

*Privatization, Competition and Regulation
in the British Electricity Industry, With
Implications for Developing Countries*

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(ESMAP)

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Acknowledgments

Stephen Littlechild, the author of this report, was Britain's Director General of Electricity Supply from 1989 to 1998. He now practices as a private consultant and is an Honorary Professor at the University of Birmingham Business School. He wishes to acknowledge helpful comments and suggestions from the late Professor M. E. Beesley and members of the Energy, Mining and Telecommunications Group at the World Bank, and updated information from former colleagues at the Office of Electricity Regulation. None of these are to be held responsible for the views expressed herein.

Acronyms

BNFL	British Nuclear Fuels Ltd.
CCGT	combined cycle gas turbine
CEGB	Central Electricity Generating Board
EU	European Union
IT	information technology
NGC	National Grid Company
OFFER	Office of Electricity Regulation
OFGAS	Office of Gas Supply
OFGEM	Office of Gas and Electricity Markets
RPI	Retail price index
SMP	system marginal price

Executive Summary

In this report Professor Stephen Littlechild, the regulator of the British electricity industry from its privatization in 1989 until the end of 1998, summarizes the British experience during this period.

According to the author, the principles of private ownership, competitive markets and independent regulation have worked well, and the British electricity industry is now more efficient and innovative. All groups of customers have benefited significantly in terms of lower prices and better quality of service. The benefits of introducing competition already outweigh the costs and, although further steps are needed, more benefits are to come. The industry's environmental record has improved, and steps have been taken to encourage energy efficiency.

In some respects the circumstances of each developing country are different from Britain and from each other. Essentially the same principles of public policy apply, however, and the commonly expressed concerns and objections discussed in this paper do not invalidate these principles. With appropriate modifications for the circumstances of each case, the policy of privatization, competition and independent regulation seems the right policy for developing countries too.

The report is divided into eight chapters as follows:

- Chapter 1 sets out the principles behind the privatization.
- Chapter 2 discusses the regulatory framework.
- Chapter 3 appraises the electricity Pool and the reasons for reforming wholesale trading, and discusses the development of competition in generation .
- Chapter 4 sets out the development of competition in supply.
- Chapter 5 explains the process of price control, including the role of private ownership and the capital market.
- Chapter 6 covers customer service, quality of service and network investment.
- Chapter 7 discusses other aspects of the UK experience, including energy efficiency and the environment, renewable energy and social issues.
- Chapter 8 presents overall conclusions.

1

Introduction and Principles

1.1 The publication in February 1988 of a White Paper¹ entitled "Privatizing Electricity" heralded a fundamental reorganization of the British electricity industry. By April 1990 the nationalized monopoly structure of the previous 40 years was replaced by a quite different structure, with the introduction of private ownership, competitive markets and independent regulation.

1.2 Some people, particularly in the rest of Europe, regarded this policy as ambitious or misguided. Some referred to it as an experiment. Yet over time, it has increasingly become apparent that the policy is working well. Countries all over the world have now adopted similar policies, including Norway, Sweden and Finland; New Zealand and several parts of Australia; and many parts of the United States and Canada. Spain, Italy, Ireland and now Germany and Holland have followed suit in Western Europe, where the transmission directive of the European Union (EU) has also been influential. (This directive has required members to take steps to provide for competition, and has also influenced potential members of the EU.) Argentina, Bolivia, Colombia, Brazil, Mexico and several other countries in Latin America have gone ahead, influenced also by the successful earlier experience of Chile with similar policies.

1.3 There is now increasing interest on the part of developing countries, especially in Asian and Eastern European countries. Between 1984 and 1989 in these countries, investment in electricity projects with private participation amounted to \$3.6 billion.² In contrast, between 1990 and 1997 some 62 developing countries introduced private participation in 534 projects, with a total value of \$131 billion. The annual expenditure increased at an increasing rate, from about \$1 billion in 1990 and 1991 to around \$40 billion in 1997.³

1.4 How have privatization, competition and regulation been implemented in Britain, and how have they worked in practice? The following assessment applies mainly to England and Wales. Similar policies and results may generally be recorded for Scotland, with several achievements but

¹ A *White Paper* is a statement of Government policy; for example, it might set out the thinking underlying a forthcoming bill. A *Green Paper* (as mentioned in Chapter 5) may be published at an earlier stage to set out policy aims, discuss a number of alternative options and invite comments.

² All dollar amounts are U.S. dollars. A billion is 1,000 million.

³ Ada K. Izaguirre, "Private Participation in the Electricity Sector—Recent Trends" (*Viewpoint*, Note No. 154, World Bank, September 1998).

with more concerns arising from extensive vertical integration and less extensive competition, as discussed in Chapter 3.

Reasons for Privatizing Electricity

1.5 Why did the British Government decide to privatize electricity back in 1988? There were several reasons:

- The Government's general preference was to reduce its own role in industry, the goal being to let managers manage, not government.
- The aim was to increase the role of the customer. "Decisions about the supply of electricity should be driven by the needs of customers."
- It was necessary to increase the efficiency of nationalized industries. Although electricity service was generally good, the record on building power stations on time and to budget was not. And the future success of British manufacturing depended on reducing the costs of basic inputs such as energy.
- Although there was some philosophical opposition to privatization, it was becoming increasingly popular with the electorate, especially small investors, who had proved willing to subscribe for shares and take a personal financial stake in British industry.
- Privatization proceeds were an important source of revenue for the Treasury to spend on more urgent needs or to reduce taxation or government borrowing.
- With the adoption of the RPI – X formula for British Telecom and British Gas, an acceptable method of price regulation had been found (see Chapter 5). What was previously regarded as unthinkable—the privatization of a monopoly—could now be considered.

1.6 The precise reasons for privatization will differ from one industry to another and from one country to another. The need for investment, however, will often be a factor. For example, a reason for privatizing the water industry in England and Wales was to access additional private capital to refurbish and improve the infrastructure of pipes and water treatment plants to a greater extent than would have been possible if water had remained in the public sector. In telecommunications, an additional aim was to improve speed and quality of service—particularly in the City of London, where investment had been inadequate—and to stimulate innovation.

1.7 Most of these factors, particularly the need for commercialization and more investment, are likely to be relevant in developing countries, where it is particularly important to transform inefficient, loss-making and poor-quality industries into efficient, profitable and better-quality ones. Good-quality services on competitive terms are the basis for improved competitiveness in the economy as a whole and higher standards of life for everyone.

Guiding Principles

1.8 In Britain, the guiding principles were simple:

- Ensure that decisions about the supply of electricity are based on the needs of customers.
- Give customers choice by promoting competition where deemed feasible, both

- among existing players and by allowing new entry.
- Introduce price controls on monopoly activities, emphasizing incentives to increase efficiency.
- Supplement price controls by specifying minimum standards for quality of supply.
- Separate as far as possible monopoly activities from competitive ones.
- Establish a regulator, guided by statutory duties and processes and possessing well-defined powers, to enforce license obligations on the companies and to respond to changing conditions and circumstances.
- Establish Consumers' Committees to represent the views of customers to companies and to the regulator.
- Enable the Government to secure other specified public interest objectives, such as supporting additional generation by non-fossil fuels, through a mechanism to be financed by a levy on customers.

2

Regulation

The Regulatory Framework

2.1 Regulation of the electricity industry followed essentially the same pattern as previously established for telecommunications, gas and water. A regulator (the Director General of Electricity Supply) is appointed by the Government for a fixed period of years, typically five. He or she cannot be dismissed except for incapacity. The regulator is required to make an annual report to the Secretary of State, which is laid before Parliament. The regulator can be brought before parliamentary commissions and investigated by them.

2.2 The regulator's duties and functions are prescribed by the Electricity Act 1989. The three main duties are to:

- secure that all reasonable demands for electricity are satisfied,
- secure that licensees can finance their licensed activities, and
- promote competition in generation and supply.

2.3 Further duties include protecting the interests of customers with respect to price, continuity and quality of supply; promoting efficiency and economy by licensees and the efficient use of electricity; and promoting research and development. The regulator must take into account the interests of rural consumers and those who are disabled or of pensionable age.

2.4 With minor exceptions, each operator of a generation, transmission, distribution or supply business must have a license. The Electricity Act requires the transmission and distribution businesses to operate efficient and economical systems and requires the transmission licensees to facilitate competition in generation and supply. The licenses impose additional obligations that might need to be revised over time in the light of experience—obligations concerning, for example, price controls, service standards, competitive conduct and service to customers.

2.5 At the time of privatization the Secretary of State granted licenses to the successor companies to the nationalized industry then delegated to the regulator the issue of licenses for subsequent new entrants into generation and supply. These had to contain certain standard conditions prescribed by the Secretary of State.

2.6 The regulator has power to enforce existing license conditions, if necessary in court, although in practice enforcement has not been problematic. If it seems to the regulator that a new or revised license condition is appropriate (to prevent an undesirable practice or to revise a price control, for example) he can propose a modification to the license. If the licensee agrees to such a modification, the Act prescribes a process for doing this, taking account of any objections raised by others. If the licensee objects to the modification the regulator cannot impose it but can refer the matter to the Competition Commission (formerly the Monopolies and Mergers Commission, or MMC). If the Commission finds that the present license conditions are against the public interest it can empower the regulator to make such license modifications as the regulator considers requisite to remedy the public interest detriments identified by the Commission.

2.7 Under the Electricity Act, the Secretary of State has the same statutory duties as the regulator. However, the Secretary of State has different functions and also additional duties under other, earlier acts. For example the regulator's job is to enforce and where necessary modify licenses; the Secretary of State cannot do these things but he can veto an agreed license modification or a reference to the Commission. The Secretary of State has additional powers with respect to wider public interest issues, such as supporting electricity from non-fossil sources, granting permission for overhead lines and granting consents for constructing generating stations.

Discussion

2.8 This framework provides checks and balances. The regulator has power to act, including to respond to changing circumstances and to innovate, but must follow due process and cannot simply impose his or her wishes. The regulator is also subject to judicial review, and this has been used on several occasions. The Courts and the Competition Commission deal with appeals from companies in all the regulated utility sectors; this encourages consistency between regulators and over time (see for example the discussion on price control in Chapter 5).

2.9 The framework of regulation is designed to make explicit the separate responsibilities of the regulator and the Government. The regulator is independent: he has to carry out the duties assigned to him by Parliament, not the orders of the Government of the day. However, he does have to act within the context of relevant Government decisions and potential vetoes. Similarly, although the Secretary of State can ultimately veto a regulatory proposal, he has to justify such an action in terms of his statutory duties, and does not have the power to get into the detail of (e.g.) revising price controls.

2.10 Some have asked about political pressures in the relationship between regulator and Government. These have been less than might be imagined, perhaps partly because the Act provides both the regulator and the Government with these specified formal powers. Moreover, the regulator is likely to be as concerned as the Government about issues like high prices and profits, or the need for Pool reform, so Government pressure to act is unlikely to be necessary here. Where the Government may need to take account of concerns, like those of the coal industry, for which the Electricity Act gives the regulator no locus, the Government has in practice found a means of addressing these concerns using its powers under another Act, as discussed in Chapter 3.

2.11 On the whole the regulatory framework has worked well, and several investigations by Parliament and others have broadly endorsed it. In particular, the Labor Government that took office in May 1997 broadly accepted the policy of privatization, competition and regulation of the utilities followed by successive Conservative Governments since 1979. However, one of its first actions was to review utility regulation.⁴ In the light of that review the Government proposed certain reforms, subsequently embodied in the Utilities Bill presented to Parliament on 29 January 2000 (see Annex A).

2.12 Other countries may not have an organization like the Competition Commission. But this does not preclude establishing a process for appeal and resolution of serious disputes between the regulator and licensee without constant recourse to government. For example, in the state of Victoria, Australia, there is provision for constituting a panel of independent observers to consider any objection by the licensee to a determination by the regulator. This panel is required to pronounce in a matter of weeks (as opposed to the six or nine months typically taken by the Commission in Britain).

2.13 In some countries there has been discussion about using legislation to give greater and more specific guidance to regulators in order to reduce regulatory uncertainty. In Victoria, Australia, the legislation itself specifies the form of the price control—and indeed the form of the calculations—to be used. In Britain this would have been problematic. At the time of privatization, the Government had to decide which conditions were appropriate in the initial licenses, including as to the form and level of the initial price controls. However, neither Government nor Parliament was well placed to specify what conditions would be appropriate in future, in the light of subsequent experience. And however detailed a form of price control is specified in an Act, there will always be gaps or room for interpretation, which must involve regulatory judgement.

2.14 In practice in Britain, all parties concerned, including the regulator and the regulated companies and the Commission, have seen advantage in developing a consistent approach to price control matters, both over time and across utilities, taking proper account of differences in circumstances and accruing experience. This consistency and cooperation has developed more generally, quite apart from the new Government's decision to require this by legislation.⁵ The balance of advantage therefore lies with giving the regulator a defined and limited authority to modify license conditions such as price controls.

2.15 It is not clear that the conclusion would be different in developing countries: admittedly the regulatory framework and expertise may not be well established there, but neither can the government of the day be presumed to be any more far-seeing or altruistic than in developed countries. Moreover, experience in such countries suggests that it is preferable to minimize the

⁴ See Department of Trade and Industry, *A Fair Deal for Consumers: Modernising the Framework for Utility Regulation*, Green Paper CM 3898 (London: The Stationery Office, March 1998). See also DTI, "Response to Consultation", July 1998.

⁵ See, for example, OFTEL (Office of Telecommunications), OFWAT (Office of Water Services), ORR (Office of the Rail Regulator) and OFREG (Office of Regulation of Gas and Electricity [in Northern Ireland]), the "Statement by OFTEL, OFGEM, OFWAT, ORR and OFREG on Joint Working" (n.p., October 1999). This covers the Competition Act, the Millennium problem, administration personnel and training issues, multi-utility regulation, transition from pre-competitive to competitive markets, dissemination of comparative price information, service delivery standards, regulatory accounting, and price control and cost of capital.

extent of government involvement in the regulatory process. In particular, it is better to give the regulator the power to approve or reject prices and to set price controls, subject to appeal to the courts, than to limit the regulator's powers to merely advising the government on this crucial issue or to give the government power to overturn the regulator.

The Regulatory Office

2.16 Each regulator of a privatized utility has the power to appoint staff and to set up a regulatory office. In Britain the staff of the Office of Electricity Regulation (OFFER) was fairly stable—typically just under 230 full-time equivalent people—though the number increased in later years to deal with additional workload, particularly in administration and developing competition. Most staff were full-time; a very few worked part-time. Somewhat over one-half of the staff worked in the head office in Birmingham; the remainder worked in a dozen regional offices, one in the area of each regional public electricity supplier. These latter staff dealt mainly with customer complaints that had not been adequately dealt with by the companies themselves, a complaint-handling function that had been carried out before privatization by Area Consultative Councils. The regional staff contributed also to a wide range of regulatory work with the head office. Table 1 shows the numbers and activities of staff, by directorate, in two early years and in two later years.

Table 1. Numbers and Activities of OFFER Permanent Staff

Directorate	1992	1993	1997	1998
Director-General's office	3.5	3.5	4	9
Administration	18	18	23	27
Consumer Affairs	10.5	11.5	11	11
Legal	3	3	4	5
Public affairs (publications and media)	8	7	9	8
Regulation and business affairs	35	36.5	35	36
Supply competition (primarily domestic)	0	0	15	17
Review of Electricity Trading	0	0	0	6
Technical	7	8	7	6
Electricity meter examining service	21	22	19	17
Scotland	19	17	18	20
Regional offices	99	95.5	104	90
Total	224	222	233	252

Note: Figures as at December of each year).

Source: OFFER annual reports.

2.17 In addition to the permanent staff, consultants and part-time staff are hired for particular assignments such as reviews of price controls and trading arrangements.

2.18 Although OFFER's budget must be approved by Parliament (via the Treasury), the monies are recovered from licensees by means of an annual license fee. To avoid disputes about allocation of regulatory time and costs and benefits as between licensees, and to facilitate setting the fee, the costs are recovered in proportion to the throughput of each licensee in terms of megawatt hours in the previous year.

2.19 In the first six years the cash cost of running OFFER was about £10 million (about \$16 million) per year. Assuming that the costs of regulation ultimately get passed through to domestic consumers, along with all the other costs of doing business, and dividing by the 25 million or so domestic households in Britain, the annual cost of regulation was about 40 pence (about 65 cents) per household. This compared to an annual domestic electricity bill of about £250 to £300 (about \$400 to \$500).

2.20 In more recent years, the costs of the Office have risen, to £13 million in 1996–97, £16 million in 1997–98, and £23 million in 1998–99. This reflects a number of factors, primarily

- the costs of additional staff and consultants to deal with the introduction of supply competition (where a great deal of project management was required),
- the review and reform of the Pool,
- the Government's review of regulation,
- the congruence of several price control reviews, and
- preparations for the merger of the regulatory offices of gas and electricity.

2.21 In preparation for the merging of gas and electricity regulation, as provided for in the Utilities Bill, the Government appointed one person (Callum McCarthy) as Director General of both Gas Supply and Electricity Supply as from the end of 1998. He formed a single regulatory office called the Office of Gas and Electricity Markets (OFGEM), located in London, to replace the Office of Electricity Regulation (OFFER) and the Office of Gas Supply (OFGAS). At the time of writing this transition was still in progress.

2.22 In 1999–2000 the costs attributable to electricity regulation are projected to increase further to about £33.5 million. Of this, about £15.5 million is projected to derive from Pool reform and the merger with OFGAS, leaving about £18 million for the normal running costs of electricity regulation in that year. It is envisaged that these costs might increase in future.

2.23 The reasons for an increase in the continuing costs of regulation are somewhat unclear. However, even if the total cost attributable to electricity were to increase to around £20 to £25 million per annum, or an average cost per customer of about £1 per household, this would still represent less than one-half of one percent of a domestic customer's bill. As will be seen later in this report, the benefits of private ownership and competition, which would not have been achieved in full without regulation, far exceed this cost. Indeed, the whole policy of privatizing utilities, and the associated restructuring of the industry and introduction of competition, would not have been politically possible without the assurance of regulation as well as competition to protect customers in the uncertain future that lay ahead.

Further Discussion

2.24 In Britain, there have hitherto been separate regulatory offices, one for each utility industry. The present Government's Utilities Bill proposes that the individual gas and electricity regulators be replaced by a Gas and Electricity Markets Authority, headed by a chairman and two or more other members. In the United States, there are public utility commissions rather than individual regulators, and each commission typically covers several industries, but within a single state.

2.25 Which is best? I suspect that the UK regulators, as individual office-holders, have been more proactive than a panel of commissioners or a multi-person Authority would have been, and can more easily be held accountable for their decisions. In developing countries especially, a panel of commissioners might be less vulnerable to improper influences and there is potential to stagger the terms of the commissioners to weaken the link with particular governments or ministers. This potential difference of viewpoint might increase stability but reduce the commission's effectiveness in taking action.

2.26 Some have argued that a single commission covering several industries can make the best use of scarce regulatory expertise. In Britain, it has been helpful for each regulator to focus on the significant issues within each industry. Regulators and observers have been able to make comparisons between regulatory bodies, so that each can learn from the experience of others. There are also advantages in spreading rather than consolidating control over important sectors of the economy. However, in future, as gas and electricity industries become more intertwined, there may be greater advantage in a single body regulating both. My impression is that various arrangements can be made to work if there is a mind to do so.

2.27 Two final points might be made on appointments and staffing. First, in the UK there has been a trend towards more open processes for appointing the regulator, including advertising the position and meeting standard criteria in making the appointment. This is particularly important in developing countries, where there may be more suspicion of appointments reflecting favoritism towards individuals or companies.

2.28 The second point concerns finance. In the UK expenses of the regulatory office are recovered from licensees. This has not prevented occasional friction with Treasury about budgets and timing of spending, and the requirement to meet civil service pay scales has not always helped to attract and keep good staff. Nevertheless, there have not been major restrictions on the regulator securing the needed resources, including by hiring consultants. It is important that regulatory offices in developing countries have a similar ability to resource themselves adequately and to properly train staff. However, there are more severe government budgetary constraints in these countries, and a greater fear of government influence compromising regulatory independence. In such countries there may be merit in giving regulatory bodies a statutory ability to fund themselves from license fees, without requiring them to obtain government permission or constrain themselves to civil service pay scales.⁶

⁶ There are very useful discussions by Warrick Smith in "Utility Regulators—The Independence Debate," "Utility Regulators—Roles and Responsibilities" and "Utility Regulators—Decisionmaking Structures, Resources, and Start-up Strategy," in *Viewpoint*, Notes Nos. 127–129 (Washington, D.C.: World Bank, October 1997).

3

Restructuring, the Pool, and Competition in Generation

3.1 To promote a competitive generation market, the Government took steps to restructure the industry before privatization and to set up a Pool. This chapter discusses these various interlinked steps.

Initial Restructuring of the Industry

3.2 Before the electricity industry was privatized, the Central Electricity Generating Board (CEGB) was responsible for all generation and high-voltage transmission in England and Wales. Twelve Area Boards were each responsible for distribution and supply in their own areas. At privatization, the Government decided that this structure was incompatible with competition. Important albeit limited steps were taken to restructure the industry. Transmission was separated from generation, and the National Grid Company (NGC) was created to run the transmission system (275-kilovolt and 400-kilovolt lines), with a duty to facilitate competition in generation and supply. This has been crucial in promoting competition in generation, particularly in assisting new entry. At first, the Company was jointly owned by the 12 regional distribution and supply companies. The subsequent public sale of National Grid Company shares (stock) in 1995 secured its independence from these potentially interested parties.

3.3 The rest of the CEGB was divided into three generating companies: National Power, PowerGen and Nuclear Electric. The decision to create three large companies was driven not by economic logic but by the belief that a large, diversified generation company (combining National Power and Nuclear Electric) was necessary in order to incorporate and privatize all the nuclear stations, and that all the other stations should be put into a second company (PowerGen) in order to compete with the first one. At a late stage privatization of the nuclear stations was deemed infeasible, and the Government considered that there was insufficient time to revise the plan so as to create more generators. Experience suggests that it would have been advantageous to create more and smaller generators, as discussed below. In the absence of this, the task of further restructuring the industry fell to the regulator, which was a more difficult process.

3.4 The two largest (non-nuclear) generators, National Power and PowerGen, often called "the duopoly," together initially accounted for nearly 80 percent of the market in England and

Wales. The three successor companies (those two companies plus Nuclear Electric) accounted for nearly 95 percent of the market. Most of the remainder was supplied through the interconnectors with Scotland and France, which had hitherto been constrained to supply only what the CEBG chose to call upon.⁷

3.5 The 12 Area Boards were left with essentially the same functions of distribution and supply as they had before privatization. However, they no longer had a monopoly over supply and were required to make their distribution systems available to other suppliers. In retrospect, there would have been advantage in greater separation of the functions of distribution and supply, as discussed below.

The Electricity Pool

3.6 With existing generating stations to be put into several separate ownerships, and the prospect of new entry, the question arose as to how to decide which stations should run at any time and how wholesale prices should be set. After much discussion, the decision was to create a Pool into which almost all generators were required to bid (except those below a specified minimum size or situated on a customer's own site) and out of which all suppliers or customers were required to buy. The National Grid Company, as the agent of the Pool, was responsible for ranking bids in merit order, comparing this aggregate supply curve against its projection of demand in each half-hour, and thereby determining system marginal price for each half-hour. This was the price that all suppliers would pay to all generators for all electricity produced and taken during that half-hour.

3.7 Among the main reasons for establishing a Pool of this kind were the following:

- The advantage of minimal change from pre-privatization arrangements (the NGC staff previously in the CEBG had ranked station costs and projected demand in this way in order to schedule and coordinate output);
- The advantage of transparency of bidding (the regional distribution/supply companies had traditionally been resentful of the dominance of the Central Electricity Generating Board, and now had concerns about generator market power);
- The advantage of an explicit and substantial market that new entrants could see and enter; and
- The belief that an efficient market would be characterized by a uniform price for all market participants, equal to marginal cost.

3.8 In practice, most of the revenues of the generators and the expenses of the suppliers have been determined by bilateral "contracts for differences" around Pool prices. A substantial set of these contracts were entered into before privatization, for three years, between the two major generators and the 12 regional companies, covering the output in the "franchise market" not yet open to competition in supply (see "Competition in Generation" below). There was a corresponding set of "back to back" contracts between the major generators and British Coal. These "vesting contracts" were facilitated by the Government to provide the coal industry with a protected transition to a competitive market. They also facilitated the projections of revenues as part of the privatization

⁷ The interconnectors were and continue to be owned jointly by NGC, the Scottish companies Scottish Power and Scottish Hydro-Electric and the French company Electricité de France. There are obligations to provide access on published terms. These companies now bid into the Pool along with other generators in England and Wales.

process. Both these sets of contracts were subsequently extended for a further five years, covering the output in the (smaller) franchise market up to 1998, again facilitated by Government with a view to assisting the coal industry. All these contracts were at prices above the levels expected to obtain in the Pool or the international coal market.

3.9 Companies voluntarily entered into other contracts for differences as a means of reducing risk. Although the latter contracts were typically for one year, many were for a few weeks or months, sometimes for particular times of day; others were for longer periods of several years. These voluntary contracts were generally at terms related closely to expected Pool prices.

Competition in Generation

3.10 Since privatization, a combination of market incentives and regulatory policy has enabled competition to develop. First, the companies supplying through the interconnectors soon increased their market share by increasing throughput to fill existing capacity and also by extending the capacity of the Scottish interconnector. Second, nuclear stations, initially considered too expensive and risky to privatize, have increased output by about 75 percent. Less than one-third of this increase came from the new nuclear station at Sizewell B. More than two-thirds came from more efficient management at existing stations, for example by reducing planned outage times for maintenance and the duration and frequency of unplanned outages. Two-thirds of the nuclear capacity (the more modern stations) has now been transferred to private ownership under the name British Energy. Discussions are underway to privatize the remaining stations, which are run by Magnox Electric, together with the fuel processing facilities operated by its parent company, British Nuclear Fuels Ltd. (BNFL). Third, new entrants brought new technology such as combined cycle gas turbines (CCGTs) and other new ideas to the industry, and accounted for 17 percent of the generation market by 1998–99. (This proportion had increased to more than 20 percent by end 1999.) The structure of the generation market has thus significantly changed over time, as shown in Table 2.

Table 2. Generation Market Shares (%)

Generator	1989–90*	1990–91	1994–95	1998–99
National Power	48	45.5	34	21
PowerGen	30	28.5	26	18
Eastern Electricity	0	0	1	9.5
Nuclear Electric/British Energy	16	17.5	22	17
Magnox Electric	0	0	0	8
Scottish Interconnector	1.5	1.5	3	3
French Interconnector	3.5	6	6	4.5
Pumped Storage	0.5	0.5	0.5	1
Others	0.5	0.5	1	1
New Entrants	0	0	6.5	17
Total	100	100	100	100
Total Output (TWh)	256	267	274	295

TWh: terawatt-hours.

*Hypothetical attribution based on allocation of plant at privatization.

Source: OFFER reports.

3.11 In 1998–99 the so-called duopoly accounted for only half of its original market share—less than 40 percent together, or about 20 percent for each company. Its size has since reduced further, as described in the following section. It is no longer a duopoly. Over 60 generation licensees now supply the remaining output, with further projects in the pipeline. Competitive pressures on gas prices, on equipment installation costs and efficiency and on contractual risk-sharing arrangements have brought down the new entry price, and many more projects are seeking to enter the market.

Market Power in the Pool

3.12 This growth of competition in generation, although very welcome, has not yet sufficed to eliminate the market power of the two largest generators. They were able to increase Pool prices for several years, from an average selling price of 2.4 pence (about 3.9 cents) per kilowatt-hour in 1990–91 to 3.15 pence (about 5.2 cents) per kilowatt-hour in 1993–94 (December 1999 prices). In the first year or two this increase may have reflected an attempt by the generators to redress an artificially low Pool price. This was caused by the vesting contracts that committed the generators to purchasing and burning large quantities of coal, and made the majority of their revenue independent of Pool prices. Pool prices were also low initially relative to the expected new entry price at that time. However, the ability to secure repeated Pool price increases demonstrated significant market power by the major generators.

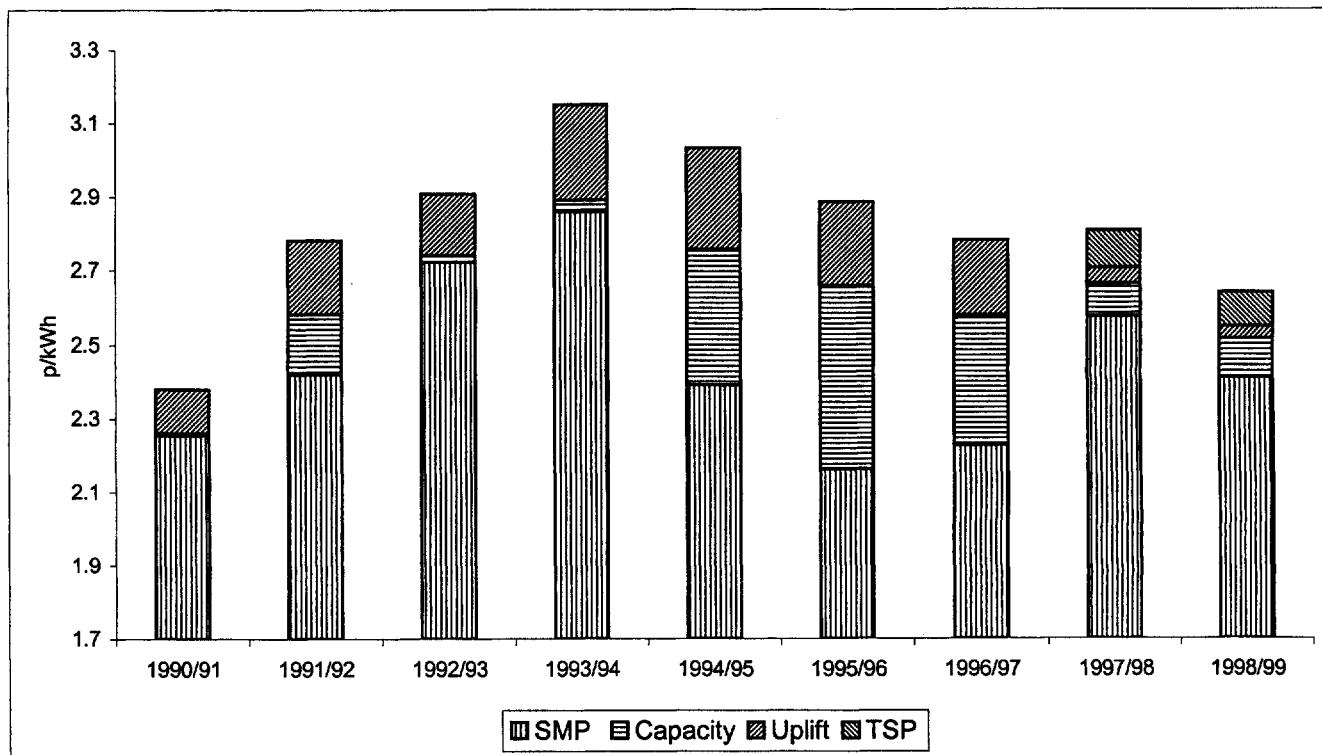
3.13 Even though the regulator may be concerned about the actions of the generators, he does not have power to impose constraints on their bidding or other behavior or to require them to dispose of assets. He may propose restraints or remedies, but if the generators do not accept these his primary recourse is a reference to the Competition Commission. He may also ask the Commission to investigate the situation and make recommendations. In December 1993 I, as regulator, was considering the problem of inadequate competition in generation. I said that I would make a reference to the Commission unless I received satisfactory undertakings from the two major generators about divestiture of power plant to other operators and an interim restraint on Pool prices. The Commission's possible future views were necessarily unknown to all parties concerned. From my perspective as regulator, a structural remedy involving disposal of plant by the two major generators seemed the most effective outcome that could realistically be hoped for from the Commission. It was preferable to the regulator or the Commission attempting to control generation prices on a long-term basis or imposing other restrictions on conduct. The two companies presumably took a similar view. For both parties an agreement to divest plant saved the time and cost of a reference to the Commission. On this basis, National Power and PowerGen agreed to divest a total of 6 gigawatts of existing coal-fired plant. This plant was purchased by Eastern Electricity and was subsequently run more aggressively, at higher output, than it previously had been.

3.14 Lower fuel costs, efficiencies in management, the increasing pressure of new entry, and the plant disposals were all instrumental in gradually reducing average Pool price to 2.8 pence (about 4.6 cents) per kilowatt-hour in 1996–97, as shown in Figure 1.

3.15 Despite these steps, competition in generation is still not fully effective. In 1998 the system marginal price (SMP) in the Pool was still set more than two-thirds of the time by the largest two generators. Increases in SMP in 1997–98 more than offset reductions in the capacity element in the Pool, showing that the two main generators still exercise substantial market power. There was a

small reduction in SMP in 1998–99, but an increase in the capacity element. Pool prices are still some 10 to 20 percent above the present new entry level based on the latest gas-fired plant.

Figure 1. Real Pool Prices Since Vesting, 1990–91 to 1998–99



p/kWh: pence per kilowatt-hour. SMP: system marginal price. TSP: transmission uplift.

Notes: TSP from April '97 only. Financial Year is from April to March. Time-weighted averages in December 1999 prices.

Source: OFGEM.

3.16 In July 1999 the present regulator launched an investigation of Pool price increases that had occurred in that month. In October he concluded that the best solution was to introduce a "good behavior" license condition requiring each generator not to abuse a position of substantial market power in electricity generation. He subsequently issued guidelines on how he would interpret this license condition and asked the generators to decide by 7 February 2000 whether to accept it.⁸

3.17 Further divestment is appropriate pending the further entry of new competitors. Both PowerGen and National Power have agreed to do this as part of their merger and acquisition strategies. PowerGen has sold two more coal-fired plants and purchased the supply and distribution businesses of East Midlands; National Power has agreed to sell its largest coal-fired station (Drax) and has acquired the supply business of Midlands Electricity.

⁸ OFGEM, *Rises in Pool Prices in July*, decision document (London, October 1999); *Pool Prices in July*, statutory consultation on proposed license amendments (December 1999); *The Prevention of Wholesale Market Abuse: Guidelines for Generators* (31 January 2000). At the time of writing several of the generators have declined to accept this proposed license modification, and the regulator is considering the terms of a reference to the Competition Commission.

3.18 The position on generation competition has been exacerbated by the present Government's decision to adopt a policy of stricter consents on the building of new gas-fired power stations. The previous Government had not used such consents to restrict new entry. The present Government's view is that distortions in the electricity market, including in the Pool, have disadvantaged coal, and that these distortions need to be put right before further gas consents can routinely be given. On this basis a large number of potential entrants wishing to build CCGTs have been frustrated. The stricter consents policy is now the major obstacle to a more competitive electricity market. In addition, political considerations besides coal are now influencing the pattern of generation. For example, while refusing most consents, the Government has authorized several smaller combined heat and power plants in England and a large CCGT in Wales.

Some Questions on Competition in Generation Answered

3.19 Do reductions in generation prices simply reflect reductions in fuel prices and improvements in technology? Is there evidence of efficiency improvements that would not have happened anyway as a result of external factors? The significantly increased output from existing capacity was independent of such factors. In addition, staffing levels at the largest generating companies have fallen by about two-thirds. Although part of this reduction reflects plant disposals to Eastern Electricity and the use of newer technology, much reflects increased productivity from existing plants. Moreover, the incentives and ability to secure such improvements, to negotiate lower fuel prices and more flexible contracts, and to introduce new technology, would not have existed to anything like the same degree without the pressures of private ownership and competition.

3.20 Will the employment implications of privatization be appropriate and acceptable in developing countries, where government-owned utilities are often used as vehicles for reducing or concealing unemployment? There is no doubt that improved efficiency will mean reductions in staffing of incumbent companies, though this is typically partly offset by growth in employment by new entrants, and in some cases contracting out of services has created new companies staffed mainly by former employees. The employment implications must be accepted and explained by the government at the beginning of the privatization process. As in Britain, they can be justified on the grounds that the country cannot sustain the cost of employing people in jobs where they are not needed. Reducing costs and improving the reliability of basic inputs such as fuel and power are necessary measures in order to save and create more jobs in other sectors of the economy. But important steps should also be taken to mitigate the impact of these changes. For example, severance payments above the statutory minimum are usually possible. In Britain, significant staff reductions have been obtained via voluntary redundancy schemes that have proved attractive to employees. There has also been a practice of consulting the unions, and at privatization staff were given options to purchase shares.

3.21 Some ask whether developing countries can sustain the number and size of generators necessary to achieve effective competition. A more relevant question is whether such countries have the scope to increase competition by restructuring their existing industry and enabling the entry of independent players. British experience suggests that neither incumbents nor entrants need to be large and diversified. New entrants have been commercially viable with plants from under one megawatt to over 1700 megawatts, typically in single-plant companies rather than portfolio generators. British Energy, a wholly nuclear company, was successfully privatized with less than 17

percent of the market. Sizes of plants and of companies can be tailored to the circumstances of each country to achieve both competition and efficiency.

3.22 How many competitors are needed for competition? British experience suggests that number of competitors alone is not the main determinant of competition. Certainly three main companies were not sufficient to secure effective competition, nor indeed was the more diversified structure obtaining in early 1999. Moreover, it is not simply the total number of players that counts, but the number typically setting prices (in a structure like the Pool) and the number with sufficient spare capacity to compete by increasing output. In England and Wales, until recently only four companies were in the former position and three in the latter; other companies, including the entrants with new gas-fired stations, all operate at maximum capacity. More importantly, it is likely that any fixed number of generators can maintain high prices unless new entrants can come in to challenge them. Hence the crucial need is to remove barriers to entry. Developing countries are in this respect fortunate in that their high potential growth rates are conducive to new entry.

3.23 Some have said that the British market is biased in favor of base-load plant. It is true that almost all new plants in Britain have been built to run base-load, and have so far done so. The structure of prices in the market has made this profitable. However, the lower costs of operating these plants, relative to the costs of older plants, and the need to replace older coal-fired plants for environmental reasons, also make this the most economic outcome. In due course some new gas-fired plants will have to run mid-merit as gas takes a greater share of the market, but such plants are already being designed and equipped with flexible fuel contracts to facilitate this. New peaking plants are also being built for peak lopping, and more would be built if consents had not been denied.

Pool Reform

3.24 In many respects the Pool worked satisfactorily. Stations were ranked broadly in order of costs; NGC was able to schedule plant and coordinate output so as to meet demand at all times, so that "the lights stayed on"; the existence of a market was valued by entrants; wholesale prices were set, varying by time of day and year broadly reflecting the balance of supply and demand; and contracts for differences were available to reduce risk and stabilize cash flow if required.

3.25 In other respects, however, the Pool was subject to criticisms. These included lack of transparency about how prices were actually determined; unnecessarily high and unpredictable prices; lack of competitive pressure and vulnerability to manipulation by generators; lack of demand-side participation (a one-sided market), which was not conducive to the development of financial markets; and lack of flexibility to adapt to changing circumstances.

3.26 To a limited extent the Pool was able to respond by, for example, publishing more information to increase the transparency of price-setting, and by introducing an incentive scheme for NGC and later transferring responsibility for this out of the Pool.

3.27 To some extent the problems in the Pool were attributable to the initial contracts mediated by government, and to the market power of generators, rather than to the Pool itself. Nevertheless, customers in particular felt strongly that reform was necessary, and Government and the regulator agreed that a review was timely. The review began in 1997, with a report in July 1998.

It was decided to replace the Pool by a series of markets for futures contracts, short-term contracts and real-time transactions, with greater emphasis on bilateral contracts than on central direction. The aim was greater choice and flexibility, as in other competitive industries, where there is not a single price imposed on the whole market. (There would however be a uniform prices at which NGC, as the System Operator still responsible for balancing the system, would supply or charge those market participants who had under- or over-contracted their requirements.) The proposed arrangements would put greater competitive pressure on generators, who would no longer all receive a uniform price set by the one marginal generating set. There would also be greater likelihood of secondary financial markets developing, and hence greater efficiency, better risk management, lower costs and more scope for competition in supply. The program of work to implement the new arrangements was expected to take about two years, with implementation from autumn 2000 subject to the Utilities Bill being passed this summer.⁹

Discussion

3.28 Is it possible to disentangle the effects of market power and Pool arrangements? This is not straightforward. There was a strong feeling during the Pool Review that both had to be tackled simultaneously. Perhaps a message to developing countries is that, while there is no uniquely best set of wholesale trading arrangements, the problems are likely to be exacerbated by market power. Conversely, the greater the number of market participants on both side of the market, and the greater the scope for new entry, the better are the prospects for making any trading system work. It has also been important to have a system that is independent of government influence, but nonetheless able to change and develop in the light of experience.

3.29 Does the single-buyer model have anything to offer, particularly in developing countries? Circumstances in each country will vary, and each situation and proposal should be studied on its merits. Nonetheless, the single buyer model is largely incompatible with the development of full competition. It also presents problems in the regulation of the powerful single buyer, not least with respect to price control, and obscures rather than solves the problem of how best to forecast and meet the uncertain market demand in the most efficient way.

3.30 What about vertical integration? There have been difficulties in Scotland, which has only two public electricity supply companies, both vertically integrated. There is less scope for the regulator and customers to compare performance and ideas, less interest within the Scottish industry in challenging the incumbents and probably greater political support for the incumbents relative to new entrants. Regulation in Scotland has been greatly facilitated by the existence of a more competitive market in England and Wales. For example, the two public electricity suppliers in Scotland are required to make available generation to other suppliers at a price related to the England and Wales Pool price. Customers have also benefited from the willingness of English companies to try to compete in Scotland, despite several difficulties. Because these protections will not generally be available in developing countries, greater emphasis on restructuring is advisable there.

3.31 How necessary are contracts? Voluntary contracts are important in supplementing the availability of a spot market. They have been entered into by essentially all the privately owned generators and suppliers (and in turn with customers) with a view to reducing the costs and risks of

⁹ OFGEM, *The New Electricity Trading Arrangements*, Volumes 1 and 2, OFGEM/DTI conclusions document (London, October 1999).

meeting uncertain demand in an increasingly competitive market. Governments have also induced companies to enter into contracts to try to influence the course of the market; these may have achieved certain ends but have caused problems for customers, the regulator and, ultimately, for the companies themselves. They should be considered only for a limited transitional period.

3.32 Long-term contracts, typically for 15 years at fixed prices, were initially used by market participants to facilitate the introduction of new generation. Whether such contracts are now the most appropriate way to proceed is increasingly doubtful: in a competitive supply market the resulting risks for the buyer are quite high, and in a monopoly market these risks and attendant costs fall directly on customers. More-recent generation contracts in Britain have been for shorter periods and involve a greater degree of risk-sharing by fuel suppliers and equipment manufacturers. A more liquid forward and futures market in which new suppliers, traders and financial intermediaries participate is also proving helpful. The absence of a single buyer, the extension to full competition in supply and the decline of 15-year contracts have not limited new entry. On the contrary, the newer methods of specializing and minimizing risks are the means by which players are able to enter an increasingly competitive market, and customers are benefiting from this.

4

Competition in Supply

Competition in Supply to Industrial Customers

4.1 The ability of all customers to choose their own electricity supplier (retail competition) was not foreseen in the 1988 White Paper, and many doubted its feasibility or desirability. This was reflected, for example, in the decision not to separate distribution and supply into separate ownership, and in the failure to distinguish clearly in the licenses between the duties of distribution businesses and those of suppliers. In the event, customers and competitive suppliers have warmly welcomed competition.

4.2 The Government's desire to protect the coal industry during the latter's own transition to a competitive market led to the introduction of a franchise in electricity supply. The largest 5,000 or so customers, with maximum demand above one megawatt, were allowed to choose their own supplier immediately on privatization in 1990. They accounted for about one-third of total electricity demand. The next 50,000 customers, with a maximum demand of 100 kilowatts to one megawatt, were allowed to choose their supplier in 1994. They brought the proportion of the total market open to competition up to about one-half. The remaining 26 million customers, including smaller business and domestic, were scheduled to have access to competition in 1998.

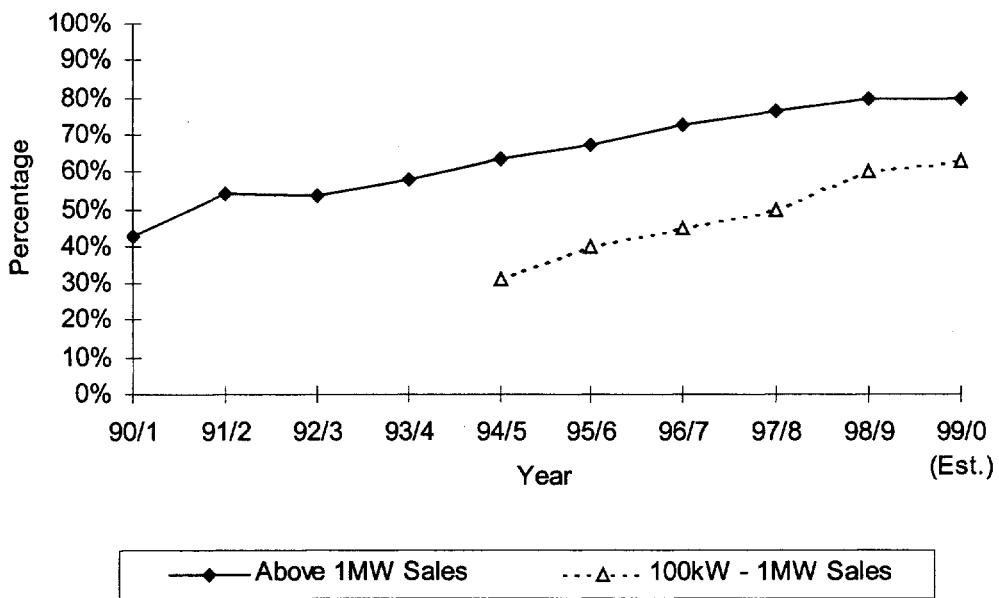
4.3 When the first two sectors of the market were initially opened, generators and other competitive suppliers offered price reductions of around 15 to 20 percent for large and medium-sized industrial customers. These offers proved popular, and incumbent suppliers gradually had to match what the market was offering. Figure 2 shows that the extent of second-tier supply (that is, supply by firms other than the previous local supplier) has steadily increased over time for all sizes of customer. Now, about 80 percent of the large customer market (with maximum demand above one megawatt) is supplied second-tier and over 60 percent of the medium-size (above 100 kilowatts) market.

Competition in Supply for Domestic Customers

4.4 In contrast to the situation at the time of privatization, considerable thought was later given to the basis of introducing competition to domestic customers. Customer profiles were

introduced to avoid the costs of new half-hourly metering. Distribution companies nonetheless had to modify their IT systems to record the registration and transfer of customers and to facilitate metering, billing and settlement, including the proper application of use of system charges and provision of other services to competitors. The introduction of competition for about 26 million customers required registration and data transfer systems; these needed to be tested and made consistent across 14 companies, the Pool and many suppliers. This was a major logistical exercise. It was decided to phase the opening of the market, both within and between regional companies, between September 1998 and June 1999. In fact the under-100 kilowatt market was fully open by the end of May 1999, some weeks ahead of the revised schedule.

**Figure 2. Market Share of Second-Tier Suppliers,
1990–91 to 1999–2000**



Source: OFFER data.

4.5 The process was not cheap, and some have asked whether it will be worthwhile for domestic customers, given the costs involved. The cost of the competition arrangements to domestic customers will be on the order of 1 percent of their annual bills. This has been more than compensated for by the reductions in prices already achieved (see below), and by the price offers and other benefits now flowing from competition.

4.6 Price controls have been used to protect customers pending the opening of the supply markets to competition. When the market for medium-sized customers was opened to competition in 1994, the supply price controls that had previously applied were removed. (The distribution price controls remained in place, as discussed below.) When the market for domestic customers was opened, it was prudent to maintain supply price restraints on a transitional basis. This was partly because the market was being opened up on a phased basis, so not all customers would be able to exercise choice immediately, and partly because the extent, development and effectiveness of domestic competition could not easily be assessed in advance. Non-discrimination conditions were

also introduced to prevent incumbent companies from targeting price reductions at, or otherwise deterring, competitive suppliers.

4.7 The initial supply price restraints allowed pass-through of generation costs to customers. This seemed undesirable and unnecessary in a competitive market. The new transitional supply price restraints specified fixed maximum prices. This transferred the price risk associated with generation from customers to suppliers, gave customers clearer protection and gave suppliers a stronger incentive to purchase and contract efficiently. The additional risk meant leaving a greater margin for suppliers, but customers were protected by being able to move to another supplier if better offers could be sustained in the market.

4.8 The restraints provided that domestic prices should fall in real terms by an average of 6 percent in April 1998 and a further 3 percent in 1999. The reductions varied by company, but ensured that all types of domestic customer would benefit from the move to competition. Presentationally, this was very helpful.

4.9 By April 1999, domestic customers had received price reductions of about 26 percent on average, relative to prices at privatization. Since then the opening of the competitive market has offered additional opportunities. Further price reductions are on offer from competitors. 16 competitors are so far licensed for the domestic market, and all offer prices to all customers, though about half a dozen of the suppliers are competing more actively than the others. The price reductions offered vary by area, by type of customer and by payment system. For a customer on a standard domestic tariff paying quarterly in arrears, the average level of price reduction is about 4 percent on a typical annual bill of about £250. The best offers range between 8 and 15 percent reduction, with a median of about 10 percent. Perhaps a more realistic estimate of competitive prices is the upper quartile price, between the third and fourth best offers, which averages a reduction of just over 5 percent.

4.10 Competitors have not offered significant price reductions to customers with prepayment meters and Economy 7 tariffs (low rates for night-time electricity for storage heaters). This probably reflects the levels at which these tariffs were previously set, which were evidently low relative to the costs involved. On the other hand, several competitors are offering additional savings of up to 5 percent if the customer takes a "dual fuel" offer, or moves to direct debit arrangements. In due course incumbent suppliers will have to match these prices or lose customers.

4.11 How have customers responded? By the end of 1999 some 4.4 million domestic customers—about 17 percent of the total number—had changed supplier, often buying gas as well as electricity from their new supplier. The rate of switching was still about 85,000 customers per week. At this rate some 20 percent of the domestic market could well have chosen a new supplier by the end of financial year 1999–2000, a year after most of the market was opened.

4.12 There have been some transitional problems, particularly with complaints about unacceptable marketing techniques in a small proportion of cases, and excessive reliance on default or "deemed" meter readings. These problems are being dealt with.

4.13 Interesting and important questions were whether to continue the transitional price restraints and, if so, how to revise them. The regulator initially proposed to remove the restraints on

prices to small business customers but to continue those on prices to domestic customers. He proposed to tighten the latter by an average of 10 percent for standard domestic tariffs, to reflect the reductions in supply business costs that had occurred since the previous restraints were set and the prospective reductions in distribution tariffs from the new distribution price controls.¹⁰ I argued that this would jeopardize the transition to a competitive supply market because it would squeeze the scope for price competition from low-cost rivals. If the regulator was going to ensure that the benefits of competition were passed to customers anyway, this would reinforce the customer view that there is no reason to change supplier. Over time a culture of dependency on price control would be reinforced, and competitors would gradually give up.¹¹ The regulator's final proposals seemed to accept this argument, and embodied a tightening by an average of 6 percent for two years, followed by abolition thereafter.¹²

More Questions Answered

4.14 Does competition in supply matter? Yes, because in its absence it is difficult to avoid allowing suppliers to pass-through generation costs as being outside their control. This means less if any incentive for suppliers to purchase all their inputs efficiently, particularly generation inputs, and less desire for greater competition in generation. There is also less incentive to pass any benefits on to customers. Regulation simply cannot replicate all the pressures of the market, and it is unrealistic to expect it to do so. In contrast, competition in retail supply has brought a culture change in Britain: companies now have to discover and provide what customers want. For example, industrial consumers have secured customized metering and billing arrangements. Domestic customers can now purchase "green" electricity if they want to. All categories of customer have secured better terms, and all can leave a company whose service they find expensive or unsatisfactory.

4.15 Does this argument still apply in developing countries? Yes, because the need to increase efficiency, develop a more commercial approach and meet the needs of customers is arguably even more crucial there. Price restraints have only a transitional role in potentially competitive industries. Price control alone is not going to be effective in protecting customers because companies will argue convincingly that they need to pass on to customers all those costs that are outside their control. Moreover, independent regulation is as yet less developed, if it exists at all, in such countries, and government control or influence often undermines prudent management. There is correspondingly greater advantage in using competition in the market, rather than regulation or government pressure, to protect customers and stimulate efficiency.

¹⁰ OFGEM, *Reviews of Public Electricity Suppliers 1998-2000: Supply Price Control Review*, Initial Proposals (London, October 1999).

¹¹ Stephen Littlechild, "A competitive shock to the system", *Financial Times*, 11 November 1999, p. 21, and "Promoting competition in electricity supply", *Power UK* No. 68 (29 November 1999), pp. 12-19.

¹² OFGEM, *Reviews of Public Electricity Suppliers 1998-2000: Supply Price Control Review*, Final Proposals (London, December 1999.)

5

Price Controls and the Capital Market

Initial Price Controls on Monopoly Activities

5.1 At the time of privatization, the government set initial price controls on the network activities of transmission and distribution, on the grounds that competition for these services could not be expected in the foreseeable future. The price controls were set for a specified period of years and related to the rate of inflation. These became known as RPI – X controls, where RPI is a retail price index and X is a specified number. (In Australia the comparable term CPI – X refers to the consumer price index.) Such controls had become familiar in Britain, having been used in the earlier privatizations of the telecommunications, gas, airports and water industries. These controls have several potential advantages over profit controls that require prices to be continually adjusted to ensure that the regulated company does not exceed a specified rate of return.

5.2 In particular, these controls

- provide greater reassurance to customers about the future path of prices;
- provide reassurance to companies, and hence to potential investors, about what pricing will be allowed, and hence what range of net revenue paths may be feasible;
- reassure investors that prices will be allowed to match inflation, which may be serious and unpredictable, subject to the specified X-factor; and
- provide greater incentives for management to increase efficiency and reduce costs because the companies keep such cost savings during the period of the control.

In addition,

- customers benefit also because, in resetting the control, account can be taken of the lower costs already achieved and of the further efficiency improvements in prospect;
- management can be left to manage, without detailed regulatory monitoring or intervention during the period of the control, provided that specified quality of service standards are met; and
- some re-balancing of the structure of prices may be allowed and achieved within an average price control, without repeated hearings or delay.

5.3 Durations of such utility price controls have typically varied between three and five years. In the British electricity industry the durations of the initial controls were three years for transmission, four years for supply (as noted above, these were essentially cost pass-through controls rather than RPI – X controls) and five years for distribution. The aim was to give a sufficiently long period of assurance to customers and investors about what would be allowed, without extending the duration so long that conditions would change in an unpredictable way to render the level of the controls inappropriate. Transmission was considered a less certain business than distribution because it had never previously been a separate activity; this indicated a shorter duration for the transmission control than for the distribution control. Another consideration was the advantage of spreading the burden of the regulator's subsequent price control reviews over several years.

5.4 In practice it was helpful to spread the workload in this way, and experience gained in the earlier reviews was used to advantage in the later ones. There was, however, a difficulty in that the allocation of costs between the distribution and supply businesses within a particular company could not easily be analyzed and modified when the price control on one of the businesses was under review but the control on the other was not. This was an important factor in the decision to align the subsequent reviews of distribution and supply in the year 2000. It has enabled the new regulator to propose a reallocation of about 8 percent of distribution business costs to supply activities. This has important and positive implications for those competitors (second-tier suppliers) who do not have distribution businesses.

Discussion

5.5 Is a price control really necessary? Only New Zealand proceeded without one, relying on the threat of a reference to its Commerce Commission if prices are excessive. But what is the Commerce Commission to do if faced with such circumstances, where competition is not practicable, other than introduce a price control? Increases in prices in New Zealand in April 1999 in fact led to Government proposals to introduce a price control there. In January 2000 the new Labor government announced an Inquiry into this and other issues.

5.6 Is it conceivable that transmission or distribution could be competitive activities, and for that reason not require regulation? The effectiveness of competition depends on the scope for new entry. This seems unlikely at present in most developed countries, but in some developing countries a rate of increase in demand averaging, say, 7 percent a year (compared with about 1 percent in Britain) is not inconceivable, and this could require a doubling of capacity in about ten years. This could make it attractive for new entrants to provide transmission and distribution lines in competition with incumbents. However, uncertainty as to whether such competition would emerge, and as to the level of charges that might be sought or allowed in the interim, could well make some form of control appropriate, at least on a transitional basis.

5.7 Is RPI-X always an appropriate form of control? In many developing countries there is a previous history of artificially suppressing utility prices. This may mean that initially there is a stronger case for increasing prices than for reducing them. This does not mean that the RPI – X approach is irrelevant. Indeed, in Britain the government accepted that electricity prices had been kept down under public ownership, and had failed to keep pace with inflation and were unsustainable for the longer term. It therefore decided to implement a price increase before electricity privatization and to provide for no increases for the next three years. In addition, the

government put in place RPI + X rather than RPI - X controls for the distribution businesses, with X ranging up to 2½ percent, in order to finance projected increases in capital expenditure on distribution networks. These increases were to be offset by reductions in other elements of cost so as to keep the total price about constant.

5.8 In the event, unexpected movements in inflation thwarted some of these aims, and prices increased just after rather than just before privatization. The contrast between promises and reality presented considerable difficulties in terms of public acceptance. Nevertheless, the point remains valid that the controls can be used even where prices need to increase. Similar initial price increases were provided for in the water industry. Whether prices are expected to increase or decrease, RPI - X controls provide assurance to customers and investors as to what will be allowed, and the incentive to operate efficiently means that price increases can be kept to the minimum necessary to secure continued funding of a commercially viable business. Experience in Britain, in electricity and water, is that private ownership subject to RPI - X controls can enable significant price reductions in due course even though initial expectations were for price increases.

5.9 What is the right or best duration for a price control? There is no easy answer that will be true for all times and places. Because the scope for price reductions is generally greatest in the early years, there is probably less need for a long duration to stimulate investment then. At the same time, uncertainty about how the privatization will turn out is probably greatest initially. On both counts there is a case for a shorter duration of price control initially, to allow the regulator the opportunity to adjust the controls sooner rather than later, and for a longer duration as things settle down. Another possibility might be a well-defined and limited scope for revision by the regulator in the first control, to allow some adjustment without the burden of a major review.

Setting and Reviewing Price Controls

5.10 Initial price controls often have to be set in a short period of time, and are typically done by the government rather than by the regulator. At that stage relatively little reliable information is available about costs and future possibilities of reducing them. Estimates nonetheless have to be made about the likely level of future revenues, cash outlays and hence net cash flows, with implications for dividends, financial ratios and return on investment in the privatized entity or entities. The Government's emphasis is typically on providing some broad reassurance to customers about future prices, and on establishing conditions under which companies to be privatized will be attractive to the capital market and potential investors.

5.11 Subsequent reviews by the regulator can be better prepared than the assessment undertaken by the Government before flotation. One aspect is the process by which information is obtained and evaluated and proposals are drawn up and discussed. Another aspect is the way in which information, having been assessed, is combined to form a proposed price control. The following is how these aspects have been developed in Britain.¹³ For the most part the description applies in other utilities as well as in electricity.

¹³ A useful description is given by Richard Green and Martin Rodriguez Pardina in *Resetting Price Controls for Privatised Utilities: A Manual for Regulators* (Washington, D.C.: Economic Development Institute, World Bank, 1999).

5.12 The process of reviewing and re-setting price controls is an interactive one, which typically takes a period of a year or so. The main steps include the following:

- Publication of a background document setting out issues to be covered and recent experience in terms of, for example, operating and capital costs, prices and output;
- A request to companies to provide more-detailed information and a business plan of projected future expenditures;
- Analysis of this and other information by the regulator and consultants;
- Dialogue, both public and confidential, between companies, regulator and other interested parties, including customer groups, about company information and projections;
- Publication and discussion of the regulator's interim views about the form of the future control and the main parameters involved, typically in the form of likely ranges;
- Further discussion with companies to test the strength of arguments on both sides and to obtain further information as necessary; and
- Publication of the regulator's final proposals, with an invitation to the companies to accept them: if they do not do so the normal course would be a reference to the Competition Commission to resolve the issue.

5.13 The process is designed to elucidate and evaluate relevant information; to give all interested parties the opportunity to express their views; and to explain and create confidence in the process of regulatory decision-making. In Britain, later reviews have learned from earlier ones the importance of this process of discussion, both public and private. There is now, for example, more publication of data and arguments, more scope for interested parties to debate with the companies, and more detailed exposition of regulatory thinking and calculations both before the final decision and accompanying it.

5.14 In actually re-setting the level of X, the main components are the following:

- The projected path of operating expenditure needed by the business, which is assumed to be increasingly efficient;
- The projected level of capital expenditure necessary to maintain or improve reliability and quality of supply;
- The estimated cost of capital necessary to attract investment to keep the business going; and
- The extent to which previous and future capital expenditure is to be remunerated within the forthcoming price control period.

5.15 Precisely how these elements are combined may vary. To some extent there is a tension between an explicit procedure for calculating and providing a specified return on capital along U.S. lines, and a procedure for assessing the financial needs of the business. In electricity, and in many other monopoly utility businesses, the price control is set so as to bring in just sufficient revenue during the forthcoming period (of, say, four or five years) to cover projected efficient operating costs and remunerate the previous and projected investments. There may be additional incentives to improvements in efficiency.

5.16 Having decided on the appropriate level of total revenue over the future price control period, a further judgement is how far any reduction (or increase) in prices over that period should be divided between an initial price change, often referred to as a P_0 change, and a gradual change in price as determined by the value of X. Adjusting the value of X alone may seem simpler, but a high value of X could lead, by the end of the period, to prices that are unsustainably low. It may be more sensible to have an initial price reduction followed by a lower value of X. In deciding on these issues, account is typically taken of the implications for the company's financial ratios and for the path of prices over the longer term as well as for customers. All the parameters of the price control are a matter for debate with companies and others.

5.17 The precise framework and arrangements will differ between countries, industries and type of businesses. As regards types of staff, all regulators will probably want to use the skills of accountants, economists and financial analysts. Of the 124 staff at OFFER HQ (including the HQ group in Scotland) in 1995, 16 had qualifications in economics or a related discipline, five in accountancy, two in law and 18 in a relevant field of engineering. A further eight were professionally qualified in fields such as procurement, personnel management, and media relations. About one-half of OFFER's staff at Higher Executive Officer level and above had previous experience of working in the private sector.¹⁴

5.18 Accountants are particularly helpful in analyzing what companies have repeated in their accounts, and in making adjustments to normalize the accounts. Economic insights are particularly helpful in understanding the likely motivations for particular courses of action by companies, for example in assessing the importance of cost allocations in relation to competition. In later reviews greater importance was attached to financial analyses, particularly the likely impact on stock market valuations. Outside consultants proved necessary, both in terms of the workload peak and to provide more expert or specialized advice. The advice of senior businessmen proved particularly valuable, especially on the question of what challenges it would be reasonable to set the companies' managements.

5.19 In developing countries it may not be possible or economic to obtain or analyze information in as much detail as in, say, Great Britain. But even in that country agreement had to be reached with the companies as to what data it was practicable to provide in the time available: there is never perfect information. The general approach seems equally applicable in developing countries. Experience will be gained over time and evidence from other countries can probably be used to good effect. An open process will provide helpful information and discipline all parties, and should give confidence to investors and customers.

Evidence from Recent Price Controls

5.20 RPI-X price controls on the transmission and distribution networks have protected customers. Coupled with stock market pressures, they have given companies the incentive to reduce costs significantly after some initial variations in the first few years. For example, manpower reductions have been on the order of one-third in transmission and one-half in distribution. (As in

¹⁴ National Audit Office, *The Work of the Directors General of Telecommunications, Gas Supply, Water Services and Electricity Supply* (report by the Comptroller and Auditor General, National Audit Office, HC 645 Session 1995-96, published 24th July 1996, paragraph B.8.2, page 327; London: The Stationery Office).

generation, these have essentially been achieved voluntarily.) Operating costs net of depreciation were reduced by nearly 40 percent in transmission from the average of the first three years (1990–91 to 1992–93) to 1997–98, and by about 27 percent on average for the 12 regional distribution companies from 1992–93 to 1997–98.

5.21 In retrospect the initial price controls and capital structures set by the Government at privatization underestimated the scope for efficiency savings and increased borrowing by companies. However, the process of revising and tightening the controls has ensured that benefits have increasingly gone to customers. The revised controls put in place in 1995 and 1996 reduced the use of system charges by between 20 and 30 percent followed by RPI – 3 for the next four years. This was equivalent in real terms to reductions in distribution charges of nearly 10 percent a year, every year for the five-year duration of the revised controls. This was worth around £4 billion (about \$6.4 billion) to users over the period of the controls. During 1999 the present regulator published proposals for revised distribution price controls for the subsequent period.¹⁵ These envisaged further reductions in distribution charges averaging nearly 25 percent in April 2000 (of which on average about 8 percent were a transfer to supply) followed by RPI-3 for the next five years. These proposals were subsequently accepted by the companies.

5.22 Broadly similar comments apply to transmission charges. The first review, shortly after privatization, made relatively small changes. In 1997 charges were reduced by 20 percent followed by RPI-4 for four years. This was worth about £1 billion (about \$1.6 billion) to users. The third review is now underway.

Prices to Customers

5.23 Final prices to customers have been affected not only by the extent of competition in generation and supply and by the price controls on the monopoly activities of transmission and distribution, but also by the so-called fossil fuel levy. The Electricity Act provides for support to non-fossil and renewable electricity, financed by a levy on consumers. At first the levy was used primarily to finance the extra costs of nuclear construction, generation and decommissioning, above what the competitive market would allow. At this stage the levy amounted to around 10 percent of final price, and raised about £1 billion per year. When the more modern nuclear stations were privatized as British Energy, this component of the levy was removed and the support focused on other renewables projects, enabling the levy to be reduced to below 1 percent.

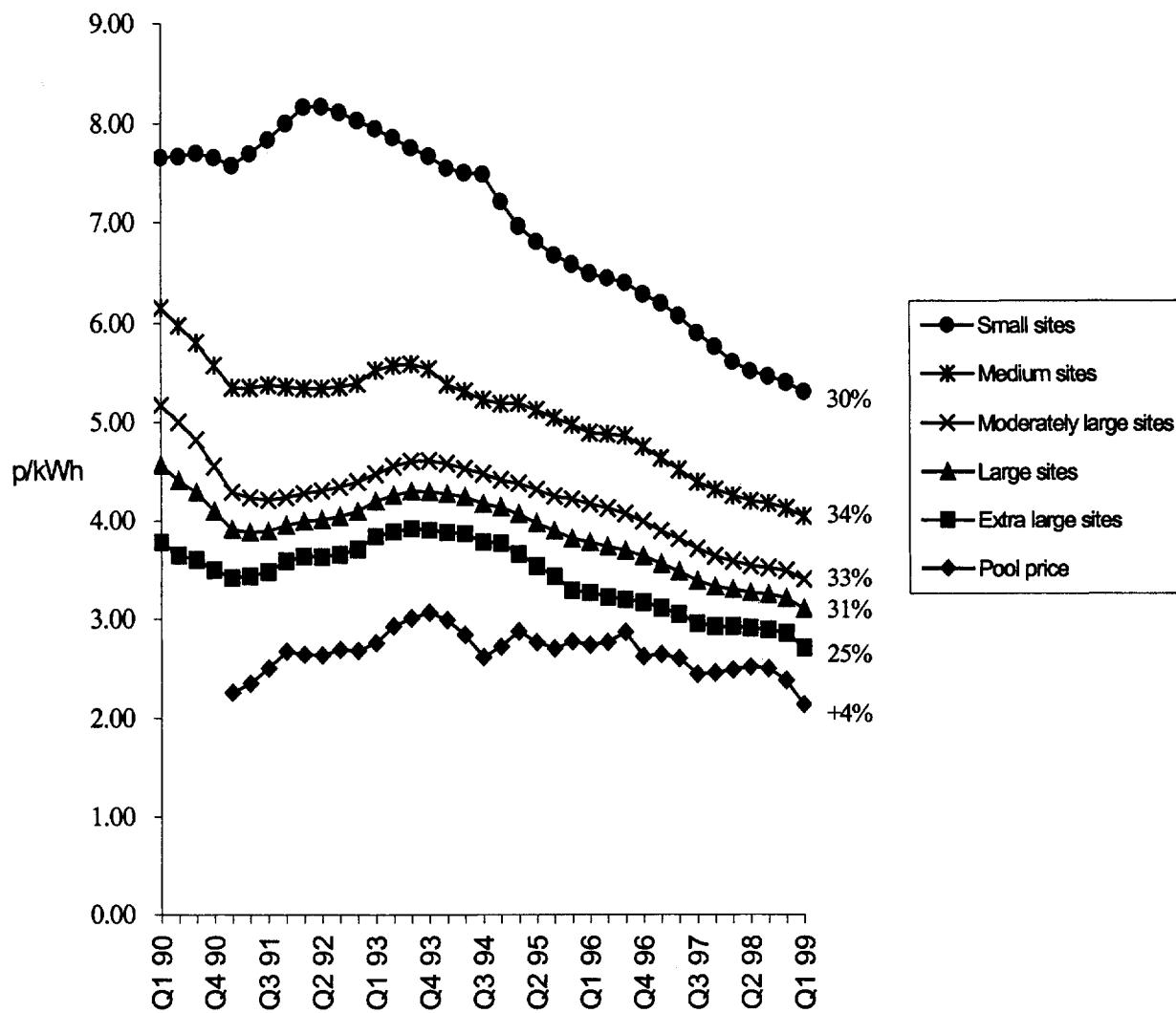
5.24 Competition, price controls and reductions in the levy have reduced prices to all groups of customers, ranging from large industrial to domestic. Figure 3 shows that, by the first quarter of 1999, price reductions to different sizes of industrial customers have been in the range 25 to 34 percent in real terms, compared to prices at privatization.

5.25 Contrary to some concerns, the benefits of competition have not accrued only or mainly to the largest users. Figure 3 shows that the very largest industrial customers have received the lowest reductions, albeit still significant ones. This reflects the relatively advantageous prices that such users were given before privatization. The highest reductions have been for moderately large and medium-sized industrial customers, which had neither political nor commercial bargaining

¹⁵ OFGEM, *Review of Public Electricity Suppliers, 1998 to 2000* (OFGEM Distribution Price Control Review: draft proposals, August 1999; update, October 1999; final proposals, December 1999).

power under the previous arrangements. Now, prices reflect more closely the relative costs of supply. There is also a lower premium over Pool price.

Figure 3. Price Reductions Since Privatisation



5.26 Price reductions to domestic customers are not measured by the same sampling process underlying Figure 3 but can nonetheless be calculated from relevant published tariffs. As noted earlier, domestic prices had fallen by around 26 percent in real terms by April 1999, with further reductions available from the opening of competition in supply during 1999.

5.27 What are the main sources of these price reductions, in terms of the factors mentioned earlier? A rough estimate can be made of the components of the average reduction of 29

per cent for domestic customers from 1991–92 (when the price was a little higher than at the time of privatization) to 1998–99. The components would be as in Table 3. The additional price reductions to industrial customers were primarily from lower costs of contract cover.

**Table 3. Sources of Price Reductions
to Domestic Customers from 1991–92 to 1998–99**

Source of Reduction	%
Lower generation costs (mainly fuel)	10
Lower distribution and transmission charges	9
Lower supply business margin	1
Lower fossil fuel levy	9
Total	29

5.28 Making competition in generation more effective should bring further reductions in generation costs, and the latest distribution price control proposals will reduce distribution charges. Although the reduction in supply margin has been small (because the margin itself is small), an indirect effect of competition in supply has been a significant reduction in costs of generation contract cover in the competitive part of the market. This has happened in the industrial sector of the market and is now beginning to feed through into the domestic sector, where further reductions in prices are available from competitive suppliers.

5.29 The largest two elements so far are the reductions in network charges and in the fossil fuel levy. Making competition in generation more effective should bring further reductions in generation costs. Although the reduction in supply margin has been small (because the margin itself is small), an indirect effect of competition in supply has been a significant reduction in costs of generation contract cover in the competitive part of the market. This has happened in the industrial sector of the market and is now beginning to feed through into the domestic sector.

Impact of the Capital Market

5.30 Some argue that all or most of what is attributed to privatization could be achieved by introducing competition while maintaining government ownership. This overlooks the very significant influence that private ownership has had, coupled with the competition in the capital market that it makes possible. Some examples from Britain are as follows:

- Most of the managers and staff in the industry were initially skeptical or opposed to privatization and competition. Further reflection led them to realize that there would be considerable benefits to them, to the industry and to customers, not least from the freedom to manage their own businesses more effectively and to be remunerated at market rates for doing so. This gradually led them to work actively for early achievement of privatization, with the restructuring and competition that this entailed.
- In order to persuade potentially skeptical customers, voters and investors, it was necessary to reassure them in terms of prices and service obligations for the foreseeable future, and in terms of due process to be followed for modifying these rights and obligations. All parties needed a clear regulatory framework, with adequate but well-defined and limited powers for the regulator and the government.

- Price cap regulation was designed to take advantage of the incentives of private ownership to seek greater efficiency and to innovate. The capital market monitors performance on a continual basis, much more thoroughly and impartially than government did or could, with analysts reporting frequently with comparison between companies.
- Many distribution companies and others considered investing in new gas-fired power stations. The future was uncertain, and the knowledge that their shareholders' own money was at stake lent discipline to the companies' deliberations. By contrast, under government ownership there had been pressure to avoid such investments to protect coal and nuclear interests. There would also have been pressure to pass the costs and risks on to customers. Private ownership and competition avoided these disadvantages.
- Whereas early power purchase agreements under government ownership or in monopoly markets would have put much of the risk on customers, the extension of competition in supply has led to the development of merchant plants with more imaginative and efficient arrangements for transferring the risks to those best able to bear and reduce them, including fuel producers, manufacturers and traders.
- The regional distribution companies were privatized with high levels of equity capital relative to the amount of debt, on the basis that they were risky investments. Subsequent experience, and the pressure of the capital market, enabled the companies to reduce their cost of capital by significantly increasing the proportion of debt.
- Under government ownership, pricing policies and investment plans had been vulnerable to economic fluctuations and short-term policy pressures to deal with inflation, unemployment and other macroeconomic issues. Since privatization, companies' pricing and network investment policies have been governed by their license obligations that are set for the longer term, independent of such macroeconomic pressures. Neither network nor generation investment has been restricted by financial considerations beyond those applicable to the private sector generally.
- Private ownership has exposed the companies to the threat of takeover. This is real: almost all of the regional companies are now under different ownership than at the time of privatization, and some have changed hands more than once. This means that new management can be introduced when the existing management fails to perform as effectively as another potential owner thinks it should. To do this, the new owner must be prepared to back its claims with its own money. It is thus subject itself to the discipline of the market.
- The possibility of takeover facilitates the restructuring of the industry to achieve greater efficiency. Mergers can achieve potential economies of scale or scope; demergers can enable managements of different businesses to concentrate on what they do best. Government does not need to plan the structure of the industry: its role can be limited to evaluating the potential effect of such changes on competition and on regulatory effectiveness.

5.31 In developing countries capital markets are not so extensive. But it is still feasible and desirable to shift from government ownership, and from pledging government credit, to raising

private capital. All the above comments still apply, based on the incentives provided by private ownership: a liquid capital market simply enhances these incentives. Indeed, some of the arguments for private ownership—such as the need to access capital to meet growing demand and improve quality of service—are even stronger. And the discipline provided by private ownership is even more needed in countries where this has been absent for so long. The scale of losses and non-collection is on the order of 50 percent in parts of some countries such as India and some of the former Soviet Union countries. This is simply inconsistent with good management and protection of the general body of customers, and would not be tolerated under private ownership. There is already evidence of private ownership significantly reducing losses in Kazakhstan¹⁶ and I understand that there have been similar achievements in Orissa and Noida in India.

5.32 It is worth adding that, just as competition alone will not yield maximum benefits, neither will private ownership alone. Competition is more effective than regulation in identifying what customers really want (which may well vary from one customer to another) and in securing that companies provide this. Price control of generation is no substitute for competitive pressure, and is likely to distort the market either by deterring new entry or by over-rewarding it at the expense of customers. Price control of retail supply is likely to be ineffective without competition. A competitive market gives regulators valuable information as to efficient levels of cost and contractual arrangements, particularly in generation and supply, and provides better incentives to purchase economically and to pass these benefits to customers.

¹⁶ World Bank, *Non-Payment in the Electricity Sector in Eastern Europe and the Former Soviet Union* (Technical Paper No. 423, Washington, D.C., June 1999).

6

Customer Service, Quality of Service and Network Investment

Customer Service

6.1 In Britain, as noted earlier, arrangements for protecting customers and dealing with customer complaints were in place before privatization, but were modified as part of the restructuring at privatization. The present arrangement is that regional offices of OFFER deal with complaints. This is after the company has had an opportunity to satisfy the customer but has been unable to do so. In the first two years after privatization such complaints were received at the rate of over 16,000 per year. Since then, the standards and practices of the companies have improved, reflecting amongst other factors pressure by OFFER and the Consumers' Committees (see below). The number of complaints has steadily fallen to under 6,000 per year, a reduction of over 60 percent. Table 4 shows the various categories of complaint dealt with by OFFER and how they have changed over the years.

**Table 4. Customer Complaints
Dealt With by OFFER**

Category	1991	%	1998	%
Disputed accounts	7120	47	2834	50
Supply terms	1913	13	653	11
Supply services	1077	7	331	6
Other charges	4027	26	519	9
Marketing	0	0	241	4
Supply standards	1127	7	1118	20
Total	15,264	100	5,696	100

Source: OFFER annual reports.

6.2 Nearly one-half of the complaints are concerned with disputed accounts (these involve levels of consumption, meter readings and accuracy). Complaints about supply terms (connection charges, security deposits, tariffs, meter positions and limitation of liability) account for somewhat over 10 percent. Complaints about supply services (including missed appointments)

represent somewhat under 10 percent. These three categories of complaint, which account for two-thirds of the total, have remained about constant as a proportion of the total, though they have all decreased by over 60 percent in absolute terms.

6.3 Complaints about other charges (debt and disconnection and meter interference) are down by nearly 90 percent in absolute terms, to only 9 percent of the total. This is slightly offset by a new category of complaints about the marketing activities of the companies in the new competitive supply market.

6.4 The actual number of complaints about supply standards (interruptions and quality of supply) is no higher than in 1991. However, these complaints have trebled as a proportion, to 20 percent of the total, because the number of other complaints has fallen so much. The lack of reduction in numbers of these complaints is not because standards have declined, since they have in fact improved (as shown below), though it takes time to improve the performance significantly for everyone. It may be because consumers are now demanding higher performance, or perhaps because they see more prospect of complaints leading to some improvement in service. The number of these complaints rose in 1996 and 1997, but the regulatory emphasis on reliability in the price control and in subsequent discussions with companies, together with the cumulative impact of the increased investment, seem to have had a salutary effect in reducing these complaints in 1998. The general picture is thus one of companies (and the regulator) increasingly responding to the concerns of customers.

6.5 OFFER also answers customers' inquiries about the industry. There are typically around 50,000 such inquiries a year. The Office frequently gives presentations in shopping centers and at public events, about regulation in general and more recently about the opening of the domestic electricity market to competition.

Consumer Representation

6.6 The Electricity Act provides for independent representation of electricity customers in regional Electricity Consumers' Committees, one for each public electricity supplier's area. Each committee has a duty to represent the interests of all electricity customers in its area, to make reports to the Director General (i.e., the regulator) and to deal with certain complaints. The chairmen are appointed by the Director General and paid on a part-time basis. The members, between 10 and 20 per committee, are appointed by the chairmen; they are unpaid and come from a variety of backgrounds. The cost of servicing the committees is covered by OFFER's budget, and averaged about £50,000 each in 1998.

6.7 The committees raise with the companies and the Director General whatever matters they regard as of particular concern to customers. They monitor the performance of the companies and make recommendations to help improve services to customers. They are consulted about the companies' codes of practice, consider certain types of complaints and make recommendations on how they should be resolved. They provide an important customer viewpoint, including on OFFER consultation papers. They have been particularly involved in such issues as revision of Codes of Practice and Standards of Performance; opening the market to full competition, especially provisions related to marketing conduct and "doorstep selling" to domestic customers; the content of company reports on quality of supply; and the content of the companies' financial regulatory accounts.

6.8 As part of its restructuring of gas and electricity regulation, the present Government has proposed to make the Consumers' Committees independent of the regulatory body, with the chairmen appointed by the government. There is some debate whether this will impair the constructive working relationship between the committees and the regulator.

Quality of Service

6.9 Quality of service depends on two main factors. One is the technical capacity of the network, including the adequacy and condition of the equipment in relation to the likely level and variation of demand. The other is how well the business is organized, managed and staffed. In Britain it was important to ensure that that quality of service did not fall after privatization, and where possible was improved. Consequently, both of these factors were carefully dealt with.

6.10 As regards management, the regulator was given power to set Standards of Performance that the companies must meet. In relevant cases he could set penalty payments to be made to customers by companies when they failed to meet these standards. Initially, standards were set for 18 dimensions of service, to broadly match what the companies were then providing. Over time, as the performance of the companies has improved, it has been possible to raise these standards. The advice of the Consumers' Committees has been valuable in assessing the importance of the various dimensions of service and the need for review. It has also been helpful to the regulator to be able to compare the performance of the different companies in assessing what each could reasonably achieve.

6.11 To illustrate with a few examples, in 1998 companies were required to

- provide a domestic supply and meter within three working days,
- give at least two days notice of scheduled supply interruption,
- investigate voltage complaints within ten days,
- offer and keep timed appointments, and
- respond to failure of the supplier's fuse within four hours.

6.12 The penalty for failure to meet any of these standards was £20 per domestic customer affected. A more substantial penalty was attached to failure to restore supplies within 24 hours of a fault: £40 per domestic customer, £100 per non-domestic customer. Additional company-specific standards specified minimum percentages of supplies to be reconnected within three hours of a fault (typically 80 to 95 percent), and minimum percentages of firm meter readings to be obtained each year (typically 97 to 99 percent).

6.13 Performance against these standards is published by the regulator each year.¹⁷ This has proved to be an effective way of improving performance. No company likes to be at the bottom of the league table in any dimension of performance, particularly since this is one way by which stock market analysts and investors can judge management ability. The standards also facilitate effective management within the companies, and some companies have linked management remuneration to performance against the standards.

¹⁷ Formerly published by OFFER, now by OFGEM. See, for example, *Report on Distribution and Transmission System Performance, 1997/98* (November 1998).

6.14 Some companies and commentators have suggested that price control revenue should be linked to such performance indicators. There are some attractions to this. However, there are also practical difficulties associated with calibrating the controls, taking into account differences between the circumstances of the companies, and ensuring accurate measurement when substantial revenues might be at stake. My own view at the last price control review was that these difficulties outweighed the potential benefits, particularly since standards in Britain were generally good, and were continuing to improve as a result of the various other measures described in this paper. The present regulator decided to strengthen the financial incentives related to quality of supply.

6.15 With the extension of competition in supply and the increasing distinction between distribution and supply activities, it has become important to distinguish between the arrangements relevant to each set of activities. For the foreseeable future it will continue to be necessary for the regulator to set statutory Standards of Performance for the monopoly network activities, but over time it should be possible to let competition and customer choice determine the desired levels of performance in supply.

Network Investment and Performance

6.16 The pricing and investment policy of the electricity network, particularly the national transmission grid but also the regional and local distribution networks, is of great importance for the efficient and economic operation of the whole electricity industry, and hence for the efficiency and satisfaction of customers. There needs to be sufficient investment, at the right times and in the right places, to ensure that availability and reliability of supply is maintained. In many countries the state of a network may need to be improved in order to attain higher standards of reliability. Also, the ability of a network to accept new generators can have a significant effect on competition in generation and supply, and hence on price. But this does not mean simply throwing money at the network: the investment plan needs to be economically justified. The pricing policy of the network should encourage new entry in the most economic locations over the longer term, and facilitate efficient scheduling of plant in the short term. It should also send appropriate signals to influence the location and responsiveness of customers on the demand side.

6.17 To design and implement such a policy is not straightforward, and requires balancing a number of possibly conflicting objectives. The main elements in the process in England and Wales are as follows.

6.18 The quantity, type and location of new investment are discussed with each network company at the beginning of each price control review. The projections look forward in detail for three to five years, depending on the expected duration of each control, but it is also relevant to look forward in general terms for several periods ahead. Increasingly OFFER has been making public the investment proposals of the companies, as part of their business plans prepared for the reviews. This has facilitated the involvement of other interested parties, and probably exercises a salutary effect on the plans that the companies put forward.

6.19 OFFER's own technical staff, together with engineering consultants, scrutinizes the plans and projections and arguments put forward by the companies, taking account of the views expressed by users, customers and others. Typically OFFER has not been convinced that the companies need to invest as much as they claim. Further discussion often narrows but does not

completely eliminate these gaps. The price controls for the forthcoming period are based upon projected levels of aggregate investment, remunerated over a period of time at the estimated cost of capital (as discussed above). It then falls to the companies to manage their businesses efficiently within the revenue allowed by the price controls. In due course the situation is reviewed as part of the process of setting the next price controls.

6.20 In general, this process seems to have worked well. As envisaged in setting the controls, compared to previous years it has enabled a considerable increase in network investment (see Table 5a) to replace older equipment and meet growth in demand. As in all electricity systems, reliability varies from one year to another depending on weather, but there is evidence that average reliability has been improving (see Table 5b). In addition, there have been more significant improvements for customers living in the worst-served areas of each company's territory.

**Table 5a. Capital Expenditure
of the Distribution Companies**

<i>Period</i>	<i>Annual average (£m)</i>
1985–86 to 1989–90	870
1990–91 to 1994–95	1140
1995–96 to 1999–2000	1240 (est.)

Source: OFFER.

Table 5b. Reliability of Supply of the Distribution Companies

<i>Period</i>	<i>Annual interruptions per 100 customers</i>	<i>Annual minutes lost per customer</i>
1986–87 to 1989–90	96	184
1990–91 to 1993–94	95	133
1994–95 to 1997–98	89	92
1999–2000*	77	75

*Companies' targets.

Source: OFFER.

6.21 An emerging issue is the relationship between projected and actual investment levels. On the one hand, consumer committees have been concerned that investment in the distribution system has typically been around 10 percent below the levels allowed for in setting the price controls. They have argued that customers have been overcharged or quality of service must have suffered. On the other hand, companies have argued that the difference represents economic efficiency and/or a prudent response to lower-than-expected demand. Some analysts and companies have argued that because the present system gives less incentive to economize on capital expenditure than on operating expenditure, it could distort the operation of the business.

6.22 OFFER—and, subsequently, the Office of Gas and Electricity Markets (OFGEM)—have been pursuing a number of steps to deal with these and related issues. First, they have scrutinized the accounting treatment of operating and capital costs to ensure consistency between companies and prevent manipulation of the figures used in setting the controls. For example, the recent price control proposals made numerous reallocations and adjustments to cost categories—and in particular, as noted above, reallocated a significant proportion of distribution business costs (around 8 percent) to supply activities.

6.23 Second, OFFER and OFGEM have begun to evaluate the reasons for differences between projected and actual spending: how far this is due to inaccurate forecasts of demand growth,

or to economies in purchasing the same amount of equipment, or to deferred investment associated with better condition monitoring, and so on. It is particularly important to assess whether the under-spending has jeopardized security of supply in any way. The present regulator's technical consultants advised that savings have arisen from the deployment of new IT systems to analyze better the condition of network assets, and that there is no significant evidence to suggest that quality of supply has been undermined by reduced capital expenditure. Third, OFFER and OFGEM have been working with companies and consultants to get a better understanding of the needs for capital expenditure, and particularly how it relates to the physical and other characteristics of each network, and of sub-areas within networks. As noted, the present regulator took steps to strengthen financial incentives related to quality of supply.

6.24 The need for improved reliability of service and quality of supply is even greater in developing countries. It is not uncommon to experience lengthy power failures every day, often unpredictably. This is extremely costly: neither businesses nor households can function effectively in such conditions. The regulatory body may not initially have the expertise to conduct the detailed price control discussions described herein, but this will develop with experience over time. In the meantime the great advantage of privatization is to give the management better access to funds to carry out the necessary investment in the network, and better internal organization and planning to make effective use of these funds.

6.25 In some developing countries it may be necessary or appropriate to extend the geographical coverage of the network into areas that might be considered uneconomic, or where costs may be significantly higher than in other areas. This does not preclude privatization or competition. There is a decision to be made, in the first instance by or with government, as to whether these additional costs should be charged to customers in those areas or spread over other customers or financed by some form of government subsidy. This decision and the associated requirement for investment can be embodied in the distribution company's license and taken into account in setting and revising the price controls. In Britain, for example, there is explicit provision for part of the surplus from hydro-electric generation to be used to maintain parity of distribution and transmission charges between Scottish Hydro Electric and Scottish Power.

Illustration of Reference of Scottish Hydro to the Commission

6.26 A reference to the Commission is always a possibility when the regulator is revising price controls, because the companies are not obliged to accept the regulator's proposals. The regulator therefore needs to ensure that his proposals are sufficiently well documented and justified as to be more appealing to the Commission, which will have a very mixed panel of members from various backgrounds, than the arguments and objections put forward by the companies.

6.27 One company, Scottish Hydro Electric, did not accept the regulator's price control proposals in 1995. The regulator referred the matter to the Commission, which investigated the issues, taking evidence from the regulator, the company and the local Consumers' Committee as well as others. It concluded that a more extensive investment program was justified than the regulator had proposed, in order to improve more quickly the quality of network service, which was lower than in other companies' areas. The Commission proposed detailed targets for these new standards. This would normally have led to higher price control revenues and hence higher charges to customers. However, at the same time the Commission considered that the company should be able to achieve a

faster reduction in operating costs than the regulator had proposed. In most other respects the Commission endorsed the approach and calculations of the regulator. It proposed a revised price control that was similar to that earlier proposed by the regulator. The regulator was thereby empowered to modify the license to give effect to this proposal.

Structure of Charges

6.28 The structure (as opposed to the level) of charges for the distribution networks has not been a particularly controversial issue, perhaps because few changes to it have been proposed. In contrast, the structure of charges for the transmission network required a good deal of thought because there had not previously been separate transmission charges, and there have been strong differences of opinion about the basis of these charges.

6.29 An early issue was how far transmission charges to generating stations should reflect the costs of accepting them on to the system and keeping them there. The existing generators typically argued that, in order to give correct location signals, charges should reflect all additional costs, including the cost of any "deep" reinforcement of the system necessitated by the changing pattern of generation following the commissioning of a new station. OFFER took the view that that this would favor incumbent generators at the expense of new entrants, and hence would not be conducive to competition. It could also lead to disputes about how these deep reinforcement costs should be calculated and allocated. OFFER supported NGC's proposal to set transmission charges on a more "shallow" basis, whereby generators were charged the cost of lines connecting them to the system, but use-of-system charges at each location were independent of whether the generator was old or new.

6.30 Another issue was how far transmission charges should be differentiated in terms of time and location. At one extreme, some argued for no change from previous charges, so as to maintain stability and not disappoint investor expectations. At the other extreme, others argued for short-run marginal cost pricing, varying minute by minute at each grid connection point, so as to give economically efficient signals. There were extensive discussions. OFFER took the view that short-run price variations could lead to disputes about their calculation, and their unpredictability would be unattractive to users and could impact adversely on new entry. However, differentiation by location was important because significant and long-lasting investment decisions needed to be properly informed. The system proposed and adopted by NGC was based on a longer-run network flow model of the system, which also reflects investment costs. Generators in areas of net demand are charged less than those in areas of net supply, and conversely for customers. This has provided useful signals on location. The signals need to be strengthened by making charges also reflect transmission losses. This has hitherto been the responsibility of the Pool. A proposal to implement differentiated charges in this respect was resisted by a few generators in export areas, who would be remunerated for their output at a lower rate than generators in import areas. At present progress on this is dependent on the reform of the Pool.

6.31 Other approaches are being tried elsewhere that may be of relevance. For instance, in Argentina new transmission capacity has to be authorized and paid for by the users themselves: the aims were reportedly to increase the scope for competition in providing transmission investments, to reduce any undue influence of the transmission company within the industry and to minimize the role of regulation. The arrangements seem to have worked insofar as, after some considerable

discussion, a new line has been decided upon and constructed by a group of generators wishing to improve their access to the market in Buenos Aires. Against this, some would say that there was undue delay, and it is acknowledged that the present rules do not provide adequate incentive for reinforcements to increase reliability, and might not be capable of dealing with a denser grid as in England. It is sensible to keep all these issues under review.

7

The Environment and Social Issues

The Environment, Renewables and Energy Efficiency

7.1 Environmental considerations are increasingly important worldwide. Privatization with appropriate regulation is not inconsistent with improving the environment, and indeed can facilitate it. In Britain this has been taken forward in various ways:

- Tighter emissions limits have been enforced on generating stations, and this has been one of the factors encouraging new entrants to build combined cycle gas-fired stations. These have reduced carbon monoxide emissions by about 30 million tons and sulfur emissions by about 900,000 tons annually. Increased nuclear output and greater use of combined heat and power technology, both prompted by competition, have also helped to improve the environment in these respects.
- The Government has made orders for over 3000 megawatts of renewables capacity, of which about 500 megawatts has so far been commissioned. A process of competitive bidding has secured this capacity economically, and promoted a convergence of renewables prices towards market prices. The levy that finances this extra cost is presently just under 1 percent on electricity bills.¹⁸
- Companies are required to provide customers with information on energy efficiency. In addition, pending the development of competition in supply to domestic consumers, an annual charge of £1 per head has been used to finance over 500 energy efficiency projects, mainly for customers with low incomes. Over their lifetimes these projects are forecast to save electricity equal to the annual consumption of more than 3 million homes as well as reduce carbon dioxide emissions by over 6 million tons and sulfur dioxide emissions by 75,000 tons.

¹⁸ The Government has indicated a target of 10 percent of British demand to be met by renewables by 2010. This has yet to be planned and costed in detail; my preliminary calculations were that it could cost up to about £15 billion and increase the levy to around 7 percent. (OFFER, *Fifth Renewables Order for England and Wales*, September 1998.) This additional cost could be a concern to customers. The present process does at least make this cost and decision more explicit than when the electricity industry was Government-owned. The Utilities Bill proposes a different process, whereby suppliers maybe required to provide a specified proportion of their electricity from renewable sources or pay a penalty for the deficit.

- The price controls on transmission provide that additional revenues may be allowed to the extent that these are required for any under-grounding of lines specified by the Government to improve the physical or visual environment. The Government has specified in some cases that new transmission lines can only be built if sensitive parts of them are under-grounded.
- As part of the present price control review, OFFER and OFGEM carried out customer surveys to ascertain willingness to pay for under-grounding. A review document published in May 1999 said that about one-third of customers would be willing to pay an extra £5 a year for this purpose. This and other relevant information were taken into account in appraising the projected capital expenditure for each company, and hence in setting Standards of Performance and other targets and price controls.

7.2 Not all these provisions will be relevant in all countries, and their significance may vary between countries. Nevertheless, they show that private ownership is fully consistent with protecting and improving the environment. Enforcement of environmental obligations may indeed be more effective with privately-owned facilities than with government-owned facilities.

Social Issues: Initial Framework

7.3 All customers can be expected to benefit from competitive and regulatory pressures towards greater efficiency and lower costs, reduction of excessive profit margins, and improved reliability of supply and quality of service. In addition, the Electricity Act and the licences take more specific steps to protect potentially disadvantaged customers, and the present Government has indicated a wish to go further in this respect.

7.4 As noted earlier the regulator has a duty (amongst others) to protect customers with respect to prices and quality and reliability of supply. The first is of particular importance to low-income customers. He has to take into account the interests of customers who are disabled or of pensionable age, and those in rural areas. He may exercise these duties by, for example, introducing and enforcing relevant license conditions and setting appropriate Standards of Performance.

7.5 Suppliers have several relevant duties. They must:

- supply on request (they may seek a reasonable deposit from a new customer) and publish their charges;
- make available a range of payment options;
- provide special service to customers who are of pensionable age, disabled or chronically sick—including bill redirection; communications appropriate to blind, partially-sighted and deaf customers; advance notice of interruptions to supply; repositioning of meters (free to the disabled); and advice on fuel use—and keep a register of qualifying customers;
- treat customers in payment difficulties sympathetically;

and, in particular, they must:

- identify customers in difficulty;

- provide information on how customers might reduce future bills by more efficient use of energy;
- where appropriate, accept payment through direct deductions from social security benefits;
- accept payment by installments, taking into account the customer's ability to pay;
- offer a prepayment meter calibrated to recover the debt at a level that the customer is able to afford;
- follow agreed procedures before disconnecting for non-payment (elderly and disabled customers have special protection against disconnection in winter months);
- establish and publish acceptable complaint handling procedures; and
- provide details of how they will visit customers, including identification of company staff.

Suppliers have to set out these arrangements in Codes of Practice to be approved by the regulator.

7.6 Tighter price controls on transmission and distribution businesses and price caps on supply to smaller customers, as discussed earlier, have contributed to lower prices to disadvantaged customers. In particular, the price caps set two years ago related prepayment meter tariffs to the nearest equivalent domestic tariff. In deciding whether and if so how to continue supply price caps, the regulator will look particularly carefully at the effect on disadvantaged customers.

7.7 Prescribed Standards of Performance apply to quality of service generally. Some have been designed to protect particular groups—for example, prescribing reconnection within a specified time of customers disconnected for non-payment, and repair within a specified time of failed prepayment meters. One of the Standards requires companies to support energy efficiency projects: about 60 percent of the associated funds are used to benefit low-income customers.

Future Policy

7.8 The Utilities Bill amends the regulator's statutory duty to include a single primary duty to protect the interests of consumers, wherever appropriate, by promoting effective competition. In discharging this duty the regulator should take into account in particular the interests of consumers who are disabled, of pensionable age and living in rural areas and, for the first time, those who are on low incomes or chronically sick.

7.9 The Utilities Bill also provides that the Secretary of State shall from time to time issue guidance about the Authority's contribution to social and environmental policies. This guidance will be subject to consultation, including consideration by Parliament, and is intended to last for a set period. The regulator will be placed under a duty to have regard to this guidance. The Government has said that when it wishes to implement social or environmental measures that would have significant financial implications for consumers or regulated companies, these would be backed by a new, specific legal provision. This would apply, for example, to new energy-efficiency Standards of Performance to meet further energy and carbon savings.

7.10 In its 1998 Green Paper the Government asked the regulators to prepare an industry-wide Action Plan to ensure efficiency, choice and fairness in the provision of electricity (and gas) to disadvantaged customers. The five broad objectives it proposed for the Plan were as follows:

- (a) Reducing the costs and improve the efficiency of all meters, particularly prepayment meters;
- (b) Increasing the choice of tariffs and payment mechanisms offered to disadvantaged customers;
- (c) Helping consumers manage debt;
- (d) Ensuring that acceptable procedures are in place for interruptions in supply to prepayment meter customers; and
- (e) Ensuring that competition in the supply market does not result in disproportionate gains to one group of customers at the expense of others.

7.11 In May 1999 the regulator published a discussion document analyzing the extent and problems of disadvantaged customers and reviewing some 30 possible measures for inclusion in the Action Plan.¹⁹ Among these he highlighted nine possible priority measures:

- (a) Ensure that customers using expensive payment options have an informed choice of alternatives and a better means of accessing cheaper methods;
- (b) Overcome barriers to disadvantaged customers participating more actively in the competitive market through better information and a reconsideration of rules on customers' debt;
- (c) Ensure that suppliers enter into an efficient dialogue with customers in debt;
- (d) Encourage the development and availability of new, alternative and cost-effective payment methods and tariffs that meet the particular needs of vulnerable customers;
- (e) Overcome barriers to suppliers' access to cost-effective prepayment meter systems and other regular payment methods;
- (f) Encourage and develop innovative schemes to improve energy efficiency in disadvantaged households;
- (g) Cut cost to customers through price controls and ensuring greater competition in generation;
- (h) Put in place measures to resolve the difficulties encountered by prepayment meter customers; and
- (i) Ensure that companies report on their activities under the Plan.

7.12 It is notable that this list did not focus on subsidies to particular customers or on price caps on suppliers. It sought to make the market work more effectively to protect customers, including by providing better information. Elsewhere the regulator was ensuring that any regulated monopoly prices, such as for use of prepayment infrastructures, are properly set. The regulator also emphasized the importance of competition in protecting disadvantaged customers:

[I]t will be important to ensure that measures taken under the Action Plan do not distort competition nor deter new entrants from entering the market and challenging suppliers with dominant positions. Actions designed to protect disadvantaged customers in the short term which unduly distort or deter competition are unlikely to produce benefits for disadvantaged customers over time and may actually further harm them....To be effective, the Action Plan should focus on

¹⁹ OFFER/OFGAS, *Social Action Plan*, discussion document (London, May 1999).

areas where specific measures designed to protect customers and the development of competition can work together to bring benefits to the disadvantaged.²⁰

7.13 In October 1999 the regulator issued a further paper proposing changes to companies' licenses in the light of the previous consultation.²¹ These changes would involve:

- obligations to offer payment methods that suit the needs of their customers;
- new emphasis on Priority Service Registers to take special account of the elderly and disabled;
- changes to industry rules to ensure that customers in debt can take part in the competitive market;
- new requirements on suppliers to give customers clearer pricing information;
- targeting energy efficiency initiatives to assist low-income households;
- delivering more effective energy efficiency advice and support to poorer customers;
- better debt management and prevention by suppliers to help customers avoid getting into debt;
- identifying vulnerable customers so that support can be better targeted; and
- finding new ways for customers without bank accounts to pay their bills, including the development of credit unions.

7.14 The regulator also identified the following 12 indicators, which would be monitored and reported on annually:

- (a) Percentage of customers experiencing fuel poverty
- (b) Number of customers using prepayment meters
- (c) Debt repayment levels
- (d) Developments in tariff and payment choice
- (e) Ability of disadvantaged customers to take advantage of competition
- (f) Take-up of priority service registers
- (g) Number of disconnections
- (h) Incidence of self-disconnection
- (i) Effectiveness of energy efficiency advice
- (j) Take-up of warm homes initiatives
- (k) Effects of prices on disadvantaged customers
- (l) Customer satisfaction.

7.15 A decision document from the regulator was published in January 2000.²² Development of the formal structure of obligations depends on the passage of the Utilities Bill.

²⁰ OFFER/OFGAS. *Social Action Plan*, discussion document (London, May 1999), p. 37.

²¹ OFGEM, *Social Action Plan*, framework document (London, October 1999).

²² OFGEM, *Social Action Plan: Enhancing Social Obligations*, proposals document (London, January 2000).

8

Conclusions

8.1 There is more to be done in Britain, for example in terms of promoting competition and revising the trading arrangements. Nonetheless, some preliminary conclusions can be drawn already.

8.2 The principles of private ownership, competitive markets and independent regulation have worked well. The British electricity industry is now more efficient and innovative, and its management and workforce deserve great credit. All groups of customers have benefited significantly in terms of lower prices and better quality of service. The benefits of introducing competition already outweigh the costs, and more benefits are to come.

8.3 The industry's environmental record has improved, steps have been taken to encourage energy efficiency, and further measures to protect disadvantaged customers and deal with social issues more generally are under active review. The Government has clearly influenced the development of the market in these respects, and costs to customers in general will be somewhat higher as a result; but in most respects these actions have not severely distorted or precluded competition.

8.4 The companies, the regulator and the Government all need to take appropriate further action in order to maintain and extend the successful development of the industry. But the general policy of privatization, competition and regulation has undoubtedly been the right one, for customers and for the country generally.

8.5 In some respects the circumstances of each developing country are different from Britain and from each other. Essentially the same principles of public policy apply, however, and the commonly expressed concerns and objections discussed in this paper do not invalidate these principles. With appropriate modifications for the circumstances of each case, the policy of privatization, competition and independent regulation seems the right policy for developing countries too.

Annex A

Excerpts from the Explanatory Notes of the Utilities Bill

**as introduced in the House of Commons
on 20 January 2000 [Bill 49]**

Following are paragraphs 4,5 and 8 of the Explanatory Notes accompanying the Utilities Bill introduced in the House of Commons on 20 January 2000. The full text of the Bill, including the Explanatory Notes, is available at The Stationery Office's website at www.parliament.the-stationery-office.co.uk. The Explanatory Notes were prepared by the Department of Trade and Industry and the Department of the Environment, Transport and the Regions.

4. The Bill covers the gas, electricity, telecommunications and water sectors. It has a number of objectives. It aims to achieve a fair balance between the interests of consumers and shareholders through changes to the regulators' duties, new powers for the regulator, and the establishment of an independent consumer council for each utility sector. It makes provision for regulators to have regard to Government guidance on its social and environmental objectives. It makes provision to make regulation more transparent, predictable and accountable. The Bill also updates the regulatory regime for the gas and electricity sectors, by making legislative provision for the alignment, where appropriate, of gas and electricity regulation and the separation of electricity supply and distribution licensing, and by providing the necessary powers to underpin the new electricity trading arrangements.

(f) The main provisions of the Bill provide for:

Consumer provisions

- in the telecommunications and energy sectors, a new principal objective for regulators to protect the interests of consumers, wherever appropriate, by promoting effective competition. (In this paragraph, the term "regulator" refers to the regulatory authorities for energy and telecommunications and, for water, to the Director General of Water Services);
- in the water sector a similar objective to protect the interests of consumers, but to apply to the extent that it is consistent with the water regulator's existing primary duties;
- a requirement for all regulators, in performing their functions, to have regard to the interests of low income consumers, the chronically sick, the disabled, pensioners and consumers in rural areas;

- the establishment of independent consumer councils for each sector with the functions of seeking to resolve complaints, providing information of use to consumers, and advocating the interests of all consumers to regulators, Government and others whose activities may affect the interests of utility consumers;
- powers for the regulators to impose financial penalties on companies for breaches of license conditions, conditions of appointment, standards of performance and specified statutory requirements;
- powers for the new consumer councils to publish utility information where this is in the interests of consumers, and does not seriously or prejudicially affect persons to whom it relates;
- a power in the energy sector for the Secretary of State to raise a cross-subsidy in favor of identifiable groups of disadvantaged customers;
- a requirement for price-regulated utilities to disclose any links between directors' pay and customer service standards;

Regulatory institutions and procedures

- in the telecommunications and energy sectors, the replacement of individual regulators by regulatory authorities;
- in the water sector, the appointment by the Secretary of State of an advisory panel to support the individual regulator;
- a requirement for the regulators to give reasons for certain key decisions and to publish and consult on their forward work programmes;
- a power for the Competition Commission to veto license modifications developed by a regulator following a reference if, in its opinion, they do not remedy or prevent the adverse effects identified by the Commission in its report on the reference and, thereafter, to make the license modifications;
- the abolition of the Competition Commission's sector-specific utility panels, and their replacement with a single cross-utility panel;

Utility regulation and wider social and environmental objectives

- a duty on each of the regulators, in the exercise of their statutory functions, to have regard to guidance issued by the Secretary of State on the social and environmental objectives relevant to their sector;
- in the energy sector, new powers for the Secretary of State to make regulations to promote energy efficiency, and the generation of electricity from renewable sources;

- in the water sector, new powers for the Secretary of State to initiate new or amended customer service standards, normally only in respect of standards raising environmental and public health issues;

Gas and electricity regulation

- legislation to underpin the New Electricity Trading Arrangements;
- separate licensing of electricity supply and distribution, and the introduction of a bar on supply and distribution licenses being held by the same legal person;
- powers for the regulatory authority to adapt the licensing regime to changing market structures in future without additional primary legislation (by statutory instrument under affirmative resolution);
- new collective license modification procedures for the electricity sector enabling the regulator to modify standard license conditions without a Competition Commission reference even if some companies disagree; and
- alignment where appropriate of the licensing and regulatory systems for gas and electricity.

to England, Wales, Scotland and Northern Ireland in respect of telecommunications.

[Paras. 6 and 7 omitted]

8. The Bill does not currently give effect to all the proposals set out in the Government's policy documents (paragraph 3 - above). Where this is the case, the Government intends to bring forward amendments later in the passage of the Bill through Parliament to give effect to them.

The main proposals in this category are:

- a requirement for each regulator to take into account the implications of its decisions for other regulated sectors within a multi-utility;
- a requirement for regulators to give collective consideration to matters of common interest, and to publish the results;
- a requirement for the regulators to establish a code of practice on their consultation and decision-making procedures;
- amendment of the regulators' existing powers to publish information to align them with the equivalent powers of the new consumer councils so that the regulator can also publish information where this is in the interests of consumers;
- measures consequential on the separation of electricity distribution and supply - including provision for transfer schemes for public electricity suppliers;
- measures to increase competition on gas transportation; and

- amendments to the procedures for referring license modifications to the Competition Commission consequential on the new procedures for license modifications (clause 32).

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Joint UNDP/World Bank
ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME (ESMAP)

LIST OF REPORTS ON COMPLETED ACTIVITIES

<i>Region/Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
SUB-SAHARAN AFRICA (AFR)			
Africa Regional	Anglophone Africa Household Energy Workshop (English)	07/88	085/88
	Regional Power Seminar on Reducing Electric Power System Losses in Africa (English)	08/88	087/88
	Institutional Evaluation of EGL (English)	02/89	098/89
	Biomass Mapping Regional Workshops (English)	05/89	--
	Francophone Household Energy Workshop (French)	08/89	--
	Interafrican Electrical Engineering College: Proposals for Short- and Long-Term Development (English)	03/90	112/90
	Biomass Assessment and Mapping (English)	03/90	--
	Symposium on Power Sector Reform and Efficiency Improvement in Sub-Saharan Africa (English)	06/96	182/96
	Commercialization of Marginal Gas Fields (English)	12/97	201/97
	Commerciliazing Natural Gas: Lessons from the Seminar in Nairobi for Sub-Saharan Africa and Beyond	01/00	225/00
Angola	Energy Assessment (English and Portuguese)	05/89	4708-ANG
	Power Rehabilitation and Technical Assistance (English)	10/91	142/91
Benin	Energy Assessment (English and French)	06/85	5222-BEN
Botswana	Energy Assessment (English)	09/84	4998-BT
	Pump Electrification Prefeasibility Study (English)	01/86	047/86
	Review of Electricity Service Connection Policy (English)	07/87	071/87
	Tuli Block Farms Electrification Study (English)	07/87	072/87
	Household Energy Issues Study (English)	02/88	--
	Urban Household Energy Strategy Study (English)	05/91	132/91
Burkina Faso	Energy Assessment (English and French)	01/86	5730-BUR
	Technical Assistance Program (English)	03/86	052/86
	Urban Household Energy Strategy Study (English and French)	06/91	134/91
Burundi	Energy Assessment (English)	06/82	3778-BU
	Petroleum Supply Management (English)	01/84	012/84
	Status Report (English and French)	02/84	011/84
	Presentation of Energy Projects for the Fourth Five-Year Plan (1983-1987) (English and French)	05/85	036/85
	Improved Charcoal Cookstove Strategy (English and French)	09/85	042/85
	Peat Utilization Project (English)	11/85	046/85
Cape Verde	Energy Assessment (English and French)	01/92	9215-BU
	Energy Assessment (English and Portuguese)	08/84	5073-CV
	Household Energy Strategy Study (English)	02/90	110/90
Central African Republic	Energy Assessement (French)	08/92	9898-CAR
Chad	Elements of Strategy for Urban Household Energy The Case of N'djamena (French)	12/93	160/94
Comoros	Energy Assessment (English and French)	01/88	7104-COM
Congo	Energy Assessment (English)	01/88	6420-COB
Côte d'Ivoire	Power Development Plan (English and French)	03/90	106/90
	Energy Assessment (English and French)	04/85	5250-IVC
	Improved Biomass Utilization (English and French)	04/87	069/87
	Power System Efficiency Study (English)	12/87	--
	Power Sector Efficiency Study (French)	02/92	140/91

<i>Region/Country</i>	<i>Activity/Report Title</i>	<i>Date</i>	<i>Number</i>
Côte d'Ivoire	Project of Energy Efficiency in Buildings (English)	09/95	175/95
Ethiopia	Energy Assessment (English)	07/84	4741-ET
	Power System Efficiency Study (English)	10/85	045/85
	Agricultural Residue Briquetting Pilot Project (English)	12/86	062/86
	Bagasse Study (English)	12/86	063/86
	Cooking Efficiency Project (English)	12/87	--
	Energy Assessment (English)	02/96	179/96
Gabon	Energy Assessment (English)	07/88	6915-GA
The Gambia	Energy Assessment (English)	11/83	4743-GM
	Solar Water Heating Retrofit Project (English)	02/85	030/85
	Solar Photovoltaic Applications (English)	03/85	032/85
	Petroleum Supply Management Assistance (English)	04/85	035/85
Ghana	Energy Assessment (English)	11/86	6234-GH
	Energy Rationalization in the Industrial Sector (English)	06/88	084/88
	Sawmill Residues Utilization Study (English)	11/88	074/87
	Industrial Energy Efficiency (English)	11/92	148/92
Guinea	Energy Assessment (English)	11/86	6137-GUI
	Household Energy Strategy (English and French)	01/94	163/94
Guinea-Bissau	Energy Assessment (English and Portuguese)	08/84	5083-GUB
	Recommended Technical Assistance Projects (English & Portuguese)	04/85	033/85
	Management Options for the Electric Power and Water Supply Subsectors (English)	02/90	100/90
	Power and Water Institutional Restructuring (French)	04/91	118/91
Kenya	Energy Assessment (English)	05/82	3800-KE
	Power System Efficiency Study (English)	03/84	014/84
	Status Report (English)	05/84	016/84
	Coal Conversion Action Plan (English)	02/87	--
	Solar Water Heating Study (English)	02/87	066/87
	Peri-Urban Woodfuel Development (English)	10/87	076/87
	Power Master Plan (English)	11/87	--
	Power Loss Reduction Study (English)	09/96	186/96
Lesotho	Energy Assessment (English)	01/84	4676-LSO
Liberia	Energy Assessment (English)	12/84	5279-LBR
	Recommended Technical Assistance Projects (English)	06/85	038/85
	Power System Efficiency Study (English)	12/87	081/87
Madagascar	Energy Assessment (English)	01/87	5700-MAG
	Power System Efficiency Study (English and French)	12/87	075/87
	Environmental Impact of Woodfuels (French)	10/95	176/95
Malawi	Energy Assessment (English)	08/82	3903-MAL
	Technical Assistance to Improve the Efficiency of Fuelwood Use in the Tobacco Industry (English)	11/83	009/83
	Status Report (English)	01/84	013/84
Mali	Energy Assessment (English and French)	11/91	8423-MLI
	Household Energy Strategy (English and French)	03/92	147/92
Islamic Republic of Mauritania	Energy Assessment (English and French)	04/85	5224-MAU
	Household Energy Strategy Study (English and French)	07/90	123/90
Mauritius	Energy Assessment (English)	12/81	3510-MAS
	Status Report (English)	10/83	008/83
	Power System Efficiency Audit (English)	05/87	070/87
Mauritius	Bagasse Power Potential (English)	10/87	077/87

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Mauritius	Energy Sector Review (English)	12/94	3643-MAS
Mozambique	Energy Assessment (English)	01/87	6128-MOZ
	Household Electricity Utilization Study (English)	03/90	113/90
	Electricity Tariffs Study (English)	06/96	181/96
	Sample Survey of Low Voltage Electricity Customers	06/97	195/97
Namibia	Energy Assessment (English)	03/93	11320-NAM
Niger	Energy Assessment (French)	05/84	4642-NIR
	Status Report (English and French)	02/86	051/86
	Improved Stoves Project (English and French)	12/87	080/87
	Household Energy Conservation and Substitution (English and French)	01/88	082/88
Nigeria	Energy Assessment (English)	08/83	4440-UNI
	Energy Assessment (English)	07/93	11672-UNI
Rwanda	Energy Assessment (English)	06/82	3779-RW
	Status Report (English and French)	05/84	017/84
	Improved Charcoal Cookstove Strategy (English and French)	08/86	059/86
	Improved Charcoal Production Techniques (English and French)	02/87	065/87
	Energy Assessment (English and French)	07/91	8017-RW
	Commercialization of Improved Charcoal Stoves and Carbonization Techniques Mid-Term Progress Report (English and French)	12/91	141/91
SADC	SADC Regional Power Interconnection Study, Vols. I-IV (English)	12/93	--
SADCC	SADCC Regional Sector: Regional Capacity-Building Program for Energy Surveys and Policy Analysis (English)	11/91	--
Sao Tome and Principe	Energy Assessment (English)	10/85	5803-STP
Senegal	Energy Assessment (English)	07/83	4182-SE
	Status Report (English and French)	10/84	025/84
	Industrial Energy Conservation Study (English)	05/85	037/85
	Preparatory Assistance for Donor Meeting (English and French)	04/86	056/86
	Urban Household Energy Strategy (English)	02/89	096/89
	Industrial Energy Conservation Program (English)	05/94	165/94
Seychelles	Energy Assessment (English)	01/84	4693-SEY
	Electric Power System Efficiency Study (English)	08/84	021/84
Sierra Leone	Energy Assessment (English)	10/87	6597-SL
Somalia	Energy Assessment (English)	12/85	5796-SO
South Africa	Options for the Structure and Regulation of Natural Gas Industry (English)	05/95	172/95
Republic of Sudan	Management Assistance to the Ministry of Energy and Mining	05/83	003/83
	Energy Assessment (English)	07/83	4511-SU
	Power System Efficiency Study (English)	06/84	018/84
	Status Report (English)	11/84	026/84
	Wood Energy/Forestry Feasibility (English)	07/87	073/87
Swaziland	Energy Assessment (English)	02/87	6262-SW
	Household Energy Strategy Study	10/97	198/97
Tanzania	Energy Assessment (English)	11/84	4969-TA
	Peri-Urban Woodfuels Feasibility Study (English)	08/88	086/88
	Tobacco Curing Efficiency Study (English)	05/89	102/89
	Remote Sensing and Mapping of Woodlands (English)	06/90	--
	Industrial Energy Efficiency Technical Assistance (English)	08/90	122/90
Tanzania	Power Loss Reduction Volume 1: Transmission and Distribution SystemTechnical Loss Reduction and Network Development (English)	06/98	204A/98

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Tanzania	Power Loss Reduction Volume 2: Reduction of Non-Technical Losses (English)	06/98	204B/98
Togo	Energy Assessment (English)	06/85	5221-TO
	Wood Recovery in the Nangbeto Lake (English and French)	04/86	055/86
	Power Efficiency Improvement (English and French)	12/87	078/87
Uganda	Energy Assessment (English)	07/83	4453-UG
	Status Report (English)	08/84	020/84
	Institutional Review of the Energy Sector (English)	01/85	029/85
	Energy Efficiency in Tobacco Curing Industry (English)	02/86	049/86
	Fuelwood/Forestry Feasibility Study (English)	03/86	053/86
	Power System Efficiency Study (English)	12/88	092/88
	Energy Efficiency Improvement in the Brick and Tile Industry (English)	02/89	097/89
	Tobacco Curing Pilot Project (English)	03/89	UNDP Terminal Report
Zaire	Energy Assessment (English)	12/96	193/96
Zambia	Rural Electrification Strategy Study	09/99	221/99
	Energy Assessment (English)	05/86	5837-ZR
	Energy Assessment (English)	01/83	4110-ZA
	Status Report (English)	08/85	039/85
	Energy Sector Institutional Review (English)	11/86	060/86
	Power Subsector Efficiency Study (English)	02/89	093/88
	Energy Strategy Study (English)	02/89	094/88
	Urban Household Energy Strategy Study (English)	08/90	121/90
Zimbabwe	Energy Assessment (English)	06/82	3765-ZIM
	Power System Efficiency Study (English)	06/83	005/83
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	Power Sector Management Assistance Project (English)	04/85	034/85
	Power Sector Management Institution Building (English)	09/89	--
	Petroleum Management Assistance (English)	12/89	109/89
	Charcoal Utilization Prefeasibility Study (English)	06/90	119/90
	Integrated Energy Strategy Evaluation (English)	01/92	8768-ZIM
	Energy Efficiency Technical Assistance Project: Strategic Framework for a National Energy Efficiency Improvement Program (English)	04/94	--
	Capacity Building for the National Energy Efficiency Improvement Programme (NEEIP) (English)	12/94	--

EAST ASIA AND PACIFIC (EAP)

Asia Regional China	Pacific Household and Rural Energy Seminar (English)	11/90	--
	County-Level Rural Energy Assessments (English)	05/89	101/89
	Fuelwood Forestry Preinvestment Study (English)	12/89	105/89
	Strategic Options for Power Sector Reform in China (English)	07/93	156/93
	Energy Efficiency and Pollution Control in Township and Village Enterprises (TVE) Industry (English)	11/94	168/94
	Energy for Rural Development in China: An Assessment Based on a Joint Chinese/ESMAP Study in Six Counties (English)	06/96	183/96
	Improving the Technical Efficiency of Decentralized Power Companies	09/99	222/999
Fiji	Energy Assessment (English)	06/83	4462-FIJ

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	Diesel Generating Plant Efficiency Study (English)	12/88	095/88
	Urban Household Energy Strategy Study (English)	02/90	107/90
	Biomass Gasifier Preinvestment Study Vols. I & II (English)	12/90	124/90
	Prospects for Biomass Power Generation with Emphasis on Palm Oil, Sugar, Rubberwood and Plywood Residues (English)	11/94	167/94
	Urban Electricity Demand Assessment Study (English)	03/93	154/93
	Institutional Development for Off-Grid Electrification	06/99	215/99
Malaysia	Sabah Power System Efficiency Study (English)	03/87	068/87
	Gas Utilization Study (English)	09/91	9645-MA
	Energy Assessment (English)	06/85	5416-BA
Myanmar Papua New Guinea	Energy Assessment (English)	06/82	3882-PNG
	Status Report (English)	07/83	006/83
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	Institutional Review in the Energy Sector (English)	10/84	023/84
	Power Tariff Study (English)	10/84	024/84
Philippines	Commercial Potential for Power Production from Agricultural Residues (English)	12/93	157/93
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	Energy Assessment (English)	06/83	4404-SOL
Solomon Islands	Energy Assessment (English)	01/92	979-SOL
	Petroleum Transport in the South Pacific (English)	05/86	--
South Pacific Thailand	Energy Assessment (English)	09/85	5793-TH
	Rural Energy Issues and Options (English)	09/85	044/85
Tonga Vanuatu Vietnam	Accelerated Dissemination of Improved Stoves and Charcoal Kilns (English)	09/87	079/87
	Northeast Region Village Forestry and Woodfuels Preinvestment Study (English)	02/88	083/88
	Impact of Lower Oil Prices (English)	08/88	--
	Coal Development and Utilization Study (English)	10/89	--
	Energy Assessment (English)	06/85	5498-TON
	Energy Assessment (English)	06/85	5577-VA
Western Samoa	Rural and Household Energy-Issues and Options (English)	01/94	161/94
	Power Sector Reform and Restructuring in Vietnam: Final Report to the Steering Committee (English and Vietnamese)	09/95	174/95
	Household Energy Technical Assistance: Improved Coal Briquetting and Commercialized Dissemination of Higher Efficiency Biomass and Coal Stoves (English)	01/96	178/96
	Energy Assessment (English)	06/85	5497-WSO

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Bangladesh	Energy Assessment (English)	10/82	3873-BD
	Priority Investment Program (English)	05/83	002/83
	Status Report (English)	04/84	015/84
	Power System Efficiency Study (English)	02/85	031/85

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	Opportunities for Commercialization of Nonconventional Energy Systems (English)	11/88	091/88
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	Mini-Hydro Development on Irrigation Dams and Canal Drops Vols. I, II and III (English)	07/91	139/91
	WindFarm Pre-Investment Study (English)	12/92	150/92
	Power Sector Reform Seminar (English)	04/94	166/94
	Environmental Issues in the Power Sector (English)	06/98	205/98
	Environmental Issues in the Power Sector: Manual for Environmental Decision Making (English)	06/99	213/99
	Household Energy Strategies for Urban India: The Case of Hyderabad	06/99	214/99
	Energy Assessment (English)	08/83	4474-NEP
Nepal	Status Report (English)	01/85	028/84
	Energy Efficiency & Fuel Substitution in Industries (English)	06/93	158/93
Pakistan	Household Energy Assessment (English)	05/88	--
	Assessment of Photovoltaic Programs, Applications, and Markets (English)	10/89	103/89
	National Household Energy Survey and Strategy Formulation Study: Project Terminal Report (English)	03/94	--
	Managing the Energy Transition (English)	10/94	--
	Lighting Efficiency Improvement Program Phase 1: Commercial Buildings Five Year Plan (English)	10/94	--
Sri Lanka	Energy Assessment (English)	05/82	3792-CE
	Power System Loss Reduction Study (English)	07/83	007/83
	Status Report (English)	01/84	010/84
	Industrial Energy Conservation Study (English)	03/86	054/86

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Central and Eastern Europe	Power Sector Reform in Selected Countries	07/97	196/97
Eastern Europe	The Future of Natural Gas in Eastern Europe (English)	08/92	149/92
Kazakhstan	Natural Gas Investment Study, Volumes 1, 2 & 3	12/97	199/97
Kazakhstan & Kyrgyzstan	Opportunities for Renewable Energy Development	11/97	16855-KAZ
Poland	Energy Sector Restructuring Program Vols. I-V (English)	01/93	153/93
	Natural Gas Upstream Policy (English and Polish)	08/98	206/98
	Energy Sector Restructuring Program: Establishing the Energy Regulation Authority	10/98	208/98
Portugal	Energy Assessment (English)	04/84	4824-PO
Romania	Natural Gas Development Strategy (English)	12/96	192/96
Slovenia	Workshop on Private Participation in the Power Sector (English)	02/99	211/99
Turkey	Energy Assessment (English)	03/83	3877-TU

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	Status Report (English and French)	01/86	048/86
Morocco	Energy Sector Institutional Development Study (English and French)	07/95	173/95
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	Gas Development Plan Phase II (French)	02/99	210/99
Syria	Energy Assessment (English)	05/86	5822-SYR
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Syria	Energy Efficiency Improvement in the Fertilizer Sector (English)	06/90	115/90
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	Energy Management Strategy in the Residential and Tertiary Sectors (English)	04/92	146/92
	Renewable Energy Strategy Study, Volume I (French)	11/96	190A/96
	Renewable Energy Strategy Study, Volume II (French)	11/96	190B/96
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	Energy Investment Priorities (English)	02/87	6376-YAR
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LAC Regional	Regional Seminar on Electric Power System Loss Reduction in the Caribbean (English)	07/89	--
	Elimination of Lead in Gasoline in Latin America and the Caribbean (English and Spanish)	04/97	194/97
	Elimination of Lead in Gasoline in Latin America and the Caribbean - Status Report (English and Spanish)	12/97	200/97
	Harmonization of Fuels Specifications in Latin America and the Caribbean (English and Spanish)	06/98	203/98
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	National Energy Plan (English)	12/87	--
	La Paz Private Power Technical Assistance (English)	11/90	111/90
	Prefeasibility Evaluation Rural Electrification and Demand Assessment (English and Spanish)	04/91	129/91
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	Natural Gas Distribution: Economics and Regulation (English)	03/92	125/92
	Natural Gas Sector Policies and Issues (English and Spanish)	12/93	164/93
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	Preparation of Capitalization of the Hydrocarbon Sector	12/96	191/96
Brazil	Energy Efficiency & Conservation: Strategic Partnership for Energy Efficiency in Brazil (English)	01/95	170/95
	Hydro and Thermal Power Sector Study	09/97	197/97
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Colombia	Energy Strategy Paper (English)	12/86	--
	Power Sector Restructuring (English)	11/94	169/94

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Costa Rica	Energy Assessment (English and Spanish)	01/84	4655-CR
	Recommended Technical Assistance Projects (English)	11/84	027/84
	Forest Residues Utilization Study (English and Spanish)	02/90	108/90
Dominican Republic	Energy Assessment (English)	05/91	8234-DO
Ecuador	Energy Assessment (Spanish)	12/85	5865-EC
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	Energy Strategy (English)	04/91	--
	Private Minihydropower Development Study (English)	11/92	--
	Energy Pricing Subsidies and Interfuel Substitution (English)	08/94	11798-EC
	Energy Pricing, Poverty and Social Mitigation (English)	08/94	12831-EC
Guatemala	Issues and Options in the Energy Sector (English)	09/93	12160-GU
Haiti	Energy Assessment (English and French)	06/82	3672-HA
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	Household Energy Strategy (English and French)	12/91	143/91
Honduras	Energy Assessment (English)	08/87	6476-HO
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	Petroleum Procurement, Refining, and Distribution Study (English)	11/86	061/86
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	Energy Efficiency Standards and Labels Phase I (English)	03/88	--
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	Charcoal Production Project (English)	09/88	090/88
	FIDCO Sawmill Residues Utilization Study (English)	09/88	088/88
	Energy Sector Strategy and Investment Planning Study (English)	07/92	135/92
Mexico	Improved Charcoal Production Within Forest Management for the State of Veracruz (English and Spanish)	08/91	138/91
	Energy Efficiency Management Technical Assistance to the Comision Nacional para el Ahorro de Energia (CONAE) (English)	04/96	180/96
Panama	Power System Efficiency Study (English)	06/83	004/83
Paraguay	Energy Assessment (English)	10/84	5145-PA
	Recommended Technical Assistance Projects (English)	09/85	--
	Status Report (English and Spanish)	09/85	043/85
Peru	Energy Assessment (English)	01/84	4677-PE
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	Proposal for a Stove Dissemination Program in the Sierra (English and Spanish)	02/87	064/87
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	Study of Energy Taxation and Liberalization of the Hydrocarbons Sector (English and Spanish)	120/93	159/93
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St. Vincent and the Grenadines	Energy Assessment (English)	09/84	5103-STV
Sub Andean	Environmental and Social Regulation of Oil and Gas Operations in Sensitive Areas of the Sub-Andean Basin (English and Spanish)	07/99	217/99

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	Energy End Use Efficiency: Research and Strategy (English)	11/89	--
	Women and Energy--A Resource Guide		
	The International Network: Policies and Experience (English)	04/90	--
	Guidelines for Utility Customer Management and Metering (English and Spanish)	07/91	--
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	A Synopsis of the Third Annual Roundtable on Independent Power Projects: Rhetoric and Reality (English)	08/96	187/96
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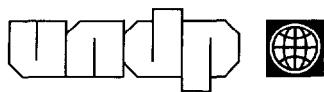
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