economic efficiency, or will you have to modify it significantly because there are equity or social considerations, which might require you to override that particular market pressure. We are not quite yet at that point within Britain, but my guess is that in about a year we shall have to face it. Under Conservative governments, our regulatory system has been very dominated by economic efficiency, and it has had the presumption that, in all possible ways, economic efficiency is best promoted by more competition, which arguably in most circumstances, it is. Because of these changes and because we have had a change in the political complexion of our government -quite a small change, I would not say we have had a radical change of government, politically-

nevertheless, it is a government which has slightly more interest in questions of poverty than the previous one. It is quite likely that we will now have to change our regulatory system in some way, to get away from the purity of economic efficiency as the only operating criterion for our system, and to moderate that with some considerations of equity. I suspect that will happen quite soon.

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