PERSPECTIVE

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# *A failure to act inspired by political cowardice?*

**SIR BERNARD INGHAM**

## INTRODUCTION

It cannot be ignorance. Ministers and officials know the score about Britain's precarious energy supplies. If their failure to act – as distinct from appointing inquiries – is because of complacency, it is risk-taking to the point of recklessness. Many suspect the real reason that prevents them from "selling" the need for nuclear power to safeguard future supplies of electricity at a reasonable cost is political cowardice born of political correctness.

Whatever the cause, the Government disingenuously excuses its inaction on two grounds: investors are not seeking approval to build new nuclear power stations; and the need to find a more permanent store for higher level radioactive waste. Neither can nor will occur until the Government bestirs itself. It is the Government which is the log that is causing the jam that could seriously damage the British economy.

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Unless something happens over the next 18 months, another Parliament – at least four too many – will go by without the Government moving to safeguard power supplies. By 2007 we shall be into the paralysis of the second half of a Parliament when "difficult" decisions are unwelcome. The situation is potentially dire.

All modern developed economies need reliable, competitively priced, continuous electric power supplies in order to function. Without them lies steep economic decline, social disruption and unnecessary distress.

It is one of the first duties of any Government to ensure the adequacy and continuity of electrical power. This was traditionally achieved by having a mix of energy sources – coal, oil, gas, nuclear, and those renewable sources of energy (notably hydropower) which could be provided at reasonable cost – and by raising energy efficiency. This mix is now being reduced.

Today coal, oil and nuclear power stations provide just over half of our electrical power – coal about one third; oil a mere 1% and nuclear down from a maximum of a third to at best 20%. But many coal and nuclear power stations are ageing and approaching closure.

Coal's demise will be hastened, as things stand, by an EU directive that will make it uneconomic to fit desulphurisation scrubbers costing hundreds of millions of pounds to ageing power stations – scrubbers that do not remove $CO_2$, despite the fact that it is called clean coal technology. Nuclear will contract steadily to a mere 3% over the next 18 years. The prospects of extending the operational lives of most existing reactors for more than a few years appear remote.

Two things are clear: a substantial proportion of UK's electricity supplies are about to be lost over the next 15 years; and there is no visible, let alone viable, strategy for replacing them.

**PROBLEMS WITH WIND**

The Government rejects such claims. Its policy, as set out in the 2003 Energy White Paper, is to fill the gap with renewable sources of energy, greater energy efficiency and natural gas. In the light of the evidence so far, this is as heroically hopeful as it is dangerous.

Currently, between 3% and 4% of our electricity comes from renewable sources. Most of this is hydropower. But there are no large hydropower developments on the agenda. Not many people are queuing up to offer their valleys for submerging under a dam. Hydro-electric power is largely developed.

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The rest of renewable electricity comes from waste combustion, sewerage and landfill methane; and wind; with insignificant contributions from such sources as solar and biomass. After 15 years of development, subsidy and distortion of the planning process, wind still delivers only about 0.5% of total electricity production.

The Government is aiming to provide 10% of electricity from renewables by 2010; and aspires to secure 15% by 2015 and 20% by 2020. Few other than those imbued with an environmental fervour akin to religious fanaticism or idle dreamers think this is remotely possible.

This is perhaps as well since, if it were to happen, it could bankrupt business. Wind power costs two or three times as much as the cheapest option, depending on whether it is generated on- or offshore. Denmark, the so-called home of wind power, has the highest electricity prices in Europe. In Germany, with the largest installed wind power capacity, consumers are restive. Wind power may provide only 6% of supply but it represents 13% of the costs of German electricity. In the UK, wind power companies are not so much farming the "free" wind as harvesting government subsidies.

Although the Government has rigged planning guidance to make it easier to secure consent for wind turbines, most onshore wind proposals and increasingly offshore projects evoke massive opposition. They are seen as blots on the landscape. The opposition will be greater when people realise not only the cost – to which heavy connection charges from remote sites have to be added – but wind's minimal contribution to saving the planet by reducing $CO_2$ emissions.

The average turbine in Britain generates only about a quarter of its rated output. Turbines do not generate any electricity when the wind does not blow or when, for safety reasons, they have to be shut down when wind speeds exceed 55mph. Nor does nature routinely oblige with optimum wind speeds for generation. Yet consumers still need electricity if turbines are becalmed since it is not possible to store electricity in bulk.

They particularly need power during those mid-winter anti-cyclones that bring calm and plummeting temperatures. The gap has to be filled by coal, oil, gas or nuclear stations on "spinning reserve" standby. As coal, oil or gas stations are most often used for this purpose, wind, looked at overall, is anything but clean.

Yet combating global warming is its sole justification.

There is yet another limitation: the problem of accommodating large amounts of "embedded" and unpredictable electricity flowing, or not as the case may be, on to the grid. The operation of the grid is a second-by-second balancing of supply and demand. Wind power can fluctuate wildly and surge or collapse steeply. This underlines the need for "spinning reserves" – i.e. fossil fuel plant coasting along relatively dirtily. The Irish National Grid long since barred the connection of more wind power because of a lack of reliable reserves.

Incidentally, this problem of balancing puts in perspective the dreams of environmentalists to convert our homes into mini-power stations using the wind and sun. The greater the amount of unpredictable power from micro-generation, including combined heat and power schemes, the more difficult the operation of the National Grid becomes. And the largely self-contained UK grid does not have the luxury of spreading the uncertainties across national boundaries as on the European mainland.

*Wind power is anything but clean: conventional power stations must still keep spinning to make up for fluctuations in supply.*

Yet for all its limitations, wind is the answer to politicians' prayers: it is a visible token of their green credentials; and it deflects attention from the fact that the UK has increased its output of $CO_2$ over the last three years.

Wind's limitations apply to a greater or lesser extent to other renewables because of their intermittency, cost or commercial availability. There are no tidal, wave or sea current sources to call upon; and are not likely to be in the foreseeable future. Global warming has not yet advanced so far that solar power is relevant to Britain; in any case, it is not much use at night. Geothermal (hot rocks) is always likely to be marginal in the UK and there are limitations on assorted bio-fuels if only because of their land requirement.

The problem is that renewables are dilute sources of energy. To produce 1000MW – the output of an average conventional power station – wind (when it is blowing conveniently) requires the whole of Dartmoor, biomass a forest the size of North Wales; bio-oil a rape seed field the size of the Highlands of Scotland; bio-alcohol the whole of Devon given over to sugar beet or Yorkshire to corn; and bio-gas 800 million chickens with regular digestions on a farm covering a third of Dartmoor, following best husbandry practice that allows 10 to 11 chickens per square metre. In contrast, a nuclear power station takes up only 10 soccer pitches.

And we need not just one 1000MW power station to meet peak demand but up to 60.

**ENERGY EFFICIENCY: A QUESTIONABLE GOOD**

The Government's failure to secure future electricity supply has earned itself a magisterial rebuke from the House of Lords' select committee on the economy. In its report published on 6 July 2005, it said:

*"We are concerned that UK energy and climate policy appears to be based on dubious assumptions about the roles of renewable energy and energy efficiency and that the costs to the UK of achieving its objectives have been poorly documented."*

Energy conservation is being asked to bear an insupportable load in energy/climate policy. No one doubts that large amounts of energy can be saved *in extremis* by pricing

and by restrictions on energy use. But the longer the crisis, the more restive and less responsive consumers become. An energy crisis soon becomes a political crisis.

Undoubtedly, sustained high prices for energy would encourage consumers to be less profligate. But raising prices to habit-changing levels in a democracy is politically difficult (as has already been discovered in the UK this century). Technological advance can steadily squeeze more useful work out of fuels used in buildings, vehicles and appliances.

But rising efficiency has not cut demand for electricity. Demand rises relentlessly at between 1% and 1.5% a year. Indeed, over the last 250 years, improved energy efficiency has actually increased, rather than reduced, energy consumption. Fells Associates make the point that energy efficiency has been a priority for the past 30 years, and yet energy demand has increased by 60%.

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**IF NOT RENEWABLE, IF NOT EFFICIENCY, THEN WHAT?**

Should half of the nation's electricity generation in the form of coal and nuclear to close, natural gas would have to take an immense strain. It is already generating 40% of our electricity. Current policy envisages up to 80% of our energy requirement being imported in the form of gas.

This is where the irresponsibility of current energy policy becomes reckless.

Less and less of this gas will come from the UK Continental Shelf where production is past its peak and falling steadily. More and more will have to be imported from, apart from Norway, politically unstable countries or areas such as Russia, the Middle East, Algeria and Nigeria. Conventional commercial wisdom has it that these producers can be relied upon to honour their contracts because they have a vested interest in doing so and have done so in the past.

But that does not remove all temptation to use oil and gas for political ends. Nor is the price at which gas will be imported predictable, except that it is likely to be much higher than lower. Indeed, this is almost guaranteed, given the pace of development in China and India with 2.4 billion people between them. For example, if China were to continue to average 8% growth, it would be consuming proportionately as many resources by 2030 to 2040 as the US is now. In that event it would require 99 million barrels of oil per day compared with total current global output of 79 million barrels per day.

Such a situation would give France, for example, a significant competitive advantage because it derives most of its electricity from nuclear (78%) and hydro-power. France has none of the UK's alarms about nuclear power. Indeed, it is proposing progressively to replace its current nuclear plant.

Against this background, the case for the development of nuclear power on national security grounds is overwhelming – or would be if it could remedy the immediate fine balance between supply and demand. The latest scenarios from National Grid on winter supplies of oil and gas show that, up to 2008, supply is increasingly precarious in cold weather. This is partly because of doubts

about the availability of gas until new pipelines come in.

Unfortunately, nuclear is no answer to short term needs if it takes – or the Government allows it to take – 10 years to build a nuclear power station from the drawing board to the first unit of electricity generated (China can do this in just five years). We shall have to muddle through. In doing so, we could make the nation more vulnerable in the long term if there is another "dash for gas" – that is, by building a new generation of gas-fired power stations.

In the long term, nuclear is a different proposition. It is a reliable form of power generation, tried and tested over 50 years, and competitive, safe and, not least, clean. The UK has not recorded a single death from a radiation accident over the nuclear industry's half-century and, measured over its life-cycle in terms of carbon production per unit of electricity generated, it is even cleaner than wind, according to the Government's Energy Technology Support Unit. The world's 440 nuclear power stations avoid the production of more $CO_2$ than would the full observance of the Kyoto Treaty, including by the US.

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So why does nuclear still remain, after eight years, an option never completely written off but never remotely exercised? Why are expensive devices such as carbon trading inflicted on industry and eventually on the consumer? And why are uncosted schemes for capturing $CO_2$ and sequestering it in oil and gas wells in the North Sea promoted? This sequestration would double the price of electricity and would do nothing about the 40% of $CO_2$ arising from domestic and transport use.

There are two conventional (and wrong) answers to these questions: doubts about nuclear's competitiveness; and the industry's ability to manage its wastes.

**THE COST OF NUCLEAR**

The nuclear industry, with its personnel rooted in the traditions of the defence and Civil service establishments, has been its own worst salesman. It has left the field to its enemies and has done little to correct the inventions and distortions of its opponents.

Now the industry is barely able to defend itself: both British Energy, the main nuclear generator, and BNFL, the reprocessing and waste management company, are firmly under Government control. And a telling indication of how the Government has failed the industry is the pressure it has put on BNFL to dispose of its profitable nuclear power station building arm, Westinghouse, just when international demand is taking off. China, India, Japan, South Korea and not least the US are all looking at building more nuclear power stations.

Worse still, British Energy is cited as proof that nuclear is uneconomic. It is a persuasive argument if the facts are ignored. It certainly had to be "rescued" by the Government from bankruptcy on confiscatory terms. But who bankrupted it? The Government through its price-crushing regulatory regime for the wholesale electricity market. It was a regime that made coal, oil, gas and nuclear generation unprofitable and left viable only those generators with large captive domestic consumers to milk. With gas and electricity prices soaring, British Energy is healthy again (although tied by Government and EU restrictions).

Opponents of nuclear energy continually forecast improvements in the performance of every technology apart from nuclear. This is a curious stance. The new Westinghouse AP 1000 reactor, already licensed in the US, has eliminated 85% of the cable, 80% of pipe, 50% of valves, 45% of seismic building volume and 35% of pumps required by the earlier generation of light water reactors. It is now inherently safer than any of its (already safe) predecessors.

Today, nuclear electricity costs somewhere between 2p and 3p per kWh. A report from the Royal Academy of Engineering (RAE) put its costs at the lower end of that range (at 2.3p per kWh). This figure includes a provision of some 4% of costs for decommissioning and waste management. Nuclear is the only form of electricity generation that provides for its environmental consequences in its current price.

*Nuclear is the only fuel to include its environmental costs in its current prices. At between 2p and 3p per kWh, it is still the cheapest option.*

It is true that discount rates are crucial to the final cost figure – the RAE used a discount rate of 7.5% – but other exercises by the Scherrer Institute in Switzerland, the OECD and the projections for the European reactor being built in Finland are consistent with the RAE's findings.

If these various institutions are broadly right, nuclear – to repeat, the only fuel to reflect its environmental costs in current prices – must be the cheapest option, given the soaring price of natural gas since the RAE put gas generating costs at 2.2pkWh. There is therefore a competitive case to be made for nuclear and that in turn underlines the security it offers the nation. That security case is strengthened by the ready availability of uranium (not to mention plutonium in the UK as a result of reprocessing) and the likely relative stability of uranium prices compared with gas. There is no foreseeable shortage of uranium, contrary to some environmentalist claims.

**NUCLEAR WASTE**

The other major objection to nuclear is its alleged inability to handle its radioactive wastes. This is also deceptive.

The nuclear industry has been handling its waste ever since it started producing plutonium for military purposes and using the atom to generate electricity. It has quite deliberately stored the intermediate and higher level wastes in "ponds" to allow the heat and some of the radioactivity to decay.

But this can be improved. After 50 years, the time has come progressively to transfer the wastes in treated form – ie locked in cement or glass inside stainless steel containers – to a longer term resting place, most likely either in deep rock or in a near-surface cavern. After 500 to 600 years, the radioactivity will have decayed to the harmless level of uranium found naturally in the earth, though some of it will remain toxic for longer periods, if ingested (as will lead in batteries and tins of weed killer that are also buried out of sight).

It is not beyond the wit of man – after all the Swedes and Finns have done it – to establish a repository. But it will take political courage. And that is all that stands in the way in Britain of resolving the waste issue. It is a political problem, not a scientific, technological, engineering or cost issue.

What is more, there is not a lot of it after 50 years of nuclear operations. Professor

Gordon McKerron, chairman of the discredited Committee on Radioactive Waste Management, claims there are 470,000 cubic metres of the stuff for which there is no long-term disposal strategy. This, he claims, would fill the Royal Albert Hall five times over.

To drum up all this waste, it turns out that Professor McKerron has included all the waste that is likely to arise in the future as well as the uranium and plutonium available as fuel. If these projected future arisings and the uranium and plutonium fuel are eliminated, my colleagues and I in Supporters of Nuclear Energy cannot identify much more than 74,500 cubic metres of the stuff – less than would be required to fill a single Royal Albert Hall. And the highly radioactive waste component would fit into a 30-metre cube.

*The Government claims that the nuclear industry is not queuing up with proposals for new nuclear power stations. This is true. And utterly disingenuous.*

In addition, the new generation of reactors will produce much less nuclear waste: they are projected to produce a tenth of that created by existing UK reactors.

**THE FAILURE OF GOVERNMENT**

The Government claims that the nuclear industry is not queuing up with proposals for new nuclear power stations. This is true. And it is utterly disingenuous.

It is not surprising that nobody is coming forward with an investment proposal. Why should a potential investor rush in when the Government appears at best agnostic and at worst hostile to nuclear power? Consider the evidence: the Government, pledged to reducing greenhouse gas emissions, imposes the climate change levy on nuclear electricity when it emits next to no greenhouse gases; and Margaret Beckett, no friend of the nuclear industry, remains the Secretary of State at the Department of Environment, Food and Rural Affairs.

The Government appears to have a perpetually open mind on the nuclear issue where it is not, like Mrs Beckett's, perpetually closed. It seems that the only thing that will make up its mind – and cause it to act – is a blackout through lack of fuel or generating capacity. So far, six Ministers of Energy since 1997 have been lucky with the winter weather. But that does not necessarily mean that Malcolm Wicks, the current incumbent, would survive the sort of severe winter last seen in 1962-3. Electricity blackouts will not only cause computers to crash and the wheels of industry and commerce to grind to a halt; they can also cause extensive domestic upheaval and distress and death from hypothermia.

**OPTIONS**

So what should the Government be doing? First, it must accept and broadcast the need for a substantial nuclear contribution to future power supplies. In an ideal world it would also indicate the desirability of building a series of nuclear reactors to secure economies of scale.

Second, it must be clear about how the private sector can be involved in developing new nuclear power stations. The Government's position is that new nuclear stations should be built by the private sector. A consortium of companies is the obvious vehicle. But before such a consortium of generators, distributors, construction companies and perhaps major users of electricity will make a heavily front-loaded investment, they need the Government to clarify: the terms on which they could enter the market; the sort of long-term contracts

open to them; the proposed insurance regime; and, not least, how the current short-term regulatory framework run by Ofgem is to be reformed.

Third, the Government should ask the Nuclear Installations Inspectorate to start licensing a choice of reactors. Investors also need guidance on the range of reactor sites available. There is no shortage, given the rundown of first and second generation nuclear reactors, and there is unlikely to be any lack of welcoming sites since these communities wish to maintain their local economies.

Logically, there is no need for the Government to end its procrastination over a site for a nuclear waste repository before facilitating a new nuclear ordering programme. But politically it would be much easier since nuclear opponents have for years assiduously sought to block nuclear development by kicking a decision on a long-term store into the long grass. A recommendation on the method, though not the site, is promised from Professor McKerron by July 2006.

Fourth, the Government must conclude its studies and enquiries on progress with reducing greenhouse gas emissions and the nuclear option. This is necessary before a promised White Paper can be published. But whether such a policy document would represent significant progress towards an energy policy the nation sorely needs without the other Government action canvassed above is another matter.

*The case for nuclear is clear. What other explanation is there for the Government's failure to act other than political cowardice?*

The case for nuclear on grounds of longer term security of supply and competitiveness, and its indispensability in combating global warming, has long been clear. What other explanation is there for the Government's failure to act other than political cowardice?

**THE AUTHOR**

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