



Policy Study No.87

## Current Choices

good ways and bad to privatise electricity

Allen Sykes and Colin Robinson



CENTRE FOR POLICY STUDIES



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## Foreword

THE PRESENT GOVERNMENT'S PRIVATISATION PROGRAMME REPRESENTS THE most important initiative in industrial policy in recent times. If properly executed, such a programme could significantly improve the performance of the British economy, lower industrial costs, reduce prices for the benefit of consumers and provide secure employment opportunities.

Nowhere is privatisation more needed than in the energy market where intra-industry competition exists only in oil; and decisions are seriously distorted by the presence and influence of two nationalised corporations. The coal, gas and electricity monopolies have been dominated by producer interests, decision-making has been highly politicised and consumer interests have been given low priority.

In the few months since the Government won a third term of office, privatisation of the electricity supply industry (ESI) has been firmly on the agenda. Widespread public debate is concentrating on the advantages and disadvantages of various options. Both the Electricity Council and the CEBG have retained financial and public relations advisers to help them conduct forceful public and private campaigns to influence the Government's imminent decision. Given all that may be at stake for its senior management this effort, well funded and evidently influential, is not hard to understand. No comparable co-ordinated effort can be mounted by the private sector since those who will be most affected (in particular consumers and potential corporate investors) are too numerous and dispersed to partake with one voice in the public debate and the equally crucial private discussions with government. Accordingly the Government may take disproportionate account of the ESI's views which are likely to favour lightly regulated monopoly (perhaps with token competition as in the case of British Gas and British Telecom). If ESI privatisation is not to follow the unhappy precedent of gas and telecommunications then the Government must show courage, vision and singleness of purpose. Otherwise, an opportunity to introduce competition into the electricity supply industry, and with it into the coal industry, will be lost for at least the remainder of this century.



## Objectives of ESI privatisation

### The principal objectives

Privatisation schemes can have three principal objectives, between which there are potential conflicts. They are to:-

- increase efficiency
- raise revenue for government
- widen share ownership

The second and third objectives have clearly been predominant in the government's privatisation programme so far. Revenues raised from privatisation of state corporations were about £11 billion from 1979 to 1986 and they are likely to average at least £4 billion a year over the rest of this Parliament. The number of shareholders has much increased in recent years, largely as a consequence of privatisation – according to an NOP Market Research<sup>1</sup> survey from about three million in 1979 to about 8 million (nearly 20 per cent of the adult population) early in 1987. Increasing efficiency, however, seems to have had a very low priority, certainly in the case of British Gas and other recent privatisations.

Improvements in efficiency can take several forms. First, goods and services may be produced at lower cost (increased productive efficiency); second, there may be a closer alignment of prices and costs (greater allocative efficiency); and third, producers may become more responsive to consumers' requirements. In general, the principal means of realising these gains is through liberalisation (the introduction of more competition). Liberalisation measures can be applied to markets for products (the markets into which a firm sells) and to markets for inputs (labour, capital and the materials and services which a firm uses).

Some gains in productive efficiency may be achieved by selling the assets of previously nationalised corporations to private shareholders; but only provided that these shareholders form a more effective pressure group for managerial efficiency than the Government – if, in other words, they introduce stronger capital market discipline. But to realise the full potential for both productive and other types of efficiency gains it is necessary not only to sell the assets but also to liberalise markets. Liberalised markets force producers to reduce costs, partly because of the pressure of

competition and partly because they no longer find political lobbying so advantageous. Monopolised markets can, by definition, provide no genuine performance standards for managers, since they lack close competitors with whom to make comparisons. Downward pressures on costs are bound to be weak and ineffective, because the system cannot provide the relevant signals.

Similarly, liberalised markets for inputs will also reduce costs. And so, as cost savings from various sources accrue, the force of competition ensures that the bulk of such savings are passed on to consumers. Thus prices and costs are more closely aligned than in monopolised markets; and allocative efficiency improves. Greater competitive pressures also normally offer consumers a wider variety of price/quality options since producers have to be more responsive to their demands than they are under monopoly.

From the viewpoint of public interest, privatisation is primarily a means of liberalising markets. There may well be political, economic and social advantages in widening share ownership, thus giving people a stake in the success of their own organisations and of the economic system as a whole. There may be legitimate reasons for the Government to raise revenues through privatisation, provided it realises adequate amounts for the assets it sells. (If it does undervalue industries on sale it will impose costs on society similar to those which are incurred when a government borrows at an excessively high interest rate). But in our view privatisation should be directed principally at improving efficiency via injecting competition into previously monopolised industries.

A serious practical problem is posed by the strong vested interests which naturally oppose liberalisation. Employees of nationalised industries understandably wish to retain the advantages they derived from working for monopolies. Financial institutions and potential shareholders may also see illiberal forms of privatisation as being in their short term interests since they are allowed to participate in the profits of a monopoly. The Government may believe that more money will be raised by selling a corporation whole rather than by splitting it into competing parts. All these pressures seem to have operated in the case of British Gas and, regrettably, appear to have been the principal determinants of the form of privatisation.

For the benefit of readers unfamiliar with the somewhat unusual structure of British electricity supply we start with an outline description of the industry.<sup>2</sup>



## England and Wales

In England and Wales, the ESI reports to the Department of Energy (except for the Scottish boards, which report to the Scottish Office). It consists of the CEBG and Area Boards and the Electricity Council on which both are represented.

The *Electricity Council* is the statutory body '... responsible for policy formulation and co-ordination ...' of the industry. It has responsibilities for a number of industry-wide functions such as finance, sales forecasting, generic advertising, investment planning, monitoring tariff proposals, pensions and industrial relations. Despite its overall responsibility the Council has to rely primarily on persuasion in its relations with the CEBG and Area Boards. None of the various proposals to turn it into a strong central body for the industry (for example, in the 1976 Plowden Report) has been implemented.

The *Central Electricity Generating Board (CEGB)* is, by common consent, the strongest of the nationalised corporations in the ESI (in management, economic and political terms). It is one of the world's largest electrical utilities, owning and operating the bulk of the ESI's assets and carrying responsibility for both generation and long distance transmission of electricity. Power is sold via bulk supply points to the Area Boards.

Twelve *Area Electricity Boards* distribute electricity locally to all categories of consumer. These Boards vary considerably in terms of density of their network and of their mix of domestic and industrial consumers. Area Boards are the customers' main point of contact with the industry.

## Scotland

In Scotland, the structure of the ESI is different. There are two integrated power boards which operate both the generation and the transmission and distribution systems. Southern Scotland, the more densely populated region, is served by the South of Scotland Electricity Board (SSEB). One of its distinguishing features is its relatively high proportion of nuclear generating capacity (responsible for over 40% of electricity supplied). The north is served by the North of Scotland Hydro Electric Board which, as the name implies, has a large number of hydro stations, as well as some oil capacity.

## The CEBG

Because of the importance of the CEBG, we give opposite some more details of its operations.

Table 1.1

Electricity supplied, number of stations and fuel consumed: England and Wales 1986-87

Fuel Type	Electricity supplied % of total	No. of stations	Fuel consumed million tonnes coal equivalent
Coal	78.2	41*	77.0
Oil	5.6	7	6.8
Gas (for peak power only)	—	11	—
Nuclear	16.4	10	16.2
Hydro, pumped storage	(0.2)+	9	—
	100	78	100.0

\* including 4 dual-fired

+ output from hydro stations less net energy used in pumped storage

Source: CEBG Annual Report and Accounts, 1986-87

The CEBG, like other power generating authorities, operates a 'merit order' system which allows it to choose the stations which have the lowest operating costs – at present nuclear followed by coal – for base load demand; and thereafter to bring in those which have higher operating costs for intermediate and peak loads. Thus the operating costs of the system (which are mainly fuel) are minimised. When a new power station is built, it will usually have low operating costs relative to other stations and so initially will be high in the merit order and supply base load power. As it ages, its position in the merit order will fall and in the end it may operate only on standby before being retired.

Nearly 80 per cent of electricity is supplied by coal stations, and another 16 per cent by nuclear power (Table 1.1). Although oil-fired stations have high thermal efficiencies, the cost of fuel oil has in recent years precluded their use even for intermediate loads. If oil prices were to stay low for a prolonged period, oil-fired stations might begin to supply intermediate or base load again. They were used extensively during the coal strike when many mothballed plants were reactivated to ensure continuity of supply. Their use increased again in 1986 when oil prices fell.

Two pumped storage systems, used to even out the daily demand curve, make an important contribution to the efficiency of the system by storing surplus intermediate power and releasing it at peak periods.



Power stations have tended to be located near their sources of fuel. Thus the large coal-fired stations are concentrated in North Yorkshire, the Trent Valley, and the Central Midlands though there are a few stations in the Thames estuary. Nuclear stations, because of their extensive need for cooling water, are usually located on or near the coast but are not concentrated in any one region.

Long distance transmission, via the National Grid, is also operated by the CEBG. The grid has to handle flows of power from regions with surplus generating capacity such as the North of England and the Midlands, to the South and South East where demand is high relative to local capacity. It is linked to Scotland and France, allowing for exchange of electricity in each direction although, in practice, the CEBG is a modest net importer of electricity from both countries. The under-Channel link completed in 1986 has a capacity of 2000 MW, equivalent to one large power station. France has low marginal costs of producing electricity as a result of its surplus nuclear capacity, and exports to other European countries as well as to Britain.

#### **Employment, industrial relations and organisation**

In March 1987 the industry employed nearly 147,000 people in England, Scotland and Wales, of which 48,000 were employed by the CEBG, 83,000 by the Area Boards and 16,000 in Scotland. Employment of 'industrial staff' in England and Wales has declined from about 131,000 in 1964 to about 69,000 in 1987, a fall of 47%. Numbers employed in other categories have also fallen significantly. These reductions in manpower have been achieved without compulsory redundancy and the bitter disputes which have characterised other nationalised industries when required to shed labour. When major power cuts have occurred they have usually been caused by serious disruption to fuel supplies.

The ESI has enjoyed good industrial relations and has been virtually strike-free for many years. In its report on the transmission system published in June 1987 the Monopolies and Mergers Commission<sup>3</sup> commended the achievements of the industry and unions in improving industrial relations. The main unions in the industry – the EEP TU, NALGO, GMBATU and the Electrical Power Engineers' Association (part of the Engineers' and Managers' Association) have 'moderate' tendencies. Their enormous industrial power has not been abused.

The CEBG has recently altered the structure of responsibility

from a series of self-contained local regions carrying out all activities, to a system whereby operations are divided into four categories, each run by a different operating division. Evidently it wished to streamline both non-technical and technical support now that power production is concentrated in fewer large units, and to strengthen the corporate management and the decision-making of the business as a whole.

#### **Plan of the Paper**

The rest of this paper shows how the privatisation principles set out on page 6 above can be applied to the complex industry whose structure has just been outlined. Chapter 2 brings out a number of specific issues which need to be addressed in injecting competition into the ESI. Chapter 3 describes the particular problems of nuclear power. Chapter 4 discusses the very important relationships between the ESI and the coal industry. Chapter 5 draws useful lessons from overseas. Chapter 6 deals with the gains which may be expected from privatisation. Then in Chapters 7, 8 and 9 we turn to the main questions which have to be answered – what criteria should be used in assessing privatisation plans and how do the various options stand up to such an assessment? Chapter 10 summarises the main points and the conclusions we reach.



## Competition, regulation and some special issues

If electricity supply is to be privatised in a form which will bring substantial benefits, competition is essential for the reasons given already.

Liberalising electricity supply, however, is not straightforward. Some of the difficulties are inherent in all efforts to denationalise industries which have been in state hands for tens of years and have developed the habits which go with state ownership. But there are special problems identified below which practical schemes for electricity supply privatisation must resolve. Some of them have been raised as obstacles to privatisation by those who support continued nationalisation. They are discussed briefly in this chapter which ends with a list of issues which need further discussion.

### The scope for competition in electricity supply

Parts of the present electricity supply industry are 'natural monopolies'. That is, they are activities which can more efficiently be organised under single ownership than under competition. Local distribution is one such activity where competition in digging up roads, laying cables and supplying electricity to small (mainly household) consumers would be unlikely to be efficient. Possibly, changes in distribution technology may eventually allow such competition to develop but at present the arguments seem to be against it. Similarly, a long distance transmission network for transporting electricity is, with existing technology, a natural monopoly. If natural monopolies are privatised, some form of supervision is normally required to avoid the abuse of monopoly power.

Apart from distribution and transmission, the rest of the present electricity supply industry is potentially competitive and could, therefore, be liberalised to reap the benefits summarised in Chapter 1. Peripheral areas of activity of the present industry, such as sales of appliances and electrical contracting, are already in competition with the private sector. Much more important, the generation of electricity (amounting to 70% of all ESI costs) is not naturally monopolistic. There could and should be competition in such generation, in order to give

lower prices and a choice of sources of supply to larger customers and to local distributors of electricity.

In privatising and liberalising electricity supply, therefore, the aim should be to:

- a) introduce competition into generation;
- b) separate long distance transmission from generation so that there is an independent 'common carrier' network useable by competing generators, including manufacturing companies with surplus power to sell. (An independent transmission network, open to all potential users on identical terms, is vital if a competitive generating industry is to develop); and
- c) separate local distribution from both generation and transmission.

The industry would therefore consist of competing generators, a long distance transmission network and a number of local distributors of electricity. The latter activities would need regulating.

### Gains from competition?

The general case for competition is stated in Chapter 1. What gains would be likely to arise if electricity generation became competitive? Let us start from the apparently plausible case, frequently made by employees of the ESI, that the existing structure already minimises costs by its use of a 'merit order'. Thus, they contend, competition can bring no improvements and might indeed be wasteful.

Such arguments embody a common and basic misconception – that centralised management and size can be equated with efficiency. The merit order used by the CEGB, a system similar to many used elsewhere in the world, will come close to minimising current operating costs. But fuel costs (about half generating costs) are determined to a large extent by a competition-restricting agreement to purchase British coal. Labour costs (over 10% of generating costs) are determined primarily by long-term agreement with unions with considerable monopoly power. In other words, operating costs of individual stations are the outcome of a monopolised regime, as also are the capital costs of existing power stations (nearly 25% of generating costs, including return on capital). Capital costs are irrelevant in operating the merit order, since they are sunk and so unavoidable: but they are a major determinant of total costs. There is too little incentive to spend capital wisely in monopolistic conditions.

Often the main charge which can be levelled against monopolies



is not that they directly exploit consumers by making large profits but rather that they are inefficient because they lack the incentives to cut costs. Inefficiency is particularly likely when the monopolies are in state hands, and decisions highly politicised. If electricity generation became a competitive industry, its costs would be reduced compared with those of its monopolistic past, and the bulk of any reductions would be passed on to consumers because of the force of competition. Larger consumers would benefit directly, since they would have a choice of supplier and prices should therefore fall. Lower electricity costs for industry would have beneficial effects throughout the economy. But smaller consumers should also gain more directly, provided regulation of distributors is so designed as to ensure that lower generation costs are passed on.

In suggesting that there are considerable inefficiencies in the ESI which could be greatly reduced by a liberal form of privatisation, we are not blaming the management and other employees of the industry. Present cost levels are products of the environment in which the industry exists, for which successive governments are primarily responsible. If the environment is non-competitive, management has insufficient incentive to spend time seeking cost reductions. If it is both non-competitive and politicised the problem is much worse; it may well be more rewarding to keep on the right side of influential politicians and civil servants rather than to be determined minimisers of costs.

Introducing competition into such an industry and reducing politicisation would be bound to give a new impetus and new incentives to existing management, as well as attracting new managers into it. Instead of arbitrary performance standards being imposed by civil servants, real performance standards would be set by competitors. Thus management would be much more efficient. And liberalisation in the product market would spill over into the markets for the ESI's inputs. It seems very unlikely, for instance, that the 'Buy British' policies for plant and equipment which have existed in the past and have inflated capital costs would survive the introduction of competition in power generation. No doubt manning levels would decline also. As a recent OECD study has pointed out<sup>4</sup>, both costs of power station construction and levels of manning appear to be substantially higher in Britain than in other countries. And, of particular importance, there would be downward pressure on the price of the ESI's principal input – coal, which accounts for about one third

of the ESI's costs – where a 'Buy British' policy has also been in operation. The Joint Understanding which supports the British coal industry by imposing extra costs on electricity consumers, would not be tolerated by generating companies in competition with each other. It is, indeed, at last coming under scrutiny by the CEGB in the light of criticism of its cost levels. We comment further on the relationship between the ESI and the coal industry in Chapter 4; and in Chapter 6 attempt to quantify some of the gains from injecting competition into electricity generation.

### Regulation

In the cases of both long distance transmission and distribution, but not in competitive generation, some form of regulation would be required to avoid the abuse of the monopoly power inherent in these two activities. Regulation could take several forms. One would be public ownership so that the government, as now, acted as the regulatory authority; or there could be regulatory bodies established specifically to supervise private transmission and distribution companies; or local authorities could own or regulate distributors; or there could be a system of franchising companies to operate the transmission network or local distribution for specified periods after which the franchise could be renewed or changed.

Experience in other parts of the world suggests that regulation is seldom very satisfactory. However, the present situation is much worse since, in effect, it involves regulating (by nationalisation) the whole of an industry, only 30% of which as measured by costs is naturally monopolistic. Regulation should be minimised by confining it strictly to those activities where there seems no alternative. An advantage of privatising electricity using the principles outlined above is that the scope of regulation would be considerably reduced compared with the present regime. The regulatory problem would be brought out into the open.

Because of the presence of natural monopolies within the ESI, we devote some attention in Chapter 9 to an appropriate method of regulation. We believe that Britain should avoid the excesses of the US method, which is increasingly questioned in the US itself. We believe also that apparently simple formulae – such as the  $RPI - X + Y$  used to determine maximum prices for smaller gas consumers after privatisation – should be avoided. The gas formula has already led to a dispute between British Gas and its regulator, Ofgas. In a more



complex industry, such as the ESI, the results would probably be even worse. We therefore make suggestions for a regulatory regime which should avoid the worst effects of cost-plus mechanisms, and provide management with incentives to improve efficiency.

#### **Safety, environmental protection and other functions of government**

Supporters of nationalisation sometimes claim that public corporations are necessary guardians of the public interest in such matters as safety and environmental protection. In practice, there is little evidence that nationalised industries have a better record in such matters than private companies. There are certainly many complaints about the effects of their activities on the environment and on people. It is also likely that imposition of 'public service' functions on nationalised corporations causes confusion of management objectives.

In any case, in a liberalised market guardianship of the public interest is clearly a matter for government. One advantage of liberalisation is that it would bring into the open certain matters with which government should be concerned, but where at present the responsibilities between nationalised corporations and central government departments are ill-defined and split. Controlling the effects of air pollution from power stations and minimising the unsightliness of large buildings are obvious examples. Dealing with such 'external costs' – for example, by ensuring that the polluters pay for their actions – is properly a function of elected government, and would clearly need to be so in a liberalised market.

Other functions which government would need to perform in a such a liberalised market include the maintenance of safety standards (which need not be diminished in any way), and establishment of the regulatory bodies needed to supervise the non-competitive parts of the ESI. A particularly important function of government would be to ensure that the industry did not revert to a monopolised structure. Thus, in a liberalised electricity supply market the functions of government would change. No longer would there be constant interference in the running of the industry, but in this freer market government would have the vital and more traditional role of protecting the public and the natural environment.

#### **Nuclear power**

The existence of a considerable nuclear capacity is a much-quoted

obstacle to privatisation. Nuclear power provides nearly 20% of the electricity generated in Britain (though over 40% in Scotland). Ten nuclear power stations are operated by the CEBG and two by the SSEB. Nine are relatively small and ageing Magnox reactors: the other three are Advanced Gas Cooled Reactors (AGRs). Both Magnox and AGR are British designs. Five new AGRs are in various stages of construction or commissioning, and should be in operation by 1988. Considerable technical problems and construction delays have been experienced with the AGRs, and there have also been technical difficulties with the Magnox reactors which will probably begin the process of decommissioning in the 1990s. Permission has recently been given for the construction of Britain's first PWR reactor at Sizewell B and the CEBG is contemplating a second PWR at Hinkley Point.

#### **Security of fuel supplies**

Electricity supply is a very large consumer of fuel as well as a supplier of energy to consumers. Disruption of fuel supply is therefore a danger against which it must guard. Would that danger be greater after privatisation?

In practice, the security of the ESI's fuel supplies should be better than it has been in recent years. Successive governments have forced the ESI to depend on British Coal, thus denying it the opportunity to increase security by diversifying its sources of supply (which is the relatively cheap way of enhancing security which a commercial organisation would normally adopt). The industry has therefore had to take extremely costly action – such as building up very large stocks of coal and other materials when it feared coal strikes in Britain, and running oil-fired power stations during strikes. Because of this forced dependence, the monopoly powers of British Coal and its workforce have been strengthened. Thus strikes and threats of strikes have almost certainly been more frequent than they would otherwise have been and their consequences have been more feared<sup>5</sup>.

Government policy has had another curious effect. Because of the monopoly power of the coal industry – which governments themselves acted to increase – nuclear power has been seen as a means of diversifying the ESI's fuel supplies. Thus governments supported an expansion of nuclear power in Britain which, though not as rapid as in extreme pro-nuclear countries such as France, was almost certainly faster than the private sector would have been prepared to finance. Whether nuclear power is, in reality, a means of improving security of



supply is highly debatable. It does provide another source of fuel for the ESI which, given recent policies of coal support, may have seemed desirable. But nuclear power suffers (rightly or wrongly) from serious problems of public acceptability. Consequently, there is an ever-present danger that existing nuclear stations in Britain might have to be de-rated or even shut down and that new building might cease because of an accident in another country, possibly with an unrelated type of reactor. Thus, a high proportion of nuclear power in an electricity supply system can make for insecurity rather than security. In any case, an obvious alternative is to change the coal support policies which have been the prime cause of such insecurity in Britain.

A privatised ESI, with competition in generation, would have a strong incentive to provide its own security of fuel supply, primarily by a policy of diversification. There is a case, which would apply whether the industry is nationalised or privatised, for some additional government provision by comparatively low cost means, such as holding excess stocks of coal and oil, to meet emergencies. Government might also want to support some nuclear power generation beyond what private generating companies would be willing to install, but whether such action would promote security or insecurity is an open question.

#### Size of the industry

The size of the ESI is sometimes regarded as an obstacle to privatisation. The assets of the industry (in the whole of Great Britain) on a current cost basis are around £45 billion. However, most commentators assume that the market value of those assets is substantially less – between £10 and £20 billion seems to be a common guess. In principle, we reckon that the market value is well below current cost, since the absence of competitive pressures has almost certainly resulted in over-investment. The very low rates of return in the ESI compared with the private sector lead us to the same conclusion; the target for the ESI is a annual return of 2.75 per cent on net current cost assets and it achieved a return in 1986-87 of just below 3.2%. It may be that these apparently low rates of return are a consequence of an artificially high value placed on the assets of the industry. However, there are such potential inconsistencies among the various financial targets which the ESI is supposed to meet (the ex post required discounted rate of return of 5 per cent on its investment programme, its external financing limit and its annual return on net

assets) that firm conclusions are very difficult to draw. What one can say for certain is that electricity privatisation would ask the capital markets to provide a very large sum indeed. Handling needs to be more judicious than in previous privatisation schemes.

#### Problems of transition

A common and much-neglected problem in proposals for radical reforms is that of transition to the ultimate structure. The present state of affairs may be clear enough; it may also be possible to see where one would eventually like to be. It is tempting simply to argue that the industry should be broken up and competition introduced into generation. But to sell the ESI at its proper price and to introduce the degree of competition which is eventually desirable cannot be done at one stroke of the pen. How to move to that more desirable state is a problem which deserves close attention. We are here dealing with an industry which, like coal, has been nationalised for forty years and was under various forms of government supervision before that. The ESI is very large, and very complex in the sense that it is a mixture of natural monopolies and naturally competitive activities. Consequently, Chapter 9 is devoted to practical suggestions for an intermediate stage so that the industry can progress towards full competition without serious disruption.

#### Coal and the ESI

As shown above, coal is the ESI's biggest input. The two industries are very closely linked. The CEEB takes 95% of its coal from British Coal and over 70 per cent of British Coal's sales are to power stations. To some extent, these high proportions are a function of collusive agreements such as the Joint Understanding (see Chapter 4, page 25). Nevertheless, even without such arrangements, the ESI is likely to take the bulk of its coal from British sources in the foreseeable future as we explained in *Privatise Coal*. Given the degree of interdependence between British Coal and the ESI, one issue which cannot be shirked is whether it is desirable to privatise one industry without the other.

#### Scotland

The privatisation of the two integrated Scottish utilities (NSHEB and SSEB) can of course be handled quite separately from that of the ESI in England and Wales, the former being the responsibility of the Scottish Office and the latter of the Department of Energy. It is always open to



the Government, however, to have a single privatisation plan for the whole of Britain (including of course Northern Ireland, which this paper does not cover). We have not attempted to take into account such political considerations.

Whichever option in England and Wales is adopted it would be quite possible to maintain the separate existence of the two Scottish Boards. Different treatment for Scotland would not cause significant distortion. If, however, any of the options for England and Wales, particularly those which introduce competition, would give Scotland benefits unobtainable under the present structure, then Scottish consumers are likely to prefer such a scheme. In any case it is desirable that any regulatory arrangements encourage free trade in electricity between all the utilities in Britain. It is also desirable to have similar regulatory regimes where possible. Finally, if special arrangements are needed for nuclear power, the position of the nuclear power stations of the SSEB needs to be considered. If they were taken away for inclusion in a British nuclear power grouping the SSEB would be very short of generating capacity.

### Conclusions

This review of the issues in privatising electricity supply suggests that many of the arguments of those who oppose privatisation are ill-founded. Safety standards should be unaffected and environmental protection standards should, if anything, improve. The security of the ESI's fuel supplies should also improve. It is perfectly possible to achieve efficiency gains through competition in generation, even though the rest of the industry would need to be subject to some form of regulation.

Nevertheless, there clearly are several issues which need further discussion. In particular:-

- How should nuclear power generation be organised and how should decisions be made about the need for new capacity? (Chapters 3 and 9)
- What should be the relationship between the ESI and the British coal industry? Should both be privatised? (Chapter 4)
- What lessons can be learned from overseas? (Chapter 5)
- What would be the gains from privatisation? (Chapter 6)
- What criteria should be used to evaluate alternative privatisation schemes? (Chapter 7)

How should one judge schemes which privatise the ESI as a monopoly? (Chapter 8)

Given the objective of more competition in generation, how can a smooth transition be arranged? (Chapter 9)

These matters are discussed in the rest of the paper. Our conclusions are set out in Chapter 10.



## Problems of nuclear power

Three major problems about nuclear power must be faced. The first is that private companies might be unwilling to buy the Magnox stations and the original, ill-fated English AGRs, though they might be prepared to invest in the Scottish AGRs whose operating experience has been better. If it is, incidentally, true that existing nuclear plants are virtually unsaleable, it is a serious indictment of past nuclear programmes and questions the claim that centralised planning of generating capacity is best. The second problem, related to the first, is that private companies might not be willing to build new nuclear capacity. Finally, would public opinion tolerate private ownership of nuclear power stations? Each of these matters is considered below.

Ownership carries with it enormous obligations in the event of an accident or failure. Furthermore, decommissioning costs which will soon fall due on the old Magnox reactors are likely to be very large (though also very uncertain, since there is little comparable experience). According to Press reports,<sup>6</sup> CEBG estimates the future cost of operation and decommissioning at £6 billion against projected revenue over the remainder of their working lives of £7.5 billion! Most of these costs are likely to relate to decommissioning; and, these costs being so uncertain, it is not impossible that the Magnox stations would be worth nothing at all to a potential purchaser, and indeed might well be deemed a liability.

Construction of new nuclear power stations also presents major problems. The record of building AGRs in Britain has been little short of disastrous. Budgeted costs and construction periods have often been vastly exceeded. The Dungeness B station is still not fully operational 21 years after construction begun, whilst according to the Monopolies Commission the average cost overrun on AGRs has been over 100% in real terms.

Although it is possible that the private sector could improve on this performance, it is by no means clear that future nuclear power stations would be regarded as economic propositions. If the Sizewell Inquiry's comparison of conventional and nuclear power generation costs is reworked with the prevailing, lower world coal prices, and a more realistic, higher discount rate, then the nuclear option no longer appears to be cheaper than coal<sup>7</sup>.

It is almost inconceivable that any private sector organisation could or would assume the risks of building or operating a nuclear power station in Britain. However, the May 1987 Conservative manifesto incorporated the twin aims of a privatised electricity industry and the development of abundant, low cost nuclear generated electricity. These two objectives appear to be inconsistent. If the government is serious in its intention to transfer the ownership and management of the industry to the private sector then it should be prepared to accept the private sector's commercial judgement, even if this results in no more nuclear construction for the present time.

If for reasons such as national security the Government still wishes to ensure further nuclear development it is likely to have to assume full financial responsibility. No matter what form of privatisation is adopted, from monopoly to maximum competition, it is improbable that any new nuclear power stations would, for the time being, be built on commercial grounds.

Despite its manifesto endorsement of nuclear power, the Government should ask itself whether the national security argument still holds good. When first put forward in its first term of office, oil prices were high and rising, while British coal was expensive and at risk from industrial action by the miners. Now oil is cheap and plentiful and coal much cheaper. Privatising coal on liberalised lines would lower costs much further, increase security of supply and, even with generous redundancy payments to displaced miners, would be cheaper for Government than a nuclear power programme. Moreover, as explained in Chapter 2, it is very uncertain whether a high proportion of nuclear capacity in an electricity supply system really does increase security of energy supplies. A privatised electricity supply industry would have a strong incentive to ensure the security of its fuel supplies by diversifying sources of supply – for instance by building coal import facilities, buying natural gas and probably by increasing imports of electricity from France.

Because their operating costs are so much lower, nuclear power stations, once built, will always be able to undercut fossil fuel power stations. Thus they will be employed on continuous base load operations all their lives, regardless of whether they are publicly or privately owned. Consequently, if for security or other reasons the Government decides that more nuclear power stations should be built, albeit at much greater capital cost than fossil fuel stations, the profitability of privatised, non-nuclear electricity companies would be



reduced. The Government needs to think further about the evident conflict between its objectives of privatising electricity supply and promoting nuclear power.

The final issue is whether public opinion would allow nuclear power to be in private hands. That is a question on which it is difficult to comment since the answer must depend on the regulatory and safety regime. If the private sector *were* willing to manage and build nuclear stations, no doubt it would be possible to devise the necessary safeguards. There is in general no reason to believe that public corporations are better guardians of the public interest than are private companies.

## Relations with the coal industry

For many years, governments have interfered with the fuel purchasing decisions of the ESI. As one of the main benefits from liberalising the industry will come from the liberalisation of the market for its fuel inputs, we begin by describing the present situation.

### Government policy

The CEBG has long been required to buy almost all its coal from British Coal (formerly the National Coal Board) and the policy of successive governments has been to favour domestic coal as the principal fuel for power generation. Under the terms of the present Joint Understanding with British Coal, the CEBG is allowed to use only small amounts of imported coal and of coal from the tiny and heavily restricted private sector. The tax on fuel oil and severe limitations on the use of natural gas for electricity generation on the grounds that it is a 'premium fuel' have also favoured the domestic coal industry. The government's use of the ESI as a backdoor means of pursuing energy policy and social objectives has clearly increased electricity prices to consumers.

Governments have condoned the Joint Understanding, which is a competition-restricting agreement between the CEBG and British Coal on which we commented in *Privatise Coal*. This agreement attempts to introduce indirect import competition to offset the effects of the CEBG's inability to purchase coal in the cheapest market. Another scheme which tries to offset these effects is QUICS. The two schemes are described briefly below.

### The 'Joint Understanding' with British Coal

The original Joint Understanding covered the five year period up to March 1985 and provided that the CEBG would use its best endeavours to take from the (then) NCB 'all suitable coal up to a total of 75 million tonnes a year' provided NCB prices rose at no more than the rate of retail price inflation. It has subsequently been changed several times but the general intent is the same<sup>8</sup>. In its latest version, it provides for the CEBG to take 95 per cent of its coal (at least 70 million tonnes a year) from British Coal. The agreement is not published but it is known that there are three price tranches. In March 1987 the basis was 50 million tonnes a year at a price of £46.88 per tonne, 12 million tonnes at a lower



price related to the cost of imported coal (£29.50 per tonne) and another 10 million tonnes related to the prevailing price of oil. The aim is to introduce indirect import competition by relating the lower price tranches to the prices of imported coal and oil.

Over the life of the agreement (four years) the proportion of coal in the highest priced tranche is due to reduce progressively to 40 million tonnes and the middle tranche will increase to 20 million tonnes. The agreement is subject to periodic renegotiation.

### QUICS

In response to complaints about high industrial electricity prices, in October 1986 the Qualifying Industrial Consumers' Scheme (QUICS) was introduced to encourage the consumption of coal-generated electricity by high load factor industrial users. Four million tonnes of coal a year is being provided by British Coal – according to the CEBG 'at prices close to those on the world market' – and used to give rebates to companies on average of about 6 per cent<sup>9</sup>.

### Privatising and liberalising coal

The Joint Understanding and QUICS are open acknowledgements that British electricity consumers are disadvantaged by the policy of limiting CEBG coal purchases almost entirely to British Coal. Arrangements such as the Joint Understanding give no genuine choice of supplier and they distort decisions about fuel use and about where to site power stations. They are no substitute for real competition.

We argued in *Privatise Coal* that two actions should be urgently taken to benefit coal and electricity consumers. The first is for the CEBG to start construction of a large coal import terminal, to be taken on by its privatised successors. No legislation would be required so there need be no delay. Competitive pressure on British Coal would then significantly increase. Whether or not there was a large increase in coal imports, British Coal would be forced to behave as one competitor in a wider market. Coal costs and prices would be reduced to the benefit of coal and electricity consumers.

The second desirable action is to privatise the coal industry, establishing competition among different sources of British coal supply. In *Privatise Coal* we made detailed proposals on how this might be done and estimated the likely gains. The bulk of these (possibly amounting to £1 billion a year by the mid-1990s) consist of lower prices to consumers. Since such a high proportion of coal is sold to the ESI,

electricity consumers stand to gain a great deal from coal privatisation. Similarly, if coal is not privatised a large part of the potential gains from electricity privatisation will not be realised. Electricity customers should benefit from better management and reductions in equipment costs and labour costs under any scheme of electricity privatisation; but they might well forego the reductions in the price of the ESI's major input which coal privatisation would stimulate. Possibly coal prices for power generation would be significantly lowered simply by abolition of the Joint Understanding (which, as we have said, may not be able to survive electricity privatisation). But, to realise the full benefits from liberalisation of the ESI, coal must be liberalised too by means of privatisation.

Another cogent argument in favour of privatisation of coal is that otherwise the ESI may be under-valued on its privatisation. Potential investors in a privatised ESI will inevitably form expectations about the future structure of the coal industry; because of the close relationship between the two industries, this is essential in order to place a value on the ESI. If the Government does not express an intent to privatise coal, investors may guess that a state coal monopoly, supported by the ESI, will remain. If that is their view, they will without doubt look askance at investing in the ESI, with the result that the industry will be unnecessarily undervalued. If the Government believes that it is not possible to embark on coal privatisation at the same time as ESI privatisation, at least some firm statement of intent outlining the form and the timing of coal privatisation, should be made so that potential investors in the ESI are well-informed.



## Lessons of foreign experience

Different countries have adopted different ESI structures. These range from the monolithic publicly owned systems of Britain and France, through the diversified public and privately owned systems of Germany and Sweden, to the predominantly privately owned systems of the US and Japan. Systems of regulation of electricity prices are similarly diversified and range from control by government fiat in France, detailed legal regulation in the US, to diverse informal methods of regulation in Germany.

All these systems have the common characteristic of providing widespread access to an assured supply of electricity. This is hardly surprising given that these countries have also conferred extensive if not total monopoly powers on the industry, either nationally or regionally, thus providing a basis for virtually unlimited funding of investment. The comparative efficiency of the various structures in other respects is very difficult to determine given the dependence of such comparisons on exchange rates and the extent to which, in such countries as France and Britain, government has incurred great costs in supporting nuclear power and, in the case of Britain, supporting the coal industry, too. One other single characteristic, however, appears common to them all. It is what might have been expected from an industry in which production predominates and on which such extensive powers of funding have been conferred – endemic overinvestment and excess capacity.

The US system, as one which has been established for over half a century on a predominantly private basis, is one which could be considered for Britain. In what follows, therefore, we briefly review the systems obtaining in other countries before looking at it. The broad conclusion which emerges is that none of the existing models of private power supply would appear either practicable or – in the case of the US system – desirable as the basis for privatisation in Britain. The German and Swedish mixed public and private systems have evolved over time within a general political consensus in a manner that could not be duplicated by a breakup of the British ESI in a far more polarised political context. The Japanese system is dependent on the unusual Japanese corporatist culture. The US system, however, is fundamentally that of regional monopolies operating within an

extremely costly and politically contentious regulatory framework which results in a 'cost plus' basis of supply.

### Public ownership and centralised control: France and Italy

France and Italy have dominant utilities accounting for nearly all electricity supply, production and distribution. If the CEEGB and Area Boards were privatised either as one company or in their present forms, they would remain similar in structure to the French and Italian industries. The new power generation company would, however, in either case be the largest privately owned utility in the world and be unique in having a private monopoly covering an entire country. Other large private utilities with local monopolies, e.g. in the USA and Japan, operate in a heavily regulated regime where no one company has control over the whole country.

### Mixed ownership and decentralised control: Germany and Sweden

Examples of countries that operate their ESIs in a decentralised manner include Germany and Sweden. Both have a variety of types of power utility and mixed public and private ownership.

Germany's electricity industry is decentralised, even though the degree of public ownership and influence is still large. There are many electricity utilities ranging from large, integrated systems engaged in all activities to simple distribution companies which buy in all their power. Most of the generation and distribution, however, is in the hands of the twelve largest companies. Many of the enterprises have mixed capital where there is a majority public sector stake and the remainder is private capital. It is, in effect, a disaggregated public sector industry organised along regional lines. Although there is interchange of power between these regions, there is no nationally co-ordinated transmission grid.

There is a strong element of local and federal government involvement throughout the industry, particularly in regulatory control. The Lander (regional governments) and local councils both partly own and regulate the industry in their regions. Regulation is quite light. All domestic tariffs are in principle free from state restrictions but are subject to the Cartel Law.

A regional system based on the Area Boards would be possible in Britain, but would require strict and detailed regulation. While many European ESIs are organised on regional lines, it is common for local government to be involved in ownership and monitoring of the



industry. The levels of local government in Britain do not have the same status and authority as those in other European countries, and the present Government is unlikely to wish to increase their power. Another drawback of the regional system is that it seriously curtails the possibilities for introducing competition.

The industry in Sweden has many features of interest in the context of privatisation. The system is an intermediate stage between full public and largely private ownership. About half of the electricity is supplied by the state utility, Vattenfall; 20 per cent comes from municipal utilities and 30 per cent is generated by the private sector. Vattenfall buys power from a variety of private generators but, in addition, these companies may rent capacity on the trunk line system which is then used as a common carrier. Thus, the state retains control of the national grid (which has natural monopoly characteristics, and would otherwise need to be closely regulated) and a significant portion of the generating capacity, but preserves many of the efficiencies and benefits that are available from market-led systems.

Both Vattenfall (though state-owned) and the local authority companies are expected to operate like private companies and to compete with the private sector, earning a return on their investment. Because other companies enjoy full access to the grid, a genuine market in power can operate, both for short term and longer term sales. Domestic and industrial tariffs are not directly regulated; but disputes about tariffs can be referred to cartel offices which can instruct a utility to alter them. A mixture of competition and co-operation keeps prices low.

#### US private utility model

Some 85 per cent of the electrical power of the US is produced by privately owned utilities which hold local monopolies on the production and distribution of power. Let us consider this option and what lessons can be learned from the US experience.

In outline, the utilities are subject to detailed state, county or municipal legislation covering every aspect of their operations – tariffs, investment, profitability. These regulations are enforced by a process of public hearings before local Public Utilities Boards (PUBs) which typically consist of political appointees. The PUBs are empowered to force the utilities to absorb costs deemed to result from inadequate diligence and prudence, but, subject to this, the utilities are allowed to

recover all their costs, including a return of around 15 per cent net of tax on their equity, on an historic cost basis.

The advantages of this model are, first, that it limits the exploitation of the monopoly power it confers, by preventing the monopolies from making a return greater than 15% on their equity. It has, however, historically often been ineffective in limiting the exploitation of the monopoly by means of overinvestment to increase total profits. Second, the system does check some of the grosser and more evident exploitations of monopoly in order to support unwarranted levels of costs or salaries.

The US system, however, has very serious political and economic disadvantages:-

- i) The frequent, lengthy and highly publicised PUB hearings are a convenient forum for all sorts of radical agitation (anti-private sector, environmentalist, etc). This, in a self re-inforcing process, has led to ever tighter regulation and extreme politicisation.
- ii) The quasi-judicial form of regulation is extremely costly, with the consumers paying the costs incurred both by the utility and by the regulatory bodies.
- iii) The net economic benefit of the system is small because of the inherent ineffectiveness of the judicial review process when applied to highly complex economic issues; the politicisation which sometimes works unjustifiably in favour of politically powerful utilities; and the fear that refusal to meet the utilities' demand for rate increases will lead to these critically important local monopolies being cut off from the capital markets. In consequence, the utilities effectively operate on a 'cost plus' basis. The major exception is investment in nuclear power stations where a combination of the utilities' poor management and pressure from anti-nuclear lobbies has forced the utilities to absorb substantial costs.
- iv) The US system does not encourage or reward efficiency. The predominant impact of regulation is on investment. Until the 1980s the main impact was to ensure that generating facilities were being provided to meet customer requirements and avoid energy shortages. As a result of excess capacity and cost overruns, price increases caused regulators to allocate part of



the enormous cost to the investors. The investors had not built such costs and risks into their rate of return. This seems to have been a major factor in the overinvestment in nuclear power in the '60s and '70s. The regulatory process does not now encourage new investment of capital because the risk and reward levels are out of balance in the US. In the 1980s the main effect of the regulatory system has been to impede new investment in response both to pressure groups which oppose almost any form of investment, and to consumer groups who oppose new investments as likely to inflate the cost of power. Therefore almost no new large scale plants are being ordered.

It must be expected that all these problems would arise if Britain adopted the US system. They might well be exacerbated by transitional problems (e.g. variations in power rates, deficiencies in service) and the publicity arising from the novelty of the proceedings.

## Prizes of privatisation

This chapter illustrates (so far as an outside observer can) the benefits to the economy and sales proceeds to the Government from the privatisation of the ESI. It draws a great deal on the excellent examination of the efficiency of the ESI by Alex Henney in his CPS paper *Privatise Power*. Our estimates cannot be precise; they can only indicate the orders of magnitude of benefits and sales proceeds.

Privatisation schemes differ considerably in their ability to realise economic gains. In particular, the more monopolistic the system and the less the competitive pressures, the smaller the gains which are likely. For purposes of the analysis, competition – without which the benefits outlined below will not be realised – is assumed to be introduced very soon, so that by the end of five years a number of benefits will have materialised.

### Economic benefits

#### *The cost structure of generation*

Let us first examine the generating industry's cost structure to establish a base from which gains can be achieved. Table 6.1 overleaf is an estimate of the CEBG's costs for 1987/8, assuming no change from 1986/7 in the amount of electricity generated. This incorporates a reduction in coal prices from the average of £44.6 per tonne in 1986/7 to £42.5 per tonne, as seems likely under the current terms of the Joint Understanding.

Because the industry is so capital-intensive, depreciation and profits account for nearly one-quarter of the total annual costs of the CEBG. Fuel accounts for two-thirds of the costs of generation (excluding depreciation and profits), with coal alone at over fifty per cent.

#### *Coal Costs*

By far the largest gains are likely to come from a reduction in fuel costs. As shown in *Privatise Coal*, the sharp reduction in costs possible if coal is privatised and competitive is unlikely to be realised unless the ESI is privatised in a way which gives rise to a number of competitive generation companies. If the coal industry still faced a dominant buyer (the CEBG) the future of privatised coal would be very difficult indeed. If the average price of coal supplied to the CEBG by a privatised British



Table 6.1

CEGB's estimated costs 1987/8  
£million

Coal	3300
Other fuels	1000
Total fuels	4300
Staff	880
Materials and services	850
Rents, rates, etc.	250
Total operating costs	6280
Current cost depreciation	1120
Current cost profit before interest and tax	800
	8200

Source: derived from CEGB Report and Accounts, 1986-87

coal industry could be reduced to £35 per tonne (18% less in real terms than now) with further reductions subsequently, the cost saving would be at least £600 million a year.

It might appear unnecessary to privatise British Coal; enough merely to remove import restrictions and to build import facilities. But any attempt to increase British imports very much would probably cause a considerable increase in the price of traded coal, thus reducing the potential gains. Moreover the replacement of British-produced coal by imports might entail large offsetting costs of support for the British coal industry and its workers. Privatisation of electricity on a basis which allowed the privatisation of coal would enable the £600million to be realised by reducing the costs of British coal to the level of imports (without too much of this gain being lost through these consequential effects).

*Nuclear and other fuel costs*

For the purposes of this evaluation we have not assumed that the costs associated with nuclear energy can be reduced, should the nuclear stations be privatised (although cost benefits might well be achieved from opening up these activities to commercial pressure). Nor have we assumed any change in the price of oil supplied to power stations.

*Labour costs*

Manpower accounts for 13-14 per cent of operating costs. Though numbers have been cut in recent years, manning levels are considerably higher than in most comparable industries overseas<sup>10</sup>.

For a 2000MW coal station, a recent OECD report<sup>11</sup> suggests that CEGB manning levels may be nearly double the average, and 25 per cent higher than the next highest. It should certainly be possible to run a privatised industry with much greater labour efficiency. Our assumption – that manning levels could be reduced by one quarter without any adverse effect on efficiency – is probably conservative. Even so, this would save £200-250 million a year.

At present the CEGB's generating activity employs roughly 44,000 people. A reduction of one quarter in their numbers would require 10,000 – 12,000 redundancies or early retirements over the next few years (say, 3,000 – 4,000 a year) of which natural wastage should account for a large proportion. At worst, even if the full reduction could only be achieved by redundancy with generous compensation, the sums involved would be comparatively small. If, for example, the average redundancy compensation was £20,000 the total cost would be £200 – 250 million spread over several years. Set against potential proceeds from flotation of £16 billion or more, this sum would be easily affordable.

*Materials and services*

This category also accounts for 13-14 per cent of operating costs. More efficient use of materials and services (together with a more commercial approach to purchasing) should enable a 20 per cent cut in their cost to be achieved. Rent and rates, the other remaining cost, is a small amount which should be little affected by privatisation.

*Capital cost savings*

The OECD study previously cited indicates that the cost of building power stations in Britain is nearly two-thirds higher than in other Western European countries. One of the major sources of cost reduction in the long term would be the more efficient use of capital. At present no less than 23% of the wholesale price of electricity is accounted for by capital charges in the form of depreciation and profit (Table 6.1 above). Given adoption of a more commercial and cost effective approach to power station building, both the amount of capital required and the costs of servicing it would be much reduced.



The size of these cost savings is, however, difficult to estimate since it requires a forecast of the CEEB's capital spending into the far future. A conservative order of magnitude can be arrived at as follows. The capital spending of the CEEB is currently around £800 million a year. Let us assume that this remains constant in real terms (rather than substantially increasing with the major construction programme now getting under way), and that a 25% greater efficiency could be achieved. This would constitute a cost saving of £200 million a year. The present value of these savings over the long term future would be £2.5 billion, assuming an 8% real discount rate.

#### *Total economic benefits*

In England and Wales, competition should reduce operating and capital costs by around £1,200 million per annum within say five years of its introduction (see Table 6.2). This represents a long term saving in present value terms of around £13 billion at an 8% real discount rate. This includes the associated benefits to the ESI deriving from the privatisation of the coal industry. It should be noted that this is based on the conservative assumption that there are no savings to be made in distribution. Over and above these, the privatisation of coal might well produce further benefits for non-ESI coal consumers equivalent to a net value of about £4 billion. These benefits are additional to those included in the table below. There will also be savings in Scotland, but these will be small due to high dependence on nuclear and hydro power.

Table 6.2

	Cash Savings Estimated £million		% Change
	1987/8 (Estimated)	1992/3	
Coal	3300	2700	-18
Other fuels	1000	1000	-
Staff	880	650	-26
Materials and services	850	680	-20
Rent & rates	250	250	-
Capital spending	800	600	-25
Operating costs plus capital expenditure	7080	5880	-17

#### **Government receipts from sale of the ESI**

The benefits outlined above are those which should accrue to the British economy as a whole. Over and above this, the Government will receive sales proceeds to compensate it for the right to the future net cash flows which it would be giving up.

The sales price of the ESI is primarily dependent on the profits which the privatised industry would expect to make. Also to a degree it will depend on the predictability of the regulatory arrangements. In general the Government has a clear choice between maximising the sales price and lowering the price of electricity. The higher the price the less the potential for privatisation to reduce electricity prices. Indeed if it attempted to set that price too high no reduction in electricity prices might be forthcoming at all.

Let us assume however, that the government policy will be to sell the ESI for a sum consistent with there being no increase in the price of electricity in the immediate future. In previous privatisations, British Telecom was sold on a price/earnings multiple of 9.4 and British Gas on one of 9.7. Supposing that the price earnings ratio for the ESI including Scotland was similar, Table 6.3 shows the possible proceeds based on a range of P/E ratios for the year ending March 1987. Note that we are assuming that all the CEEB's generating assets are privatised both nuclear and non-nuclear. No account has been taken of the decommissioning costs of the Magnox nuclear stations, nor of any separation of the grid from the generation assets.

Table 6.3

	Possible sales proceeds England and Wales £million			
	9	10	11	12
P/E ratio				
Total	13,500	15,000	16,500	18,000

On these assumptions the total value from the sale of the ESI (England and Wales) would range from £13.5 billion to £18 billion. In addition, there will be a sum realised from the sale of the Scottish boards.

#### **Impact of privatisation on the cost of power**

It has been frequently claimed by the opponents of privatisation that,



because private investors require a higher rate of return on investment, the cost of electricity will be higher. This is erroneous both in logic and in fact.

The error of logic lies in the failure to recognise that the higher rate of return looked for by private investors arises from their absorbing some of the risks – such as those arising from poor investment decisions and excess capacity – which would otherwise be borne by consumers. It would, indeed, be perfectly possible to raise private finance for the privatised ESI as 100% debt finance at the Government's borrowing rate, if the ESI customers were obliged as at present to meet all the risks by simply paying more for power as these risks materialised. In other words, the higher return required by the private sector must be offset against the gains to consumers arising from the private investor taking some of the risk after privatisation; so the chance of future price increases as a result of cost overruns, etc., is correspondingly reduced.

The error of fact is to suppose that the costs of power from the existing ESI system would go up if privatisation produced no cost savings. This is not so, because the assets will almost certainly be sold at such a price as to give the investor a commercial rate of return if the price of electricity stays as it is. The Government will probably choose to set the sale price of the existing system at a level which ensures no increase in electricity prices, any other policy being politically unacceptable. If this is so whatever scheme is chosen, then holding power costs at their current levels will set an upper limit on the maximum proceeds the Government can obtain. Nevertheless there should be a considerable reduction in costs after privatisation.

Additions to the existing generating system are another matter. These assets would have to be acquired by the privatised company at their full current cost of construction. Even so, construction costs should be substantially reduced compared with those which would have been incurred by the CEGB. This, combined with savings in operating costs, should more than offset the higher rate of return being sought, even if one disregards the offsetting gains from the sharing of risks by the investor.

In sum, while many real problems do confront electricity privatisation, higher priced electricity is not one of them.

## Criteria; economic and political, essential and desirable

### The Manifesto commitments

Privatisation has been a major achievement of the present Conservative Government, and is being widely copied abroad. Its general merits – the application of economic and commercial pressures for efficiency, the depoliticisation of decision taking, the elimination of the burden on public sector financing, and the enhancement of consumer and investor interests at the expense of unreasonably comfortable arrangements for those who work in the industry – are set out in our opening chapter. Indeed the general merits of privatisation may appear too well known to require elaboration. Unfortunately it is not true that any form of privatisation will secure most of the possible benefits, nor that particular forms differ but little from one another in desirability. With the unsatisfactory experiences of privatising British Gas and British Telecom, as lightly regulated, private sector monopolies, it is apparent that the form in which an industry is privatised is crucial. Some forms of privatisation may indeed be inferior to public ownership, and poorly planned and executed privatisation schemes may become serious economic and political liabilities.

Agreement is therefore necessary on the criteria for privatising the ESI. Unfortunately, the main source document, the Conservative election manifesto 'The Next Moves Forward' is almost silent on the reasons for electricity privatisation. The single sentence on the subject states 'Following the success of gas privatisation, with the benefits it brought to employees and millions of consumers, we will bring forward proposals for privatising the electricity industry subject to proper regulation.' The benefits of electricity privatisation seem to be regarded as self-evident. The only clue about criteria may be inferred from the subsequent paragraph urging the general merits of competition for the economy as a whole, where it is stated 'Competition forces the economy to respond to the needs of the consumer. It promotes efficiency, holds down costs, drives companies to innovate and ensures that customers get the best possible value for money.' Presumably this forceful justification of the merits of



competition is meant to apply, inter alia, to electricity privatisation.

The manifesto also revealed, however, that not all the important decisions on electricity supply would be left to a privatised ESI. It supports nuclear energy as supplier of low-cost electricity, stating that to depend on coal alone '... would be short-sighted and irresponsible' and that it is the Government's intention '... to go on playing a leading role in the task of developing abundant, low-cost supplies of nuclear energy ...'. In short, privatisation of the ESI would be circumscribed by a continued Government commitment to further 'abundant' supplies of nuclear generated electricity.

As the Government has not yet set out its reasons for electricity privatisation save in the briefest and most general terms, and has referred only to the criteria of introducing more competition and to its commitment to 'abundant' nuclear energy, we here set out our own views on essential criteria. Otherwise no evaluations of and comparisons between privatisation schemes can sensibly be made.

### **Making the criteria explicit**

Chapter 2 discussed the broad objectives of privatisation schemes and potential conflicts between them. In assessing the various privatisation proposals, however, explicit and more detailed criteria are needed.

There are many different interest groups who will be affected by electricity privatisation: for example, the Government, senior ESI management, other staff of the industry, its unions, power plant manufacturers, the construction industry, the coal industry, the nuclear industry and potential investors. The criteria used and the weight assigned to each criterion will vary according to the group concerned (and within a particular group, too).

There are also two very large dispersed groups – taxpayers and electricity consumers – almost identical in membership but not necessarily with the same interests in privatisation; since an individual may have one view about a privatisation proposal in his role of taxpayer, and another in his role of electricity consumer.

In the light of this diversity of interests, the criteria which could be used are very numerous. The ones which we take – necessarily a personal selection – include some 'political' criteria which the Government is likely to have in mind. We have chosen economic criteria on the basis of national interest rather than those of appeal to particular lobbies. Not everyone will agree with our criteria, partly because not everyone stands to gain from ESI privatisation (though the

gains should be sufficient to compensate any potential losers). By making the criteria explicit, however, it is possible for readers to see how our conclusions have been derived. Sectional interests who press for particular forms of privatisation would do well to follow this example.

### **Essential and desirable criteria**

There are six essential political criteria which we believe the Government is likely to use in assessing ESI privatisation schemes; five essential economic criteria if it is to be demonstrably in the national interest and to appeal to consumers and investors; and several desirable criteria by which options should also be judged.

Any acceptable option must meet all of them – or at least preserve the possibility of their eventual satisfaction. This latter point is most important. For once a formerly nationalised industry is privatised it is almost impossible to alter its structure for many years. Prospectuses on which huge sums have been raised can be written only if rules are clearly written in advance, and designed to be scrupulously adhered to. A government which breaks such agreements lays itself open to legal action, and undermines public support for subsequent privatisation issues. In practice a government has to live with the consequences of any large act of privatisation for a very long time indeed. That is why, if for whatever reason the Government cannot privatise the ESI satisfactorily this term, it is better to defer the measure until such time as completion is possible within the lifetime of a single Parliament.

### **Essential political criteria**

#### *Absence of serious disruption*

No government could contemplate changing the structure of so basic an industry as electricity if significant disruption in the supply of power seemed likely to ensue. None of the serious privatisation options is, however, likely to fail this test. The problem of providing reliable electricity supplies is daily met and daily overcome in every major Western country as a matter of routine. Yet the belief is voiced in Government circles and by some private individuals that real danger of disruption exists unless the industry either continues in public ownership, or is privatised as a monopoly. Independent British and international technical opinion lends no support to such an idea. The Government should put just one question to the ESI on this critical



matter: 'Can the ESI suggest adequate technical arrangements to avoid disruption for each of the most likely privatisation alternatives?'

If the answer is yes, the 'problem' disappears. If the answer is no, then the Government should take advice from British and international power engineering consultants of repute. They will be reassured.

#### *Assured privatisation within the lifetime of a Parliament*

Privatisation of the ESI requires government vision, courage and energy. It is not a measure which a government would like to introduce in the second half of any political term, particularly as the benefits may not be immediately forthcoming. For these and other reasons we assume that the Government hopes to pass the necessary legislation during the first half of its present term. Further, it will wish to do so in a form which minimises the chances of subsequent renationalisation (for instance by dividing the industry into parts and involving a large number of investors on terms which they would not like to be reversed by a subsequent government). Thus there is pressure on the Government to proceed immediately with ESI privatisation. Speed, however, may be the enemy of choosing the best scheme which may require more time for evaluation and implementation. In practice we assume that the Government's choice is either to complete electricity privatisation well before the run up to the next general election or else to postpone it to a subsequent term.

#### *Minimum risk of electoral unpopularity*

Privatisation schemes which neglect the interests of consumers can do serious political damage. If consumers came to resent the prices or service of previously nationalised industries, privatisation would become an electoral albatross. After the experience of British Telecom, the Government will be advised to seek measures which minimise this risk.

#### *Generous profit participation and redundancy arrangements*

The Government will want the support of management, workers and unions. Those who leave the industry through redundancy or early retirement must be treated generously to secure their support and to meet the understandable loyalty to ex-colleagues of the majority staying with the industry. Equally those who stay in the industry will need to look forward to a more attractive future than they would have had under continued nationalisation (for instance, by means of profit

and capital incentives – although pay increases will need to be earned through increased productivity).

#### *No foreign control or domination of the ESI*

The capital sums which the Government can expect to raise from the ESI are huge – certainly more than from any other industry which has been or may be privatised. Any scheme must be within the capabilities of capital markets. Without special measures there is always the possibility that one or more parts of the ESI might come under foreign domination. This is not necessarily a matter for regret, since new management expertise is needed to realise the industry's potential. But in political terms the Government is unlikely to welcome foreign control. The sensible compromise, to the extent that corporate investors are involved in the industry (which we judge to be likely and indeed essential under the more attractive privatisation options) is to allow consortia with strong minority foreign representation. This, rather than the banning of foreign corporate investors, would assist the Government to realise the highest achievable proceeds from the industry consistent with the other essential criteria.

#### *No undervaluation of assets*

The Government will clearly wish to achieve the highest price it can for the assets it sells, subject to other criteria and aims – e.g. no increase in the price of electricity. That price will, however, depend on the form of privatisation (see Chapter 6).

#### *Essential economic criteria*

The distinction between political and economic criteria is in part artificial. What is certain, however, is that unless the essential economic criteria are met investors and business will not make ESI privatisation a success. One of the worst outcomes for the Government would be to choose a scheme of privatisation on political grounds only to find that it failed through insufficient attraction to investors.

#### *Introduction of maximum competition*

This is particularly important since it is to competition that we must look for the major efficiency gains in a privatised ESI. Any option which fails to introduce competition where appropriate will fail to satisfy consumers in the medium to long term, and may well seriously damage the Government's credibility. Virtually all independent



commentators urge the need for significant injections of competition if privatisation schemes are to bring economic gains. It is also the only criterion made explicit in the 1987 Conservative Election manifesto.

#### *Compatibility with competitive coal privatisation*

Chapter 4 explained the interdependence of the ESI and British Coal. Unless both industries are privatised, both with the introduction of maximum competition, then the cost reductions which we suggest should be the paramount purpose of privatisation, cannot be achieved. Investors will be deterred from investing in privatised coal unless there is real competition in the buying of coal for electricity generation. Similarly, investors will be less interested in electricity privatisation if an unreformed coal monopolist provides all but a token amount of coal requirements. Indeed, investor interest could be so reduced as to force the Government to abandon ESI privatisation.

#### *Need for new management and corporate shareholders*

New, commercially orientated management is essential if privatisation is to achieve its potential economic benefits, and not prove an economic liability. In practice this requires new corporate shareholders. This requirement arises for the following reasons. First, while the public is accustomed to accept the shortcomings of nationalised industries with resignation, it is less tolerant of a newly privatised industry, particularly if it seems that inferior service is being offered in order to reap higher profits. Second, the managerial requirements of a newly privatised industry are much more exacting because of the formidable problems of transition to competition and maintenance of standards of service within strict cost limits.

The process of competition should ultimately provide higher management standards. But it may take too long, given the immediate demand by the public for better service and the risk of failure in any attempt by existing management to secure the transition to competition.

#### *Simple but effective regulation of monopoly activities*

Transmission and distribution are natural monopolies which will need to be regulated. Generation will not need regulation provided sufficient competition is introduced. But long distance transmission must become a common carrier system open to all generators of electric power, existing or prospective, whatever their size. It is also essential

that any distributing company or bulk customer should be able to buy electricity from nearly any British power station without penalty. This *does* require regulation, which should however be as simple as possible.

#### *Attractiveness to individual and corporate investors*

ESI privatisation must be attractive to enough British individual and corporate investors. This implies a well designed privatisation scheme with a clearly specified form of regulation having a predictable impact on earnings. The transitional and the long term structure will be equally important. Schemes which secure the co-operation of managers, workers and unions will also enhance the attractiveness of the ESI to potential investors. Finally, it will be necessary to promise enough stability of transitional earnings for investors to be ready to pay appropriate values for what they are buying. All these matters are addressed in subsequent chapters when discussing the individual options.

#### *Desirable criteria*

Over and above the six essential political criteria and the five essential economic criteria, several further *desirable* criteria deserve attention.

#### *Minimising the pre-privatisation planning period*

The period of planning uncertainty before privatisation should be as short as possible, for the benefit of management, staff and suppliers to the industry. Not, of course, that it is desirable to reduce the planning period to the point where an inferior privatisation option is chosen. Certainly, the period of uncertainty will exist up to the point where legislation is introduced (commonly expected to be October 1988); and even beyond as the ESI privatisation bill passes through Parliament).

#### *Minimum period of structural change*

In moving from its present nationalised state to a competitive industry a period of transition is needed. Management and workers will have to be assigned to the different parts of the new structure. The assets and, of course, the liabilities and contingent liabilities of the restructured parts, will have to be identified and allocated in order to permit prospectuses and other legal documentation to be drawn up. This said, it is highly desirable that the period of structural change (that between privatisation and the ESI settling down in its permanent form) should be kept to a minimum.



generation is the one area of the ESI where real competition is possible. This third variant has no advantages compared with the other two. It will not be considered further.

#### *Monolith with regulation in the style of British Gas*

This option of privatising the ESI in essentially its present form would need a government agency to exercise discretionary control over the price structure to avoid abuse of monopoly power. Such control might adopt a formula similar to that for British Gas, where the total cost of gas purchased is passed on to consumers, while other costs can be increased in line with the retail price index subject to a discretionary deduction – the 'x' factor – for what the government or its agency deems to 'reflect improvements in efficiency'. The 'x' factor (which obviously gives wide discretionary powers) was initially set at 2% a year in the case of British Gas.

This option has some clear advantages. It would be easy to understand, to describe in a prospectus, and fairly easy to finance. If financed in one single operation then, at say £13.5 billion to £18 billion (for England and Wales alone), it would impose a serious strain on capital markets. But finance could easily be raised in tranches over 4 to 5 years, without undue risk of foreign control or domination of the ESI.

Privatisation as a monopoly could also be completed more quickly than most other options, and certainly within the first half of the present parliamentary term. The proposal also has the advantages of precedent, and acceptability, or the chance of it, by the industry's unions and management. Thus with token concessions to competition (as outlined below) it may be regarded favourably by decision makers who take the short term view.

A possible final advantage of monolithic privatisation in some eyes is that the Government might sidestep many of the difficulties of handling present and future nuclear power stations. The present senior CEBG management, committed as they are to building PWR reactors, could use the financial strength of the monolith to continue this programme regardless of its economic merits, as in the past. Thus it might be possible to honour the election manifesto commitment to provide 'abundant', if not cheap, nuclear power.

But the disadvantages of monolithic privatisation outweigh the advantages. In particular it does nothing to bring about the possible economic benefits of privatisation. No competition would be introduced at all. Furthermore, there would be little if any introduction

of new senior management. For reasons explained below the method of regulation, while superficially simple, would be ineffective. In essence, this option would attempt to achieve by a limited form of regulation what the virtually unlimited powers vested in direct public ownership have failed to achieve in almost half a century, namely to establish competitive standards of cost effectiveness. And it would require regulation of the whole industry, instead of only parts of it.

It may be argued that any form of privatisation is better than a nationalised structure in that it enables government to subject the privatised industry to pressure for greater efficiency from its shareholders, which could be increased by use of its discretionary control over the price structure in order to restrict profits. For many reasons such pressure would not work.

First, such a huge industry would have widely dispersed shareholding and thus be virtually immune to direct shareholder pressure. It would also be immune from takeover. It may be objected that it would be little bigger than BP, with a present market capitalisation of around £20 billion, which is widely regarded as a well run company. Size, therefore, need be no barrier to shareholder pressure for efficiency. The point is valid if the company concerned is subject to effective competition. The international oil industry is competitive, but a monolithic ESI would face no direct competition. Moreover, ESI shareholders, if past privatisations are any guide, would mainly comprise:-

- i) a huge number of individuals with relatively small stakes (purchasing on the attractive terms usually offered to household customers); and
- ii) a wide spread of institutional shareholders who would, in total, probably have half or more of the shares.

Neither of these groups would be able and willing to exert significant shareholder pressure. In practice, the new ESI board would be almost autonomous.

Second, the complexities of an industry in which a high proportion of costs is governed by investment decisions mean that standards of efficiency are not readily ascertainable. Any management could contend that higher standards were simply not attainable.

Third, since security of supply depends on huge and continued investment, the privatised ESI could exert great political leverage by



claiming that its required levels of profit were essential for the maintenance of such investment.

A government agency would need quite extraordinary determination if it tried to reduce profitability through control of the price structure, thereby risking a slow-down in investment. These considerations would have even more force if the privatised industry were saddled with the multi-billion pound investment requirements of the nuclear power programme. Nor can it be expected that any future Labour Government, with its likely dependence on the ESI unions, would try seriously to use its discretionary control over prices in order to impose higher standards of efficiency.

Past privatisations have been based on minimal regulation using simple formulae. But this would not remain the basis of regulation for the ESI for very long. Over 20% of present generating costs are accounted for by capital charges (depreciation, interest and profit), costs which will vary greatly with the rate of capital investment and inflation. The regulators would find themselves confronted with a dilemma familiar to their U.S. counterparts. On the one hand, refusal to allow such charges to be passed on to consumers risks inadequate capital investment; on the other hand, automatic acceptance of such charges produces over-investment in order to justify greater profits. Ultimately the Government might be driven to impose U.S. style regulation with all the economic and political difficulties outlined in Chapter 5.

Undervaluation is an undoubted hazard. Almost all the twelve privatisations to date which created new publicly quoted companies have opened at a premium to the offer price after the first day of trading – only Britoil and Enterprise Oil failing to do so. For example, British Telecom and British Gas traded at premia of 33% and 9% respectively to the fully-paid price. The premia to the partly-paid price were much larger (86% and 25% respectively). Other privatisation issues have also been at substantial discounts. If only from the sheer size of an ESI issue – up to perhaps £20 billion, even if phased in over 4 to 5 years – a large undervaluation seems probable.

Many uncertainties would stem from any discretionary element in the system of regulation, giving rise to longer term losses to the Exchequer. The extent to which the monopoly attempted to exploit its market power, and the counter extent to which successive governments and regulators succeeded in preventing it, would determine the return to investors, who would consequently look for a

risk premium higher than that which would obtain with the more formalised regulated systems in the U.S. This would certainly be true of sophisticated institutional investors who are likely to be in the majority.

But one of the worst disadvantages of monolithic privatisation is that it would be incompatible with privatising the coal industry on a competitive basis. Thus the greatest opportunity to reduce ESI costs would be missed, and two of the largest British energy industries would remain unreformed and inefficient.

To sum up, monolithic privatisation in this form would freeze Britain's largest company (in terms of British sales and assets), into a form which was non-competitive and non-accountable: a corporatist structure which would combine shareholder and union support in resistance to change. The consumer would not be pleased.

#### *Monopoly with US style regulation*

The US private regulated utility system, as described in Chapter 5, is essentially a cost-plus system. The system is well defined legally, and clearly understood in the financial markets (though obviously far better in the US than in Britain). Thus, uncertainty about its operation, so marked in the discretionary regulatory systems described above, would be lessened: which should remove one possible source of undervaluation.

In other respects, however, this option would fail all the criteria for efficient privatisation. It would not inject competition. No new management would be introduced, and the system would effectively operate on a cost-plus basis and then only by means of very costly regulatory procedures. Existing levels of costs would tend to be frozen, and there would be the additional costs of regulation.

It would also be almost impossible to prevent the regulatory process becoming – as in the US – an arena for endless enquiry and debate on every aspect of power generation, specifically on the need for and type of new generation capacity. By adopting this scheme the Government would create a publicly-funded forum for radical agitation, against private sector enterprise and for the wilder forms of environmentalism. Dissatisfaction among consumers with monolithic privatisation (already experienced under British style regulation), would almost certainly find a loud and continuous voice.

This variant would therefore fail all the essential economic privatisation criteria and most of the essential political criteria.



**(ii) Initial privatisation as a monolith – but with competitive new generation**

There is strong opposition to privatising the ESI as a monolith, not least because it would stand in the way of the development of competitive sources of new generation. Hence the ESI and its political supporters have canvassed a variant on monolithic privatisation which holds out the prospect of the gradual introduction of competition in power generation. Given the Government's desire to continue with a nuclear programme, the shortness of time before it chooses a privatisation scheme, and the appearance of introducing competition which it has, this scheme is no doubt being seriously considered.

The proposal purports to address a major problem of any ESI privatisation – transition from monopoly to competition in electricity generation. The interim 'solution'<sup>12</sup> which has been suggested is to privatise the existing generation system as a single unit but to introduce competition in stages by permitting private companies to compete to construct and own power stations, and to sell power from the 12,000-13,000 MW or so of new capacity (about 20 percent of existing installed ESI capacity) which may be started before the end of the century. Private companies would presumably enjoy access on fair terms to the transmission network, and be able to sell their power to the public. If the Area Boards were sold as separate companies, these and bulk commercial consumers would constitute their market.

This scheme has many features in common with the previous option; so our comments are limited to evaluating the differences. Advantages are few; and disadvantages are shared with the previous monolithic option, with the exception that there is some prospect of competitive generation. But is this prospect realisable or significant? And can it overcome the otherwise unacceptable drawbacks of monolithic privatisation?

This scheme at least gives the CEBG a political opportunity to welcome talks about new private power generation which it has hitherto discouraged; and talks are reported to be in progress with several private promoters whose combined schemes could generate 1500 MW<sup>13</sup>. Sources of power are said to include imported and low grade, waste tip coal. Efficient combined cycle systems are also proposed. This appears to be a prudent change of heart by the CEBG. Further, the CEBG now may be willing to contemplate some independence for the national grid whereby the latter can arbitrate between the CEBG and any private producers (including presumably

the SSEB with its surplus generating capacity which it seems it was discouraged from selling to the CEBG before the miners' strike)<sup>14</sup>. Could this be another major change of stance? Hitherto the CEBG has insisted on being the sole guardian of the national grid. Under the threat of being broken up it may be willing to sacrifice the lesser part of itself to try to preserve the greater. Therefore, we assume, in evaluating this proposal, that there would be an independent transmission system (probably regulated as a natural monopoly). There would be little prospect of effective competition if the transmission network remained in the hands of the CEBG, who could charge over the odds for access. This has been the experience under the 1983 Energy Act. New generation, and of course replacement generation, could be provided either by allowing the CEBG to compete with private promoters (assuredly CEBG's preference), or by allowing private companies exclusively to quote for all new generating capacity. Under either choice the CEBG could be left responsible for new nuclear capacity.

Like monolithic privatisation, this scheme could proceed quickly, involve minimal transitional problems and avoid risk of foreign domination. Moreover, it should not upset management and unions. It has the further, delusively attractive advantage of offering some competition and immediate business prospects for the SSEB, France and private power promoters, lobbies which the CEBG must prefer to have on their side.

In some industries provision of free entry might quite quickly introduce genuine competition. By this means a state monopoly might be undermined without privatisation. If, for example, new capacity could quickly be brought into operation and the original monopoly had no special advantages vis-a-vis new entrants, liberalisation without privatisation might well work. In electricity supply, however, neither condition is fulfilled; so it is improbable that this proposal would introduce any competition worth the name in electricity generation. To be effective new entrants must be able to offer a balanced, flexible supply of power, backed up by reserve capacity. This means they must come in with a spread of power stations, not on a single station-by-station basis. The long time lags in planning and building new power stations (7 years or more) would postpone the emergence of any competition. Moreover, the incumbent would have overwhelming advantages – for example, its size and its relationships with the power plant manufacturers which it has supported.



The new generation planned by the CEEB for the rest of this century is shown below.

Stations	MW	Type
Fawley	1800	Coal
Plymouth	1800	Coal
West Burton	1800	Coal
Killingholme	1800	Coal
Thames Side	1800	Coal
<hr/>		
Sub-total-coal capacity	9000	
Sizewell B	1175	Nuclear
Hinkley C	1175	Nuclear
Other PWR	1175	Nuclear
<hr/>		
Sub-total-Nuclear capacity	3525	
TOTAL	12525	

Source: CEEB Annual Report and Accounts 1986/87 plus our estimates.

These huge stations (costing about £1.5 billion each at 1987 prices) would be economic only if operated on base load.

Before a plant is built in this environment, any new investor would need a long term power contract from customers – on most exacting terms given the very heavy market risks (on top of the risks deriving from all the cost uncertainties) which have surrounded the building of generating plant in Britain.

The CEEB will have to be privatised at a very large discount on the current replacement cost of its assets (not much more than historic costs) if privatised power is not to be more expensive than at present. This would evidently give the new CEEB a major advantage over any investors in new generating facilities who would be paying current costs for their power stations. Also the new CEEB could accommodate any pattern of demand, provide security of supply and require far less stringent contract terms, since it could supply power from a system which enjoyed a greater diversity of customers. Even without recourse to overt cross subsidisation, the new CEEB would be at an overwhelming advantage in the very limited market for large industrial loads. In theory, this advantage could be redressed by making the new

CEEB play the part of customer, and requiring it to sell the new power as part of its output. The trouble is that this process could easily result in the provision of merely token competition, as the new CEEB would be determined to preserve its effective monopoly. As with US regulated utilities, such potential competition is easily negated by the purchaser (i.e. the new CEEB) imposing conditions of availability of power, security of supply and price which only it, using its huge system of diversified plant and fuel sources, can afford to meet. Also, implementation of the power contract over the years would be dependent on the purchaser's exercising fairness and goodwill. Would this be forthcoming? That is another formidable risk.

Finally the new CEEB could use its immense powers of cross-subsidisation whenever it chose to bid for any new power station. Formal bars to this practice would be unenforceable. Bidding relates to the cost of power several years ahead; there are no objective means of determining that a successful bidder has quoted unrealistic costs which would require subsidising. Even with very strong regulation along US lines, cross subsidisation could only be proved by expensive enquiry when stations were operational many years later – and could not possibly be checked by the light forms of regulation so far practised in Britain.

If, therefore, competition was to be at all genuine the CEEB could not be allowed to bid to build power stations. Even so competition would only advance at the slow pace of new non-nuclear construction. (The difficulties of private sector capital being used for new nuclear stations are dealt with in Chapter 9.) Thus, on the best of interpretations, and assuming that the policy was rigorously upheld by the 2 – 3 successor governments which will be in office up to the turn of the century, at most 10% of installed capacity would be in new private hands by the year 2000. Most of this could, as we have shown, only function as a tame supplier for the new CEEB. Even with Scottish and French imports the monopoly would be effectively intact. Few of the potential economic benefits would be realised. And, above all, the continuing domination of the British coal market by the new CEEB would preclude coal privatisation. This option is surely unacceptable.

(iii) **Monopoly distributor competing with the CEEB in generation**  
This is an option recently proposed by the Electricity Council<sup>15</sup>. A single integrated distribution company would comprise all the present Area Boards under a holding company – presumably the former



Electricity Council, though the Area Boards would prefer complete independence. There would also be a single generating company, the new CEGB. The generating company would sell power to customers as the Area Boards do at present; and in addition would have the right to build power stations. It would also control the National Grid. This option would appear to relegate the CEGB to a subordinate position of a supplier of power. In other words it purports to introduce countervailing power against the new CEGB, and at the same time to bring competition into generation.

These advantages are illusory. A distributing monopoly could not, in the foreseeable future, be other than overwhelmingly dependent on the new CEGB: obliged to pay whatever price the regulatory system permitted. Even if all non-nuclear stations were built by other organisations, the CEGB would still in fifteen years' time be responsible for over 90% of power. The distributing monopoly would, therefore, be powerless to challenge the CEGB's terms or to impose upon it higher standards of efficiency.

Only if the distributing monopoly built and operated stations more efficiently than the new CEGB (thereby inducing the latter to adopt higher standards) could 'competition' in the building of new power stations be of economic benefit. But the distributing monopoly and the new CEGB are sister organisations in their managerial origins. With no new management and operating from positions of unassailable monopoly strength, why should they be more efficient than the existing ESI?

The regulatory problems would be even more intractable since the regulator would have to adjudicate on the rival claims of the two organisations to build the new non-nuclear stations. Electorally, this option might well be a greater liability than the single monopoly. The unwieldiness of this structure, and the additional layers of costs would soon lead to public dissatisfaction and hasten the date at which both were subject to US style regulation.

In defence of this proposal stress has been laid on the grid being privatised as a separate company. This is certainly desirable in the context of a competitive generation system. But it is of minimal importance in a system where the grid serves power generation without real competition.

#### (iv) Establishment of integrated regional utilities

Under this option a number of vertically integrated regional utilities

(henceforth called IRUs) would be created which would combine ownership of both power stations and distribution, a structure similar to the South of Scotland Electricity Board, which is widely judged to be more responsive to consumers than the ESI in England and Wales. The IRUs would effectively be regional monopolies since, apart from a few bulk customers, all other consumers, and particularly households, would depend entirely on the IRU of their region.

Common to all the IRU variants is the need to have the national grid as a separate, independent and regulated entity. It could remain in public ownership. But it would be more responsive to consumer demand and to the needs of power supply if privatised and regulated. It would be a common carrier with fixed terms and act as the common link between the IRUs and bulk consumers. It would have a statutory duty not to discriminate between any users. Its independence would ensure that electricity was traded efficiently between the IRUs, thus preserving a measure of generating competition and allowing reserve capacity to be shared. Indeed, it could and should have full powers to run a merit order system much like the present one. With some £4 billion of assets, consisting for the most part of transmission lines, and an assured income, the national grid would not be hard to sell.

The IRUs could take a number of shapes. They could be based on the existing Area Boards in England and Wales. Or new regions could be formed. In practical term the existing Area Boards could be used as building blocks, in order to speed the planning period, and to avoid disruption. But there is nothing sacred about the present number of twelve Area Boards. Eventually, it might well be better to amalgamate them into five or six boards of broadly comparable size, if thereby economies of scale in power generation would be achieved.

One problem in setting up the IRUs would be how to break up the CEGB and allocate the existing power stations so that each IRU had enough generating capacity for its own needs (a practical problem on which we comment in Chapter 9). Another difficulty is that existing nuclear power stations cannot easily be incorporated in this regional structure. Few IRUs would want to adopt the existing ones, and even fewer would be likely to want to build new ones. Thus the present nuclear stations would have to stay within the public sector, with the resultant base load power sold on equitable terms to the IRUs. Future nuclear stations, unless subsidised, would be unlikely to be built, except possibly under co-ownership schemes. Problems of nuclear



stations are treated more fully at the beginning of Chapter 9, though most of the comments apply equally to the IRU option.

The IRU option has some advantages. It could lead to more responsiveness to consumers than the present ESI. It would also decentralise generation, and be financed in stages, either by selling IRUs in sequence or, better, by selling them all at once but with staged payments. This should be within the capacity of financial markets and thus avoid foreign control or domination. By creating a number of potential purchasers for coal, it would also permit the privatisation of coal.

This scheme, however, would fail even more of the criteria for efficient privatisation than the other monopoly options. First, it is extremely unlikely that it could be completed within the term of the present Government. Allocating the generating assets to the IRUs would be an extremely complex and technical task which could be accomplished only with the wholehearted co-operation of management and unions. CEBG management would certainly oppose the option, and union agreement to the transfer of the members to new companies would occur, if at all, only after very lengthy negotiations and very substantial improvements in pay and conditions.

Reorganisation would be very expensive; and there would be no offsetting efficiency gains from the introduction of competition. No simple regulation of the British Gas type could be used for the IRUs; since the economics of each would vary depending on the amount of generation for which they were responsible and the extent of the new construction which they would have to undertake. As in the US the utilities would have to be allowed enough profit to finance their building programmes. This in turn would raise all the problems which have arisen with this system in the US; for example, precisely what rate of profit should they be allowed, what conditions of efficiency must be fulfilled, and (most important of all) how could the utilities be prevented from over-investing in order to secure the investment-related profit? And this in turn raises the problem of how to allocate the new building programme between utilities, each anxious for the additional profit and scale of activity which such building would bring.

Almost certainly under this option governments would be driven towards the US system of regulation, despite its high cost, ineffectiveness and political contentiousness.

A final disadvantage is that the IRU option not only fails to meet most of the essential political and economic criteria, but also creates so

many new monopolies that it stands even less chance than the other monopoly options of any later restructuring in order to meet those criteria (that is if a government were later to want to inject more competition).

In conclusion, it is evident that none of the monopoly options or their variants can be recommended. All fail too many of the essential criteria. If privatisation is to be effective possible it must introduce adequate competition. This is considered in the next chapter.



## Options for competitive privatisation

The options so far considered suffer from disadvantages so serious that it would be a grave mistake for the Government to adopt any of them. The Government should either choose a scheme which introduces early competition, or else use this Parliamentary term to study the problems more thoroughly and prepare for competitive privatisation later. This chapter assesses schemes to introduce competition, and the option to 'do nothing yet'.

The first competitive option was outlined in *Privatise Coal* and has been urged by others (including Alex Henney in *Privatise Power*). It keeps generation and distribution separate, and breaks up the CEBG into units which compete to supply regional distribution utilities (which we will henceforth call RDUs). This is the 'competitive generation' option, or 'CG'. The second option is original to this paper; it was created and developed by A J Merrett. It has the same aim as the first option but would be introduced over a transitional period with safeguards built in to ensure competitive generation. At the start RDUs would own the new CEBG in partnership. Over the years they would sell off blocks of power stations to form a number of balanced, independent generating companies in competition with one another. The National Grid would be independent from the beginning of privatisation. We have called this second option the 'Privatised transition to competition' (PTC).

Let us discuss the CG option first in its most satisfactory version.

### (i) The CG system and variants

The CG system recognises that generation is inherently competitive, and that distribution and transmission are naturally monopolistic, needing to be regulated to prevent abuse of power. But distribution, although it is a monopoly activity whether at local, regional or national levels must be in multiple ownership. Otherwise the competing generating companies would be facing a monopsonist (sole buyer), rendering them unattractive to private investors. And distribution must be in private ownership, too. If the RDUs were publicly owned, generating companies would believe that they were facing a *de facto* monopsonist.

Finally, the National Grid would be independent of both

generating companies and RDUs. It would link generating companies and other power sources (e.g. France) to all electricity customers, and be open freely to all users on equal terms. Like the RDUs, it should be regulated; unlike them, it could either remain in public ownership (albeit strictly regulated by an independent regulatory agency), or be privately owned. The case for preferring private ownership is that it could function at least as well in the private sector, and might attract a higher quality management, some of whom might with advantage have international experience of large transmission systems.

### *The regulatory body*

All the competitive privatisation options would need an regulatory body which we will call the 'Electricity Standards and Regulatory Commission' (ESRC). The functions of the ESRC are further considered in the context of the PTC option below.

### *Limits of regulation*

Under the CG option it would be unnecessary to regulate generation, since prices and profits would be determined by competition. RDUs could be permitted to pass on (with certain exceptions) all operating costs and capital charges. In practice the RDUs would have only limited discretion over their levels of capital spending. American experience suggests that regulatory procedures which attempt to adjudicate how much of these costs should be passed on would be expensive and ineffective. The RDUs would, however, under their charter be required to spend capital in the most efficient manner possible.

The operating costs which the RDUs could pass on, however, would be limited to those incurred immediately prior to privatisation, subject to agreed indices of inflation. Such operating costs might best be expressed as an amount per user so that more costs in total might be passed on, as the number of users increased.

Regulation of the National Grid would essentially be on the 'cost of service' model established in the US, under which the owning company receives a regulatory rate of return on its investment – 15% in America on the equity after tax, together with all interest charges. The National Grid would be required to give fair access to all generating companies wishing to use the grid on a non-discriminating tariff.

The activities of the RDUs and of the National Grid would be subject to scrutiny by the Electricity Standards and Regulatory Commission described in the context of the PTC option below.



### *Evaluation*

Tested against the essential political and economic criteria, the CG option achieves a score very much higher than any of the monopoly options. It ensures maximum competition and incentives to efficiency. It is the system most commonly urged by businessmen and economists who favour competition. The doubts which exist about it are mainly about the means of creating it in an effective and timely way. By introducing full competition in generating, and an independently controlled National Grid, consumers could look forward to lower power costs. Provided the ESI sales proceeds were paid for in stages over, say, 5 to 7 years (both debt and equity) the strain on the capital markets should not be great; and so risk of undervalued asset sales or of foreign domination and control would be negligible. Corporate investors with controlling shareholdings would need to be attracted to both the newly formed RDUs and the new generating companies (with perhaps 25% equity in both types of companies), in order to introduce enough new senior management to achieve the gains identified in Chapter 6. Regulation of a relatively straightforward kind would be needed only for transmission and distribution.

Finally, this option is fully compatible with coal privatisation on a competitive basis. The major new coal terminal, which the Government should put in hand immediately, could be co-operatively owned by the new generating companies in whose interest it would be to seek the best value in coal purchases.

Further, retention of the ESI pension scheme would present no problems. The list of advantages is formidable.

### *Problems of timing*

The ESI could not, however, be restructured in this way during the present Government's term of office. First, there is the complex technical task of devising a generation system based on five or more independent, viable generation companies each with an efficient mix of generation capacity. Even if adequate CEBG co-operation could be secured in drawing up a plan for its own demise, completion and political ratification could not take less than a year. Only then could the extensive legal and organisational negotiations be begun, and staff recruited. Negotiation, too, with the industry's powerful unions would be necessary, who might well be slow to co-operate at all in the formation of a competitive system. In so far as they did, they would, understandably, demand the most exacting terms for their members'

new contracts of employment and operational practices. No one can say how long this could take.

The new companies would also need to establish contractual relationships with the RDUs for the offtake of power. This task would be extremely complex since the load of each RDU would need to be determined by reference to the other RDUs, the generation capacity of all five companies and the efficient working of the system. The CEBG, which alone has the familiarity with the system and the necessary staff would have to undertake all these tasks. It is hard to see how they could be completed in less than three years. Thereafter the final task of floating 10 companies (say 5 RDUs and 5 generating companies) could proceed.

Generating companies with no profit record, and an untried structure and management, could probably not be floated successfully, unless reputable corporate investors were prepared to assume controlling interests. Negotiations to this end would take many months, and by no means all would succeed. The magnitude of the shareholding, the price, the future structure of the industry (e.g. the rules to protect competition), the regulatory regime, and safeguards against subsequent unfavourable legislation would all need to be negotiated in detail before corporate investors contemplated the £500 million or so required for a controlling investment. (The total sales proceeds per generating company would be say £2-£2½ billion, but a majority could be debt.) Cross reference to negotiations by other investors in the other new generating companies would also be required, so that investors could be sure that they were receiving at least equally favourable terms. Complex safeguards would also be needed against the possibility that, if investor interest was inadequate, a very few private companies might find themselves competing against a still formidable state-owned generating corporation.

In short, this option fails on the essential political criterion that privatisation be sure of completion this term. It is indeed improbable that such a restructuring could be accomplished without new commercial management and within the constraints of public ownership. Any attempt to do so could present an opportunity for prevarication and delay designed to postpone privatisation indefinitely. Another route towards the same desirable end must be found. To this we now turn.



ii) **The privatised transition to competition (PTC) option**

The PTC scheme aims to build an initial structure which will lead within a reasonable time to competitive generation.

Generation, under control of the CEEB, at present dominates the ESI. The PTC option reverses this. It places the new CEEB under the control of a number of (say, at least five) privatised regional distributing utilities (RDUs) charged with introducing competition after privatisation. In order that these RDUs have new commercial managements able to assume such a responsibility, a controlling interest (say 25%) in each one would be offered to corporate investors on the same terms as the shares are offered to the public. Such corporate investors would need to show proven capabilities in the management of comparable industries, and should, where possible, also have regional associations. It would be desirable to include overseas companies with relevant ESI experience in each consortium of corporate investors, in order to ensure a breadth of ideas, experience and technical knowledge.

These privately owned RDUs would be allowed by the regulatory agency to pass on all costs incurred in their purchases of power. Their remuneration, however, would be along the lines described under the CG option; that is, flow-through (with certain exceptions of capital costs) with operating cost increases being allowed only in line with relevant indices of inflation and increases in the number of consumers.

RDUs would, however, be under a statutory obligation to minimise all power costs consistent with maintaining established standards of service. Discharge of these functions would be monitored by the Electricity Standards and Regulatory Commission described below.

The new CEEB (embodying the generation and transmission functions) would initially be a wholly owned joint venture subsidiary of all the RDUs, and be 100% debt-financed, the debt owned by the Treasury. This debt would be partially redeemed as power stations were sold off, with the remainder reflecting the value of the nuclear stations which would still be owned by the generating company (see below). Some residual guarantees might be required, however, in respect of the nuclear risks associated with the nuclear power stations. The company would operate on a cost-of-service basis; that is, it would have the right to pass on all its costs in the form of cost of power to the RDUs, which in their turn would have the right to pass these costs on to their consumers.

The rationale of this structure is as follows. First, any substantial equity stake by the RDUs in generation creates the problem which has bedevilled the US private utility system. American utilities have a vested interest in increasing their capital investment in order to secure greater profits from the (effectively guaranteed) returns which they are permitted on their equity investments. This, in its turn, requires detailed regulation even to attempt to check abuse. If the investment is 100% debt financed and remunerated solely on cost of service no such incentive to overinvestment exists. Second, it would in any case be extremely difficult to create an equity investment in a generation system which, as outlined below, would be a transitional privatised structure, soon leading on to one which was designed to maximise competition.

*Achieving competition in generation*

The RDUs would, at the appropriate stage, (specified at the time of privatisation to take realistic account of the time needed to prepare for power stations sales) oblige the new CEEB to offer for sale say five or six representative blocks of its existing stations. Each block would have a mix of type and age of station which could be geographically dispersed. The nuclear units would be treated differently, as discussed below. The new CEEB would then buy back power from the owners on competitive long term contracts; the blocks of power stations would be sold, and the power contract awarded to whichever potential owner offered the most favourable terms. The new owners would have complete freedom in their purchase of fuels. This should greatly encourage companies in the fuel and coal industries to bid for fuel supply contracts, and so should ensure much more competition in the supply of fuels for power generation than there is now. All new power stations other than nuclear (whether for replacement or expansion of capacity) would also be thrown open to competitive bidding on the same lines.

Long term power contracts would also provide the basis for financing the purchase of the power stations largely by debt, with relatively small equity investment. In this way the number of potential corporate investors would be enlarged, as may be essential if political and economic policy restrict the extent of foreign ownership. The long term contract basis has another advantage. It is immune from the risks of subsequent regulatory impositions, leaving bidders free to pitch their bids at levels representing their perceptions of the profit and risk



opportunities. This structure would also permit the new CEEB to continue to operate a merit order system.

As well as making the introduction of competition a fundamental charter requirement, the RDUs should also be given the incentive of a direct share in the resulting savings.

#### *Progression towards competition to supply the RDUs*

With independent companies owning stations and supplying power on a financially viable basis, it would become possible to progress towards direct competition in the supply of power to the RDUs (rather than via the new CEEB). This could develop step-by-step with the companies supplying power on long term contract to the new CEEB (owning by now only nuclear stations and acting as purchase and despatch agency for the RDUs). The companies would allocate part of their capacity to the supply of power on a competitive basis to the RDUs or direct to large consumers on whatever terms they could negotiate. This, however, could not occur until the companies were established with diversity of supply and capital base sufficient to give them material advantages over the centralised purchase system. This the sale of stations and long term power contracts would provide.

A powerful driving force would be required to ensure that the new CEEB was not obstructive, but conducted the power contract tendering objectively and promptly. This force would be provided by the RDUs and, in particular by their controlling corporate shareholders. The latter would have no vested interest in maintaining the existing CEEB structure; indeed they would be given a strong financial incentive to break it up whereupon they would receive an agreed share of lower power costs, to increase their profits. There would be time for the complex technical and negotiating processes involved in the competitive system to be achieved with the minimum disruption and with privatisation already a *fait accompli*.

Flotation of the PTC structure within the term of the present Government should also be simpler than flotation of any other possible structure. Equity investment would be confined to the RDUs and perhaps be less than a quarter of the equity required to float the monolith structure described in the previous chapter. The whole of the generating system would be debt financed and the bonds representing this debt would be held by the Government to be redeemed as the blocks of power stations are sold off. Consequently costs arising from possible undervaluation of the otherwise immense equity issues would be reduced. The well-defined regulatory structure should also eliminate uncertainties which would otherwise be a source of undervaluation. Finally the much smaller equity investment would diminish the risk that a downturn in equity markets would cause the whole programme of electricity privatisation to be postponed to another term (if not indefinitely). This avoids a major risk inherent in all the other options.

Political advantages are also significant. Risk of disruption through attempting to force the CEEB into break-up as a preliminary to privatisation is avoided. The CEEB would retain a valuable role and scope for its expertise in its continuing control of the nuclear sector, and, in the medium term, the functions of central power purchasing, system planning and operation. Moreover, under this structure the CEEB would initially be privatised as an integral structure, albeit under the stronger and more commercially orientated management of the RDUs and their controlling corporate investors. This should reduce the risk of union militancy sabotaging a privatisation flotation based on break-up of the generation system.

#### *The National Grid*

During the planning period the CEEB would be required to separate the assets, management and staff of the National Grid so that it could be hived off as an independent entity, private but regulated, at the time of privatisation. Thus any competitive sources of electricity would be available to the RDUs and bulk customers from the beginning. Then, as blocks of power stations were sold off their power would be freely available to all power customers, a vital requirement for investors in generating companies. Regulation would be as explained under the PTC option.

#### *The nuclear sector*

This is an exceptional category of investment, and necessitates



exceptional measures – concerning, first, the terms on which any private sector financing might be available for the existing nuclear power stations. Ownership of these stations carries apparently very large, although incalculable, obligations which relate to their operation, possible modification and decommissioning. Their operation involves liability for nuclear accident – a risk all but uninsurable in the commercial markets. If higher safety standards were imposed, the stations could be closed down. In the future they will have to be decommissioned. The costs are likely to be huge and most uncertain – they depend on the environmental and safety requirements prevailing at the time.

What private sector investor could or would assume these risks? Almost everywhere in the world they are borne either by governments, or by the nuclear generating companies which can pass the costs on in full to their consumers. In the United States they are borne partly by the Federal Government and partly by consumers through the tariffs imposed by the US private utilities.

The nuclear sector also has special problems of power station construction. Cost, long lead times and the many unpredictabilities make it almost inconceivable that nuclear power stations could be built unless these risks are assumed by the Government (as in Britain at present) or in part by the consumer (as in the US). In the United States the construction of nuclear stations is in large measure a cost plus operation since, provided that a utility acts prudently and diligently, it is practically sure to recover its investment through the tariffs which it is allowed to impose.

Options, then for the privatisation of the nuclear sector are as follows:

i) *The US system of regulated private utilities*

It was pointed out in Chapter 5 that in the US private financing is secured only at the expense of expensive regulation which generally results in a cost-plus non-competitive system of operation. It is doubtful whether gains in the form of reduction in the public sector borrowing requirement would warrant the very high cost of setting up such a system of regulation.

ii) *Retention within the public sector*

This would mean that the public sector would continue to bear the burden of financing; but that the need for a separate regulatory body would be obviated. But if nuclear power generation is to fit within a

merit order system, it would constitute base load capacity (since its operating costs are relatively low). Provision would have to be made so that distributing companies were obliged to accept this power as part of their base load.

This, however, should not pose significant difficulties since a) the nuclear capacity is already operated as base load – hence no change in the operating regime is involved and b) pre-emption of about 20% of the load by nuclear would still leave 80% of power requirements to be met by the private sector.

iii) *Ownership by RDUs as 100% debt-financed subsidiary (the PTC option)*

Under this option the nuclear sector would be owned in partnership by all the RDUs. This nuclear power company would be 100% debt financed (private debt replacing Treasury debt) by firm 'take or pay' contracts from the RDUs. These contracts (commonly employed in the US) require payment of the cost of service irrespective of the amount of power taken. They are essentially a basis for financing. Such contracts in effect already exist since the CEGB charges the consumer whatever the cost of power is from these stations. The new nuclear power company would effectively be given taxing powers. Given the unqualified right of the RDUs to pass these costs on to consumers, the risk of default by the nuclear company would be minimal. Nevertheless, the Government would probably have to provide supplementary undertakings including the assumption of full nuclear accident liability, deficit guarantees in the event of widespread nuclear shutdown and residual financing responsibility if the nuclear programme required more funding than could be obtained from the commercial markets. Since in practice the Government already has these obligations, formalising them in this manner should be acceptable.

In the past governments have reserved for themselves control over nuclear power policy and will presumably do so in the future. This could be provided for (and be seen as a quid pro quo for the undertakings referred to above) by a 'golden share' giving it such policy powers.

The nominal equity of the nuclear company would be owned by the RDUs under the structure described above, which charges these utilities with the responsibility to ensure minimum cost of power consistent with security of supply. This function as it relates to the



nuclear company would be limited by the Government's power of intervention on policy. Nevertheless, the distributing utilities would provide a countervailing force reflecting the consumer interest, one with considerable resources, standing – and above all independence. Given also that their reputation with the public would depend to a large extent on containing power cost increases, they would be likely to exercise their powers fully.

There is no way (short of extensive regulation) by which the RDUs could directly benefit from their stewardship over the nuclear company – the cost of service structure effectively involves a flow-through of its costs including the debt service by which it is financed. There would, however, be some advantage in ensuring that these utilities are not influenced in the extremely costly investment decisions of the nuclear company by the prospect of direct financial benefit. As noted in Chapter 5 such motivation has had some most adverse consequences in the US.

This option is certainly the 'least worst' and offers significant benefits (private financing and powerful representation of consumer interest) compared with retaining the nuclear industry within the public sector. Nevertheless, it is a pity that no genuinely competitive solution with private risk capital seems possible. The Government should consider whether the alleged economic benefits of nuclear power fully justify the support of a technology which by its sheer scale of financial and technological risk precludes such private sector investment.

#### **Electricity Standards and Regulatory Commission**

Under the PTC option, as indeed with all options, an Electricity Standards and Regulatory Commission would be appointed with Government, ESI and consumer representation. For the PTC option, it would:-

- i) ensure that historical standards of service were maintained by the RDUs and, where any significant variation was judged in the consumer interest, that the consumer shared appropriately in the benefits;
- ii) supervise the regulatory process as it applied to the RDUs and ensure compliance;
- iii) ensure that capacity in generation and transmission was adequate to secure reliability. (If it foresaw any inadequacy, it would instruct the RDUs to invite competitive tenders for new

stations. Capacity could not fall short unless demand was underestimated – which is a risk to which any system is equally exposed);

- iv) ensure that if there were any serious breaches of the charter, the corporate shareholders in the RDUs would be obliged to surrender their shareholdings (on an appropriate non-profit basis) to other corporate investors deemed more suitable;
- v) maintain competition in generation, and free entry to the industry by ensuring that all generators of power had access on fair terms to the transmission system and hence to all possible purchasers, and that there was no collusion between generating companies; and
- vi) adjudicate on representations that tariff levels were unfair between one category of customer and another. In the event of it finding the tariff unfair it could require the RDUs to put forward alternative tariffs.

To sum up, the ESRC would act as regulatory agency for distribution and transmission, and would ensure that power generation remained competitive.

#### *Conclusion on PTC option*

The PTC option thus meets all the essential criteria. In particular, it would inject genuine competition, introduce new management, establish effective but simple regulation and provide a path to complete privatisation within the life of the present Government. Not least it also provides a basis on which the large financial burdens of the nuclear sector could be financed from the private capital markets.

And it is flexible and relatively free of risk. At the very worst it might not prove possible – for a considerable time – to reach agreement with the ESI unions on implementing the competitive generation system. If so, then that would apply equally to any other option involving comparable competitiveness. Under the PTC option, however, it would at least be possible to defer the issue and return to it at a later date. This would still leave the new, 100% debt financed CEGB free from the very serious regulatory problems bound to arise if it was substantially equity financed. Similarly, the RDUs, having no equity investment in the new CEGB, would have no vested interest in maintaining the status quo, or in opposing subsequent moves towards greater competition. Indeed, they would have a sharp spur to achieve greater efficiency; with financial incentives, they would wish to sell



power stations to reliable purchasers as soon as possible. With strong corporate shareholders, they would be a strong countervailing force acting in the interest of consumers, in an industry which has been traditionally dominated by the CEGB. On these grounds we hold that the PTC option (or some variant of it) is superior to any other privatisation option so far proposed.

iii) **Privatisation deferred to a later term**

No one should assume that all forms of privatisation are superior to maintaining the status quo, least of all those forms with unnecessary or badly regulated monopoly activities. Even sensible forms of privatisation might be worse than deferral if they were inadequately thought-out or poorly designed through lack of time. Given therefore that the Government has not spent undue time planning ESI privatisation, and that margins for error are considerable, the privatisation options should be compared with maintenance of the status quo (or at least with deferment of privatisation to a later term). We have no wish to join the chorus of vested interests urging caution and delay. All the same the case for deferral must be examined.

The clearest gain is that it gives the Government the chance to do the job properly, provided that it wins the next election. But if it does not, the chance for privatisation may not recur this century. Then there is the advantage that risk of disruption to the system is nil; but this risk is slight for any privatisation option.

Consumers might well be dissatisfied with deferral; in particular industrial consumers who would be at a disadvantage compared with their international competitors. GNP and employment would suffer accordingly. Individual consumers would also be hurt, though they might be less aware of it. But since ultimate government control would remain, consumers would not be as badly off as under monopoly privatisation accompanied by unsatisfactory forms of regulation (and unsatisfactory regulation is a real possibility given the lack of British experience in this field). For management and staff redundancies would be fewer, but equally pay would be lower; and there would be no profit incentives and no chance of building up capital. Then, there would be no risk of foreign ownership or domination of the ESI. Finally, since there would be no sale, there would be no problem of undervaluation. But the tendency to overinvestment would continue.

Deferral would fail all the essential economic criteria. Competition would not be introduced (past attempts to permit private

power stations have largely failed, and could reasonably be expected to fail in future); there would be a probably fatal incompatibility with a liberal form of coal privatisation; much needed new management would not be introduced; the existing unsatisfactory form of political and bureaucratic regulation on a largely unaccountable basis would continue unchanged; and finally no opportunities would be created for individual and corporate investors. This is a damning economic score, but no worse than for most of the monopoly forms of privatisation. On the other hand, since the status quo preserves the vital option of later privatisation in a liberal form (assuming that the Government has such a scheme ready for early implementation in a fourth term) we judge that it should be ranked higher than the irreversible monopoly options.



CEGB. But without competition in generation, privatisation is pointless.

The existing nuclear power stations, and the Government's intention of having many more in future, pose special problems which have been considered at length in this paper. Because of their large risks of operations, the immense costs and uncertainties involved in their construction, and their doubtful profitability if coal is privatised effectively, neither the ownership of existing (or shortly to be completed) nuclear power stations nor the building of new ones, is likely to attract the private sector on a risk capital basis. The Government should consider the analysis and questions posed in this paper and rethink the case for its present nuclear power policy. If it still wishes to have a major nuclear power programme then it must accept either the provision of large subsidies or else special arrangements of the kind we have identified. Nuclear power could be privatised under the PTC option on a private sector financing basis.

#### **Practical implementation – the PTC scheme**

While the desirable goal for ESI privatisation is clear the route to achieving it is not. In default of identifying any such route, the Government may seek initially to privatise only the distributing utilities (the present Area Boards) and maintain the CEGB intact while examining further the problems of privatising it effectively. Such an outcome, with no certainty of achieving any of the substantial benefits from electricity and coal privatisation, and which would preclude the effective privatisation of power stations under effective new corporate management, must be deplored. Fortunately, it is unnecessary because there is a scheme identified in the paper – the 'Privatised Transition to Competition' Scheme (PTC) – which can be made to realise *all* the benefits identified, meeting as it does the essential political and economic criteria by which privatisation should be judged.

The PTC scheme introduces corporate investors with the means, experience, management and incentive to transform the CEGB into 5 independent generating companies within 2 to 5 years of privatisation. It avoids the main weakness of all the other privatisation schemes which either maintain the CEGB intact and thus fail to realise the potential efficiency benefits, or which require the CEGB to break itself up, which would be unlikely to happen without the involvement of new entities or new management.

#### **The privatisation options compared**

It is impossible to judge the six serious privatisation options which we have considered in this paper (four monopoly ones and two competitive ones) without agreement on the essential criteria. In Chapter 7 we evaluated six such essential political criteria and five such essential economic criteria. Summary tables follow, with a quick recapitulation of the options in the appendix.

From these tables, and particularly the final summary evaluation column it is seen that the PTC option is the only one to pass all the essential criteria, making it the preferred choice. The CG option fails one essential criterion, but comes second. The 'do nothing yet' or deferral option comes next, because while failing many of the political criteria and all of the economic criteria, it is nevertheless superior to all of the monopoly options. Of the monopoly options, the IRU is somewhat better than the two monolithic options, but none of them scores at all well, and there is little to choose between them.

#### **Conclusion**

The PTC is the only competitive privatisation scheme so far identified which meets the Government's criterion of possible accomplishment in its present term of office, without risk of either serious disruption or eventual consumer dissatisfaction. It further ensures maximum efficiency and lower electricity prices by introducing genuine and *sustainable* competition by means of a structure which would attract powerful corporate investors and new senior management, and yet involve minimal regulations.

Thus there is a realistic route to effective electricity privatisation for the Government to follow.



## ESSENTIAL POLITICAL CRITERIA

Table 10.1

	1	2	3	4	5	6
OPTIONS	ABSENCE OF SERIOUS DISRUPTION	ASSURED ESI PRIVATISATION THIS TERM	MINIMUM RISE OF CONSUMER DISSATISFACTION	GENEROUS PROFIT PARTICIPATION /REDUNDANCY ARRANGEMENTS	NO FOREIGN CONTROLLING DOMINATION OF ESI	NO UNACCEPTABLE UNDERVALUATION OF ASSETS
A. MONOLITH: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	✓	✓	x	-	✓	x ?
B. INITIAL GENERATING MONOLITH - COMPETITIVE NEW GENERATION: 1) CEGS COMPETES FOR NEW CAPACITY 11) CEGS PREVENTED FROM COMPETING: a) IN NEW CAPACITY b) IN NEW CAPACITY PLUS REPLACEMENT CAPACITY	✓	✓	x	-	✓	✓
C. ELECTRICITY COUNCIL PROPOSAL	✓	✓	x	-	✓	?
D. INTEGRATED REGIONAL MONOPOLIES: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	✓	x ? x ?	x	✓	✓	x
E. COMPETITIVE GENERATION SALE OF ASSET BLOCKS WITH TRANSITIONAL POWER CONTRACTS	✓	x	✓	✓	✓	1✓
F. PRIVATISED TRANSITION TO COMPETITION (PTC)	✓	✓	✓	✓	✓	✓
G. DO NOTHING YET	✓	-	? x	-	✓	✓

Key: ✓ ACCEPTABLE - NEUTRAL OR NOT APPLICABLE x UNACCEPTABLE ? UNCERTAIN

## ESSENTIAL ECONOMIC CRITERIA

Table 10.2

	1	2	3	4	5
OPTIONS	INTRODUCTION OF NEW COMPETITION	COMPATIBLE WITH COMPETITIVE PRIVATISATION	INTRODUCTION OF NEW SENIOR MANAGEMENT	SIMPLE BUT EFFECTIVE REGULATION OF MONOPOLY ACTIVITIES	ATTRACTIVE TO UK INDIVIDUAL AND CORPORATE INVESTORS
A. MONOLITH: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	x	x	x	x	✓
B. INITIAL GENERATING MONOLITH - COMPETITIVE NEW GENERATION: 1) CEGS COMPETES FOR NEW CAPACITY 11) CEGS PREVENTED FROM COMPETING: a) IN NEW CAPACITY b) IN NEW CAPACITY PLUS REPLACEMENT CAPACITY	x	x	x	x	✓
C. ELECTRICITY COUNCIL PROPOSAL	x	x	x	x	✓
D. INTEGRATED REGIONAL MONOPOLIES: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	x	✓	?	x	✓
E. COMPETITIVE GENERATION SALE OF ASSET BLOCKS WITH TRANSITIONAL POWER CONTRACTS	✓	✓	✓	✓	✓
F. PRIVATISED TRANSITION TO COMPETITION (PTC)	✓	✓	✓	✓	✓
G. DO NOTHING YET	x	x	x	x	-

Key: ✓ ACCEPTABLE - NEUTRAL OR NOT APPLICABLE x UNACCEPTABLE ? UNCERTAIN



## DESIRABLE FURTHER CRITERIA

Table 10.3

OPTIONS	1	2	3
	MINIMUM PERIOD OF PLANNING UNCERTAINTY	MINIMUM PERIOD OF STRUCTURAL CHANGE	RETENTION OF INDUSTRY PENSION SCHEME
A. MONOLITH: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	2 3	2 3	3 3
B. INITIAL GENERATING MONOLITH + COMPETITIVE NEW GENERATION 1) CEGP COMPETES FOR NEW CAPACITY 11) CEGP PREVENTED FROM COMPETING; a) IN NEW CAPACITY b) IN NEW CAPACITY PLUS REPLACEMENT CAPACITY	2 2 2	3 1 1	3 3 3
C. ELECTRICITY COUNCIL PROPOSAL	3	3	3
D. INTEGRATED REGIONAL MONOPOLIES: 1) US STYLE REGULATION 11) UK DISCRETIONARY STYLE REGULATION	1 1	2 3	3 3
E. COMPETITIVE GENERATION: SALE OF ASSET BLOCKS WITH TRANSITIONAL POWER CONTRACTS	1	3	3
F. PRIVATISED TRANSITION TO COMPETITION (PTC)	3	3	3
G. DO NOTHING YET	-	-	3

Key 1 IS WORST

3 IS BEST

## SUMMARY EVALUATION

Table 10.4

ESSENTIAL CRITERIA	DESIRABLE CRITERIA	FINAL RANK
PASSES OUT OF 11	SCORE OUT OF 9	
4	7	5/6/7
4	9	
4	8	5/6/7
3	6	
3	6	
4	9	5/6/7
5	6	4
5	7	
10	7	2
11	9	1
3 PASS 3 NEUTRAL	3	3

# A

## Summary guide to the options



### **Monolithic privatisation with British style regulation**

This option, urged by the CEBG is to privatise the whole ESI as a single entity, subject to minimal regulation as with British Gas. Absence of competition and the ineffectiveness of this type of regulation would make this option fail all the essential economic criteria. Consumers would be likely soon to be dissatisfied; so it fails some essential political criteria, too.

### **Monolithic privatisation with competition in new generation**

This is to privatise the ESI in its present form, subject to the discretionary type of regulation imposed on British Gas – but to allow competition in new generation. Private companies could compete to build new power stations to supply the new CEBG, distributors and possibly bulk customers direct. In practice few if any would do so, since the need for balanced supply contracts requires that the viable competitive unit has a *spread* of different types of power stations.

Few economic benefits would flow from this option. Competition with the new CEBG would in practice be minimal, since it could occur only in the building and operation of the non nuclear stations. Even if every new non nuclear station were built by private investors, 10% at most of generating capacity installed at the end of the century would be in private hands. Even this may well be a gross overestimate. The new non-nuclear stations proposed by the CEBG are 1800 MW coal stations costing around £1.5 billion, each with a seven year or more lead time to completion. Few investors would contemplate investments of this magnitude and lead time in order to enter into competition with the massively entrenched new CEBG.

Such a scheme would also continue to confront the coal industry with a dominant buyer, and thus preclude the privatisation of coal with all its potential economic benefits.

Finally, if the type of regulation is as minimal as it is with British Gas, the scheme would probably not produce any improvements in efficiency. Such regulation would most likely prove grossly inadequate, so that governments would be obliged to impose the expensive, politically contentious but still largely ineffectual forms of regulation which pervade the US private utility industry.

### **Monopoly distribution and transmission with competition in new generation (the Electricity Council scheme)**

This, the Electricity Council proposal, combines all the disadvantages

of the single monopoly with additional regulatory problems. It would create two separate monopolies (one of generation, one of distribution). The distribution monopoly would be allowed to compete in new generation, but in practice competition would be minimal. All the expertise in building and operating power stations would remain with the new CEBG. And even assuming that the new distribution monopoly were to build all new non-nuclear power stations required by the end of the century, the CEBG would still supply 90 percent of power in England and Wales. Competition would be token. There would be no new corporate investors; and therefore unlikely to be any new senior management. So cost reductions would be improbable. Regulators would face all but insurmountable difficulties in dealing with two such huge monopolies. The proposal fails half the essential political criteria, and almost all the essential economic criteria. It is clearly inferior to the status quo.

### **Integrated regional utilities (IRUs)**

This, the fourth monopoly option, involves the creation of a number of regional 'power boards' having local monopolies of distribution, and generating most of their own power. Because it would be natural for the 'power boards' to favour their own generating sources, they would have considerable incentives to over-invest, so that this system would need US style regulation. That means extensive semi-judicial review of costs, investments and prices; and adjudication on the need for and type of future additions to generating capacity.

Based on American experience, this would be both costly and ineffectual. Effective competition – and improvements in efficiency – would be minimal. It is indeed more likely that additional layers of costs would be created in forming these companies and meeting union demands. The main benefits which could accrue from this option would be indirect, in that it would create several buyers of power station coal in place of one, permitting the privatisation of coal. Even so, it fails most of the essential political and economic criteria.

### **Competitive generation with regulated distribution (CG)**

This option involves dividing the CEBG into five or so privatised generating companies serving some five Regional Distribution Utilities (RDU's) formed by amalgamating the 12 Area Boards. If it could be achieved within the term of the present government, it would fulfil all the essential criteria. Competition would produce pressure for



efficiency, no regulation would be required in generation (70% of total power cost); and the scheme would create the diversified market which would enable coal privatisation to proceed. But it fails the criterion of being achievable within the term of the present Government. It would first require the CEEB to produce a technically viable plan for its own demise, an unlikely outcome. Second, it would require the establishment of some ten new companies – the five generating ones without any previous commercial management, staffing, sales contracts or profit record. Although such deficiencies could be remedied over-time, much more than a parliamentary term would be required. So a mechanism is needed which will overcome the transitional difficulties in an acceptably short period.

#### **Privatised transition to competition (PTC)**

An intermediate stage of privatisation is required, so structured as to guarantee to bring about the competitive option – but over a more realistic period. The PTC model could achieve this as follows:-

- i) amalgamate the existing Area Boards into, say, 5 RDUs and give qualified corporate investors a controlling interest (say 25%) on the same terms as the balance of the shares sold to the public;
- ii) establish the National Grid on a regulated independent basis, open to all existing or potential power sources on equal terms to guarantee free access to all RDU and bulk customers;
- iii) make the new CEEB a wholly owned subsidiary of these RDUs with the latter given the specific charter requirement to introduce competition in generation as soon as is practical. Since cost reductions would be shared, the RDUs would also be given a strong financial incentive to introduce generating competition. Simultaneously new controlling management should be brought in to provide a basis for quick progress to a fully competitive system;
- iv) establish the new CEEB as 100% debt financed, the debt being held initially by the Treasury with all the costs of operation flowed through to the consumer (via the RDUs, effectively as the CEEB's costs now are). Debt financing is to provide for the subsequent sale of part of the assets to private companies, very difficult if the new CEEB was financed by equity (since at the time of privatisation the terms and conditions of its future sale would be unforeseeable); and
- v) post privatisation give the RDUs the duty, the power and the

incentive to establish competitive generation in an orderly manner. Deriving no profit from the 100% debt financed CEEB they would have no vested interest in sustaining its existence in its then form; indeed, they would be given a strong financial incentive to introduce more efficient and competitive generation. Their task would be to make the CEEB sell off viable blocks of power stations to the private sector; and then buy back the power on long term contracts based on competitive tendering by intending purchasers of the stations. These contracts would constitute a basis on which substantial debt financing could be secured. When enough independent generating capacity had been established in this manner, the new generating companies could then deal directly with the RDUs on a competitive basis, thus realising the desired CG option.

The new CEEB (retaining the nuclear sector on the basis of 100% debt flow-through of costs) could remain a subsidiary of the RDUs. This would provide the financing for the nuclear programme from the private sector and impose further degree of supervision by the RDUs, acting in accordance with prescribed government policy.

The RDUs could be remunerated on the basis of permitting them to flow through capital charges to consumers – but limiting the operating costs which they might charge to those incurred prior to privatisation; subject to increases for relevant inflation and adjustments for the number of users.

Breaking up a monopoly – non-commercial, integrated and unionised – into a number of commercial companies requires new management of very high calibre indeed. Only experienced, corporate investors can supply such management, which must be a feature of any proposal designed to secure the economic benefits and to avoid serious dissatisfaction among consumers. This is what the PTC option, and only the PTC option, provides.

#### **Privatisation deferred**

Although it is the Government's proclaimed intention to privatise the ESI in its present term, some forms of privatisation are inferior to maintaining the status quo (which at least leaves it open to privatise on a competitive basis at a later date). In our judgment, *all* the monopoly options are inferior to deferral.



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- 13 See, for example, CEGB in talks to set up private power stations, the *Financial Times*, 27 August 1987 and CEGB talks on private power stations, *The Times*, 28 August 1987.
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- 15 Cabinet to discuss power sell-off, the *Financial Times*, 7 September 1987.

## Glossary

AGR	Advanced gas cooled reactor. A British designed nuclear reactor which was the successor to Magnox
CCA	Current cost accounting
CEGB	Central Electricity Generating Board
EEPTU	Electrical, Electronic, Telecommunications and Plumbing Trades union
EPEA	Electrical Power Engineers Association
ESI	Electricity Supply Industry
ESRC	Electricity Standards and Regulatory Commission - a proposed regulatory body
GMBATU	General, Municipal, Boilermakers and Allied Trades Union
GW	Gigawatt - a unit of power. 1 gigawatt = 1000 megawatts
Joint Understanding	A pricing agreement between the CEGB and British Coal
Magnox	Early British designed nuclear reactor
MW	Megawatt - a unit of power. One megawatt = 1 million watts
NALGO	National and Local Government Officers Association
NHSEB	North of Scotland Hydro-Electric Board
PWR	Pressurised Water Reactor. A U.S. designed reactor exported to many parts of the world. The first PWR (adapted to British conditions) to be built in this country will be at Sizewell in Suffolk.
QUICS	Qualifying Industrial Consumers Scheme - a mechanism for providing low cost power to some large industrial users
RPI-X+Y	Gas price formula, where RPI is the retail price index, X is a factor set by the Government to reflect scope for improved efficiency and Y is increase in fuel costs
SSEB	South of Scotland Electricity Board



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