Broken Promises: Subsiding the Nuclear Industry

We Promise No Subsidies

When the UK Coalition Agreement was signed between the Conservatives and Liberal Democrats in May 2010 the government gave a firm and unequivocal commitment. It would promote the construction of new nuclear reactors provided they received "no public subsidy".[1]

A week after the general election, the new Secretary of State for Energy, Chris Huhne told *The Today Programme* that he might oversee new reactor construction if power companies could do it without government subsidy. Huhne stressed that the key point on which the coalition government agreed was that **there would be no public subsidy**. [2]

The media was sceptical right from the start. *The Sunday Times* said the government was planning to "*rig the carbon trading market*" to encourage the construction of new nuclear power stations. Peter Atherton, head of European utilities at Citigroup said this could increase electricity bills for households and businesses, and "*transfer risk from the nuclear developer to the electricity consumer*" and, in effect, subsidise nuclear power by the back door. [3]

It was already clear when the Coalition Agreement was signed that "...*what the government and EDF believe constitutes a subsidy is very different to the usual definition*" according to Stephen Thomas, Professor of Energy Policy at Greenwich University. [4] But, as former government adviser Tom Burke said "*it soon became clear that neutering the planning system, capping the cost of radioactive waste management, continuing to accept the bulk of the nuclear industry's third-party liabilities and putting in a floor price for carbon would not be enough.*" [5]

Most recently *The Guardian* put it in stark terms: *"Ministers are planning to subsidise nuclear power through electricity bills – despite their promises not to."* [6]

This is how they propose to do it:

Electricity Market Reform

In May 2012 it is expected that the government's Queens Speech will include a commitment to Electricity Market Reforms (EMR). This is the most obvious way in which the government is planning to subsidise new reactors. When the EMR plans were first announced *The Telegraph* declared that:

"Years of lobbying by nuclear companies have finally paid off, as the Government ... reveal[s] plans to subsidise the price that they are paid for generating electricity." [7]

Writing in April 2012 the former Labour Environment Minister Michael Meacher agreed: *"The Coalition is about to rig the market through its so-called Electricity Market Reform programme which is aimed to favour nuclear at the expense of every other alternative. It will absorb huge amounts of direct and indirect subsidy even though the government has repeatedly and solemnly intoned that there will be no public subsidy at all for the building of new nuclear."* Meacher went on to talk about a triple subsidy, comprising a capacity payment, a carbon floor price, and a low carbon 'contract for difference'." [8]

In fact there are four main elements to the EMR proposed by the government, which will raise electricity prices so that nuclear power can make a profit whilst giving the illusion there is no public subsidy.

- a Feed-in Tariff with Contracts for Difference (CfD-FiTs)
- a Capacity Mechanism
- a Carbon Floor Price (CFP)
- The Emissions Performance Standard.

The issue is complicated, but behind the veil of market reform there will be subsidies. "*The government wants nuclear power but cannot be seen to subsidise it, so it has had to set up this set of convoluted measures*", argues Catherine Mitchell, Professor of Energy Policy at Exeter University. [9]

Feed-in Tariff with Contracts for Difference (CfD-FiTs)

A CfD-FiT is a long-term contract between an electricity generator and a '*contract counterparty*', which enables the generator to stabilise its revenues at a pre-agreed level (the strike price – set by the government) for the contract duration. Under the CfD-FiT payments would flow from contract counterparty to the generator, and *vice versa*. So when the market price for electricity is below the strike price, payments would flow from the contract counterparty to the generator. When the market price is above the strike price, payment would flow from the generator to the contract counter party. [10]

The CfD-FiT gives a subsidy to nuclear reactors in two ways:

• A recent independent analysis has predicted that the strike price for nuclear will be around 15 p/kwh, which is a sum that is considerably in excess of what offshore windfarm owners are currently being paid for their output. This is because new nuclear electricity will cost more than our existing generating capacity.[11] There will almost certainly be no competitive bidding within the sector because there is only likely to be one supplier – EDF Energy.

• Secondly it transfers risk from generators to consumers both by providing long-term contracts above market rates and by ensuring that generators are compensated when the market price falls below the strike price. One consequence of this will be a reduction in the cost of capital for nuclear generators so a simple proxy for subsidy would be to compare the interest rate offered with a CfD to the one that would have been offered without a CfD. However, no company anywhere in the world has

seriously tried to finance a nuclear plant to operate unprotected in a competitive electricity market, probably because it is known that such a plant could not be financed.

So CFD-FiTs will virtually dispense with the free market in energy, replacing it with fixed long-term contracts, set as a result of auctions regulated by the government.

The government published its proposals for the institutional framework for EMR in December 2011. It proposes to ask the System Operator within National Grid to implement both the CfD-FiT (i.e. to act as the contract counterparty) and the Capacity Market. Discussions between the government and National Grid are underway with a view to agree precisely how the System Operator will fulfil this role and the exact nature of the relationship between Government and the System Operator.[12]

David Simpson, global head of mergers and acquisitions at KPMG says he expects the UK government to offer 35-year deals, which could be illegal state aid under European Union competition rules. [13]

Whether or not CfD-FiTs amount to a subsidy may be answered soon if the UK government follows through on its indications that it will make a Phase II State Aid application for an interim CfD. It will ask the European Commission for permission to introduce the CfD-FiTs – in other words it believes these will count as a subsidy to nuclear, but may be a permitted exemption. [14]

Fiona Hall MEP, leader of the Liberal-Democrat group in the European Parliament, says she has no doubt the CfD-FiT is a subsidy. [15] She has called for Liberal Democrats to speak out against this public subsidy for nuclear energy, which goes against the Coalition Government Agreement.

Hall says that if a CfD-FiT goes ahead British consumers may end up subsidising nuclear technology for over 40 years (the average lifespan of a nuclear reactor) solely to keep the one remaining interested power company, France's EDF, in profit. Billions of pounds will be diverted from the wind and marine energy sectors where the UK's natural advantage lies, hampering British industrial leadership in these sectors and risking major loss of business opportunities and new jobs. [16]

The UK government has not yet achieved European Commission assent to its proposed electricity market reforms, considered essential to enable new nuclear build. Minister of State for Energy Charles Hendry said in April 2012 that the government is *"engaging closely with the European Commission to ensure the electricity market reform proposals are consistent with the appropriate rules*." [17]

A document leaked to *The Guardian* lays out plans for the "contracts for difference" for the European Commission. It says: "*Our reforms will put in place a regulatory framework based on feed-in tariffs for all low-carbon technologies, which will allow younger technologies to mature so that in the near- to mid-term future they will be able to compete in the open market ... in time, we expect that this regulatory framework will enable different low-carbon technologies to compete against each other on a level playing field for their appropriate role in the energy mix*." [18]

This is the clearest evidence yet of government plans to subsidise nuclear power through the back door, by classifying it with renewables as "low-carbon power", despite repeated assurances that there would be no public subsidy.

The Guardian also quoted a presentation made by Scottish & Southern Energy (SSE) to MPs in March 2010, saying that the plans contain "*hidden subsidies*", will be open to challenge on legal grounds, and could "*mess up*" funding for renewables. SSE says the government is bringing in the changes to "*hide the subsidy*" to avoid a furore. The company notes the plans will have to "*clear state aid* [rules], *yet subsidy for a mature technology like nuclear is a likely stumbling block with the commission*". SSE said: "*We are concerned because if a nuclear subsidy messes up renewable support* [there will be] *massive uncertainty in our core market*." [19]

However, the Secretary of State for Energy and Climate Change, Ed Davey, argues that nuclear will not receive a higher price than low carbon technologies, so there will be no public subsidy of nuclear generation. [20] In other words because the CfD-FiT put nuclear on the same footing as other forms of low-carbon energy, which will also receive a feed-in tariff, this is not a subsidy for nuclear power.

The plans are likely to come under severe attack in the European Parliament, particularly from the Greens who are preparing to take legal action against the UK government, arguing that the plans amount to state aid for nuclear. The CfD-FiTs will gradually replace existing subsidies for renewables which were designed to assist new technologies such as wind or marine energy in their expansion and by reducing costs through economies of scale, thereby helping them reach market maturity. Fiona Hall MEP argues that it is wrong to apply the same mechanism to nuclear technology, which has existed for over 70 years without ever achieving any cost reductions. [21]

Carbon Floor Price

The carbon floor price is also a subsidy to the whole low-carbon generating sector. The way it is designed means that existing low-carbon generating capacity will also receive payments. So EDF Energy will receive a windfall for its existing nuclear plant. This is a subsidy because existing nuclear plants were paid for by the UK taxpayer and sold at artificially low prices to EDF Energy who now operates them.

There is a dispute over the value of the windfall. The former Treasury Secretary, Justine Greening MP, argued that the benefits to the existing nuclear sector are likely to be: 'an average of £50 million per annum to 2030 due to higher wholesale electricity prices'. [22] But according to calculations by WWF and Greenpeace, the proposed carbon price floor could result in windfall profits for existing nuclear generators of up to £3.43 billion between 2013 and 2026. This equates to £264 million per year. [23]

The proposed Carbon Floor Price was in the Finance Bill discussed in Parliament before the 2011 summer recess. Even £50 million per year to existing reactors will give a £1 billion windfall to nuclear power operators, predominantly EDF Energy. Labour MP Nic Dakin put forward an amendment to the Finance Bill to introduce a windfall tax, but failed to get approval. [24] The Carbon Floor Price is expected to be introduced in April 2013. [25]

Capacity Mechanism

A 'capacity mechanism' was also proposed in the 2011 White Paper[26] but it is not yet fully defined. Its main purpose is to address what the government sees as the problem of 'resource adequacy': "... *how to ensure there is sufficient reliable and diverse capacity to meet demand, for example during winter anticyclonic conditions where demand is high and wind generation low for a number of days*."

Energy Fair, a group of independent researchers and energy consultants, has made a formal complaint to the European Commission about unlawful state aid by the UK for nuclear power. It says the government's proposals in this area need to be more fully defined before it is possible to see more clearly whether or how they provide a back door subsidy for nuclear power. If, for example, they allow the government to help pay for the building of nuclear power stations that would be used only rarely, this would be an unjustifiable subsidy for nuclear power. [27]

Nuclear Waste Subsidy

Apart from the EMR measures, there are several other subsidies that are perhaps less obvious. The government insists that "...*operators of new nuclear power stations will have secure financing arrangements in place to meet the full costs of decommissioning and their* ***full share of waste management and disposal costs***" (emphasis added) [28]

The Energy Act 2008 requires operators of new reactors to have in place plans to carry out and fully fund decommissioning, managing and disposal of the radioactive waste they will produce. This Funded Decommissioning Programme (FDP), which should include a Funding Arrangements Plan, must be approved by the Secretary of State for Energy and Climate Change before construction of a new nuclear power station begins. [29]

As part of these arrangements nuclear operators have to set aside funds to pay for waste 'disposal'. The government is currently expecting that a Geological Disposal Facility (GDF) will be built to accept so-called legacy waste from both existing and new reactors.

Nuclear operators need some certainty over their maximum exposure to waste disposal costs before deciding to invest in new reactors. But there are many uncertainties associated with deciding what operators of new reactors should be charged. There isn't even a site yet for a GDF; we do not know how many new reactors will be built; and we need to know how to apportion costs between legacy waste and new reactor waste. The government consulted recently on an updated Waste Transfer Pricing (WTP) methodology to propose a way of calculating a nuclear operator's fair share of waste disposal costs.[30]

The original idea was to charge reactor operators a fixed price for each unit of nuclear waste produced, with a high-risk premium added to allow for the uncertainties. Responsibility for the waste would not be transferred to the state until after it had been disposed of, which could not happen before 2130 at the earliest, (because legacy waste would be emplaced in the GDF first with operations presumed to begin about 2040.) Both proposals were deeply unpopular with the industry, so in March 2010 the government published revised proposals that made significant concessions.[31]

Now it is proposed to defer the setting of a Fixed Unit Price (FUP) for 30 years after the start of generation and instead give operators an expected FUP. But the final FUP will be subject to a price cap, so will include a small risk premium. The government is also proposing to 'take title' to (or ownership of) nuclear waste and spent fuel much earlier, so that it is aligned with the operators decommissioning timetable rather than waiting for the GDF to be available. This means the operators do not have to be responsible for onsite interim storage of waste and spent fuel for several decades after revenues from the nuclear power station have ceased, plus it transfers a significant risk that the cost of geological disposal will escalate to the taxpayer.

The government continues to insist that taking title to radioactive waste, including spent fuel, for a fixed price is not a subsidy to new nuclear power, provided that the price properly reflects any financial risks or liabilities assumed by the state.

Nuclear consultant Ian Jackson argues that these proposals introduce two subsidies for nuclear generation:

• A subsidy from the price cap, which means the UK government takes on the risk of cost over-runs.
• A subsidy arising from his assessment that the Department of Energy and Climate Change has underestimated the cost of disposal. [32]

Jackson says nuclear costs are escalating above inflation. The Nuclear Decommissioning Authority's (NDA's) nuclear liabilities, for example, have risen about 4.5% above inflation. So the obvious question is: will nuclear disposal costs rise higher than the maximum price cap? If disposal costs rise by 4.5% above inflation they will eventually reach the price cap by 2047. Jackson also says the government has underestimated the cost of disposing of spent fuel from new reactors. He estimates that the total subsidy per reactor that these two factors represent could be £427 million. [33]

On top of all this, nuclear operators are not required to be insured against any cost overruns for disposal.

The Energy Act (2008) requires new nuclear power stations' operators to have plans for decommissioning, including for how it will be financed. The government must approve such plans. Yet operators are not required to insure these costs, leaving the taxpayer to carry the risk of operator default. [34]

Nuclear Liabilities

At the end of March 2012, the government confirmed its intention to increase the third party liabilities of operators in the event of a nuclear incident.[35] This followed a public consultation held in 2011 on the UK's proposals to implement changes made to an international treaty on nuclear third party liability – the Paris and Brussels Conventions, to which the UK and most other EU countries are signatories.

Among other things, the Paris and Brussels Convention aims to ensure that victims of a nuclear incident can easily get compensation for damage. But under the current proposals, nuclear operators will only have to pay the first £1 billion towards the cost of any accident.

This is a welcome increase on the previous £140 million cap on their liabilities, but it is still an explicit subsidy to the nuclear industry since all other power generators have to bear the full costs of their third party liability. By agreeing to cover any costs above £1 billion the government is clearly handing the industry a public subsidy.

To give an idea of the potential scale of this subsidy, BP has allocated $41 billion to cover all claims arising from the Gulf oil disaster. [36] The estimated costs of the Fukushima clean-up has been put at up to $250 billion. [37]The cost of the Chernobyl accident can only be roughly estimated, but the magnitude of the cost is clear from various government estimates in the 1990s, which put the cost of the accident, over two decades, at hundreds of billions of dollars. Belarus, for instance, has estimated losses over 30 years at US $235 billion. [38]

The cap on nuclear liabilities was introduced because no company can obtain insurance against a nuclear accident – or would want to shoulder the risk itself – because the costs are potentially limitless. The cost of a worst-case nuclear accident at a plant in Germany, for example, has been estimated at up to €7.6 trillion ($11 trillion). [39] A study by the insurance board of Leipzig estimates the maximum total loss from a nuclear accident at around €6 trillion. Even if a fund of €6 trillion were collected very slowly - over the next 50 years – insurance premiums would still amount to more than half a euro per kWh. Full insurance against nuclear disasters would increase the price of nuclear electricity by a range of values—€ 0.14 per kWh up to € 2.36 per kWh—depending on assumptions made. The study therefore, concludes that nuclear power is uninsurable. [40]

Research and Development, Training and Administrative Support

An astonishing number of public bodies are involved in supporting the nuclear industry. All are at least part-funded by the taxpayer. For a hint at the scale of this spending read this briefing by Tom Burke, Tony Juniper, Jonathon Porritt, and Charles Secret.[41]

Other subsidies mentioned by the above four former Friends of the Earth directors and the Energy Fair Group include the huge security and counterterrorism costs, most of which is paid for by government, but secrecy prevents us knowing how much. And the likelihood is that new reactors will need some form of government guarantee. The companies involved will be looking to borrow the minimum £32 billion required to build 8GW of new nuclear in Britain. It is difficult to see this level of loan being available without explicit loan guarantees from the French and/or British governments. If these guarantees were provided in a way that lowered the cost of capital to the generator, that too would be a direct subsidy.

Conclusion

The UK government appears to be planning to force consumers to subsidise nuclear power through electricity market reforms, despite its promise of no public subsidies for new reactors.

Offering new nuclear operators a fixed unit price for the cost of spent fuel management and disposal represents a subsidy of perhaps as much as £427 million per reactor. Underwriting nuclear operators' nuclear waste and decommissioning costs is another subsidy.

Any limit on liability on the costs of nuclear accidents eases the burden on nuclear operators. Paying for commercial insurance could add around half a euro to the cost of a unit of electricity, so a cap on liability also represents a subsidy.

Subsiding new technologies to help with their deployment and reduce costs - so they can eventually reach market maturity and no longer need subsidies - is a sensible government policy that can help meet the UK's goal to reduce greenhouse gas emissions. But subsiding a technology which has already existed for over 70 years without achieving the expected cost reductions, and which produces a dangerous waste we are still not sure what to do with, is certainly not in the interest of taxpayers or electricity consumers.

Pete Roche 8 May 2012

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