Nuclear power? Itâ€™s still no thanks

by Oscar Reyes
Tuesday, 26 October 2010

Nuclear power is being repackaged and promoted as a green alternative to fossil fuels. But neither this claim nor the underlying costs of the industry add up, writes Oscar Reyes

The case for nuclear power is now so overwhelming that frankly it is almost irresponsible â€¦ to oppose its development,â€™ according to Tony Blair. It is far from the most eye-catching of his biographical musings, but he is not alone in defending a programme to build 10 new nuclear reactors in the UK.

Like much else under the coalition government, Britainâ€™s nuclear energy programme was set in motion by New Labour and continues unchanged, despite being opposed in the Lib Dem manifesto. Yet the case for nuclear is more overwhelming in its persistence than its attractiveness as a proposition. Nuclear reactors remain prohibitively expensive to build, notoriously subject to delay, expensive to secure, and impossible to clean up with any certainty. So why do they continue to attract the support of politicians once they gain power?

The lights that never go out

Like so much else in energy politics, fear of supply shortages is a crucial part of the explanation. â€˜I have no intention of the lights going out on my watch,â€™ said the coalitionâ€™s energy and climate change secretary Chris Huhne in August, as he stated his support for a new reactor at Hinkley Point in Somerset, scheduled to open in 2018.

Yet this fails to tell the whole story. Huhneâ€™s 2018 estimate is already a year later than the original plan for Hinkley, which is only at the â€˜pre-applicationâ€™ stage of the planning process. Long delays are the norm in nuclear development, and while the most optimistic estimates suggest that a new station could be ready by the end of the decade, the House of Commons trade and industry committee reported in 2006 that: â€˜Experience in the UK to date has shown . . . an average construction period for existing nuclear power stations of almost 11 years.â€™

In 2007, the Department of Trade and Industry reported that a third of the UKâ€™s electricity generation capacity would be retired over the next two decades. This would include two-thirds of the existing nuclear capacity (8GW), and almost a third of currently operating coal plants (another 8GW). Together with the projected growth in energy demand, the 2007 energy white paper estimated that the UK would need to add up to 35GW to the grid, with two-thirds of this already in place by 2020.

The bottom line is simple: a nuclear power programme that is intended to replace existing capacity will come too late to replace that capacity. So why, then, the enthusiasm for new nukes?

Playing the carbon card

In the aftermath of Chernobyl, the abiding image of the nuclear industry was the blue glow of an apocalyptic meltdown. In recent years, however, the nuclear industry has bathed itself in a green glow of climate friendliness. This greenwashing of nuclear power as a â€˜solutionâ€™ to climate change is widespread.

Nuclear energy is not â€˜carbon neutralâ€™, although it is often treated as such. Uranium mining, enrichment and transport, as well as the construction and decommissioning of nuclear facilities, generate significant carbon dioxide emissions that are at least double those of wind power, according to Germanyâ€™s Ã–ko-Institut. Yet these emissions are mostly outsourced, which keeps them off the radar of political decision makers whose field of policy vision seems to reach only as far as the UK coastlines where most nuclear reactors will be located.

That said, it is indisputably the case that nuclear power produces far fewer greenhouse gases than coal or gas, its main rivals as far as the large energy companies are concerned. On every other environmental measure, however, nuclear power remains as dirty as it is risky.

As Greenpeace puts it, â€˜The UK now has enough radioactive waste to fill the Royal Albert Hall five times over.â€™ Despite a series of government reviews on decommissioning, there is still no long-term means to deal with radioactive waste safely, ensuring that it wonâ€™t contaminate water supplies or leak back into the environment and food chain.

This risk to future generations should be seen against a backdrop of the massive environmental damage that is already being caused. From Kazakhstan to Canada, uranium mining leaves a legacy of polluted land and water supplies. To produce around 25 tonnes of uranium, the amount needed to supply an average sized reactor for a year, entails the extraction of half a million tonnes of waste rock and more than 100,000 tonnes of mill tailings â€“ which remain polluted for thousands of years.

On top of these environmental concerns, there remain major security risks â€“ most notably from the stockpiling of plutonium, the key element in the creation of nuclear weapons â€“ and significant doubts about the economic viability of nuclear power.

The numbers game

The current construction budget of Britainâ€™s new generation of nuclear power stations is estimated at around Â£50 billion, but these projected costs conceal as much as they reveal.

The nuclear industry has consistently underestimated the cost of building reactors. The projected costs of 75 nuclear reactors in the US amounted to $45 billion, but the actual costs once built were $145 billion, according to research by Greenpeace International. The high-profile Olkiluoto reactor in Finland, which was intended as the flagship of a â€˜new generationâ€™ of reactors, has seen a doubling in its estimated cost from â‚¬3 billion to â‚¬6 billion. The most recent reactor in t UK (at Sizewell B) was estimated at Â£1.7 billion, but ended up costing Â£3.7 billion.

This initial cost of building nuclear plants is way in excess of their fossil-fuel powered rivals, which poses serious questions about their economic viability. In the UKâ€™s liberalised energy markets, the risk of investing in nuclear is simply too high, since the large upfront costs cannot necessarily be recouped in the current climate of fluctuating energy supply and prices. Studies that claim otherwise tend to manipulate the â€˜discount rateâ€™, which is the comparison between how much the plant costs, and how much money could otherwise have been accrued by leaving the money in the bank to gain interest. When proponents of nuclear power are showcasing its viability, this rate is set low. When they argue for subsidies, the rate is set higher.

The hidden hands behind the hidden hand

At present, much of the debate is focused on whether the UK government will provide public subsidies to build nuclear power stations. The coalition has continued the policy of the previous government in announcing that it wonâ€™t do so. Yet here, too, the devil lies in the detail.

The coalition agreement includes a commitment to a â€˜floor priceâ€™ on the EU emissions trading scheme (EU ETS), which would be a thinly veiled subsidy. (The pledge also contains an implicit recognition, although a far from profound one, that the EU ETS is failing.) The rationale is that shoring up the price of carbon, which has fluctuated wildly since the inception of the EU ETS in 2005, would provide greater certainty in how to calculate the costs of pollution by fossil-fuel power stations.

The EU ETS treats nuclear as carbon-free, so it would stand to benefit from such a move. In practice, though, it looks distinctly unlikely that the government will be able to deliver on this promise in the context of an EU-wide scheme. If it does, the floor price is likely simply to be a carbon tax by another name. This, in turn, would have a far greater effect on the profitability of existing power stations than the likelihood of building new ones.

EDF, which is 85 per cent owned by the French government, is the main operator of nuclear power stations in the UK, having purchased British Energy (which runs eight of the 10 UK nuclear sites) in 2008. It is no surprise, then, that it has lobbied vociferously for a carbon floor price. It stands to gain a windfall of around Â£400 million per year (assuming a price of Â£10 per ton of CO2). If the price was set at Â£50 per ton, a level considered more â€˜viableâ€™ to incentivise investment in nuclear power, it would net EDF around Â£2 billion per year for its existing power stations.

Two even more significant subsidies already exist, moreover. As Peter Roche, of industry monitoring group No 2 Nuclear Power, explained to Red Pepper, â€˜In the event of a nuclear accident, the nuclear operating companies donâ€™t have to provide proper insurance. Beyond a certain level, the UK government underwrites the cleanup costs. Without this guarantee, or hidden subsidy, it is doubtful if anyone could afford to build new nuclear power stations.â€™

The costs of decommissioning existing nuclear waste have also fallen largely onto the state, as Chris Huhne lamented shortly after taking up his post as secretary of state in May. On finding a Â£4 billion budget hole relating to unavoidable nuclear decommissioning and waste costs, Huhne spoke of an â€˜existential problemâ€™ facing his department, which he told the Guardian was â€˜not so much the department of energy and climate change, as the department of nuclear legacy and bits of other things.â€™

Forced choices

Huhneâ€™s conflicted conscience on nuclear power reflects the possibility that it could emerge as a wedge issue dividing opinion within the coalition. In a statement that reads like it was scripted by Private Eye, Huhne claims that he was never anti-nuclear and was simply â€˜misunderstoodâ€™. Yet as recently as November 2007, he wrote: â€˜Nuclear is a tried, tested a failed technology and the government must stop putting time, effort and subsidies into reviving this outdated industry.â€™

However, Huhneâ€™s recent enthusiasm should not be â€˜misunderstoodâ€™ either. A quick look at the right-wing press, or th outpourings of the Adam Smith Institute, shows that Huhne remains under fire for damaging the nuclear industry. They accuse the Lib Dems of being behind the cancellation of an Â£80 million loan to Sheffield Forgemasters to build nuclear power plant components, while the continued inclusion of nuclear power within the climate change levy is criticised as harming the nuclear industry. Changing the rules of this scheme, or cutting off renewable energy incentives such as the current feed-in tariff scheme, could fall within the terms of the coalition agreement without amounting to a new â€˜subsidyâ€™.

Ultimately, though, the strongest driver for new nuclear power stations is the perceived paucity of other options. Nuclear

benefits from the perception that it is the worst form of energy except for all of the others. The key selling point of nuclear power is that it is a technology that is ideally suited to the provision of â€˜baseloadâ€™ energy. Put simply, electricity usage fluctuates widely, but grid supply has to remain constant. Baseload is the â€˜always onâ€™ electricity production required to meet minimum levels of demand, which is supplemented by sources that are switched on and off as customer use fluctuates.

From the perspective of the energy industry, nuclear power is ideally suited to this purpose, with existing plants typically run at full throttle. Wind power, by contrast, is seen as being as fickle as the wind itself. It is too unreliable, says the industry, so even if the UK builds more turbines, these would need to be backed up by nuclear, coal or gas generation capacity. And in the case of gas, the UK government (like many of its European counterparts) is wary of over-reliance on Russia, a fear that was exacerbated by the gas dispute between Russia and Ukraine in 2009.

Yet is energy supply really such a forced choice? For one thing, nuclear power is not quite the â€˜always onâ€™ bedrock of reliability that its advocates claim. Aside from routine repairs and refuelling, there have been a series of safety shutdowns in the UK, which sometimes span years.

More generally, though, the concept of always-on baseload energy at the centre of electricity production reproduces the assumption that power must be sourced from large, grid-connected power systems. While it is true that wind power is variable, no one credibly suggests that the UK switch its entire capacity to wind. Variations in one renewable technology, along with enhanced energy storage capacity, can balance out another. A diversity of smaller energy sources â€“ not all of which need electricity grid connections â€“ not only enhances the flexibility of the system, but also reduces the significant losses of power through transmissions networks.

More than half of UK domestic greenhouse gas emissions arise from space heating, with a further fifth coming from heating water, according to the Centre for Alternative Technologyâ€™s Zero Carbon Britain report (see Red Pepper Aug/Sep 2010). An emphasis on better building regulations, including incentives for the retrofitting and insulation of old buildings, has been proven by numerous analyses to be both faster and more cost effective than building new power generating capacity. Regulatory weaknesses â€“ compounded by the lobby efforts of the construction industry â€“ play a large part in preventing it from happening.

The structure of the energy industry compounds these problems. In a liberalised electricity market, it is far more difficult than in a publicly owned system to negotiate â€˜demand side managementâ€™ â€“ a bargain struck with the largest industrial us to restrict their usage at peak hours for domestic consumption. On this point, it is Brussels rather than Westminster where the battle needs to be fought to regain public control (not simply ownership) of electricity as a public good.

Ultimately, though, the UKâ€™s energy dilemma is about far more than the choice between one technology or another. These are not shifts that will be achieved by personal footprint counting. Nor will they be achieved by polite pressure on the coalition government â€“ although some policies, such as â€˜emissions performance standardsâ€™ on power producers (a f more effective means of limiting fossil-fuel emissions than carbon markets or taxes) are certainly worth pursuing. Rather, we will need to focus on how to achieve systemic changes in how goods are produced, traded and consumed. This may sound utopian, but it merely asks that we consider how the energy transitions of the past â€“ from wood to coal and oil â€“ have affected how goods are valued and produced, and apply those lessons to the creation of a world beyond fossil fuels and nuclear power.

Â

source: www.redpepper.org.uk/Nuclear-power-It-s-still-no-thanks Â