

# Energy and Water: The Dangers Ahead

## Challenges for a Second Term Government

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## EXECUTIVE SUMMARY

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The Labour party manifesto of 1997 promised that: “*In the utility industries we will promote competition wherever possible. Where competition is not an effective discipline, .... we will pursue tough, efficient regulation in the interests of customers.*” It also recognised “*the need for open and predictable regulation which is fair both to consumers and to shareholders.*”

There was a perception that the framework of price control regulation which would be inherited from the previous government was inadequate on several counts: it failed to ensure that the needs of customers, as well as shareholders, were fully recognised; it did not fully acknowledge the significance of the utilities in promoting social and environmental objectives, and it was insufficiently open and accountable. This, combined with the need to respond to considerable changes since privatisation (including the development of multi-utilities and the emergence of competition in the energy sector), prompted the review of utility regulation launched in 1997. The end result is the Utilities Act which became law in July 2000 (addressing issues relating to energy) and the forthcoming Water Bill which is expected to be published in autumn 2002 (addressing issues relating to water).

Although the Utilities Act made substantial changes to the regulatory environment, the essential character of the regime was retained – namely a predominant reliance of regulation plus competition as the mechanisms for change and improvement. The question that this paper discusses is whether the institutions that govern these industries are by themselves sufficient to address the key issues of the future. These issues are of two types:

- Potential problems which, if they were to emerge, might not be containable within the legal and regulatory framework but would instead need politicians to become directly involved.
- Potential gaps between the government’s public policy objectives for the industry and the institutions currently responsible for achieving them.

As the issues in the two industries are rather different, the analysis is presented separately for energy and for water. In both cases, the structure of the analysis is similar:

- A brief overview of the development of each of these industries since their privatisation in 1986 (gas), 1989 (water) and 1990 (the regional electricity companies).
- An assessment of the problems that could arise over the medium term (say up to 2010) which could spill out from the technical domain into the political and which government should, therefore, give consideration to trying to deal with *in advance* by taking pre-emptive action.

The material has been developed through discussions with people with good knowledge of the industry plus a thorough review of the literature.

In the case of energy, there may be some overlap with the government’s Energy Review launched earlier in the summer. However, the overlap is not that large, since our time horizon is much shorter - effectively to 2015 rather than 2050 - and because our focus is on internal factors and developments rather than external and, in particular, international, ones.

It should be stressed that the claim we make for the issues we have identified is that each one should be subject to an in-depth examination in its own right. In other words, the report’s conclusion on each issue is that there is a case to answer, rather than to try and make detailed proposals for what these answers should be.

## WATER: RISKS AND OPPORTUNITIES

While it has not been the purpose of this report to scrutinise past performance in detail, our overall view is that the regulatory system in water has successfully delivered the investment to improve standards that was seen as the major strategic objective at the time of privatisation and, furthermore, that the industry has remained largely sound, notwithstanding some serious incidents and some serious criticism. In short, water has not gone the way of the way of the railways. This may reflect the fact that privatisation was part of a broader settlement for the water industry at the time. The investment required to improve standards was estimated and factored into the price regime, metering (and its associated tariffs) were viewed as the way forward, and the act of privatisation set out a clear framework for the structure and ownership of the industry.

Since privatisation, prices rose by around 40% to 1999, with falls since then following the last price review. The number of employees has declined by almost a third. Even so, on the surface at least, the structure of the industry and the way that it operates have changed little since privatisation in 1989. Water companies continue as monopolies in their country, region or area. In most cases, they continue both to own and operate the assets. The ban on their taking one-another over and the absence of competition for customers means that the biggest change has been the acquisition of the companies by either foreign companies or domestic, non-water companies.

Beneath the surface, however, considerable pressures have been building up. The risks here are not, for the most part, new ones; rather, we see the challenges arising from the very *persistence* of long standing problems, namely:

- ***Environmental objectives, price controls and investment.*** While the 1995 price settlement may have been somewhat generous, the settlement for 2000 was not. Yet the industry continues to face ambitious environmental targets, both national and European. The next five years see no slackening in the rate of investment that has been maintained since privatisation. The companies' inability to fund these improvements except by resorting to borrowing creates a situation that may not be sustainable. If not, then either the environmental objectives will not be achieved, or the companies will get into severe financial difficulties or the price control regime will have to be substantially eased. It is also not clear what the processes are within government for reconciling decisions on environmental objectives with decisions on the pricing settlement.
- ***The industry's attempts to restructure itself.*** The industry-led restructuring of the water industry in Wales, with Glas Cymru owning the infrastructure but with United Utilities actually operating them, is a decisive break with the way the industry has been organised since privatisation. There are certainly dangers here: the success of water privatisation may in part be due to the fact that the current vertically-integrated structure both makes it very clear where responsibility lies and also obliges companies to take an all-embracing view of the needs and challenges in 'their area'. The separation of assets and operations also creates a very different situation for the regulator, particular where (as with Glas Cymru) there are no shareholders to squeeze. But if there are risks here, there are also opportunities. For one thing, the model may have considerable attractions for the companies themselves. It also works in other countries, for example France. Perhaps most importantly, it could represent an opportunity through which democratic accountability could be re-introduced into the water supply in England, perhaps exercised at the regional level, through the public ownership and control of assets with operations contracted out (as in the Welsh case) to specialist private water companies.

- ***The present two-tier charging system.*** Two quite different charging systems for customers sit side by side: households with a water meter pay according to how much they use whereas households without a meter pay a fixed charge, independent of the amount of water used but varying between households according their rateable value (a proxy for the value of the dwelling). This situation is inherently unstable because if a household exercises its right to switch to the metered tariff and in doing so reduces its water bill, the water company can recoup that money by increasing charges to the remaining non-metered customers. If there were a flight to metering, provoked for example by competition, many households on low and medium incomes - not just the narrowly defined 'vulnerable' - would lose out. Government policy on this matter has been of a holding nature and a more strategic solution is clearly required at some time in the future. It should also be noted that the Environment Agency sees much more widespread use of meters as one way of controlling the growth in demand over the next 25 years.
- ***Incentives for investment in infrastructure to maintain the current assets.*** The system of price controls creates financial incentives for the water companies to defer investment where possible. When the investment in question is to replace aging but still functioning assets, deferment is indeed very often possible partly because there will be no *immediate* obvious problems in doing so and partly, especially in the case of the subterranean assets, objective assessment of needs is very difficult. However, if or when some part of the infrastructure does fail, not only may the direct costs of dealing with it be high, but costs (for example traffic disruption, damage to property through flooding etc) will also arise which will be borne by others. A related issue is whether the industry or the company has retained staff of sufficient calibre and experience to carry out the work to the required standards.
- ***The balance between supply and demand.*** The potential for imbalances comes from both changes in the climate and changes in both demography and our use of water. Annual average temperatures are trending upwards while global warming is also likely to bring more extreme weather. The numbers of both people and households are set to rise. Yet rates of extraction of both surface water and groundwater are already judged to be at unsustainable levels across much of the South and East. There are a variety of means for dealing with the problem (e.g. new reservoirs; leakage control; water meters to manage domestic demand) but these would cause pressure in other areas. While the Environment Agency can take a long term view, action depends on plans put forward by the companies (and approved by Ofwat) operating within five-year planning cycles which may not be appropriate for decisions about the long term direction.

The major issue that we have not considered in this report is the possible impact of introducing competition for domestic customers. Given that competition for the individual customer is impossible on the basis of either quality or product differentiation, any competition at the retail end would have to be on price. Given that the average annual water bill is about £225, even a substantial reduction (say 25%) would only be saving customers about £1 a week. The question that would arise from our analysis is whether competition is the right 'big' challenge to be presenting to the industry at a time when other strategic issues clearly need addressing and when the financial gains to individual customers are, for any but the poorest households, minor.

## ENERGY: RISKS AND OPPORTUNITIES

If the water industry has hardly changed since privatisation, the energy industry could hardly be more different. Instead of a national monopoly in gas distribution and supply, and regional monopolies in electricity distribution and supply, both businesses are now characterised by competition to such an extent that Ofgem anticipates being able to cease setting prices for energy suppliers from April 2002. Most suppliers to domestic customers now offer both gas and electricity. The supply businesses are fully separated from the distribution businesses (pipes and cables). The industry is now populated by a mix of British, American and European companies.

Our overall impression, however, is that the original privatisation agenda has been worked through to a largely successful conclusion. Since privatisation, gas prices have fallen by 35% in real terms and electricity prices by 20%, reflecting falls in the wholesale prices for energy. The combination of the break-up of the previous monolithic industries and the introduction of the regulatory regime organised around the 'RPI-X' formula for setting price limits has arguably brought about substantial benefits to the consumer - even if only to the extent of ensuring that the falls in wholesale prices have indeed been passed through to the consumer.

The question that arises now, however, is whether the industry has moved into a new phase of its development where sole reliance on a largely independent economic regulator is no longer sufficient to address the concerns of the future. Our analysis of risks and opportunities has highlighted five concerns. Of these, the first two fall under the heading of 'security of supply' (the former to do with reliability and the latter to do with capacity) while the other three are concerned with the potential gap between government objectives (in either the social and environmental fields) and the means for achieving the desired outcomes. They are:

- ***The number and age profile of engineers.*** The long decline in the number of employees in the energy industries may have resulted in too few engineers at certain levels, but it certainly has left recruitment rates far below retirement rates and therefore far short of what is needed simply to maintain current engineering numbers. A step change in engineering training is needed simply to stabilise the situation. Although the consequent problems will be different, the question is pertinent to both gas and electricity. The break up of the distribution business in electricity (a break up which has not happened in gas) raises the further question of whether there are sufficient engineers nationally to restore supplies following a major incident such as a severe storm. The whole issue is illustrative of a wider phenomenon, whereby the continual drive for cost reduction associated with the regulatory regime can lead to economising in those areas – such as infrastructure maintenance – where there may be no obvious adverse results in the short term. The issue here is not one of regulation – judging the 'right' level of maintenance is very problematic – but to avoid a situation where there is an inherent and prolonged incentive to economise where possible.
- ***Electricity generation in the medium term.*** The issue here is whether the UK might find itself with too little generating capacity at some point in the next few years, creating a power crisis similar to that experienced this year in California. While there is no strong evidence pointing to this at the moment, similarities with the Californian situation - in particular, the role that the introduction of competition has played in triggering the crisis and the importance of the interaction between a value-laden regulatory agenda and the behaviour of the market in causing it - should serve to caution against complacency. At bottom, what appears to be required here is the proper assessment and control of risks. Since the latter involves a valuation of different risks – an inherently political rather than merely technical task - one key issue is whether government is sufficiently involved. A second issue is whether government has taken sufficient account of the impact on risk of the targets that it has elsewhere put in place for the industry.

- **The Fuel Poverty Strategy:** The government has set a target of eliminating fuel poverty for all vulnerable households by 2010 and a number of initiatives are in train to achieve this. But the coherence of this approach is uncertain: will the initiatives operate on the scale envisaged and, if not, what can government do about it? Even if the initiatives do work on the scale envisaged, are they collectively sufficient such that the target can be achieved? While Ofgem has responsibility for monitoring the progress being made towards achievement of the targets, it is not clear who has responsibility for reviewing the strategy and amending it in the light of experience, changed circumstances etc. Is it sufficient to rely on the combination of ‘a strategy document plus targets plus monitoring’ to deliver change over a long period in a changing industry involving so many industry players.
- **Prices paid by customers using pre-payment meters.** The significantly higher prices paid by customers using pre-payment meters is a long-standing issue which now affects up to 20% of households, mainly with low incomes. Under its *Social Action Plan*, Ofgem is now focused on this problem and has adopted an approach that can be summarised as trying to ensure that all customers can enjoy the benefits of competition, including those using expensive payment options. But this begs the question as to whether *any* differential is really justified, even on economic grounds. Although accepted in the UK, some outside economists have expressed astonishment at it. The issue for government is whether Ofgem may be too soft on this subject, partly because it has been accepted wisdom for so long and partly because economics may have little to say on questions of equity. The matter is also complicated by the fact that part of the solution may involve institutions from outside the industry, namely the banks.
- **Targets for alternative energy.** The UK’s Kyoto target is a (legally binding) 12½% reduction in emissions of greenhouse gases by 2010 compared with 1990. Although this is a substantial reduction, it is not challenging for the UK since emissions in 2000 were already 13½% below the 1990 levels, largely due to the switch to gas (from coal) for generating electricity. On the other hand, the government’s target for a 20% reduction in carbon emissions by 2010 is challenging. At least 15 different programmes and initiatives are identified as contributing to the carbon target, some of which (e.g. renewables, combined-heat-and-power) have their own targets in turn. The government’s current approach relies on market-type solutions that use price signals to encourage suppliers to introduce new energy sources and consumers to switch towards using them. As with the Fuel Poverty Strategy, the issue here is whether the proliferation of initiatives will collectively be sufficient to achieve the target and if not, what government can actually do if they are failing to deliver as envisaged.

With the possible exception of the first issue (which may be taken to have been growing gradually under the regulatory regime in place since the 1980s), our conclusion is that the issues which are going to be important in energy over the next decade or so are very different from those which were paramount in the 1990s. In part, this is the working out of the old ‘competition’ agenda and in part, too, it is the result of the environmental and social targets that the government has introduced since 1997.

The net effect of this is that the energy industry in the UK is now far more complex than it was even four years ago. This raises the question of the adequacy of the institutions guiding its development and the means by which government seeks to influence it. Our concern is that the emerging framework is both elaborate and flimsy. In effect, it relies on a combination of targets, markets (both real and artificial), regulations and at times initiatives by others outside the industry (e.g. local authorities) to deliver solutions. The results of this mix in such an uncertain industry are hard enough to predict, let alone influence, especially in terms of the scale and pace of progress. It is also not clear what the government can do if and when it finds that some parts of its plans are not working and some of its targets are going to be missed.

## **AN AGENDA FOR GOVERNMENT**

### **A New Settlement**

Although the specific challenges facing the energy and water industries are different, we find they share a sense that their future is now uncertain in a way that it was not even five years ago. The way this has been put to us with respect to the water industry is that at the time of privatisation there was a sort of ‘settlement’ between government and industry, covering such things as objectives, the means and mechanisms for their achievement, as well as the companies’ room for manoeuvre.

As time has passed, however, this settlement has started to work loose and the government’s responses to the various issues has become increasingly ad hoc, for example banning disconnections, going slow on metering, allowing the out-of-date rateable values to continue as the basis for charging, accepting the Welsh separation of assets and operations as a necessity in the circumstances, etc. For a first-term government, ‘finding its feet’, so to speak, such an approach was reasonable. There comes a point, however, when the changes - and the industry’s responses to them - pile up to such an extent that it becomes insufficient and the settlement that was made at the time of privatisation no longer applies.

Although the reasons for it are different, we think that a similar conclusion can be reached for energy. Here, this is due not so much to the fact the industry has moved from monopoly to competitive market (important though that is) as to the changes that the government itself has introduced since 1997. As a result, energy now finds itself playing a leading role in no fewer than three of the government’s big ‘projects’, namely competitive markets, the elimination of poverty, and long term environmental change. Add to this the national security dimension implicit in the decline in the domestic production of gas and oil over the next few years and one is left with the inescapable conclusion that there is no other industry which faces a more diverse set of objectives or has to contribute towards the achievement of so many different outcomes.

We therefore conclude that both industries need a new settlement. Besides clarifying the industry’s public policy objectives, such a settlement would have to do two things:

- Set out an intellectual framework to guide the resolution of conflicts between environmental, social and economic goals.
- Establish an institutional framework that, while allowing it room to develop of its own accord, can steer each industry as time passes and new circumstances arise.

Such a settlement could only be created following a review. We therefore recommend that the government should:

- Initiate such a review in water: with the new Water Bill not due before autumn 2002, there is a clear opportunity here.
- Either extend the remit of the Energy Review or consider the questions we have identified as part of their response to the Energy Review in early 2002.

## **Questions For Review**

Within water, we suggest that the focus should be on the underlying conflicts now present and the intellectual framework needed to resolve them. The two issues that we see as most important are: first, the conflict between the demand for higher standards, the costs of financing the necessary investment and the price consumers have to pay; and, second, the instability and potential unsustainability of the current two part pricing structure.

The review should also consider what scope there might be for new types of players in the industry and what the advantages might be of allowing a greater plurality of types. In particular, the review could examine whether there is scope for introducing democratic ownership and control (e.g. at regional level) over assets with the operation left in the hands of private water companies. Such a wide-ranging review would also help government decide whether competition is the right ‘big’ issue to be guiding and shaping change in this industry over the next period.

With energy, by contrast, the focus for review needs to be on the institutional framework responsible for overseeing and implementing the government’s agenda. In particular, it needs to examine whether an approach which rests on ‘strategy plus targets plus monitoring’ is both strong enough and flexible enough in such a complex industry. We also suggest that it should address the question of whether there is a case for re-creating a Department of Energy or equivalent.

Another specific question for energy is whether, like water, there is a case for a second regulator who is not economically-led (e.g. a ‘Sustainable Energy Agency’). This question is part of a more general debate about the pros and cons of having a single regulator with multiple agendas (e.g. economic, environmental, social) as opposed to multiple regulators each with a single agenda. The example of the water industry, with both its economic regulator (Ofwat) and its environmental regulator (the Environment Agency), is instructive here: while inconsistencies and conflicts between these two bodies are clearly a potential problem, there is no doubt that the Environment Agency has served as an effective driver of a set of non-economic concerns.

Related to this, we also conclude that both the water and energy reviews should look at whether responsibility for developing and driving forward the government’s social agenda should be vested in a regulatory institution devoted to the task.. We also propose that close attention should be paid to the way multiple regulators interact, how they take one-another’s concerns into account and how conflicts between them should be resolved.

Besides institutional reform, the government also needs to devote its efforts to securing the widest possible acceptance of its public policy objectives among the companies themselves. On the one hand, this will require the government to develop an institutional structure that both affords the companies a sufficient degree of long term stability and allows them the real prospect of growth and development in pursuit of profitable market opportunities. On the other hand, however, it will require that those who lead these industries recognise that they have a responsibility for helping attain the public policy objectives. Sustaining the right attitude at the top of these industries is therefore of vital importance.

In conclusion, quite apart from the details of the particular subjects we examine in this report, we suggest that a second term government ought to make the presumption that the institutions it inherited, and then modified in its first term, are likely to be in need of close attention and possibly reform. The issue is not just whether the structures are adequate today but whether they will be adequate in, say, 10 to 20 years time. This government might be in power for some considerable time and should have both the confidence and the vision to prepare for the long term. This report argues that the time is now right to take this approach with these highly important industries.

## 1. THE WATER INDUSTRY: HISTORY SINCE PRIVATISATION

### CHANGES IN STRUCTURE AND OWNERSHIP

In this chapter, we consider developments in the water industry in England and Wales since its privatisation in 1989. The first major structural change in the water industry since the time of privatisation was the recent conversion of Welsh Water into the not-for-profit company limited by guarantee, Glas Cymru, which retains ownership of the assets, but contracts out operations. Otherwise, the situation at privatisation remains intact in that the vertically-integrated water and sewerage companies retain control of collection, distribution and supply in their particular geographical areas. The 29 statutory water-only companies had their restrictions on borrowing and payment of dividends released and were brought under Ofwat regulation in 1989, but otherwise they have remained effectively the same.

There have, however, been a number of changes in ownership. 7 separate mergers reduced the number of water-only companies from 29 to 18. Since 1994, when the Secretary of State released his golden shares and fully exposed the water and sewerage companies to the possibility of mergers and acquisitions, 5 of the water-only companies have been bought out by other water and sewerage companies.

5 of the water and sewerage companies have experienced changes in ownership, with 1 (Welsh Water) changing hands more than once. There have also been two mergers with Public Electricity Suppliers, in the cases of North West Water and Welsh Water. The current situation sees 4 water and sewerage companies remaining in their original ownership, 3 having been taken over by foreign utilities companies, 1 merged with a PES (United Utilities), 1 taken over by a Scottish generating company (Scottish Power took over Southern Water to form Scottish and Southern) and 1 (Glas Cymru, previously Welsh Water) now a not-for-profit company limited by guarantee, which retains ownership of the assets, but contracts out operations.

Holding Companies at Privatisation	Taken Over By	Merged With	Changed Name to	Date	Holding Companies Now
Anglian Water plc	n/a	n/a	n/a	n/a	Anglian Water plc
Northumbrian Water Group plc	Lyonnaise Europe plc	n/a	n/a	08/03/1996	Suez Lyonnaise des Eaux
North West Water Group plc	n/a	Norweb plc	United Utilities plc	08/11/1995	United Utilities plc
Severn Trent plc	n/a	n/a	n/a	n/a	Severn Trent plc
Southern Water plc	ScottishPower plc	n/a	n/a	07/08/1996	ScottishPower plc
South West Water plc	n/a	n/a	Pennon Group plc	01/08/1998	Pennon Group plc
Thames Water plc	RWE (Germany) <sup>1</sup>	n/a	n/a	Late 2000	RWE
Welsh Water plc	n/a	Swalec plc	Hyder plc	29/01/1996	Glas Cymru <sup>2</sup>
Wessex Water plc	Enron Water (Europe)	n/a	n/a	16/11/1998	Enron Corporation
Yorkshire Water plc	n/a	n/a	n/a	n/a	Yorkshire Water plc

With one new licensee (Albion Water) introduced under the inset appointment rule, there are now 24 separately owned companies supplying water in England and Wales, compared with 39 at the time of privatisation.

The decision taken by Welsh Water to become a not-for-profit company, limited by guarantee, which contracts out its operations while retaining ownership of the assets, is arguably the most significant development in the structure of the industry since privatisation. Prompted by the 1999 price review, which was widely viewed as very stringent, the separation of ownership of assets and operations has raised a number of regulatory questions. Even if other companies are not tempted to adopt precisely the same approach of separation of assets and operations, it seems likely that there will be an increasing trend towards the contracting out of particular operational functions.

Competition remains limited, with inset appointments for large usage customers and greenfield sites the only present possibilities. Although the Competition Act (1998) effectively paves the way, for example, for the possibility of common carriage (where one water company allows another access to its distribution network), the introduction of competition was 'work in progress' according to the draft water bill (see regulatory changes below). It may, rather than in water supply, increasingly be in the contracting out of certain operations that competition develops.

## **REGULATORY AND LEGAL CHANGES**

**1989**

Privatisation of the Regional Water Authorities in England and the Welsh Water Authority.

**1991**

*Water Industry Act* makes the primary duty of Ofwat to ensure water companies can adequately finance their operations.

**1992**

*Competition and Service Utilities Act* introduces the possibility of inset appointments for premises already receiving water/sewerage services. It also removed the restriction requiring companies only to supply customers within their designated area.

**1994**

Government gives up its 'golden' share in each of the water and sewerage companies.

**1996**

Environment Agency is created as sole environmental regulator for the Water Industry, taking over the National Rivers Authority and HMI of Pollution and the waste regulation responsibilities of local authorities.

**1997**

Labour Government launches Review of Utility Regulation.

Windfall Tax on privatised utilities (£5.2bn).

**1998**

*Competition Act* (came into effect March 2000).

Government Green Paper *A fair deal for consumers: modernising the framework for utility regulation*.

**1999**

*Water Industry Act* introduces new requirements aimed at ensuring that charges schemes are fair, especially to vulnerable customers, prohibits the disconnection of certain properties and awards all households the right to a meter.

**2000**

Water removed from the Utilities Act. A draft water bill was published late in 2000, largely retaining the measures which would have formed part of a Utilities Act applying to water. A statement of the government's position is expected later in 2001.

## **Recent Changes**

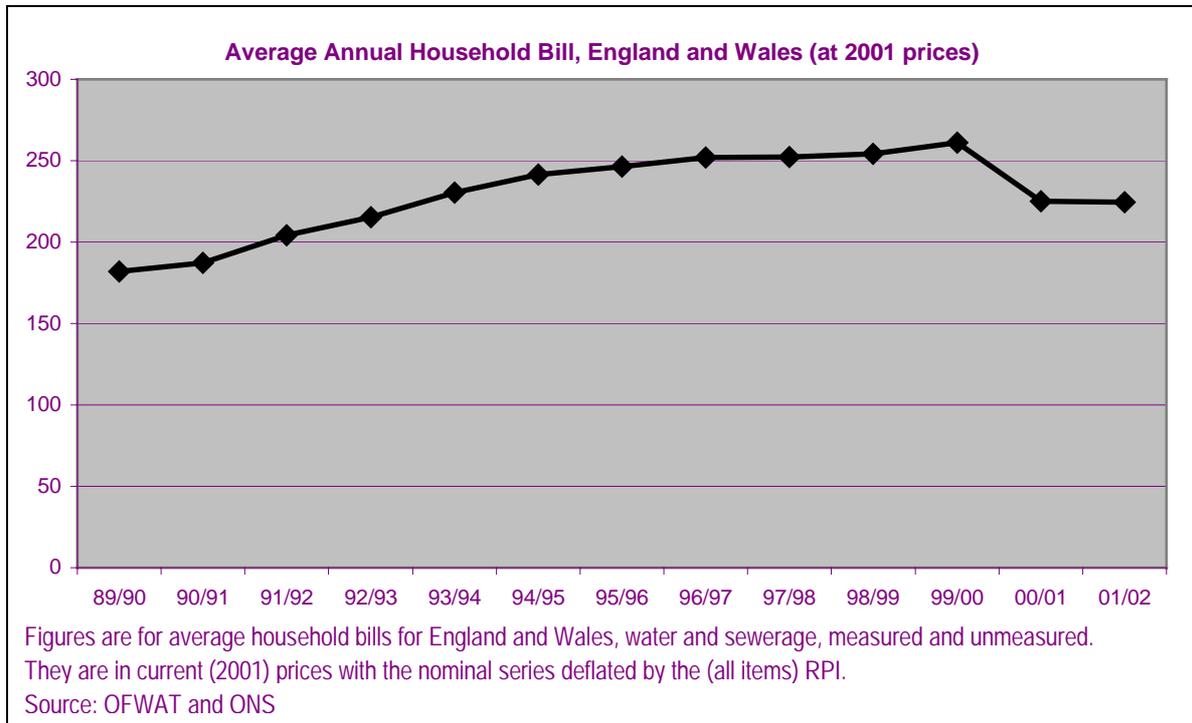
The main regulatory change since 1997 has been the Water Industry Act 1999, which had the significant impact of prohibiting the disconnection of residential and certain institutional customers. It also established the right to a meter. Additionally, it aims to ensure that charges schemes are fair and affordable, especially for vulnerable customers. A new framework for the setting of water companies' charges includes the requirement for the regulator to approve charges schemes on an annual basis, the power of the Secretary of State to issue guidance on the charges schemes to which the regulator must have regard, and the additional power of the Secretary of State to prescribe in regulations issues with which charges schemes must comply.

Water was removed from the Utilities Bill before it was enacted in 2000. However, a draft water bill was published later in the same year which would have introduced to the regulation of the water industry a similar framework to that established for the energy sector by the *Utilities Act*. A statement of the government's post-consultation position is expected soon and it seems likely that the major aspects of the draft bill will be retained. At the earliest, a new water bill would now come before Parliament in the 2002/03 session. If such a bill were to retain the key aspects of the draft legislation, there would be a new 'consumer objective' for water, requiring the regulator to protect consumers' interests in the first instance. As with energy this would, as far as possible, be through the promotion of 'effective' competition. The regulator would also have to have regard to environmental and social guidance published by either the Secretary of State or the Welsh Assembly. There would additionally be a Consumer Council for Water, with powers similar to those of Energywatch to handle complaints and acquire and publish information.

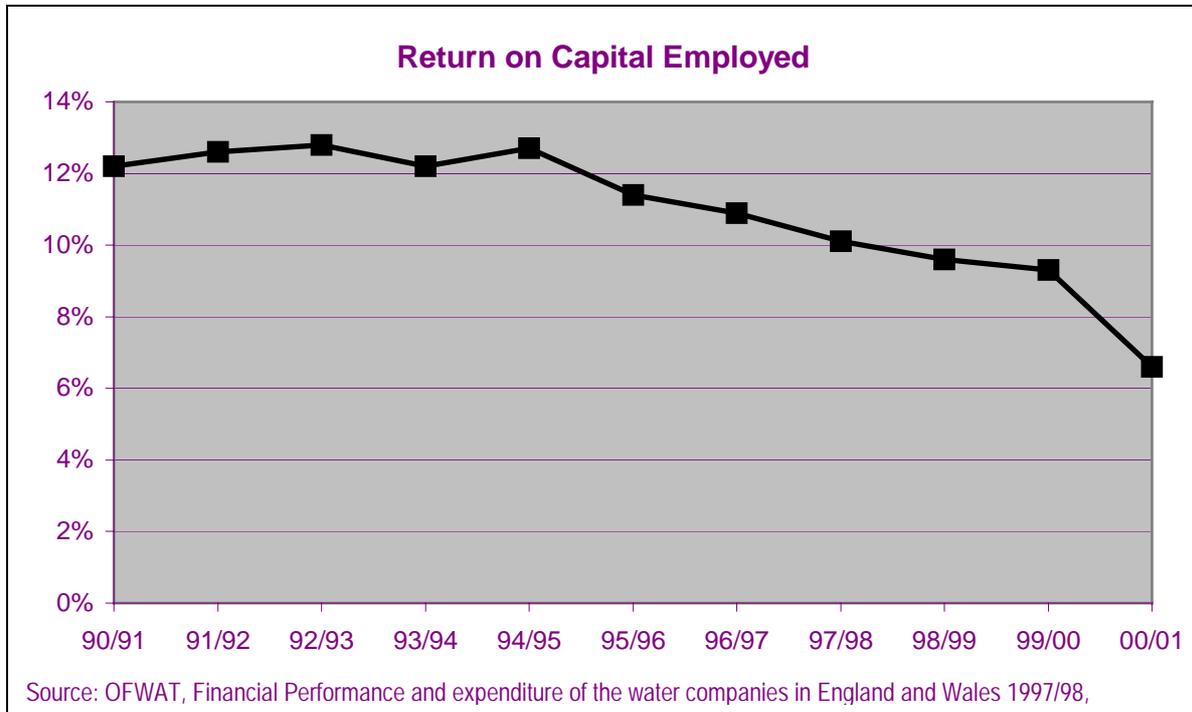
The regulatory and legal framework regarding the future nature of competition remains uncertain. The government has published a consultation paper on the subject, Ofwat has published proposals on the possibility of 'common carriage' and the Competition Act 1998 has some potential impact; but, especially given the need to consider the implications of the recent conversion of Welsh Water to non-profit status and the separation of the ownership and operation of its assets, competition was relegated to 'work in progress' in the draft water bill.<sup>3</sup> A new consultation document on the future of competition, taking into account the consequences of these developments, is expected later in 2001.

## IMPACTS ON STAKEHOLDERS

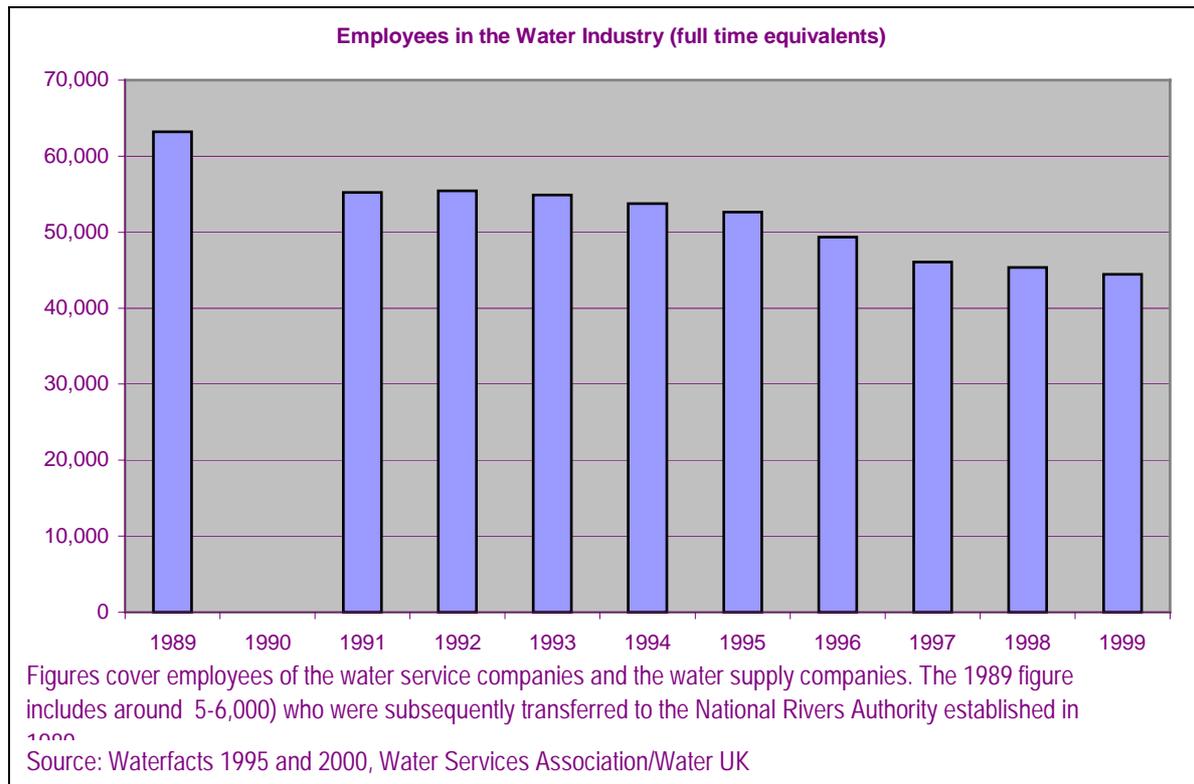
### Customers: Charges



### Investors: Return on Capital Employed (ROCE)



## Employees: Levels of Employment



## THE GLOBAL CONTEXT

Within the European Union, England and Wales is exceptional in that the provision of all drinking water is not the ultimate responsibility of a public body; this legal duty resting instead with the privately owned and managed companies. A couple of EU countries retain all of their water supply under direct public management, and in most of the EU states a clear majority of the water supply is in direct public control (usually at the municipal level). Mostly, investment is funded publicly, with only a couple of examples where private companies are involved. Only France has a majority of its water supply managed by private companies (a form of public/private partnership), and even this represents only a delegation of the operations by the municipality, which retains ownership of the assets and ultimate control.

Another arrangement, developed in the Netherlands, is management by limited liability companies, whose shares are owned by the municipality. This model displays many similarities to the UK experience, since the private companies are responsible both for financing the investment and own the assets for the duration of the contract. The fact, however, that the municipality retains ultimate responsibility for the supply of water and that the shares are all publicly owned, differentiates the Netherlands approach from that of England and Wales, leaving it unique in the EU for having solely private responsibility for water supply.

In summary, the UK has the world's most privatised water industry. England and Wales's system of regulated private management of the operations, ownership of the assets and ultimate responsibility for water supply is very uncommon.<sup>4</sup> While many other countries involve the private sector, full divestiture to private enterprise on a national scale is, however, unique to England and Wales.

Country	Legal responsibility for water supply	Asset ownership	Operations and maintenance	Capital Investment
England and Wales	Private	Private	Private	Private
Scotland and Northern Ireland	Public (water authorities/government agency)	Public	Public	Public
Ireland	Public (local authority)	Public (local authority)	Public (local authority)	Public
Germany	Public (local authority)	Mixed	Mixed	Mixed
France	Public (local authority)	Public	Mixed (mostly private)	Mixed (mostly private)
Netherlands	Public (local authority)	'Public'*	'Public'*	'Public'*

\*Mostly publicly owned limited liability companies, the shares of which are held exclusively by the provincial or communal government.

Similarly, if the proposals mooted in recent consultation documents to introduce choice of supplier for domestic customers through common carriage were put into practice, England and Wales would again achieve a first: consumer choice in water supply.

## 2. THE WATER INDUSTRY: FUTURE RISKS

### SUMMARY OF RISKS

As discussed in the previous section, the approach to the regulation of the water industry remains largely similar to that originally established at the time of privatisation. In order to try to assess whether these arrangements remain adequate, this section discusses the possible risks that the industry could face in the future.

The table below provides a long list of the risks that we have identified, arrived at on the basis of discussions with people with good knowledge of the industry. The risks are limited to those that could arise from ‘internal’ threats and thus, for example, do not cover any risks to water quality from terrorism. They can be grouped under three major headings.

- Stability of the current industry structure.
- Achieving social objectives
- Security and quality of supply.

Of the nine risks listed in the table, the five that we have assessed as of ‘high’ or ‘medium’ likelihood are then discussed in more detail on the following pages.

<i>Risk</i>	<i>Our assessment of the risk</i>	<i>Considered further?</i>
<b>Stability of the current industry structure</b>		
Some companies cease to be able to make the investment necessary to meet the demands for higher environmental standards within the present price limits	Medium – but almost certainly growing	Yes
The model of the water industry that has applied since privatisation, dominated by private companies who both own the assets and run the operations, breaks down under pressure from the companies themselves.	High	Yes
Customer debt either grows inexorably (adding to costs) or spirals out of control (threatening company financial collapse)	Low – but anecdotal evidence suggests it could flare up under certain circumstances	No
Collapse of public confidence in the water supply network	Low	No
<b>Achieving social objectives</b>		
The two-part charging structure becomes unstable, with many of those who can save money by switching to metering doing so, causing bills to rise sharply for those remaining on unmeasured charges.	High	Yes
Effective withdrawal of supply to households in certain localities	Low	No
<b>Security and quality of supply</b>		
A significant failure of some part of the infrastructure of the water network, due either to under-investment or a failure to follow agreed operating standards.	Medium - but could grow under certain circumstances	Yes
Acute fall in water quality (due to errors by the companies)	Low	No
An increase in the frequency of episodes of water shortages, either in response to periods of drought or to a long term rise in demand.	Medium	Yes

## **ENVIRONMENTAL OBJECTIVES, PRICE CONTROLS AND INVESTMENT**

### ***The risk***

That some companies cease to be able to make the investment necessary to meet the demands for higher environmental standards within the present price limits. There are a number of ways, not necessarily exclusive of one-another, in which a breakdown in this area could manifest itself:

- Investment slows, such that the required/envisaged rise in standards or increase in capacity fails to materialise.
- More mundane investment (e.g. in repair and renewal) is cut back.
- The investment only happens if prices to customers are allowed to rise to pay for it.
- Government has to put in money in one form or another. Once something has broken down, government may not be able to avoid responsibility for resolving a problem, even if it had no responsibility for it in the first place.

### ***Analysis of the problem***

Undertaking the investment needed to reach higher standards, especially those laid down by the EU, has been one of the primary aims of the water industry since privatisation.<sup>5</sup> Judged against that aim, the industry has been successful, investing some £35 billion over the period 1989 to 2000 with a further £17 billion due for the period to 2005.<sup>6</sup>

This has, however, come at the price of rising levels of debt, with gearing rising from zero at the time of privatisation to almost 50% in 2000. The industry has also suffered a net cash outflow in all years since privatisation. A range of financial indicators have been trending in an adverse direction at least for the second half of the 1990s<sup>7</sup>. The continued demand for investment means that these trends are likely to continue.

While all companies have been able to meet requirements up until now, it does not follow that they will in the future.

First, while high levels of investment were anticipated at the time of privatisation, it is not clear that it was expected they would continue into a second and even third decade.<sup>8</sup> This continued demand for investment therefore represents an important change.

Second, while the relative autonomy of the Environment Agency and the environment side more generally has helped drive standards up, there is some evidence to suggest that costs of further improvements may sometimes be less than the resulting benefits.<sup>9</sup>

### ***Issues for further consideration***

The primary question in this area is whether the path set for the industry, involving the intersection of investment levels and future prices, is in fact sustainable.

A related question is whether the setting of environmental standards is sufficiently subject to economic and financial considerations.

Finally, if these ‘technical’ decisions became politicised, would the regulatory institutions have the credibility and authority to take them (e.g. if their decisions implied sharp price rises)?

## THE INDUSTRY'S ATTEMPTS TO RESTRUCTURE ITSELF

### **The risk**

That the model of the water industry that has applied since privatisation, whereby private water companies both own the assets and run the operations, breaks down under pressure from the companies themselves. Among the possible consequences are:

- Ofwat's ability to set prices is severely restricted leaving customers more exposed to financial risks.
- The division of responsibility creates uncertainty about where responsibility for quality, safety etc. lies and may weaken the ability of the 'quality' regulators to maintain standards.

### **Analysis of the problem**

The recent changes to the water industry in Wales, with the assets now owned by Glas Cymru (a new company, without shareholders) and the operations contracted out, show that fundamental reform is no longer just hypothetical.<sup>10</sup> The changes were driven by the industry itself - and its bankers - with regulators eventually giving their approval.<sup>11</sup>

One of the advantages claimed for this model is that the cost of capital is reduced, thereby allowing investment to be financed more cheaply.<sup>12</sup> The potential downside is that, without shareholders 'to take the strain', any future financial risks fall upon the customers. The regulator's ability to defend customers by squeezing dividends is also effectively removed.

Another question is how far vertical integration has contributed to the success of this industry since privatisation (in contrast, say, to the railways where track and operations were split). Arguably, the stability in the industry has helped to ensure the continuation of high standards of professional practice and know-how, as well as the continued employment of people who hold those standards. This stability could be threatened by the fracturing of responsibility that is inherent in the contracting model.

Against this, a contracting model could be attractive to the water companies. A company that simply operates the system under contract to the asset owner may escape from the direct control of the economic regulator. Such a company, now in the business of operating water systems under contract, also has the prospect of being able to grow by winning other contracts, both in the UK and abroad, on the basis of a successful track record. Companies emphasise the importance of this for retaining and motivating good staff.

Finally, while the structure of the industry in England is unique, the reforms in Wales bear at least a passing resemblance to the French model, whereby the assets are publicly owned (by municipalities or even communes) while the operations are carried out by private companies on long franchises. This suggests that there may be opportunities for yet more radical reforms. For example, the opportunity might exist to re-introduce public ownership and democratic accountability within the industry, perhaps exercised (within England) at the regional level, while operations remain in private hands.

### **Issues for further consideration**

Is the current ownership model sustainable? How far do companies - or some companies - want to depart from it? Is there an appetite in some of the English regions for public ownership of the industry's assets?

Would the government and the regulator be willing to accept a plurality of organisational forms in the water industry which, up until the Glas Cymru case, they were not?

What would need to be done to ensure that contracted models worked to an adequate standard? While there is no reason to believe that this could not work, the railway example, (where this split has been present) shows that it cannot be taken for granted.

## THE PRESENT TWO-TIER CHARGING SYSTEM

### **The risk**

That the present, two-part charging structure becomes unstable, with many of those who can save money by switching to metering doing so, causing bills to rise sharply for those remaining on unmeasured charges.

Two groups of households would lose: first, those for whom switching would save money but who cannot do so because a meter cannot be fitted (e.g. people in flats); and second, those for whom switching is an option but one that loses them money (typically larger households in lower value properties). Taken together, these households are far more than just the 'vulnerable' households who are usually seen as those in need of protection.

### **Analysis of the problem**

Water is currently charged for in two quite different ways:

- For the 20% of homes (in England and Wales) with a water meter, according to how much water is used.
- For the other 80%; as a fixed charge that is in proportion to the rateable value of the dwelling (or in Scotland, the dwelling's council tax band).<sup>13</sup>

For a long time after privatisation, it was intended that this two tier system should end in March 2000 (when the use of rateable values would become illegal under the 1991 Water Industry Act), all customers presumably paying instead by meter. For pragmatic reasons, the 1999 Act removed the end-stop on rateable values, thereby allowing the two tier system to continue.

The problem is that the co-existence is not stable. Provided that their water use is not unduly high, most higher value properties would save money by switching to the metered tariff. That saving represents a loss to the water company, but one which it is entitled to recover by raising charges for the remaining unmeasured customers.

This therefore has the potential to create a snowball effect, with rises in unmeasured charges increasing the incentive for more households to switch to metering; and so on. The net result is that low rateable (often low income) customers lose out.

Customers already have the right to demand a water meter. Although there are no signs of it at present, this on its own could be enough to create a momentum. More likely, however, it would be outside pressures that would create such momentum. For example:

- Competition in the market for individual households. Those in higher-value properties would be an ideal target for a company seeking to win new customers, since, if allowed to, it would be able to offer substantial savings if the household switched to them and used a meter.
- Environmental pressure to control demand by economic means. For example, the Environment Agency believes that metering will be - and implicitly, needs to be - widespread in 25 years.<sup>14</sup>

Although the present situation is widely recognised as something of a mess, one of the problems with any change is that it would create 'losers' and 'winners'. Yet the present situation not only also creates winners and losers - through a slower and less visible process - but the losers are largely those whom the government is seeking to protect through its anti-poverty and welfare-to-work measures. Ultimately, therefore, the choice comes down to 'which' losers rather than whether there are losers.<sup>15</sup>

### **Issues for further consideration**

Just how strong is the potential for a faster switch to metering, thereby destabilising the current two part tariff structure?

What is the potential for developing socially progressive tariffs that, while based on metering, protect essential water use for all while subjecting discretionary use to the usual constraints of pricing?<sup>16</sup>

## **INCENTIVES FOR INVESTMENT IN INFRASTRUCTURE**

### ***The risk***

That there is a significant failure of some part of the infrastructure of the water network, due either to under-investment or a failure to follow agreed operating standards.

The direct consequences might include sewer collapse, mains bursts and increased leakages. The indirect consequences would depend on both the wider effects of the failure (traffic disruption, damage to property through flooding etc) and the company's response (e.g. other forms of investment reduced, reduced payments to shareholders etc).

### ***Analysis of the problem***

In a sense this is a general problem, relevant to any privatised utility where substantial investment is needed, where assets are kept in use for many decades and where thorough inspection may not be possible.

The basic logic of the problem has two parts to it:

- First, in their desire to earn a better return than the regulator's price-capping formula has envisaged, companies have an incentive to avoid planned expenditures if they can.
- Second, much of the investment needed to replace aging but still functioning equipment can be deferred without immediate problem or penalty.

An additional concern is whether the industry or the company has retained staff of sufficient calibre and experience to carry out the work to the required standards.<sup>17</sup>

The full cost of eventual failure arising from any associated accident or disruption - not just the private costs to the company to remedy the problem, but the wider social costs - would arguably far exceed the cost that would have been incurred to avoid the problem in the first place.

In the water industry, it would seem as if the greater concern is with the subterranean assets, which are obviously difficult to inspect. It applies to both the sewerage system, where the assets are extremely long lived, and the water supply pipes.

The key point for the water industry is that the 1999 price review, which reduced prices sharply after a decade of their being allowed to rise, represented a turning point. While the potential problems exist irrespective of the pressure on prices, they are likely to be exacerbated the greater is that pressure. The consensus view is that while the earlier price reviews were rather generous to the industry, the most recent one is much harsher.

### ***Issues for further consideration***

The general issue here is whether there is sufficient of an overall framework to reconcile economic and safety objectives. The question is not whether it is still right to bear down on costs but whether the degree to which this is done and the importance which is attached to it are now too high.

On a more specific point, should any discrepancies between the plans that the regulator has approved and the actual outcomes be subject to much greater scrutiny?

## THE BALANCE BETWEEN SUPPLY AND DEMAND

### **The risk**

That there is an increase in the frequency of episodes of water shortages, either in response to periods of drought or to a long term rise in demand.

There is a range of possible consequences which depend on the particular manifestation of the risk. They include:

- Prolonged interruptions to supply during a period of acute drought.
- Limitations on residential and/or industrial development if water shortage becomes chronic in some areas of the country.
- Environmental damage; restrictions on leisure activity or use.

In each case, the most likely manifestation would be within the defined geographic area of a particular water company.

### **Analysis of the problem**

The potential for imbalances comes from both changes in the climate and changes in both demography and our use of water. Annual average temperatures are trending upwards: for the world as a whole, the 1990s contained seven of the warmest ten years on record; for the UK, it contained four of the warmest five.<sup>18</sup> Global warming is also likely to bring more extreme weather<sup>19</sup> although this does not necessarily mean that prolonged droughts are more likely.<sup>20</sup>

UK demographic trends are also adverse, with the numbers of both people and households set to rise. The Environment Agency offers a range of scenarios for future demand, with a more than 75% increase by 2025 being one extreme.<sup>21</sup> At the same time, rates of extraction of either or both surface water and groundwater are judged to be at unsustainable levels across much of the South and East.<sup>22</sup>

There are a variety of means for dealing with, or even heading off the problem, including new reservoirs, further attention to leakage control and demand management via the use of domestic meters. But each of these causes other pressures in other areas, variously on investment, prices and tariff structures.

These problems will presumably continue to be given close attention by the Environment Agency. Action, however, depends on specific plans put forward by the companies, and Ofwat's reaction to them. Their decisions are taken in a five year time frame which may not be appropriate for decisions which are actually about long term direction.

Ultimately, the emergence of any prolonged shortage is bound to become a political issue, with unpredictable effects. It could, for example, lead to a rapid growth in support for a national water grid (or elements of it) to bring water from the wetter parts of the country to the drier. It could also trigger a sharp increase in the extent of domestic metering.

### **Issues for further consideration**

In many ways the issues discussed above are liable to pose delicate political problems. Adverse public reaction is certain if shortages emerge but, without proper preparation, opposition is also likely to any measures to pre-empt the problems.

More generally, what reason is there to think that the action to ensure supply and demand balance that is taken by between companies and Ofwat will be in line with overall government objectives?

## CONCLUSIONS

In judging the prospects for the water industry and the continued suitability of the regulatory institutions that govern it, the phrase that comes to mind is the health warning that personal investment adverts carry, namely, that “*past performance is not necessarily a guide to future performance*”. While it has not been the purpose of this report to scrutinise that past performance in any detail, our overall view is that the system has successfully delivered the investment to improve standards that was seen as the major strategic objective at the time of privatisation and, furthermore, that the industry has remained largely sound, notwithstanding some serious incidents and some serious criticism.

However, our assessment of the risks the industry faces over the coming period strongly suggests that the future sustainability of the industry in its present form is very questionable. Unlike the energy industry, the threat does not come exclusively from a series of new challenges: rather, we see the fundamental difficulties arising from the very persistence of the long standing challenges, namely:

- The continuing requirement for investment, chiefly to raise standards.
- The continuing priority given by the regulatory system to ‘efficiency’ improvements.
- The continued existence side-by-side of two incompatible systems for charging households for their water.

All three challenges represent zones of conflict, with unpredictable outcomes. Into this must be added the attempts by the companies themselves to alter the shape of the industry, for example through separation of assets and operation and the extension of contracting out. While there may be no reason to think that any of these issues is about to blow up, the possibility of something going seriously wrong at some point over the next few years cannot be discounted. Now would be a good time for a government that took the long view to address this question in a forward-looking way.

Putting this point another way, privatisation of water was arguably part of a broader settlement for the water industry at the time. The investment required to improve standards was estimated and factored into the price regime, metering (and its associated tariffs) were viewed as the way forward, and the act of privatisation set out a clear framework for the structure and ownership of the industry. What is now needed is a new settlement which looks forward over the next decade or so and presents an agreed overall stance on the challenges above.

As we have emphasised in the detailed discussions, there are opportunities here as well as risks. In particular, the separation of assets and operations that was introduced (into the UK) by Glas Cymru in Wales opens up the possibility of introducing public ownership and control, perhaps at the regional level if all parties including the regional assembly agreed, while leaving operations in the hands of a private company. From an international point of view, this is hardly a revolutionary proposal. If the phrase had not already been used, one might even call it ‘a third way for water’.

Finally, a review of the industry’s future structure and the strategic challenges facing it would provide the right context within which to judge the wisdom of selecting the introduction of competition as the central challenge for the industry over the next period. While there are certainly deep divisions of opinion about whether competition can be introduced successfully, we would want to be sure that the likely gain was worth the trouble of it all, particularly since - as we suspect - other strategic issues are more important.

### **3. THE ENERGY INDUSTRY: HISTORY SINCE PRIVATISATION**

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#### **CHANGES IN STRUCTURE AND OWNERSHIP**

##### **Electricity**

The electricity industry has seen radical changes since privatisation. Prompted primarily by increased competition in generation, the liberalisation of the supply markets and the requirement for the separation of supply and distribution businesses, there are now a large number of companies involved, with a diverse range of interests. This contrasts sharply with the monolithic structure that was in place before 1990.

The number of companies regarded as major power producers has increased from 6 at privatisation (England, Wales and Scotland) to 35, due to a combination of the reorganisation of the industry, new entry into the market and divestment of capacity by the largest generating companies (to an extent through pressure from the regulator). The first new player was Edison Mission Energy, which bought National Grid's pumped storage capacity, and numerous other US companies soon followed suit. The Regional Electricity Companies (RECs) also backed a number of independent projects. In 1990, Powergen and National Power held 85% of registered capacity; by the end of 2000, this had reduced to 25%.

The end of the generators' coal contracts in 1993, combined with the specifics of the operation of the wholesale electricity market prompted a 'dash for gas'. 85% of the capacity which has come on stream since 1990 has been Combined Cycle Gas Turbine (CCGT). In 1990, coal-fired power stations represented 70% of capacity in England and Wales and CCGT less than 5%; by 2000, these figures had changed to 33% and 30% respectively (nuclear provides 14% of capacity, with the rest coming from oil, dual fuel, pumped storage and the interconnector). This shift has provoked concern about diversity (and hence security) of supply and prompted a moratorium on new gas-fired generation between 1998 and November 2000. A recent government review of sources of supply also revealed perceived distortions in the wholesale electricity market, encouraging the building of new plant and so facilitating the entry of cheaper CCGT capacity. The 2001 New Electricity Trading Arrangements (NETA) represent an attempt to correct this, with bilateral contracting arrangements replacing a mandatory pooling system. It is expected that the new arrangements will also drive down prices.

The generators have also broadened their interests, diversifying into distribution and supply. Indeed, generation is now seen as increasingly risky by Independent Power Producer (IPP) developers and their bankers, particularly since NETA is intended to drive prices down. Some of the major generators are therefore considering further divestment of their plant, while retaining sufficient capacity to support their supply businesses.

There have also been major changes in the structure and ownership of the downstream end of the market as a result of the government relinquishing its golden shares in the RECs in 1995, the domestic electricity supply market being fully opened to competition in 1999 and the Utilities Act requiring that distribution and supply are licensed and carried out by separate companies. At the time of privatisation, there were a total of 14 Public Electricity Suppliers (PESs) operating in England, Wales and Scotland, each solely responsible for both distribution and supply within specific local areas. Now, domestic customers can choose from any of the active licensed suppliers, and distribution and supply are (or will be) separate businesses. New players have entered the market from other UK businesses, Europe and the US, and there have been a number of mergers and acquisitions. The distribution and supply businesses of 5 of the former PESs in England and Wales are now fully separated and owned by entirely distinct players.

Competition in the supply market has seen 21 supply licences issued by the end of 2000 and there are currently 14 active suppliers. Most of these are the businesses of the former PESs, with Centrica (supplying as British Gas Trading) the only non-PES to have attracted a substantial number of customers. 5 companies each own the supply businesses of at least 2 former PESs (TXU, Scottish and Southern, Scottish Power, EdF and npower) and it is these companies which have the largest market shares. Only ScottishPower's supply and distribution businesses remain in their original hands, with all the other former PES businesses having acquired new owners, either through mergers or acquisitions. There are now 8 companies (4 foreign controlled) who own the supply businesses of the former PESs and 11 companies (6 foreign owned) who own the distribution businesses.

The other key aspect of changes in the downstream end of the sector has been the convergence of electricity and gas supply. As well as moving into non-regulated businesses during the recession of the early 1990s, all former PESs moved into gas supply when the domestic markets were fully liberalised in 1998. 11 companies now offer dual fuel deals where electricity and gas are sold together. By 2000, around a third of customers were buying their gas and electricity from the same supplier.

Owner	Nationality	No of former PES supply businesses	% of GB domestic electricity supplied (Dec 2000)	No of former PES distribution businesses	Generation in UK?	Gas supply?
TXU Europe	US	2	18	1	Yes	Yes
Scottish & Southern Energy	UK	3	15	2	Yes	Yes
ScottishPower	UK	2	11	2	Yes	Yes
EdF	France	2	11	1	Yes	Yes
Centrica	UK	-	12	-	No	Yes
npower (subsidiary of Innogy)	UK	2	8 <sup>23*</sup>	1 <sup>24</sup>	Yes (Innogy)	Yes
Powergen	UK <sup>25</sup>	1	8	1	Yes	Yes
MidAmerican Energy	US	1 <sup>26</sup>	4	1	No	Yes <sup>27</sup>
AEP	US	1	7	1	No	Yes
GPU Power UK	US	-	-	1	Yes	No
Southern Energy/PPL Global	US	-	-	2	No	No
United Utilities	UK	-	-	1	No	No

## **Gas**

Like electricity, the structure of the gas sector is now radically different from that at privatisation. Pre-privatisation, British Gas had a monopoly on transportation and supply, to both domestic and industrial customers, and was the sole purchaser of gas.

Competition for most industrial customers was introduced in 1992 and BG's market share fell significantly below the 55% limit which was initially imposed on it (and subsequently removed). It currently supplies 40% of large user sites and only 10% of volumes. 90 licences for large user supply remain current, and there are 35 companies active in the market.

In February 1997, British Gas was de-merged to become British Gas Trading (BGT) and British Gas Services both owned by Centrica (supply) and Transco owned by BG plc (transportation). While transportation remains a monopoly (with a number of other companies owning relatively insignificant sections of pipeline), competition for supply to the domestic market was introduced in 1996, with full exposure to competition completed in 1998. Nevertheless, BGT still retains around 70% of the domestic market (with customers switching both ways), and the rate at which it has been losing customers has been decreasing in recent years. Thus, while the markets have now been liberalised both for domestic and large user supply, competition for domestic users remains much less developed than for large users.

The main competitors to BGT in gas supply are the former Public Electricity Suppliers (and their new owners), such as TXU Europe, Scottish and Southern and npower. All current significant suppliers (more than 5% share of the non-BGT residential gas supply market) are companies developed from former PESs and the major generators. There are now 28 licensed domestic gas suppliers, of which 18 were active in June 2001. Consolidation in the supply market has seen a number of national and regional supply brands coming under common ownership (such as npower acquiring Calortex, York Gas, independent Energy and Midlands Electricity), leading to a recent reduction in the number of active gas suppliers.

Clearly, the increasing convergence of gas and electricity supply (both through common ownership and dual fuel supply) is of major significance in the gas industry. The increasing share of gas-fired plant in electricity generation has also seen generation companies diversifying into upstream gas, primarily to ensure that gas supplies are secured. They are also acquiring shippers' licenses enabling them to buy gas from producers and sell to suppliers. The trend appears to be increasing consolidation, both of ownership of gas supply businesses and in integration between electricity and gas.

## REGULATORY AND LEGAL CHANGES

### 1986

Privatisation of British Gas.

### 1989

*Electricity Act* receives Royal Assent.

The English and Scottish Nuclear Power Stations withdrawn from the plan to privatise the electricity industry.

### 1990

Electricity Pool of England and Wales opened for trading.

Office of Electricity Regulation (OFFER) assumes full responsibilities.

Privatisation of the Regional Electricity Companies.

### 1991

Partial privatisation of PowerGen and National Power (60% of shares offered on the Stock Exchange).

### 1992

Competition in gas supply for most industrial customers introduced.

Office of Electricity Regulation, Northern Ireland, assumes full responsibilities.

### 1993

Privatisation of Northern Ireland Electricity.

### 1995

*Gas Act* gives OFGAS wide-ranging powers to introduce competition in the gas supply market.

Remaining 40% of shares in National Power and PowerGen offered on the Stock Exchange.

Government gives up its 'golden' share in each of the Regional Electricity Companies.

Privatisation of the National Grid.

### 1996

Competition in gas supply introduced in SW England.

Privatisation of British Energy plc (owner of the 2<sup>nd</sup> generation nuclear power stations). The 1<sup>st</sup> generation (Magnox) stations remain in government ownership.

### 1997

Labour Government launches Review of Utility Regulation.

Windfall Tax on privatised utilities (£5.2bn).

De-merger of British Gas plc to become Centrica plc (which owns British Gas Trading and British Gas Services) and BG plc (which owns the distribution network – Transco - and BG International, Exploration and Production).

### 1998

*Competition Act* (came into effect March 2000).

Energy White Paper paves the way for the New Electricity Trading Arrangements.

Moratorium on new gas-fired capacity (ended November 2000).

Government Green Paper *A fair deal for consumers: modernising the framework for utility regulation..*

Full competition introduced into the domestic gas supply markets.

Electricity supply markets opened in the first four PES areas.

### 1999

Ofgem created from OFFER and OFGAS.

First stage of electricity supply market liberalisation in the final two PES areas. All PES markets fully open to competition in supply.

### 2000

*Utilities Act* receives royal assent.

Government gives up its golden shares in Powergen and National Power (it still holds golden shares in National Grid, British Energy, Northern Ireland Electricity, ScottishPower and Scottish and Southern Energy).

### 2001

New Electricity Trading Arrangements come into effect.

## **Recent Changes**

The Utilities Act of 2000 substantially changed the industry's structure and regulatory framework and represents the most significant legislation for the energy sector since privatisation. It involved an attempt to improve the quality of regulation through de-personalisation, increased transparency and greater consistency, as well as a shift of focus away from price controls (Ofgem hopes not to have to cap prices from April 2002) toward the promotion of competition, the protection of consumer interest and the stimulation of social and environmental actions. Most visibly, the Act integrated the regulation of gas and electricity, with 'Offer' and Ofgas uniting to form Ofgem. Reflecting both the convergence of the gas and electricity sectors and a desire to increase consistency in regulation, Ofgem is run by a three member authority (as opposed to a single director) to depersonalise decision-making, and has increased responsibilities to consult on its actions and publish explanations of its key determinations.

A notable impact of the legislation was to change the primary duty of the regulator in an attempt to bolster the consumer interest. The principal requirement is now to protect the interests of customers by promoting 'effective' competition, rather than simply ensuring that the duties of the gas and electricity companies are properly carried out and financed. In meeting this responsibility, the regulator is required, as previously, to have regard to the interests of various specific groups (e.g. the disabled and consumers of pensionable age), but, for the first time, the needs of low-income customers must also be considered. The Act additionally provides a reserve power for the Secretary of State to intervene by adjusting charges if he believes that any individual group of customers is being unfairly discriminated against.

A further provision to promote the interests of consumers is the establishment of Energywatch (the Gas and Electricity Consumers Council) which has a sharper focus on championing the interests of consumers than its predecessors and enhanced information-gathering powers.

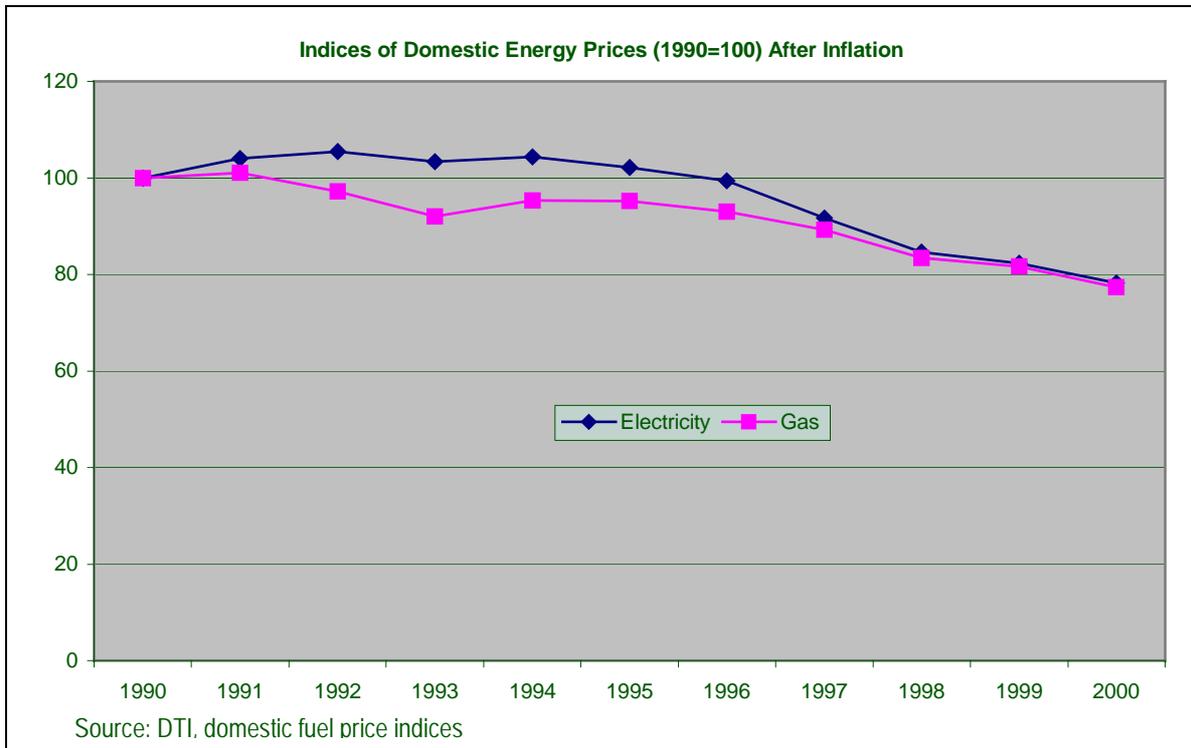
The goal of 'effective' competition is underpinned by provisions in both the Utilities Act itself and the Competition Act 1998. The Utilities Act requires the separation of the licensing of electricity supply and distribution, removing the concept of a PES and placing a statutory bar on the same legal entity holding both supply and distribution licenses. Companies are to be completely separated by April 2002, although some shared services may be kept until 2005 as long as this judged most efficient and there is no cross-subsidy or distortion in competition. The Competition Act introduced new laws preventing practices which prevent, restrict or distort competition.

In carrying out its new duties, the regulator has a number of new or enhanced powers. It may introduce modifications to the standard licence conditions without recourse to primary legislation or the consent of the licensees (who may appeal to the Competition Commission). As a means of enforcement, the regulator may also fine companies up to 10% of turnover if they fail to meet licence conditions, performance standards or statutory requirements. Finally, the regulator can require the production of information and/or search premises.

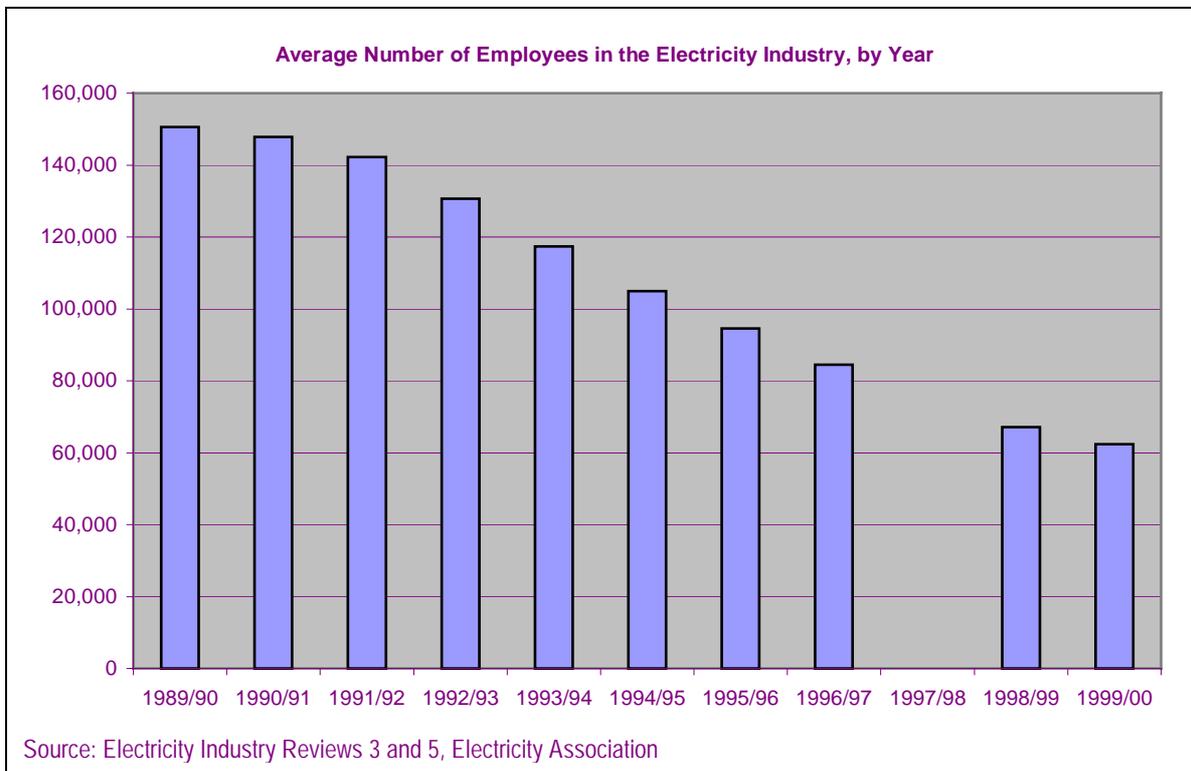
In an effort to increase the role of regulation in promoting the government's social and environmental priorities, the Utilities Act requires the regulator to have regard to statutory guidance issued by the Secretary of State on social and environmental concerns. Draft guidance published in May 2001 includes Ofgem having to have regard to issues relating to payment for services, debt, disconnection, benefits of competition, security of supply and contact with consumers. It is important to note that the requirement is only that Ofgem 'has regard' to the guidance: the legislation does not strictly require any specific response.

## IMPACTS ON STAKEHOLDERS

### Customers: Charges



### Employees: Levels of Employment



## THE GLOBAL CONTEXT

Unlike water, the structure of the energy industry in England and Wales is not unique. Rather, a number of countries exhibit a broadly similar structure or, at least, many common elements. For example, both the US and Japan were ahead of the UK in enabling private companies to be responsible for electricity supply. A number of other OECD countries, such as Australia and Germany, have significant private sector responsibility for energy supply. Similarly, the liberalisation of energy supply (retail) markets has enabled customers in several countries to choose between energy suppliers. For example, by 2000, the market was fully open in Finland, Germany, New Zealand, Norway, Sweden and several states in Australia and the US. Overall, by 2006, around 500 million people within the OECD (50% of the population) will be able to choose their electricity supplier.

In paving the way for an integrated European energy market, the EU Electricity and Gas directives (1996 and 1998 respectively) require a considerable degree of liberalisation of markets in individual member states and the trend is therefore towards the increased significance of competition and private sector involvement in energy supply. Countries such as Portugal, which previously had monopoly public suppliers, have had to introduce competition under the EU legislation.

It is not then in the structure itself of the energy sector that England and Wales display their most obvious differences; rather it is arguably in the *extent* of privatisation and liberalisation that they are distinct with other countries typically being more cautious, and more slow, in their moves towards energy liberalisation.

In England and Wales, there are no publicly managed energy companies, neither central nor local government have equity stakes in most of the companies (with the exception of the nuclear companies, National Grid and the Scottish suppliers) and the separation of generation, transmission and distribution companies is complete. The number of major, active participants in the energy markets is also greater than in most other countries and the UK markets have provided greater opportunities for the development of foreign ownership of the principal businesses than elsewhere.

Country	Privatisation (even partial)?	Competition?	% of market open to competition	When was competition introduced?	Unbundling of generation and transmission?
<b>UK</b>	Yes – full privatisation	Yes	100	1990: 1MW 1994 100KW 1998: 0KW	Yes - separately owned companies
<b>US</b>	Yes – mixture of investor owned utilities and public companies	Yes, in some states	n/a		Yes - accounting separation
<b>Japan</b>	Yes – primarily private, vertically integrated utilities with some local authority generation	Yes	2MW – utilities have monopolies on the domestic market in their area	1998: 2MW	No - integrated
<b>Germany</b>	Yes	Yes	100	1998: 0KW	Yes – management/ accounting separation
<b>Australia</b>	Yes	Yes	44KW	1995: 1MW 1998: 44 KW	Yes – management by legally separate companies

While other countries allow considerable private sector participation and have competition in the retail market, the extent of liberalisation is often limited compared to the UK, frequently either because legislation impedes it or because the markets have yet had time to develop. Japan, for example, has electricity and gas supplied by private enterprises, but they have monopolies on particular geographical areas. In France, although the state-owned suppliers are being exposed to the possibility of increased competition, it is often viewed as unlikely that significant competition will develop since the state-owned companies will not be broken up and will have considerable incumbent advantage. In the US, although the large, vertically integrated investor owned utilities (IOUs) are responsible for more than 70% of electricity generation, there are also a number of publicly owned and managed companies which have significant roles, with federal, state, municipal and co-operative utilities all involved in energy supply.

Competition, and arguably the driving down of cost, is also hindered in a number of countries since generation, transmission and distribution are not fully unbundled. Whereas the England and Wales system effectively has all these aspects undertaken by separate companies (although they may ultimately be in common ownership), most other countries still display either integration of the various components or a requirement only for separate accounting. Even the EU Electricity and Gas directives do not go so far as requiring separate companies to run the distinct components of the energy industries; rather, there is only a necessity for separate accounting. This leads to a situation where there remain a small number of large integrated players who are dominant in their domestic markets. France and Germany are examples of this, and recent mergers and acquisitions are simply furthering the trend. Combined with the more fragmented nature of the UK energy industry, this leaves UK companies more exposed to acquisition by foreign competitors.

In summary, it is not in its individual components that the UK energy sector is unique, rather in the fact that it combines almost all the key elements of full privatisation and liberalisation in one place. Few, if any, of these components are exceptional in themselves, but their combination is often viewed by those in favour of increased liberalisation as a model towards which other countries should work.

## 4. THE ENERGY INDUSTRY: FUTURE RISKS

### SUMMARY OF RISKS

As discussed in the previous section, the energy industry has changed considerably since privatisation, and some of this government's objectives are quite distinct from those of the previous government. But the regulatory regime remains similar. The issue is whether this regulatory regime on its own is sufficient to address the issues of the future. In order to make such an assessment, this section discusses the possible risks that the industry could face in the future.

The table below provides a long list of the risks that we have identified, arrived at on the basis of discussions with people with good knowledge of the industry. The issues are limited to those which might arise in the short to medium term (say, the next ten years), and thus there is no direct overlap with the government's current Energy Review. They are also limited to those that could arise from 'internal' threats and thus, for example, do not include disruptions in supply from possible external factors. The risks are grouped under three major headings.

- Security of supply in the short to medium term.
- Achieving social objectives.
- Environmental issues.

Of the ten risks listed in the table, the five that we have assessed as of 'high' or 'medium' likelihood are then discussed in more detail on the following pages.

<i>Risk</i>	<i>Assessment of risk</i>	<i>Considered further?</i>
<b>Security of supply: short and medium term</b>		
Both gas and electricity have too few engineers to be able to carry an number of essential functions	Medium – but almost certainly rising	Yes
Collapse of public confidence in any aspect the energy network	Low	No
Too little generating capacity, creating a power crisis similar to that experienced this year in California.	Medium	Yes
Major interruption to supply from international sources (e.g. war, accident, terrorist activity)	Medium – but beyond our remit	No
<b>Achieving social objectives</b>		
The measures set out in the Fuel Poverty Strategy fails to reach - or even approach – their targets	High	Yes
The higher fuel prices that many (largely poorer) customers pay, persist indefinitely	High	Yes
Effective withdrawal of supply to households in certain localities	Low – although 'self-exclusion' via differential tariffs is higher	No
<b>Environmental issues</b>		
Failure to reach UK's Kyoto targets	Low – although complacency is a danger	No
The initiatives to promote alternative technologies and to improve energy efficiency fail to meet their targets	High	Yes
Consumer resistance to rising energy prices	Low	No

## THE NUMBER AND AGE PROFILE OF ENGINEERS

### **The risk**

That both industries may have too few engineers to be able to carry out a number of essential functions.

The chronic problem associated with this is of a progressive lowering of standards of repair and maintenance.

The critical risk in gas is of a serious infrastructure failure, possibly resulting in a serious accident.

In electricity, one of the risks of low engineering numbers would be a failure to restore electricity supplies in a timely fashion following a serious disruption (e.g. due to a storm) across a large part of the country.

### **Analysis of the problem**

Hard evidence for a shortage of engineers is (at least in the public domain) fragmentary.<sup>28</sup> Nevertheless, there are three reasons connected with the industry's history for believing that it may very well be a problem.

First, the substantial falls in the numbers employed in the energy industry since privatisation has meant that overall levels of recruitment have been low for a long time. As a result, the average age of engineers is now high and projected retirement rates far exceed recruitment rates. Recruitment *rates* (and training capacity) are likely to be least as much of a problem as absolute engineering numbers, with the situation likely to deteriorate over time.

Second, with the current regulatory regime, maintenance and renewal can be reduced (compared with the regulator's plans), giving financial gain to the company with few if any adverse consequences in the short term.

Third, the fragmentation of the industry since privatisation has had two effects: a sheer lack of knowledge about the extent, or otherwise, of engineer numbers across the industry as whole; and an absence of any organisation taking an industry-wide view of what is needed.

Unless there is compelling evidence that proves that there is not an engineering shortage now or in the near future, a risk-averse government should proceed on the basis that there is a problem.

This is partly because the incentives have been driving the industry in the same direction for so long now. But it is also because action to reverse any problems is bound to take time to have its effects. For example, even if pay rates were raised in an attempt to attract more engineering recruits, it would require a number of years of an increased flow of engineers into the industry before there was a significant increase in the stock of engineers.

Likewise, even if Ofgem were to re-open the price review to allow the companies to raise their prices to finance higher levels of maintenance deemed necessary by the Health and Safety Executive, it would be some time before all necessary remedial action could be completed.

A final point is that while the costs of erring on the side of caution are fairly tangible the costs of getting it wrong the other way are less so - but are likely to include a much wider group of costs than money on the company's bottom line.<sup>29</sup>

### **Issues for further consideration**

The key issue is no longer increases in efficiency through staff reductions but the re-building of training capacity and the encouragement of young adults to enter the business.

The Treasury's current review of the supply of engineers is concerned with those with higher level, rather than technician level skills.<sup>30</sup> Should this review be extended?

## **ELECTRICITY GENERATION IN THE MEDIUM TERM**

### ***The risk***

That the UK finds itself with too little generating capacity at some point in the next few years, creating a power crisis similar to that experienced this year in California.

As California shows, besides the obvious inconvenience and discomfort caused by a shortage of electricity, such a crisis can have serious economic consequences including:

- Financial problems for the electricity generators themselves.
- Higher energy prices for both domestic and business customers, thereby causing reductions in sales in other sectors, thereby depressing the economy more widely.

### ***Analysis of the problem***

While we have found no evidence to suggest that a shortage of generating capacity is an immediate prospect, there are too many superficial similarities between the Californian and UK situations to allow California to be dismissed as special case.<sup>31</sup> Two that are worthy of particular mention are:

- The role that the introduction of competition played as the trigger for the crisis, bringing to light – and bringing to a head – more long-standing problems to do with generation.
- The crucial importance in causing the crisis of the interaction between a value-laden regulatory agenda and the behaviour of the market.

One of the important underlying issues is the degree of volatility and uncertainty exhibited by competitive energy markets. A planned system that always provides a sufficient margin of spare capacity may be more inefficient, but it is also more likely to avoid the excesses of feast and famine that carry their own costs.

The overall conclusion from the example of California is that the behaviour of regulated energy markets is highly complex. Since particular regulations may have significant unintended consequences, the situation has to be reviewed as a whole – and kept under constant review.

Furthermore, with risk arising from the interaction of uncertainty about external conditions and constraints on action, it is vital that government-imposed constraints (e.g. certain targets) are designed and if necessary amended in the light of a clear understanding of their impacts here.

### ***Issues for further consideration***

While the regulation of a competitive energy market is certainly a highly complex task, it is not one which can be left to experts alone. At its heart, lies an exercise in risk assessment and risk control, requiring a quantitative assessment of the risks which then drives the planned controls. The central question here is whether government is currently sufficiently involved and whether (assuming this to be the case) any heightened aversion to risk following the Paddington and Hatfield crashes is being properly reflected in the analysis.

Do the targets and constraints which the government itself has already set take sufficient account of their possible impact on energy supply?

## THE FUEL POVERTY STRATEGY

### **The risk**

That the measures set out in the government's Fuel Poverty Strategy fails to reach - or even approach – the targets set, in particular for eliminating fuel poverty among vulnerable households.

The strategy represents a major government initiative in an area of widely accepted great importance so failure would deal a serious blow to its wider social justice strategy.

Furthermore, to the extent that the Fuel Poverty Strategy is a form of public-private partnership, failure would also be a blow to the government's preferred means of dealing with social problems via the engagement of the private sector.

### **Analysis of the problem**

Fuel poverty is defined by the government as households who spend more than 10% of their disposable income on fuel. Insulation and central heating are viewed as two developments which can help to reduce these costs.

The Fuel Poverty Strategy comprises two main elements: a set of targets set by government - both ultimate (2010) and interim (various dates) – plus a whole series of envisaged industry actions and initiatives. The envisaged actions are required of a wide variety of organisations including the industry, local government, registered social landlords and Ofgem (which contributes to the Fuel Poverty Strategy by seeking to broaden the benefits of competition and widen choice especially for low income customers as well as monitoring progress).

However, two key questions appear to have been left unexamined:

- Whether, even if the initiatives work on the scale envisaged, the goals will be achieved.
- What scale the initiatives are actually likely to work at.

As a result, there is a potential disconnect between the targets and the actions to achieve them.

While Ofgem has responsibility for monitoring the progress being made towards achievement of the targets, it does not have ownership of the strategy nor is it responsible for its implementation. Indeed a major concern is that no institution has responsibility for its implementation, amending it in the light of experience, changed circumstances etc. The lack of any discernable link between targets and actions is highly symptomatic of this.

In its turn, this is illustrative of a wider phenomenon, namely whether it is sufficient to rely on the combination of 'strategy document plus targets plus monitoring' to deliver change over a long period in a changing industry which involves so many organisations both inside the industry and outside.

### **Issues for further consideration**

The issues to do with the Fuel Poverty Strategy concern its implementation and adaptation in the light of experience and in the face of changed circumstances. In particular, who or what will be responsible for overseeing both the implementation of the strategy and its amendment and alteration in the future?

More specifically, we would also question whether the strategy is overly-focussed on 'fuel poverty', as opposed to other problems with heating that low income households typically suffer.<sup>32</sup>

## PRICES PAID BY CUSTOMERS USING PRE-PAYMENT METERS

### **The risk**

That the higher fuel prices that many (largely poorer) customers pay, principally those unable or unwilling to use cheques or direct debit as their means of payment, persist indefinitely.

### **Analysis of the problem**

The mere existence of a difference is a long-standing problem: the 4 million people who use prepayment meters pay substantially more for their gas and electricity than the rest of the population.

The price differentials are substantial and not getting smaller: figures for 1999 show pre-payment electricity bills £27 (11%) higher and pre-payment gas bills £51 (19%) higher than for bills for direct debit customers.<sup>33</sup>

Furthermore, the numbers using pre-payment meters for one or both fuels has actually been rising: from 1.9 million in 1991, to 4.7 million in 1997 and to 5.3 million in 2000.<sup>34</sup>

Depending on how many customers are paying for *both* fuels by pre-payment meter, this equates to between 15% and 20% of all households in the country.

Under its *Social Action Plan* (March 2000), Ofgem is now focused on this problem and has adopted an approach that can be summarised as trying to ensure that *all* customers can enjoy the benefits of competition.<sup>35</sup>

The question that needs to be asked before this, however, is what possible justification there is for a price differential on anything like the scale now observed. There is certainly no doubt that the idea that prices paid by pre-payment customers *ought* to be higher is very much received wisdom in this country (although we have found astonishment at it from at least one international energy expert). We believe, however, that government should view these higher prices with the greatest suspicion, for three reasons:<sup>36</sup>

- First, the sheer number of meters now in use means that there must be substantial economies of scale in their production, thereby reducing production costs substantially. Moreover, since there is no risk to the supplier that pre-payment customers will go into debt, that factor at least ought to lead to *lower* prices for such customers rather higher ones.
- Second, a large element of the 'cost' to the supplier of pre-payment meters will actually be an allocation of part of various overheads. Those allocations are a matter of accounting conventions - and different conventions could therefore be adopted.
- Third, while companies are not allowed to refuse to supply, they can find ways of discouraging demand from particular groups customers whom they deem to be unattractive.

The sense that those on low incomes end up paying more for something than the average citizen pays will also strike many as very unfair.

### **Issues for further consideration**

Clearly, the fundamental question here is what – if anything – ought the differential on pre-payment meters to be? In seeking an answer to this question, government should insist on an answer that distinguishes facts from judgments made by companies and regulators.

Government could also give consideration to the more general question of whether issues of equity between consumers are treated properly and seriously (if at all) under the present institutional arrangements.

Finally, one important aspect of the problem lies outside the energy industry itself: people often use prepayment meters because they do not use bank accounts, and they do not use bank accounts because they feel that the products offered by the financial industry are unsuitable.

## TARGETS FOR ALTERNATIVE ENERGY

### **The risk**

That the various initiatives being undertaken to promote alternative technologies and to improve energy efficiency fail to meet the targets set for them, either individually or (perhaps more importantly) collectively.

A failure to come close to the targets risks undermining a future UK government's ability – and willingness – to play a leading role at the international level in pursuit of the much tougher long term targets that are needed if the climate change linked with global warming is to be controlled.

### **Analysis of the problem**

The key overall government target is to reduce CO<sub>2</sub> emissions to 20% below the 1990 level by 2010. This is a much tougher target for the UK than the Kyoto target.<sup>37</sup>

At least 15 different programmes and initiatives are identified as contributing to the overall CO<sub>2</sub> target. While the government's plan details the expected role that each is expected to contribute towards the overall target,<sup>38</sup> some independent assessments suggest that these look optimistic.<sup>39</sup> Some of the initiatives also have their own targets, for example: for renewables (10% of electricity from such sources by 2010) and combined heat and power (capacity to double by 2010).

The government's current approach to implementation relies on market-type solutions that use price signals to encourage suppliers to introduce new energy sources and consumers to switch towards using them. Taxes discourage consumption (e.g. the climate change levy, or higher duty on petrol) are the most straightforward, although as with the use of any tax to try to control consumption, their effectiveness depends on how much consumers cut back as prices rise.<sup>40</sup>

So, the government's approach combines a proliferation of initiatives with relatively little leverage over their achievement. Monitoring of progress is promised but it is not obvious what government could actually do to make things move faster.

Furthermore, incentives to encourage new energy sources require careful design and – once introduced – attention to unintended consequences: for example, the adverse impact that the New Electricity Trading Arrangements (NETA) is having on small generators including CHP.<sup>41</sup> The more artificial the market then the greater such problems may be<sup>42</sup> (e.g. some energy suppliers giving away low energy light-bulbs as the easiest way of meeting their energy efficiency commitment).

A Dti/Ofgem Embedded Generation Working Group was recently set up to examine what has to be done to encourage and accommodate the many more generators ('embedded generators') that will be needed if the various renewables targets are to be met. Not only does this group's report demonstrate the breadth and complexity of the issues involved but it also concludes that a new government body is needed to oversee the implementation of its recommendations.<sup>43</sup>

### **Issues for further consideration**

Progress in some areas will inevitably be too slow but the present approach is likely to leave government short of effective remedies. This is likely to be exacerbated by the fact that responsibility is spread across a number of government departments. Can this be avoided?

The creation of the Embedded Generation Working Group demonstrates that something more than Ofgem is needed to oversee developments. Is there a case for a new agency within energy – a 'Sustainable Energy Agency' – to play the kind of strategic role within energy that is played by the Environment Agency within water?

## **CONCLUSIONS**

Our overall conclusion from the analysis of risks is that the issues that are going to be important in energy over the next decade or so are likely to be very different from those that were judged paramount in the 1990s.

In some sense, the strategic issue in energy over the last decade has centred on the creation of a competitive market in energy generation and supply. While some of this agenda still remains to be addressed, substantial progress now has been made.<sup>44</sup>

But there are new challenges in the environmental and social fields. These are quite different in nature from the economic challenge that has been the principal concern over the past fifteen years. These new challenges can be encapsulated in a series of targets, including:

- The eventual elimination of fuel poverty, with a government target set for 2010 of its elimination for all vulnerable households.
- A 20% reduction of carbon emissions by 2010, with associated targets for renewable energy sources, combined heat and power etc.

While there is no shortage of initiatives in place designed to help achieve these targets, our concern is that the approach is one that is both overly elaborate and flimsy, in effect, relying on a combination of targets, market mechanisms and interactions between the various players to deliver solutions. But the results of this mix are very difficult to predict - let alone influence - particularly in terms of the scale and pace of progress. Add to this the (as yet uncompleted) effects of further competition and the lifting of some price controls, then the conclusion one reaches is that the overall approach that is being taken at the moment is quite inadequate in such a complex and uncertain industry.

Rather, what we believe is required is an approach that places much greater emphasis on implementation – and the institutions needed to help achieve it. We also suggest that with multiple objectives and agendas to pursue, the case for having more than one regulator (Ofgem) should be given serious consideration. In this respect, the experience of the water industry with both Ofwat and the Environment Agency is pertinent. Whilst such an arrangement is not without its problems, it does at least mean that each set of objectives receives due and continuing attention.

We also have some worries about the possible side effects of the continual priority that the current regulatory regime places on cost reductions and efficiency gains. Given the amount of time that it takes to reverse both under-expenditure on maintenance and a shortage of engineers, early action is needed unless detailed investigations reveal that there is absolutely no problem here.

We conclude, therefore, that a thorough going review is now required of the institutions responsible for implementing different parts of the government's strategic agenda in energy, both social and environmental as well as economic. That review could be part of the current review of energy policy to 2050, but - and we suspect this might be more appropriate - it could also be considered as part of the response to that review early in 2001.

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## ENDNOTES

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<sup>1</sup> Thames is responsible for running RWE's core water interests in Europe.

<sup>2</sup> Hyder was taken over by WPD (Western Power Distribution - US utility) after a battle with Nomura (Japan) in late 2000. WPD has now sold off the water interests to Glas Cymru, a not-for-profit company, while retaining the electricity operations.

<sup>3</sup> The issue of competition is very different in water than in energy and other industries. At the retail end, given that competition in terms of either quality or product differentiation is not really relevant, it would have to be on price. But, as illustrated by the continuing predominance of tariffs based on rateable values rather than on the costs of supply, the extant position is one where prices to individual consumers within a given geographic area have a common basis and to move away from this position would allow companies to 'cherry pick' more attractive customers at the expense of less attractive customers. The consequences for larger and/or low income households could be severe and there are no signs that the government wants this to happen. Furthermore, we are not aware of any evidence that there are *largescale* gains in cost reductions to be had and so, for example, the partial form of competition that is being pursued, i.e. 'inset' competition for large industrial customers, runs the risk of being at the expense of everyone else who does not have the benefit of competition.

Competition at the 'generation' end is also problematic as, within a given geographic area, water is a natural monopoly. No one, for example, is suggesting that different companies should manage 'competing' reservoirs.

So, any competition is likely to be for particular services *within* the market (e.g. sewage, support services). Importantly, it may take the form of competition *for* the market, either in terms periodic competition for licences or for the operation of services within these licences. In any event, it is likely to be less visible to the consumer and with less tangible benefits in terms of substantially reduced prices. We conclude that, while competition may be important, we doubt whether it will ever become the predominant issue as, for example, it has been in the energy sector over the last X years.

<sup>4</sup> The situation in Scotland and Northern Ireland is somewhat different. Scotland has 3 public water authorities, with the responsibility for water supply, ownership of the assets, operations and finance all in the public sector. Similarly, Northern Ireland has water run by a government agency, which does the same as the water boards in Scotland.

<sup>5</sup> The first phase of Community water legislation focused on specific waters, setting standards for rivers and lakes used for drinking water abstraction (1975) and bathing water (1976), or to protect freshwater fish (1978) and shellfish (1979). It culminated in binding quality targets for drinking water (1980). The Dangerous Substances Directive (1976) and its daughter Directives were the main legislative measures for controlling emissions.

The 1988 Ministerial Seminar on water reviewed the existing Community legislation. It identified a number of improvements and gaps to be filled. This resulted in the second phase of water legislation. The Urban Waste Water Treatment Directive (91/271/EEC) and the Nitrates Directive (91/676/EEC) were both adopted in 1991. The first sets out to protect the aquatic environment from the effects of sewage discharges. It sets minimum standards for sewage treatment from sewage works serving larger towns. The Nitrates Directive addresses water pollution by nitrates from agriculture. At the same time, the Commission also proposed a new Drinking Water Directive (adopted in 1998) and a Directive for integrated pollution prevention and control (adopted in 1996). A Commission proposal to revise the Bathing Water Directive is expected later this year.

The provisions of several pieces of the earlier Community water legislation have been integrated into the recent Water Framework Directive (2000/60/EC), allowing the earlier Directives to be repealed in a phased approach. The Water Framework Directive establishes a management structure for future European water policy based on river basins and expands the scope of water protection to all waters (both surface and ground). It sets new quality standards, including, for the first time, ecological quality status for surface water. The Directive is not intended to replace some more recent pieces of legislation and it will complement the Urban Waste Water Treatment Directive, the Nitrates Directive and the Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC).

<sup>6</sup> Ofwat, *Financial Performance and Expenditure of the Water Companies in England and Wales 2000-2001 report*, 2001

<sup>7</sup> For example, see the statistics on cash interest cover, debt payback period and the cash flow : capital expenditure ratio *ibid*, table2.

<sup>8</sup> Ofwat statistics from 1994.

<sup>9</sup> DEFRA, *First Consultation Paper on the Implementation of the EC Water Framework Directive, Annex B*, 2001, Annex B.

<sup>10</sup> Until 2000, the standard water industry model applied in Wales with a single company - Hyder plc - both owning the assets and being responsible for operations. Hyder also owned the former electricity utility SWALEC plc. Following the takeover of Hyder by the U.S. utility Western Power Distribution, the water interests were sold off to Glas Cymru, a company formed specifically and solely for the purpose of acquiring those assets. Glas Cymru, a not-for-profit company (i.e. it has no shareholders) funded that acquisition through a bond issue. While it remains overall responsible for the water industry in Wales, the operation of the industry has been contracted out to United Utilities plc.

<sup>11</sup> In our view, Wales should not be dismissed as a unique case. While there were special factors, these could well re-appear elsewhere, perhaps most importantly the presence of both a willing buyer and a willing seller, each independent of the other.

<sup>12</sup> The cost of financing the acquisition of the original assets does indeed appear to have been low. But whether Glas Cymru can finance future investment at similar advantageous rates remains still to be proven.

<sup>13</sup> Rateable values are themselves very out of date, being based on valuations made in 1973 and they are no longer in use for their original primary purpose, as the basis for local government taxation.

<sup>14</sup> Ofwat, *Water resource for the future: A Strategy for England and Wales*, March 2001.

<sup>15</sup> Historically, water companies have been keen on a move to metered tariffs. But one of the consequences of the recent government decision to ban disconnections has been to make them look on progressive tariff structures more favourably, as the lost revenues from people who don't/can't pay are lowered.

<sup>16</sup> As demonstrated in Hills, Huby and Kenway, *Fair and Sustainable: Paying for Water. What the government could do* (New Policy Institute, 1997), metered tariffs could include an element related to either the value of the property and/or 'ability to pay'.

<sup>17</sup> While this concern has been expressed to us during our research, the balance of opinion among those we have spoken to is that it is not a big issue. Even so, the circumstances of the water industry in regard to staff numbers and the pressures to economise on investment, maintenance etc. are not fundamentally different from those in gas where there is evidence of a problem. We would therefore keep an open mind on the question as far as water is concerned.

<sup>18</sup> DETR, *Climate Change: the UK Programme*, November 2000.

<sup>19</sup> Intergovernmental Panel on Climate Change, *Summary for Policy Makers*, 2001, table 1.

<sup>20</sup> Environment Agency, *Water Resources for the Future: a Strategy for England and Wales* March 2001, §4.4

<sup>21</sup> *ibid.*, table 5.1.

<sup>22</sup> *ibid.*, §3.5.

<sup>23</sup> This figure is now significantly higher, since npower purchased Yorkshire Electricity in April 2001.

<sup>24</sup> There are plans to sell this to Northern Electricity (owned by MidAmerican) in exchange for Northern's supply business.

<sup>25</sup> May be taken over by E.ON (Germany).

<sup>26</sup> There are plans to sell this in exchange for npower's distribution business.

<sup>27</sup> Until the sale of the Northern Electric and Gas supply business.

<sup>28</sup> For example, in a pair of articles for the *Guardian* newspaper (30 April 2001) on the fatal gas explosions at Larkhall and Dundee, Felicity Lawrence suggested a shortage of around 950 engineers needed to maintain and repair the pipes.

<sup>29</sup> These include such intangibles as: a loss of confidence in the network and/or private ownership of it; public anger etc; the government being held responsible for sorting out the mess even if it is not held responsible for getting into it; the coincidence of similar events plus media pressure creating a public perception of a general problem.

<sup>30</sup> ‘Review of the supply of Scientists and Engineers’ led by Sir Gareth Thomas, June 2001.

<sup>31</sup> Our understanding of the California crisis is particular informed by ICF Consulting’s (2001) *The Path Forward in California and the West: The ICF Consulting View on Power Market Restructuring*.

<sup>32</sup> For example, while some evidence suggests the installation of central heating leads to reductions in overall fuel bills, other evidence suggests that the effect is more for people to keep their homes warmer, as unit costs fall. In terms of health and well-being (e.g. reduced levels of damp) this is unequivocally a good thing. Yet the paradoxical situation might arise whereby the widespread installation of central heating is a failure in fuel poverty terms while still being a success on wider, health grounds.

<sup>33</sup> Ofgem *Social Action Plan*, March 2000, Appendix D2 and Ofgem *Social Action Plan Annual Review*, March 2001, Appendix 1 The corresponding differentials for pre-payment bills over credit bills are 6% and 4% for electricity and gas respectively. DTI figures show little change in the pre-payment/credit differential between 1995 and 2000 (down 1% in gas; no change in electricity) but a rise in the pre-payment/direct debit differential since 1995 of 3½% in electricity and 6% in gas. It should be noted that all comparisons between different forms of payment are based on the same quantity of consumption.

<sup>34</sup> Ofgem *Social Action Plan Annual Review*, March 2001, Appendix 1

<sup>35</sup> “Measures taken as part of the plan should not deter or distort competition. Rather the plan should focus on areas where specific measures to protect consumers and the development of competition can work together to bring benefits to the disadvantaged.” Ofgem *Social Action Plan Annual Review*, March 2001, Appendix 1.

<sup>36</sup> In taking this line, it should be emphasised that we are not arguing in favour of retaining cross-subsidies so as to keep the price of pre-payment meters down. Rather, given our suspicion that pre-payment prices are too high, we are arguing for the elimination of the cross-subsidies that we suspect may currently flow *from* pre-payment customers *to* other customers.

<sup>37</sup> The UK’s Kyoto target is a (legally binding) 12½% reduction in emissions of greenhouse gases by 2010 compared with 1990. Although this is a substantial reduction, it is not a challenging target for the UK since emissions in 2000 were already 13½% below the 1990 levels, largely due to earlier the switch from coal to natural gas (DETR, *Climate Change, The UK Programme*, November 2000, Section 2, Chapter 1, table 1). The CO<sub>2</sub> target, by contrast, looks much more challenging since the reduction by 2000 was only 8½% compared with 1990 (DETR, *Climate Change, The UK Programme*, November 2000, Section 1, Chapter 3). There are also some adverse trends over the next decade (e.g. following the anticipated decommissioning of nuclear plants from 2007).

<sup>38</sup> DETR, *Climate Change, The UK Programme*, November 2000, Section 2, Chapter 9.

<sup>39</sup> For example, Gareth Thomas and Stewart T. Boyle, *At The Energy Crossroads*, Fabian Society Policy Report 55, 2001.

<sup>40</sup> It is because car owners do not reduce their usage much in response to higher petrol prices that - short of a massive rise - higher prices on their own are not a very effective tool of ‘green’ strategy. On the other hand, it is this very lack of responsiveness that makes them a very good source of revenue for the Treasury.

<sup>41</sup> The report (January 2001) of the Ofgem/DTI Embedded Generation Working Group concluded that ‘that current arrangements are not conducive to the development of embedded generation’ (e.g. CHP) and that the regulatory incentives on the Distributed Network Operators should therefore be reviewed.

<sup>42</sup> Because none of the prices are ‘real’ in the sense of having been arrived at through market transactions.

<sup>43</sup> One of its two key recommendations being that ‘A Group should be established under Government leadership to co-ordinate and take forward the implementation of the present Group’s recommendations for the longer term’. Dti, *Embedded Generation Working Group: Report into Network Access Issues*, January 2001.

<sup>44</sup> That is not to say that all aspects of competition have yet been fully resolved. For example, the direct successors to the original regional electricity companies still enjoy market shares of 80% or more in each of ‘their’ markets and a number of vertically integrated companies combining generation, distribution and supply appear to be emerging.