

Energy perspectives

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Another energy policy review— evolution or revolution?

It's official—the Government is planning to issue a new energy White Paper next year. The nuclear lobby is convinced that the tide is turning in its favour. But many people believe a renewed focus on nuclear could be damaging to the drive towards renewables and other competing low carbon options. At a simplistic level, some see a choice for the review between an evolutionary approach based on fine-tuning existing policies or a revolutionary approach involving new nuclear build.

This perspective briefly looks at some of the issues that need to be considered as part of the energy review. To do this, we will touch on:

- the direction set in the February 2003 White Paper;
- what has changed since then;
- some of the key issues involved in reformulating policy; and

- how they might inter-react.

It is not an advocacy statement, though we have a bias against a radical shift in energy policy for the sake of it. Perhaps this is what the Secretary of State when he says he is nuclear agnostic.

February 2003 policies?

The four main policy goals set by the 2003 White Paper illustrate the need to fashion policies that deliver multi-faceted outcomes – the environment, security of supply while maintaining competitiveness and low prices to the fuel poor. To steer a path towards these goals, the government set five specific targets to achieve a 15-25MtC emissions reduction by 2020. These are:

- refocusing on emissions trading from 2005 (2-4MtC) with generator entry;
- “ambition” to double renewables by 2020 from its previ-

5MtC);

- ramp up energy efficiency for both domestic (4-6MtC) and I&C sectors (4-6MtC); and
- not forgetting transport (2-4MtC).

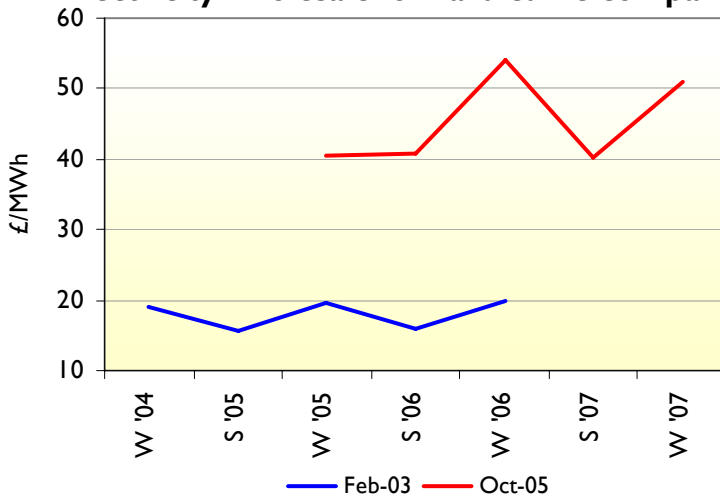
As for nuclear: “[Nuclear’s] current economics make it an unattractive option for new, carbon free generating capacity and there are also important issues of nuclear waste to be resolved.... The White Paper does not contain specific proposals for building new nuclear power stations. However, we do not rule out the possibility that at some point in the future new nuclear build might be necessary if we are to meet our carbon targets.”

Changing global context

So what has prompted another review less than three years on?

The first and most obvious change is that the UK is on a confirmed course that will miss critical government targets. Defra’s review of progress towards the UK’s nearer term Kyoto targets came out late last year. The *Review of the UK Climate Change Programme* admits that more needs to be done to meet the national target of 20% reduction in CO₂ emissions by 2010. The evidence contained in the review effectively says that the policy measures favoured since 1999 have not de-

Electricity wholesale forward curve comparison



ous target (3-

livered the hoped for CO₂ reductions. In fact since 2000 emissions in the UK have begun to rise, and a recent Cambridge Econometrics report has spelt out that the gap is widening.

The second change can be described as the recognition of the reality of gas import dependency. What we have seen since the White Paper is a local gas market undergoing profound change. The UK has become a net gas importer ahead of expectation. Unforeseen security of supply concerns are now high up the agenda. The energy pricing implications of this shift have already been severe, with the UK now seemingly the swing gas market in Europe. Gas prices this winter and next are north of 60p/therm, building on last winter's trend. And because of the importance of gas as a fuel for electricity, major consequential changes have also fed through into power prices, and the forward curve has more than doubled in 30 months as shown on page 1. As a consequence the price scenarios anticipated in February 2003 are effectively redundant.

The third change concerns changes to the European nuclear landscape. For most of the pe-

riod since Three Mile Island (1979) and Chernobyl (1986), nuclear power has been ignored by western governments. This change led to decisions of phase-out in Italy (fully implemented), Sweden (partly implemented), Germany (implementation started) and Belgium (still to be implemented). But public opinion in a number of traditionally anti-nuclear countries now seems to be turning – notably in Germany and Sweden. Also Finland has committed to the construction of a new nuclear reactor, and there is of course the new French European Pressurised Water Reactor (EPR). Political opinion here too seems to be thawing, gauging by a recent poll of politicians by Mori. For the first time in over a decade it is being argued that the level of public opposition is less than the level of support.

This shift in attitude should not come as a surprise. In fact whenever oil prices became volatile and newsworthy, policy makers tend to react instinctively pro nuclear. Oil price trends and the response are shown at the figure below. The trend started way back in 1956 when Suez led to the tripling of the UK's initial Magnox nuclear pro-

gramme. At the time it was proclaimed that nuclear power would be too cheap to meter, and the hope of this has sustained the nuclear programme ever since. Since then we have seen:

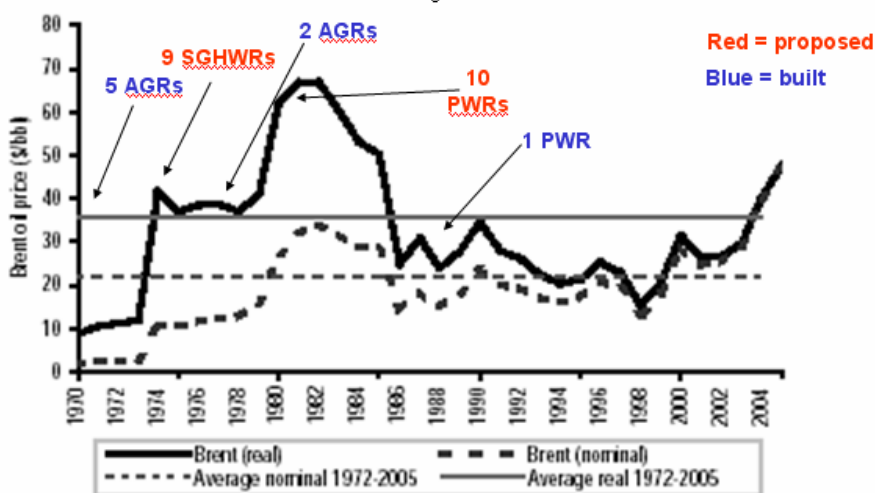
- in 1970 – orders for five AGRs based on erroneous industry forecasts;
- the legacy of the OPEC years and oil shocks of 1973, when a further nine nuclear stations were to be ordered in the period to 1979;
- although this programme was cancelled in 1978, the government committed to two further AGRs after high oil prices endured into the late 1970s with a second price shock and led to David Howell's December 1979 statement in support of 15GW of PWRs;
- but by 1982 this policy was downgraded following cost overruns on the AGRs and falling oil prices, with only the Sizewell PWR being pursued;

It looks as if, with oil prices surging again, we are poised to go round the same loop, but it is essential that in doing so we dismiss the positions of the past and take a bottom assessment of the merits of the case.

Oil dependency is key

Two further obvious changes have occurred since February 2003 in the pricing background. Oil prices are stubbornly above \$60/barrel with no sign of any immediate respite. As we have observed, electricity and gas wholesale prices have more than doubled. Carbon costs have provided a wild card, though the market—despite its strength this year—is not significantly above levels forecast two years ago. The effect of these changes should be to impact favourably

We have been here before.....



on their position of nuclear as well as renewables compared to fossil-fuel alternatives.

In actuality various studies show a wide range of costs for both wind and nuclear against February 2003 estimates. These are summarised below, against prevailing baseload prices then and now. To illustrate the difficulties inherent in more recent estimates: the Sustainable Development Commission argued recently that the generated cost of wind is around 3.2p/kWh on-shore and 5.5p/kWh offshore. Other studies such as the Royal Academy for Engineering give a range of 3.7-5.4p/kWh for on-shore, and 5.5-7.2p/kWh for offshore. Likewise some studies show costs of the EPR down at 2.3p/kWh but others in excess of 6p/kWh once backend costs are allowed for. All too often with such studies though, like most of the daily newspapers, one knows what one is going to get before the first page has been turned.

Getting to the heart of the matter

What, then, are the key issues a policy review should take into account?

The government's view of fossil fuel prices will be critical. A glance at recent brokers' views suggests that something further has to shift on an enduring basis for nuclear to become economic without financial support. It is likely that nuclear would become the most obvious economic choice beyond the end of the decade if prices remain consistently high. But, in the British gas market at least, few analysts seem to think this is likely over the medium term once new LNG and gas supply infrastructure is commissioned. The oil-gas price linkage is also looking increasingly fragile as it becomes

exposed to political scrutiny here and on the continent.

The management of highly radioactive waste also needs resolution. A recent House of Lords select committee noted: "We are dismayed by the Government's lack of urgency. The UK has generated radioactive waste for more than half a century and still hasn't decided how to deal with it." In this context recent remarks by Elliott Morley suggest that the government is not at one on the prospects of early resolution. Final storage is a very complex issue, but it is also a very emotional one and one that is not likely to be resolved because of political impatience.

The arguments for and against nuclear power have never, of course, turned solely on questions of performance and waste management alone. There are other dimensions to nuclear energy: the concerns about nuclear proliferation, the creation of a plutonium economy and safety. Anxieties such as these may have seemed abstract back in the 1980s, but they are unavoidable in the post-9/11 environment.

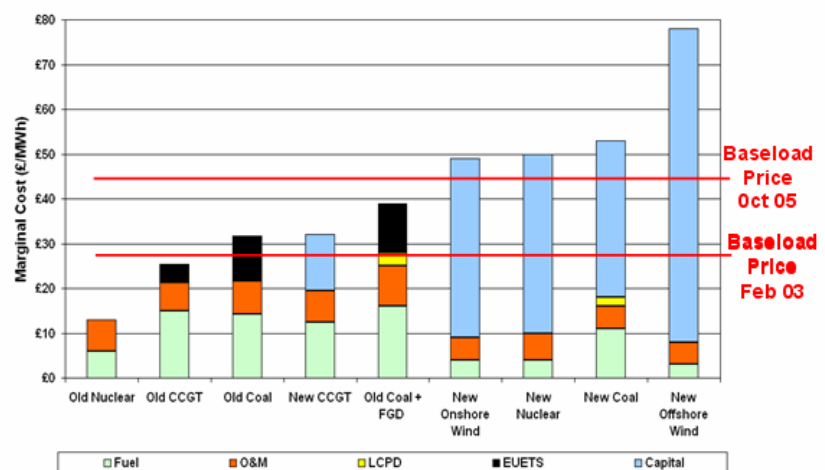
But there are also some further matters relating to the structure of the market that

need to be thought through before a major shift in policy can be contemplated, not least because of the interactions with other policy initiatives.

First, who will build such a facility? British Energy by its own admission is not among the world's low cost nuclear operators and the constraints following the restructuring under which it operates are immense. The UK of course already has three front line nuclear operators through affiliates of EDF, RWE and E.ON active in the market. But it is improbable that their equity investors would be likely to support nuclear growth at least outside their domestic sectors unless the market were guaranteed.

Second, how will such development be funded? New nuclear build would require government guarantees over a period of fifty years or more, fixed take or pay commitments from suppliers or some combination of the two. It is interesting that the only companies that are currently considering a new nuclear plant are a still state-owned entity (EDF) and a non-profit organisation (TVO in Finland). And both benefit from some form of state guarantee.

Government cost estimates from 2003



Source: John Bower/Cornwall Energy Associates

More fundamentally, it is hard to see how new nuclear build can be accommodated easily within the current market structure with its high imbalance penalties.

Some would argue that some of the current concepts of supply and competition that underpin the market will need to be overhauled. Others would point to the need for some form of carbon obligation building on current regulatory obligations that apply to renewables and energy efficiency.

A brave government might also consider the merits of a carbon tax that replaced the patchwork quilt of current fiscal arrangements, but we suspect this option will remain in the too-hard basket.

Where does this leave us?

Global energy markets and the UK's position relative to them have seen a paradigm shift

since February 2003 and it is time for a wide-ranging policy rethink. The White Paper vision is still appropriate—more so, maybe. The key issue is how to get there.

The implications of increasing gas dependency are much greater than the government previously anticipated and are being felt much sooner than expected. Consequently the scale of the problems identified by government in terms of carbon reductions to be achieved and the difficulties of ensuring security of supply at reasonable cost is greater than was thought. Teething issues with programmes to support renewables, energy efficiency and emissions trading are being addressed, and it is important these policies are allowed to run their course. We need to build on their successes, not over-egg their weaknesses. The need for a significant renew-

ables contribution is no less great than back in February 2003, and we must resist the temptation to see the policy debate as a nuclear versus renewables one. Nuclear power clearly has a key role going forward, and as a minimum life extension is looking increasingly attractive to help fill the shortfall against targets. But new nuclear build will require fundamental reworking of the market. It also entails a gamble on oil prices. A fundamental shift in policy now could involve a diversion in financial resources, and how any shift in policy is managed could deter other necessary investment.

The clear message is that the UK needs evolution, not revolution, in energy policy. But provided there is rigour in the review process this need not preclude a change of heart on nuclear policy.

European status of nuclear and opinion

Country	Attitude towards nuclear	Main players	Nuclear as % of total generation in 2003	Number of active reactors at end of 2004	Total net nuclear capacity at end 2004 (net MW)
France	The biggest fan in the world – likely to grant life extensions from 40 years to 50 years, if not more Now starting the building of an EPR	EDF (generation) Areva (fuel, construction of plants, fuel reprocessing)	86% (2004)	56	62,893
Belgium	Current policy is for a shut-down of all plants after 40 years of operation	Electrabel	56%	7	5,681
Germany	A phase-out has been initiated in 2000 that should lead to all plants being closed in 2025 or 2026	E.ON, RWE, EnBW, Vattenfall	28%	18	20,879
Spain	No particular political issue – current Socialist government traditionally anti-nuclear – recent change in payment of waste management could be a negative for companies	Endesa, Iberdrola, Union Fenosa	24%	9	7,892
UK	- No particular political issue - Collapse of BGY has raised doubts on economics of nuclear (unlike in other European countries) - Unlikely to see new nuclear in the foreseeable future	British Energy (generation) BNFL (fuel, fuel reprocessing)	23%	12	11,852
Switzerland	- Positive A recent referendum confirmed that two-thirds of the population wants to keep nuclear generation	NOK Bernische Kraftwerk KWE Leibstadt KWE Goesgen-Daeniken	42%	5	2,985
Italy	A 1986 referendum led to a pull-out	Enel	0	0	0
Finland	A way to ensure fuel independence from Russia TVO – a non-profit organisation - now building a new EPR plant	Fortum TVO	27%	4	2,520
Czech Republic	Favourable – Nuclear seen as key to country's competitiveness and independence Two new plants in early planning stage	CEZ	31%	6	3,780
Sweden	Tentative pull-out seems to be failing, but very unlikely to build new nuclear in the future Operational excellence	Sydskraft (E.ON) Vattenfall	51%	11	10,000

About Energy perspectives: this is part of a regular series, Energy perspectives, from Cornwall Energy Associates. It is intended to provide informed, independent comment on topical energy market issues. The series is available on www.cornwallenergyassociates.com