

THE RETURN OF CENTRALISED ENERGY PLANNING

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Abstract

After a brief period of liberalisation, the UK energy market is reverting towards its pre-1980s state in which central government intervenes extensively, particularly in the fuel choices of electricity generators. Many powerful interest groups benefit from centralised energy planning, which may be why the market reverts to that situation as a norm. Of the two principal reasons given for government intervention, there is little substance in the argument that it improves security of supply. There may be a better case for action to offset prospective climate change, but the present centralised approach risks massive errors. Decentralised, market-based action is more appropriate.

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1. The background

A remarkable change has come over the UK energy market in recent years as governments have reverted to a regime of centralised energy planning not seen since the late 1970s.

At the turn of the millennium, that market was highly competitive, probably more so than the comparable market in any other major economy. Reforms began in the early 1980s when Nigel (now Lord) Lawson was Secretary of State for Energy. He took the bold step of curbing the planning mentality deeply engrained in the Department of Energy, stressing the importance of using markets and pricing energy realistically (Lawson 1992; Robinson 2004). Liberalisation then proceeded rather slowly and tentatively in the 1980s. Privatisation of gas (1986) and electricity (1990) did little in the short term to increase energy market competition since the privatised companies retained substantial market power. However, the privatisation statutes were significant enabling measures since they removed the previous state prohibitions on entry, at the same time charging the new regulators¹ they established with promoting competition. Using these powers, the energy regulators set about dismantling entry barriers and, by the late 1990s, the market had been transformed as competition took hold. Electricity and gas networks were regulated as ‘natural monopolies’ but the potentially competitive areas in the two industries were opened to competition.

A significant and symbolic event came in 1998 when household consumers of both gas and electricity were given the freedom (not available in any other major economy at the time) to choose suppliers. Soon afterwards, with some prompting from the regulators, wholesale markets for gas and electricity developed so that the two products came to be traded in a similar way to

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other commodities. Energy privatisation was virtually completed when both coal and nuclear power were privatised in the 1990s.²

The newly liberalised market stood in stark contrast to the UK energy market under nationalisation, which was dominated by state monopolies with captive suppliers. Only the oil industry³ was in private hands, and government intervened in all corners of the market⁴. There was a broad political consensus that a considerable government presence in the energy market was justified: up to the 1980s, there were only marginal disagreements among the main political parties about energy policy.⁵

The liberalised energy market, eventually established some years after privatisation, was short-lived, lasting less than ten years. Its demise can be traced to the final years of the Labour government of 1997–2010 when a retreat from liberalisation began which has continued under the present governing coalition. Governments, whilst eschewing renationalisation, are again pursuing centralised ‘energy policies’, taking steps and introducing legislation, as in the 2013 Energy Bill, which represent a reversion towards pre-privatisation times.

Electricity generation is a particularly striking example of the reversal of policy. Under nationalisation, government intervened extensively in the choice of generation fuels, forcing the Central Electricity Generating Board (CEGB) to burn indigenous coal and to construct (mainly British-designed) nuclear power stations, at the same time instructing the CEGB not to use natural gas. Privatisation then provided the generators with freer choice of fuels (though for a while they had to burn more coal than they would have chosen) and they embarked on a dash for (previously banned) gas.

In the last few years, however, the government has begun once again to constrain the fuel choices of electricity generators, reverting to the old policy of carrying out centralised energy planning principally through the medium of the electricity industry. Coal is, of course, now out of favour, but a government-promoted programme of generation from ‘renewables’, especially wind and biomass, is under way, and the government has ambitions to embark on another nuclear programme if it can persuade someone to undertake the necessary investment.⁶ The liberalised energy market is becoming a distant memory. It seems to have virtually no defenders, and hardly anyone now questions the government’s assumption of the right to make major decisions about the future of electricity generation in the corridors of Whitehall.⁷

2. Why has energy policy returned? The role of interest groups

Why did the liberalised energy market last for such a short period? One possibility is that some very powerful arguments suddenly appeared that favoured a revival of centralised energy policy. That case is examined in sections 3 to 7 of this paper.

But, since representative governments rarely take actions unless they perceive electoral advantage in doing so, it is worth considering the issue from a public choice point of view (Buchanan and Tullock 1962; Peacock 1992), in particular, examining the role of interest groups. One hypothesis suggested by recent experience is that, because of the influence of interest groups, energy policy tends towards a norm in which central government intervenes extensively and takes a key role in major energy investment decisions. Policy may depart from this norm for short periods but it will then revert because of interest group pressures. In other words, the hypothesis is that centralised energy policy refuses to go away because it is in the

interests of powerful interest groups that it should remain (Robinson 2013). Liberalisation, on this view, is always likely to be a temporary phenomenon.

A number of influential groups in the UK have an interest in centralised policy. For example, senior civil servants form a very powerful group that can be expected to favour centralised regulation. Since their influence necessarily diminishes in markets where competition flourishes, they are likely to favour less competition than there was during the period of liberalisation, and more central government regulation. They are not alone. George Stigler's insights about regulation (Stigler 1971) suggest that large incumbents are often only too happy to be regulated. Regulation raises potential rivals' costs and restricts market entry, so existing energy suppliers may well be happy in an energy market where rent-seeking is rife – one in which government hands out favours, takes responsibility from private companies and generally allows them to enjoy a quieter and more profitable life than they would have had in competitive conditions. Certainly the present energy market is much more comfortable for electricity and gas suppliers than was the market in the first few years of the twenty-first century: competition is muted, as is clear from the confidence with which suppliers have in recent years raised prices, in the expectation that their 'rivals' would follow. Not only senior management but also lower-level employees are likely to be content with a situation in which they negotiate with employers with sufficient market power to pass on to consumers any increases in earnings.

Other, perhaps less obvious groups may also benefit from a market in which competition is suppressed and government is heavily involved. For instance, in politicised markets research scientists may hope to extract favours from government for energy projects which have expensive research programmes attached. The scientific establishment in Britain has a long history (going back to the 1950s) of pressing for civil nuclear power programmes (Robinson 1993) and it has for some years been a major force in arguing for investments in technologies to combat the possible effects of climate change. Similarly, environmental pressure groups are likely to favour extensive government intervention which allows them to impose their views on the community as a whole.

It is well known that pressure groups are key influences on government policy between elections. Governments have great difficulty finding information which would help them make decisions (not surprisingly, since all the relevant information is about the future). Once it is known that government intends to be active in a market, lobbying appears as a potentially highly profitable activity since any benefits will be concentrated on members of the lobbying group whereas the costs will be borne by the community as a whole. Pressure groups therefore rush to take advantage of the investment opportunity, filling what would otherwise be an information vacuum with data and arguments that support their causes, either proposing specific policies or supporting incipient ideas for change.

Energy appears to be a prime example of this tendency. Powerful groups stand to gain from a centralised energy policy, and they bring to politicians a message that in general politicians like to hear – that government is better at providing 'solutions' than is a market subject to 'imperfections' and 'failures' – at the same time suggesting interventionist steps that would be in the pressure groups' interests. In the circumstances, though consumers are likely to bear the costs, because consumers are generally not well organised the consumer voice is not easily heard, despite the well-documented problems, in theory and in practice, of the centralised planning that tends to result.

The power of pressure groups may, in this instance, be magnified by government failure to learn from history. Energy policy from the end of World War II to the 1980s was an expensive failure (Robinson 2013) but, because there are now very few people in authority who had direct experience of that policy, the lessons it holds for present-day action seem to go unrecognised. The institutions that dealt with energy policy in the past (for example, the Ministry of Fuel and Power, the Ministry of Technology and the Department of Energy) have disappeared, as have key individuals who were responsible for policy. There is no memory, collective or individual, of the problems of centralised policy making in energy. Contemporary politicians and civil servants, unless they are avid readers of literature about post-war energy policy, may not appreciate the perverse and unintended consequences – such as unnecessarily high energy prices and insecure energy supplies – that may flow from their actions.⁸

The sheer weight of the interest groups that favour a centralised energy policy is a serious problem that is not easily overcome. Nevertheless, interest groups do not prevail in the long run if the ideas that support them are against the interests of the community as a whole (Seldon 1989). What can one conclude about the intellectual arguments that have been used to justify the centralising policy that has been pursued?

3. Energy market ‘failures’

As explained above, the origin of present energy policy lies in the latter stages of the Labour government of 1997–2010, which had initially supported the energy market liberalisation begun under the previous Conservative administration (Robinson 1999). A White Paper in 2007 (DTI 2007), which appeared after various consultations and was then followed by the Energy Act 2008, marked the beginning of the return to an energy policy in which central government sets ‘strategic objectives’ which override market forces.

Two such objectives are particularly significant in the latest revival of energy policy, one relating to the provision of energy supply security and the other to the avoidance of damaging climate change and its economic and social effects. Interventions by government in pursuit of these objectives have undermined the competitive market which had previously enjoyed a brief existence. They have also severely constrained Ofgem, the energy regulator, jeopardising its independence from the political process and making it difficult to give priority to promoting competition as it had done successfully in its early years (Robinson 2010). The present coalition government has, in effect, adopted Labour’s strategic objectives, founding its energy policies on them, so that there is once again a political consensus (at least among major parties) in favour of widespread state intervention in energy markets.

The general claim that supports the pursuit by the state of these strategic objectives is that there are inherent limitations in energy markets which mean that they will fail to provide adequate security of supply and to avoid the damaging effects of climate change. Therefore, the argument proceeds on familiar grounds, the state should step in, on behalf of the community as a whole, to remedy what are perceived to be ‘market failures’.

Market failure arguments always need to be scrutinised with great care. They can be grasped by governments or by pressure groups and used as convenient excuses for actions that are being taken for quite different reasons. A particular problem is that the standard definition of ‘failure’ is so all-encompassing that every market may appear to fail and government action to remedy such failures therefore appears to be required everywhere. Advocates of action to

overcome failures in markets hardly ever acknowledge that their standard of comparison in deciding what constitutes failure is a perfect state that can never be realised – a perfectly competitive market with all externalities internalised (Kirzner 1985). But, of course, in considering real world policies, states of perfection have no relevance. In practice, nothing will be ideal: everything will be flawed, including government action to remedy supposed failures in markets. The only useful comparisons are among actually realisable states of the world (Demsetz 1969, 1989). In that light, what can be said about the two strategic objectives and their two implied market failures? First, it is necessary to summarise existing energy policy as it has developed under the present coalition government and its predecessor.

4. Aims of policy

The main features of the new energy policy which has emerged since about 2007 are as follows.⁹

A central policy aim, which distinguishes it from the aims of energy policies in the earlier post-war period,¹⁰ is to reduce emissions of ‘greenhouse gases’, principally carbon dioxide, so as to mitigate their estimated effects on climate and their associated economic and social effects. The UK is at one with most developed economies in having such a policy, though in some respects it has gone farther than others. For example, under the 2008 Climate Change Act the UK has ‘carbon budgets’ (claimed to be the first in the world) which aim to cut carbon emissions by ‘at least’ 80 per cent below their 1990 level by 2050,¹¹ setting out objectives for periods much longer than any normal political time horizon. It is also contemplating a carbon reduction target for 2030 specifically for the electricity generation sector. To reduce greenhouse gas emissions, the government wants both to reduce energy consumption per unit of GDP by encouraging the more efficient use of energy, and to switch what energy is consumed from fossil (gas, oil and coal), carbon-emitting sources to non-fossil sources such as ‘renewables’ (mainly wind and biomass) and nuclear power, which do not directly emit carbon.

Combating climate change and its effects is, however, not the only aim of the carbon reduction policy. The government evidently believes that its approach will also help to achieve its objective of enhancing the security of energy supplies. In common with virtually all British governments since World War II, the coalition apparently sees home supplies as more secure than imports.¹² Consequently, it thinks that the substitution of indigenous supplies for imports that will occur because it is promoting non-fossil fuels at the expense of gas, oil and coal will make energy supplies more secure. The protectionist element in British government energy policy that existed for decades (up to the 1980s) thus continues.

5. Instruments of policy

For a government concerned about greenhouse gas emissions and their effects, one approach which appeals to neoclassical economists is to impose a tax on carbon emissions, leaving energy markets to adjust to the tax. Alternatively, carbon emission allowances can be set by government, leaving the allowances to be traded and a price for carbon established in the resulting market. There are many practical problems in applying such neoclassical prescriptions (see section 8 below) but they do have the advantage of transparency. The effect on energy prices of the tax or trading scheme is fairly clear so consumers can see what they are paying for the government’s policy.

However, the British government, like virtually all other governments, is not willing to rely solely on carbon taxes or carbon trading. Instead, again like other governments, it applies a 'belt and braces' approach to the reduction of emissions, in which carbon pricing is only one element, supplemented by numerous government incentives and administrative measures, some overlapping and not necessarily consistent one with another, many of them applying specifically to electricity. As in previous incarnations of energy policy, there has in recent years been a tendency to pile measure on measure in the hope that something will work (Robinson 1969), making constant adjustments to policy so that there is confusion about what it is at any point in time and what its costs are, and also uncertainty about how it might develop.

The UK is a member of the European Emissions Trading Scheme (ETS), which puts a price on carbon by the trading of allowances. But the government presumably regards the scheme as ineffective¹³ since in April 2013 it introduced a minimum price for carbon, at a much higher rate than the one in the ETS (and which will increase over the next few years), in an attempt to stimulate low-carbon energy sources. Moreover, the Energy Bill 2013 takes powers to introduce 'feed-in tariffs' with a contracts-for-differences system centred on a 'strike price' intended to encourage low-carbon generators to invest. And, apparently as a backup (described as a 'regulatory backstop'), there are to be emissions performance standards for new power stations to ensure that they keep emissions within the limits that government thinks desirable. These measures are in addition to the regime the government has operated for some years under which generators must have 'renewable obligation certificates' to show that they are installing the amounts of renewable capacity required by government.

Then there are obligations imposed on energy companies (the costs of which they recover in prices, thus imposing them on all consumers), intended to encourage consumers to use non-fossil sources and to cut energy use. Householders who introduce energy-saving measures or use non-fossil energy, for example by installing solar panels, have for some time been cross-subsidised by other householders via a feed-in tariff which pays generously for the electricity produced.¹⁴

In addition, there is nuclear power which is, as in the past, being treated as a special case in which government must be heavily involved. The coalition would like to have a new nuclear power programme and for some time it has involved itself in negotiations with potential generators. The only generator still actively contemplating a new nuclear power station (at Hinkley in Somerset) is EdF. Not surprisingly, newspaper reports indicate that EdF is holding out for a big subsidy (via the strike price) for the electricity it would generate before it commits to the investment. In a rent-seekers' energy market, resulting directly from government policy, EdF's attitude is entirely understandable.

To summarise, the UK energy market has changed, in a period of less than ten years, from highly competitive conditions to a state in which government intervention is widespread. As in all centralised planning systems, the present regime assumes a huge amount of government knowledge about the future and about what should be done in the 'national interest' to improve on the market outcome. For example, does the government know enough about future climate change and its economic and social effects to be able to determine, for the benefit of society as a whole, what the electricity strike price should be, at what level the carbon tax should be set, what the renewable proportion of electricity generated should be and whether

a new nuclear power programme can be justified? The rest of this paper considers whether the reasons given by governments for their intervention justify the very significant move back to centralised planning which has occurred.

6. Security of supply

British governments have always claimed that one of the principal reasons for their energy policies is that government has a responsibility to its citizens to ensure that energy supplies are secure. The most recent official statement about energy security makes clear that, though the energy market will provide security, it will fail in some respects or that there are areas where ‘... the incentives for market operators could be improved’, so that government needs to step in to enhance market-based security’ (DECC 2012b). As already explained, the government appears to believe that its carbon-reduction strategy will itself improve security. But the government also intends to take significant regulatory steps, such as running a ‘capacity market’ (auctions for new electricity generating capacity) and encouraging the development of gas storage. Presumably, therefore, the government believes that, without its intervention, there could be shortages of generating capacity or gas storage capacity. At the same time, the government will set out ‘strategic priorities’, including security of supply, to which Ofgem will be expected to conform.

A theoretical argument for government involvement in energy security provision can be made on the grounds that energy security has some of the characteristics of a ‘public good’. ‘Pure’ public goods will not be provided by markets because providers will not be able to charge for them: anyone can enjoy the benefits without payment. Such goods are said to be non-excludable (no consumer can be excluded from enjoying the benefits) and non-rivalrous (one person’s consumption does not reduce the amount available for others). National defence and law and order are usually quoted as examples of such goods.

In the case of energy security, it is claimed that, though clearly not a pure public good, it has some public-good characteristics because of its significant external benefits. Any organisation that provides energy security will necessarily confer (external) benefits on people who do not pay: thus, free-riding may occur and underinvestment in security may be the norm because the provider cannot appropriate all the benefits of investment. For example, if organisation A invests in extra stocks of oil or in standby electrical equipment to protect against an interruption of supplies or big price increases, it cannot avoid providing external (security) benefits to others who have made no investment in security provision. These unpaid-for benefits are of two sorts. First, the more provision is made against emergencies such as strikes or cartel action, the less likely such emergencies become. Second, if an emergency does occur, some of the pressure on supplies will be relieved by A’s action.

The theoretical case set out above, which indicates that energy markets tend to under-provide security, leads to the view that governments should ‘top up’ market-based security provision to move it towards the ‘optimal’. That seems to be the essence of the present government’s view, as set out in its recent statements (DECC 2012a). However, trying to translate such ideas into practical policy comes up against the problem mentioned earlier – that policy can only reasonably be concerned with attainable states of the world. Optimal security is a theoretical construct rather than such a state: it is not clear what its attributes would be so that it could be identified and pursued or even how it could be recognised as having been

achieved. Once the issue is examined in terms of attainable states – one based on market provision and the other based on government provision – the case for government action appears much less clear (Robinson 2007).

First, whilst it is true that there are some public good characteristics of security provision in energy markets, it is not obvious that there is significant under-provision so long as energy markets are competitive. ‘Competitive’ is used here in the Hayekian sense to mean a market where there is a process of competitive rivalry and discovery, not a perfectly competitive market (Hayek 1948; Kirzner 1985). Markets will provide security in the same way that they will provide other attributes of products which consumers consider valuable. Consumers want their supply of energy to be reliable and continuous and, to obtain such desirable characteristics, they can be expected to be willing to pay. Consequently, sellers have powerful market-based incentives to supply energy products that provide security.

Moreover, markets develop ways of dealing with potential security problems, both on their supply and on their demand sides, provided governments permit them to do so. For example, suppliers have strong incentives to diversify their sources and technologies of supply to protect against interruptions because consumers will desert them if they do not do so. In competitive energy markets, increasing forward prices provide signals and incentives to increase electricity generating and other energy supply capacity, including import capacity. Similarly, investment in storage for gas, oil and coal will respond to market signals of potential scarcity, as will investment in reserve electricity generating capacity. Consumers will also seek out means of controlling security, for example by signing ‘interruptible’ contracts that mean that, in exchange for a lower price, the seller can in some circumstances interrupt supplies.

In sum, energy markets clearly do take security into account, as they take into account all product characteristics which consumers value and for which they are willing to pay. Security provision is inherent in energy markets and normal market interactions ensure that it appears in the price of energy. Security will not be ‘optimal’ in energy markets but, from a policy viewpoint, that is irrelevant since there is no regime under which optimal security will result except by chance. The pertinent policy question is whether, as seems to be generally assumed, government involvement to ‘top up’ security can improve on the competitive market outcome.

Both theory and experience suggest that it is very difficult for government to enhance the degree of security found in a competitive energy market, and that there is a significant risk that the attempt will have the perverse effect of reducing security.¹⁵ For example, attempts at government security provision, such as reserve stocks held by government or government-led decisions about new investment in power stations, may crowd out private investment in security because they depress the returns private investors would have expected from providing security. Another reason private investment in security may decline when government assumes responsibility is that companies may come to believe that government will not permit wholesale market prices to rise when there are shortages and will not allow them to raise prices to consumers. Finally, but by no means least important, if government action promotes indigenous supply sources as against imports, it may well reduce the diversification that markets would have provided and enhance the market power of indigenous suppliers, thus producing less secure supplies.

More generally, when a government declares itself responsible for some activity there is inevitably a tendency for others to opt out on the grounds that ‘government will provide’,

resulting in the abdication of responsibility for security by market participants. This opting out tendency is enhanced because a virtually inevitable consequence of government attempts to provide security is the development of political uncertainty about the actions of present and future administrations. Such perverse unintended effects tend to be overlooked by governments in policy documents about security which implicitly assume that market-based security remains intact when government intervenes so that any government action is a genuine top-up: net benefits always flow from government action (DECC 2012b). More succinctly, government action is assumed to be perfect whereas markets operate imperfectly.

One example of the unintended and perverse consequences that can result from government attempts to improve energy security relates to the period when British coalmining was heavily protected by government. Protection enhanced the monopoly power of the mining industry and its unions, resulting in strikes and threats of strikes that made energy supplies less, not more, secure. That policy and the insecurity that resulted are examined elsewhere (Robinson 2007).

A more recent example relates to the last few years when British governments have reverted to a policy of influencing the fuel choices of power generators. An unintended consequence has been a re-politicisation of the energy market, which has created considerable uncertainty, reducing the incentive to invest and possibly threatening the security of Britain's energy supplies.

As explained, Britain has embarked on a major government-promoted programme of 'renewable' generation, supported by a variety of measures which effectively impose the costs on energy consumers. At the same time, the government has spent a long time trying to negotiate with potential investors in a new nuclear power programme which will be possible only if nuclear generators are subsidised by giving them a minimum price for the electricity they supply. Since it assumed office in 2010, the coalition has adopted an equivocal position towards gas-fired generation (which would most likely be the generators' preferred choice), seeming to shift its position from near-hostility towards a more favourable attitude as the costs of its renewable-promoting policy have become clearer. These steps are partly a consequence of the government's climate change agenda (see below) but also of the belief, which ignores the evidence of earlier post-war years, that reducing import dependence is a means of increasing energy security. In addition to British government measures, a number of British coal-fired power stations are being closed because of European Union directives.

The general effect of all these measures has been to create a degree of political uncertainty in the British energy market sufficient to undermine incentives to invest in new power stations and associated facilities. Instead of operating in a competitive market in which they assess the normal commercial risks, generators and potential generators find themselves in a market governed by political whims. Given the government's recent record of delay and changes of mind over power generation projects, potential investors are bound to demand a political uncertainty premium on the expected returns on any project. Moreover, since most energy projects have periods of planning and operation which, in total, run into decades, investors are required to take a view not only on the present administration's policy but on what future administrations might do.

In summary, the popular idea that there is a major market 'failure' which requires government to intervene to ensure energy security has little basis in fact: security is a valuable attribute of any energy product which is incorporated in the prices that appear in market

transactions. Taking responsibility for energy security from energy suppliers (which are the main instruments for achieving it) and handing it to government is more likely to reduce security than to increase it. Market-based security has firm foundations, based as it is on the incentives which producers have to diversify supply sources and technologies, on the price signals provided by competitive markets and on supplier incentives to purchase energy which is likely to be continuously available because that is what consumers demand.

7. Climate change policy

The government's climate change objective¹⁶ is based on the premise that damaging climate change (most likely global warming) can be expected and that national and international government action is required both to avert such change as far as possible and, to the extent that it happens, to mitigate its economic and social consequences.

Neoclassical economic theory lends some support to the view that government intervention is necessary. On the face of it, the presence of environmental externalities in energy markets provides a clear case for collective action, although the action could be voluntary rather than by government. If energy producers and consumers act without taking into account the effects of their actions on the earth's climate and those effects are significant, it appears that competitive markets contain no mechanism to prevent changes in climate that might have damaging economic and social consequences. Hence markets evidently fail. Another way of putting the problem is that since there are no property rights in the earth's natural environment, the environment will appear to be a free resource and will be overused. For that reason, the Stern report (Stern 2006) described the climate change problem as arising from 'the greatest market failure the world has ever seen'¹⁷ and it set out a wide range of interventionist measures that governments could take to avoid serious damage from a changing (warming) climate.

However, the issue is not so simple. In analysing the presence and the scale of failure in any market, there is always room for doubt about whether the failure is genuine and, if it is, what its costs are. There is also always scope for dispute about what the costs might be of any government action taken to remedy the failure. Whether or not there are likely to be net welfare benefits from government action is inevitably a difficult judgment to make, especially in cases in which the cost calculation is dependent on scientific and technological assessments. In the case of climate change, scientific knowledge is absolutely critical and yet it is obvious that ignorance of the determinants of climatic change is such that any attempt at estimates of external costs or the costs of government remedial action is fraught with problems. In short, there is severe information failure.

One does not have to be a climate scientist to appreciate the nature of the issues. There is general (though not universal) agreement that there has been some warming of the earth in the last hundred years or so but it is fairly modest – around 0.75 °C. There is scientific evidence that, other things equal, emissions of carbon dioxide and other greenhouse gases will bring rising world temperatures. However, given the state of knowledge about the climate, the list of 'other things' is long and incomplete.

Thus there is a difficult problem in multivariate analysis which is familiar to economists engaged in modelling. How can the contribution of greenhouse gas emissions to changes in

climate be isolated when so many other incompletely understood variables also affect the climate? Inspection of the statistics makes it clear that any interactions between greenhouse gas emissions and climate change are complex. During the twentieth century, despite continuously rising emissions, warming was confined to two periods of just over 40 years in total (1920–40 and 1975–98) with slight cooling in between the two periods. Since 1998, with emissions again rising, there has been no significant change in world temperature. ‘Other things’ have clearly had a substantial influence on the temperature trend.

Information failure is a particular problem in climate change policy in that not only is there huge scientific uncertainty about how much (if any) global warming there will be as a consequence of human activities, there is also extreme uncertainty about the economic and social consequences of a given amount of warming and about the effects of any remedies that are applied. The conventional conclusion – that drastic human-induced climate change with dire economic and social consequences is virtually certain in the rest of this century – is based on models of the climate and of the economy that go out into the far distant future, typically a century or more, and well beyond the range of any experience.

The Stern review, for example, argues that climate change analysis requires models that ‘... look out over 50, 100, 200 years and more’¹⁸ but, given the ignorance of both climate scientists and economists about the systems they are attempting to model, and the modest success of models that look even short periods ahead, it is reasonable to wonder whether anything useful can come from peering so far ahead in such an uncertain field. When systems that are being modelled are poorly understood and the intention is to make predictions from them over a very long period ahead (so that huge unforeseeable changes that affect model structures are likely), there is a clear danger that formal modelling will be misleading rather than helpful.

The huge uncertainty about future climate change and its economic and social effects places a premium on flexibility of adjustment. Unfortunately, one of the difficulties of a politicised marketplace (such as UK energy) is that it finds difficulty in accommodating uncertainty because decision-making is centralised. Central action involves big decisions, such as whether there should be another nuclear power programme and how many renewable stations and how many gas stations should be built. In the circumstances, the central decision-makers tend for a while to hesitate and prevaricate, as they have done over the nuclear programme and the place of gas in electricity generation, but when they make decisions massive commitments of resources occur, resulting in very inflexible investment programmes. In other words, the return to a centralised energy policy imports into Britain many of the defects of now-discredited Soviet-style central planning,

The problem is compounded because parts of the scientific establishment have tried to play down the inherent uncertainty of the future by claiming, against all the precepts of scientific method, that global warming and its presumed deleterious consequences are established facts – ‘the science is settled’, as it is often expressed. Thus the uncertainties of the future are dismissed, leading to the conventional view that informs policy in most countries, which is that the external costs of prospective climate change are very substantial and can be dealt with only by centralised government and international action. But because of the information failures and government failures in policy implementation just described, it is very difficult to translate that view into action that will in practice improve social welfare.

8. A better direction for policy

Like its immediate predecessor, the present UK government seems determined to plan centrally, with all the rigidities that implies. Its plans implicitly assume that the future contains only a narrow range of possible outcomes, and so it is left with very little flexibility to deal with the inevitable surprises. What approach might be more appropriate?

First, it seems most unlikely that government action to enhance energy security is desirable. Instead of involving itself, *inter alia*, in capacity mechanisms in the electricity generation market and in gas storage, the government would be better employed in reviving competition in the gas and electricity markets by ensuring that Ofgem once again gives priority to promoting competition and by removing the obstacles the coalition and its predecessor have placed in the way of competition in recent years. Political uncertainty would be reduced and a restored competitive market should provide adequate incentives for private companies to supply security, removing the danger that government action to 'improve' security would, as in times past, reduce it.

Climate change action is a more difficult issue. There is an acute 'knowledge problem'.¹⁹ Centralised action in the face of scientific ignorance about the causes of climate change and economic ignorance about its economic and social consequences risk very serious errors, even in the direction of policy, and the major investment programmes that are involved would be difficult to change even marginally, let alone reverse, if circumstances required. But what alternative is there?

One approach is to internalise the relevant externality, in this case introducing a carbon tax or carbon trading. Although this appears more attractive than centralised action, in practice it is very difficult to apply successfully. A major problem, discussed earlier, is that no government is willing to rely solely on it: those that favour a tax or trading want to take other actions as well so it is not clearly a way of disposing of all the paraphernalia of administrative action and cross-subsidies that has accumulated in recent times. Moreover, the information requirements for the successful use of a carbon tax or carbon trading are huge. Given all the uncertainties about not only the magnitude but also the direction of any future climate change, and about the consequences, setting the necessary tax rate or the traded volumes is no more than guesswork and so it is uncertain whether a carbon tax or carbon trading would be welfare-improving.²⁰

The other approach is to rely primarily on decentralised action – market forces and local small-scale community initiatives – to deal with climate change issues (Robinson 2008, 2013). Most economists are so impressed with the magnitude of the apparent market failure that they do not believe that market forces and voluntary action have the capacity to cope with this task. However, it is not sufficient to observe that markets 'fail' and then to assume that government will succeed. Markets and governments will both deal with climate change imperfectly and it is by no means clear that the better result will come from reliance on a government which places its faith in very long-term forecasts of climate change and its effects and proceeds to centralised action.

Markets have for some years been adapting to expectations about prospective climate change. The public good aspect of climate change is not a conclusive argument against the efficacy of market adaptation. People may be willing to contribute to the provision of public goods, even though they realise they are supporting free riders, if they think the provision is

sufficiently important (de Jasay 1994). The reaction in favour of ‘green’ products and services is based on some very imperfect information, much of it emanating from governments and international bodies, as well as from producers of the relevant products. But consumers are used, in most markets, to filtering distorted information (such as that from producer advertising). Indeed, if damaging man-made climate change is in prospect, the only real hope of avoiding the damage may be through the problem-solving mechanisms of markets: experience so far suggests that the chances of effective action by governments and international bodies are very small.

A very significant advantage of relying primarily on markets is their flexibility and adaptability, which permits adjustment as information changes. It is unnecessary to peer many decades ahead into a very murky future and, in the way of central planners, make long-term commitments now to massive investments to deal with supposed problems. Nor is it necessary to wait for politicians to act. Markets will start to deal with problems as soon as they are perceived as such and they will adapt as views change, discovering means of adjusting to those problems. Climate change may appear a more serious issue than now, in which case markets will enhance the profitability of ‘greenery’, so reacting in the ‘right’ direction. Or it may seem less serious, so that greenery starts to go out of fashion.

It seems unlikely that the big programmes now being urged by climate change activists could be similarly adaptive to changing circumstances. They are all too likely to set communities on courses which are very difficult to change as the views of climate scientists change. A market-based, decentralised approach to climate change would allow adaptation to changes in climate that scientists cannot at present foresee and by means that central authorities have no means of predicting.

Notes

1. Originally the Office of Electricity Regulation (OFFER) for electricity and the Office of Gas Supply (OFGAS) for gas. The two Offices were merged in the Office of Gas and Electricity Markets (Ofgem) in 2000.
2. The early (Magnox) nuclear power stations were regarded as unsaleable and remained in state hands. One Magnox plant, Wylfa in Anglesey, is still in operation.
3. Gas production was effectively denationalised in the 1960s when private companies discovered natural gas in the North Sea and were permitted to exploit it, though under strict controls which included the government’s granting the nationalised gas industry a de facto monopsony of the purchase of this gas (Robinson 1994).
4. An interventionist energy market goes back before nationalisation. The market was controlled by the government during World War II and, before that in the 1930s, British governments helped introduce a quota system and marketing agencies to support the indigenous coal industry and passed legislation in 1926 to establish a national electricity grid.
5. UK energy policy post-war is discussed in Helm (2003) and Robinson (1993, 2004).
6. The costs (most likely very high) associated with the government’s attempts to force renewables, especially wind, into the generation system are not examined in this paper. For an excellent analysis see Hughes (2012).
7. Another aspect of the new centralisation, which is not discussed in this paper, is government interference in retail energy markets to try to offset the increase in consumer bills caused by its policies. The perverse consequences of government attempts to ‘simplify’ tariffs have been very effectively exposed by Stephen Littlechild (2013). The government has also revived a policy pursued under nationalisation of subsidising the energy prices paid by energy-intensive users to protect them from the effects of its policies.
8. The problem may well be magnified because much of the literature does not recognise the failures that occurred (for example, in the nuclear power programmes). Discussion of energy policy in this period is in Robinson (2004, 2013).
9. The *Annual Energy Statement* of November 2012 explains present policy (DECC 2012a). There were hints before 2007, for example in a 2003 White Paper, that policy might be about to change.
10. A discussion of policy in earlier post-war years is in Robinson (1969).
11. An intermediate target is to achieve a 50 per cent reduction over the 2023–27 period.
12. The fallacies in this view are considered in Robinson (2007).

13. The scheme has been heavily criticised. One of the critics' main concerns is that they think the carbon price that results from trading is 'too low'. In April 2013, the European Parliament rejected a scheme that would have supported prices by temporarily restricting the supply of allowances.
14. Economists used to criticise nationalisation, inter alia, on the grounds that it resulted in a network of cross-subsidies which brought about inefficiencies. Cross-subsidies abound again because of present energy policy.
15. The arguments in this section of the paper are developed in more detail and examples from British energy policy are given in Marshall (2005) and Robinson (2007).
16. Further discussion is in Robinson (2008).
17. Stern (2006, Summary of Conclusions, p. viii).
18. Stern (2006, Executive Summary, p. x).
19. Authors in the Austrian tradition such as Ludwig von Mises, Friedrich Hayek, Israel Kirzner and George Shackle have stressed the impossibility of collecting centrally knowledge which is essentially dispersed (and much of which may be tacit). See, for example, Hayek (1945).
20. A way of dealing with some of the problems associated with setting a carbon tax rate is to vary the rate according to experience with warming so that the tax rate would be positively related to temperature. McKittrick (2013) sets out a proposal.

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