

Nuclear power subsidies (or how to impoverish the nation)

Background

Just before the 2010 General Election Conservative spokesperson, Greg Clark insisted there would be no taxpayer subsidies for nuclear power: "*We're very clear, we're not going to subsidise it.*" (1) Then, just one week after the election, the new Secretary of State for Energy, Liberal Democrat MP Chris Huhne told *The Today Programme* on 13th May (2) that he may oversee new reactor construction if power companies can do it without government subsidy. The key point, Huhne stressed, on which there is agreement within the coalition Government, is the principle there will be no public subsidy.

The coalition agreement between the two parties notes that the Liberal Democrats have "*long opposed any new nuclear construction*", and will maintain their opposition to nuclear power while permitting the Government to pass laws that make new nuclear construction possible. They will abstain in parliamentary votes. The Tories, on the other hand, are "*committed to allowing the replacement of existing nuclear power stations... provided that they receive no public subsidy.*" (3)

By the end of May 2010, EDF Energy announced it had received sufficient reassurances from Huhne to continue planning new reactors. Vincent de Rivaz, the chief executive of EDF in Britain said the company and the Government are both committed to new reactors without subsidies. (4)

Reportedly it was the promise of a carbon floor price which swung it for EDF. "*The Government has found a back-handed way to subsidise nuclear power*" declared Dan Box in *The Ecologist*, "*21st century nuclear power needs a 21st century subsidy... no blank cheques this time - just an apparently green tweak to the emissions trading system, and voila! ... Huhne, it seems, may have ruled out using the public purse to fund the new nuclear generation, but his Government is asking us to use our wallets to do the same.*" (5)

But it wasn't just the anti-nuclear *Ecologist Magazine*, formerly edited by Tory MP Zac Goldsmith, which saw things this way. The government is planning to "*rig the carbon trading market*" said *The Sunday Times*. This will increase electricity bills for households and businesses, "*transfer risk from the nuclear developer to the electricity consumer,*" and, in effect, subsidise nuclear power by the back door, said Peter Atherton, head of European utilities at Citigroup. (6) New reactors will take years to build, but power companies could start passing on the costs of the higher carbon price to consumers through higher energy bills, as soon as legislation is agreed.

But even looking at more conventional ways of subsidising nuclear power with taxpayer subsidies, it seems the Government is being disingenuous. Professor of Energy Policy at Greenwich University, Stephen Thomas, points out "*what the government and EDF believe constitutes a subsidy is very different to the usual definition.*" (7)

Chris Huhne told *The Times* that even support in the event of a nuclear disaster was out of the question: "*That would count as a subsidy absolutely. There will be no public bailouts . . . I have explained my position to the industry and said public subsidies include contingent liabilities.*" (8) Yet

the Government is proposing to implement changes to the Paris-Brussels Convention on nuclear third party liability by placing a cap on the liability of nuclear companies of £1 billion in the event of an accident at a nuclear reactor. The total amount of compensation required after the Fukushima disaster is now estimated to be between £29.2bn (9) and £80bn (10), so the £1bn cap leaves the taxpayer shouldering a heavy potential risk.

On 20th May 2010 the Nuclear Free Local Authorities (NFLA) wrote to Chris Huhne urging him to withdraw the Labour Government's consultation on a methodology for determining a Fixed Unit Price for waste disposal from new nuclear reactors. This proposed to place a cap on charges to nuclear operators for the cost of waste disposal with the risks of cost overruns – a usual occurrence in the nuclear industry –transferred to the UK taxpayer. In other words, it would be a hidden public subsidy for new nuclear build. (11) Chris Huhne replied on 15th August 2011 simply saying “*the Coalition policy on new nuclear is clear nuclear power – without public subsidy – has a role to play in our energy mix.*”

Jamie Reed, the re-elected pro-nuclear Labour MP for Copeland, and now shadow environment minister, pointed to other subsidies: “*Public money will inevitably be used to support the civil nuclear constabulary, development of the national grid, establishment of a deep underground repository and much else.*” (12) He believes new nuclear power stations will not be built without public subsidy and “would certainly support subsidy for new nuclear generation in this country.” (13)

Former Government Advisor, Tom Burke, writing in the ENDS Report says the “dreadful economics” of nuclear power has collided with the policy of not providing subsidies: “*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.*”

So the decision has been taken to use much needed reform of the electricity market to disguise nuclear subsidies. Consequently we have ended up with an assemblage of measures with no clear analysis to back them up. What the whole thing amounts to is “*the weird sight of a government actually picking a technology loser while pretending it is not in the business of picking technology winners*”. (14)

Consumer Subsidies

“*UK government agrees to subsidise nuclear power companies' prices. 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.*”

Rowena Mason in *The Telegraph* 16th Dec 2010 on the launch of Electricity Market Reforms. (15)

The government is expected to publish its final plans for electricity market reform in June 2011. *The Sunday Times* described the draft proposals as —*a cocktail of big subsidies for nuclear and offshore wind, harsh penalties for coal, and a doubling, at least, of household energy bills ... a return to aggressive state intervention.* (16)

The Government risks distorting its planned reform of the electricity market merely to save political face over implicit subsidies for nuclear power, the House of Commons Energy and Climate Change Committee warned. Government proposals will effectively provide subsidies to nuclear generators through new long term contracts, according to the Committee, and a carbon price floor that could hand them windfall profits. Tim Yeo MP, Chair of the Committee, said:

“The Government must be up front about the support it is giving to nuclear and not hide subsidies in a one-size-fits-all design for long-term energy contracts.” (17)

This “one size fits all” approach will fail to bring forward the low carbon investment needed. The model of contracts proposed may be appropriate for some generators, such as nuclear and biomass, but could increase costs and risks for intermittent generators such as wind and technologies like carbon capture and storage. (18) Ian Marchant, CEO of Scottish and Southern Energy, said the package seemed to be designed around the requirements for new nuclear. He called on the Government to be much more honest. If subsidies are needed to get the first few nuclear plants built, let’s be clear and let’s make that happen rather than designing the market to hide the subsidies. (19)

The Committee concluded that new nuclear will almost certainly require some form of subsidy if it is to go ahead. The Government *“should not distort the market merely to save political face”* because the Coalition Agreement ruled out subsidies for new nuclear. (20)

The only company pleased with all the government’s proposed reforms is EDF – the owner of most of Britain’s existing nuclear stations. Rivals argue that the subsidy system is tailored to nuclear power at the expense of alternatives. (21)

Impact on Consumers

It is widely agreed that energy prices will increase over the next 20 years whatever we do, (22) which makes it all the more important that whatever reforms are implemented pay due regard to the needs of the 4.5 million households living in fuel poverty. Yet one estimate calculates that the Government’s reforms will add another million households to those in fuel poverty. (23) If the Government is prepared to sanction as *The Sunday Times* puts it *“a return to aggressive state intervention”*, surely it must now be time to implement a much more ambitious energy efficiency programme. (24)

Ofgem has predicted that, in the worst-case scenario, household energy bills could double to £2,000 a year within a decade, but this figure now looks too low. Extra safety for nuclear plants (after the Fukushima disaster) could add to the predicted £5 billion price tag for each reactor. (25) Ofgem’s prediction was based on a world where oil was about \$110 a barrel. Analysts at Barclays Capital now predict it could hit \$184 by 2020, though new gas finds in America could keep gas prices lower.

Richard Hall of Consumer Focus told the House of Commons Energy and Climate Change Committee that all the scenarios modelled by the Government were predicated on a baseline that forecasts that electricity wholesale prices will approximately double in real terms by 2030. He said that it *“seems unrealistic to expect that disposable incomes will increase by a similar fraction, so one would certainly forecast a deterioration in fuel poverty”* (26)

The Government says its “Green Deal” is key to improving household energy efficiency and tackling fuel poverty. (27) But it is still unclear whether the Green Deal will deliver the promised energy efficiency savings to households on low incomes. It is supposed to give every household the right to have home energy efficiency improvements of up to £10,000 in value with the cost of the work paid back through the household’s energy bills. (28) The cost of repaying the loan should be less than the savings arising from a more energy-efficient home. The trouble is that for some of the more expensive measures, such as solid wall insulation, savings might not be enough to pay back the loan, especially if householders are taking some of the savings in the form of extra heat. (29) And it is the fuel poor who tend to live in older properties with solid walls. (30)

Andrew Warren, Director of the Association for the Conservation of Energy (ACE) points out that utilities have spent the last decade installing the most cost-effective energy saving items - loft and cavity wall insulation – at a heavily subsidised price, yet there are still many people who haven’t

taken up the offer. The Green Deal expects people to pay the full unsubsidised rate, plus interest on the loan, so it is difficult to see how this will boost take-up. (31)

Peter Atherton of Citigroup told the Energy and Climate Change Committee that he thought the Green Deal might offset increasing electricity prices a little but people will still have to pay for the loans. Former MP Alan Simpson giving evidence for Friends of the Earth said the Green Deal was unlikely to help beat fuel poverty: *“it’s hard to see the fuel-poor wanting to take on personal debt at a time when we are encouraging them to reduce debt”*. (32)

A survey by the Federation of Master Builders (FMB) found 44 per cent of its members believe homeowners were “unlikely” to engage with the Green Deal. The government believes 14 million homes out of a total of 26 million will eventually have insulation fitted through the scheme. The results of the FMB survey, however, *“underlines what many industry observers anticipate: that take up will be underwhelming”*. Unless significant financial support is offered or the upfront costs are virtually non-existent, the public will not suddenly become concerned with making their properties green. (33)

A report from the environmental think-tank E3G (34) and research by the Green party MP Caroline Lucas suggest that householders are likely to reject the scheme because of its high cost. Householders will be charged interest at a market rate on the loans, which could mean interest at 8%, which is not viable as homeowners will not see enough benefits in the form of energy savings to make up for the rates charged. A German scheme was successful because it offered loans with an interest rate of 2.65%. The UK government's plan to subsidise the green deal by transferring money from the energy company obligation, paid by energy utilities, would provide about £1bn of subsidy – but about £3bn to £4bn a year would be needed to make the green deal attractive to householders, E3G says. Those sums could be available if the government channeled cash from auctioning carbon permits into the green deal – which the Treasury opposes. The scale of the green deal is also in doubt. The government estimates that 14m households will be insulated by 2020 – more than 1.7m a year – Germany only carried out about 100,000 retrofits a year. (35)

Professor of Energy Policy at Exeter University, Catherine Mitchell, says the proposed electricity market reforms and the Green Deal do not include anything that will move the UK forward in anything other than an incremental manner. What’s needed is a change to the energy market to deliver a new type of energy system with regulated obligations on the scale of the transition from town gas to natural gas. Tendering for street-by-street or area-by-area contracts to make homes energy efficient would be much more cost effective. (36)

Energy Efficiency & Demand Management

The Energy and Climate Change Committee criticises the Government’s Electricity Market Reform proposals for failing to address the potential for reducing energy demand in the long term.

The Government’s Revised Draft Overarching National Policy Statement on Energy (37) states unequivocally: *“Department of Energy and Climate Change analysis...shows that reductions in electricity consumption resulting from improvements in energy efficiency will be far outweighed by increases in electricity demand, potentially leading to a doubling of electricity demand between now and 2050... (and because of possible intermittency) total installed capacity might need to treble.”* (Para 3.3.14)

Andrew Warren asks how it is that Germany has the confidence to go down an entirely non-nuclear route, even with the same 2050 objective of an 80% reduction in greenhouse gases. The difference between where we believe our electricity consumption will be by then – twice, even three times, present levels – and where the German government thinks electricity demand can be via a purposeful and consistent efficiency programme - 25% below present levels – gives the answer. (38)

Warren says that ACE has been trying for months to get hold of a copy of the analysis which leads the Government to the conclusion that improvements in energy efficiency will be far outweighed by increases in electricity demand, but has finally come to the conclusion that the analysis doesn't exist. There is something called the Pathways Analysis, which consists of various scenarios but far as energy efficiency is concerned, none of these 2050 scenarios assume penetration of basic energy-saving measures like solid wall insulation into more than 1 in 3 homes. Similarly, it is assumed that the commercial sector can only improve its energy efficiency by just 20% over the next 40 years. (39)

Not only is energy demand reduction compelling from an economic point of view, because it is far cheaper than building new generating capacity, but it is also key to reducing CO₂ emissions without driving thousands more householders into fuel poverty. The UK Energy Research Centre (UKERC) estimates in its report, *"Making the transition to a secure and low-carbon energy system"*, that a combination of energy service demand change and efficiency improvement in the transport and residential sectors could reduce energy demand in these two sectors by more than 50% by 2050 compared to business as usual levels in that same year. UKERC estimates that *"in an energy system constrained to 80% carbon emissions reduction, the main effect of social and lifestyle change is to reduce the costs of delivering a low carbon energy system, up to £70 billion."* (40)

The Government's message appears to be that *"a substantial level of electrification of heating, transport and industry is needed"* to significantly reduce greenhouse gas emissions. Whilst electricity will undoubtedly play an important role in sectors such as transport and heat over the next 40 years, WWF-UK argues that the overall level of electricity demand may in fact only have to increase moderately given the potential for achieving significant energy demand efficiencies across all sectors of the economy, including those that are to be electrified. For example, according to new research commissioned by WWF-UK on electric vehicles (EVs), additional average annual electricity demand from EVs is less than 1.5% of total forecast electricity demand in 2020 for all three of the scenarios that were considered. Even in the case of an extremely ambitious scenario for the deployment of EVs (approximately 26.3 million EVs by 2030, representing 75% of the car stock by that date), additional annual electricity demand would amount to less than 10% of forecast electricity demand for all end-users. (41)

WWF-UK concludes that because of the importance of rapidly decarbonising the power sector by 2030 in the most environmentally sustainable, cost-efficient and economically beneficial way possible, the system of feed in tariffs (proposed by the Government under its Electricity Market Reforms) should primarily apply to renewable technologies, with a particular (but not exclusive) focus on marine renewables.

"We do not believe that nuclear power generation should benefit from feed-in tariffs (FiTs) given the very mature stage of this technology, and the environmental and economic risks inherent to that technology. We consider that FiTs for nuclear would represent a subsidy [and] would therefore break the government's own pledge that new nuclear will receive no subsidy beyond the carbon price." (emphasis added)

The UK's 26 million households are responsible for around 27% of greenhouse gas emissions. The obvious question is why are we not planning to refurbish existing households at around 700,000 houses per year in order to make the required contribution to the UK's target of reducing greenhouse gas emissions by 80% by 2050? (42) Instead the Government appears to be planning to force consumers to subsidise nuclear power, driving an extra million into fuel poverty and failing to help those already there. Subsidising nuclear power is bad enough, but impoverishing at least 20% of the population in the process is risible.

Taxpayer Subsidies

Apart from the planned consumer subsidies, there are also several hidden taxpayer subsidies. A report by the Energy Fair Group details seven main subsidies. (43) The group has made a formal complaint to the European Commission about these subsidies. (44) Here we deal with the three main taxpayer subsidies.

Nuclear Liability

The UK Government recently consulted on proposed changes to the Paris-Brussels Convention on nuclear third party liability. (45) Among other things the Convention aims to ensure that victims of a nuclear incident can easily get compensation for damage as a result of a nuclear incident. Under the UK proposals nuclear operators will have to pay the first £1bn towards the cost of any accident – compared with the current cap on their liabilities of £140m.

The new rule is supposed to ensure there would be no public subsidy for nuclear power. The cap was introduced because no company can obtain insurance against a nuclear accident – or would want to shoulder the risk themselves – because the costs could potentially be limitless. But agreeing to cover any costs above £1bn clearly amounts to a public subsidy. Under the European proposals, in future, nuclear operators must pay a minimum of the first €700m (£590m) for any accident. Governments have the option of adding a maximum of an extra €500m towards companies' liabilities. Huhne is proposing to load the maximum liability onto companies that is allowed under the new treaties. (46)

While this may be a significant and positive increase in the cap on nuclear companies' liability, with the estimate of the total amount of compensation required in Japan after the Fukushima disaster now at least 4 trillion yen (£29.2 billion) (47) and up to £80bn (48) that leaves the UK taxpayer shouldering a heavy potential risk. Also worth remembering is the fact that BP had to pay £20 billion after the recent Gulf of Mexico oil spill last year, and a comparative nuclear accident would cost much more to clean-up and take a lot longer before the area was 'clean' again. The cost of the Chernobyl accident can only be roughly estimated, but the magnitude of the cost is clear from a variety of government estimates from 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. (49)

From the U.S. to Japan, it's illegal to drive a car without sufficient insurance, yet governments around the world choose to run over 440 nuclear power plants with hardly any coverage whatsoever, says the *Washington Post*. The Fukushima disaster brings to the fore one of the industry's key weaknesses that nuclear power is a viable source for cheap energy only if it goes uninsured. Governments that use nuclear energy are torn between the benefit of the electricity and the risk of a nuclear catastrophe, which could total trillions of dollars and even bankrupt a country. The bottom line is that it's a gamble: Governments are hoping to dodge a one-off disaster while they accumulate small gains over the long-term. The cost of a worst-case nuclear accident at a plant in Germany, for example, has been estimated to total as much as €7.6 trillion (\$11 trillion), while the mandatory reactor insurance is only €2.5 billion. —The €2.5 billion will be just enough to buy the stamps for the letters of condolence, said Olav Hohmeyer, an economist at the University of Flensburg who is also a member of the German government's environmental advisory body. (50)

Another study by Mark Rosenbaum of insurance company Leipzig GmbH 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. The study, therefore, concludes that nuclear power is uninsurable. (51)

Barry Jones, Emeritus Professor at Reading University says any limit on liability for the costs of nuclear accidents eases the burden on nuclear operators. If the government reinsures those costs, in

the absence of commercial insurers, then the nuclear operators will be absolved of most, if not all, of their ultimate liability. (52)

For more information see the press release (53) and consultation submission (54) by the Nuclear Free Local Authorities.

Subsidies for Nuclear Waste Management

The Energy Act 2008 requires operators of new nuclear power stations 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. (55)

As part of these arrangements nuclear operators will need to set aside funds to pay for waste ‘disposal’. The Government consulted recently on an updated Waste Transfer Pricing (WTP) methodology (56) to propose a way of calculating a nuclear operator’s “fair share” of waste disposal costs. Because the construction of a Geological Disposal Facility (GDF) is planned for existing, so-called “legacy waste”, whether or not new reactors are built, it is not a straightforward calculation.

There are many uncertainties associated with deciding what operators should be charged, not least because there is not even a site yet for a GDF. Originally the Labour government had planned to charge the industry a fixed price for each unit of nuclear waste it produced, with a high risk premium added to allow for these uncertainties. It also told the industry that responsibility for the waste wouldn’t be transferred to the state until after the waste had been disposed of, which couldn’t happen before 2130 at the earliest. Both proposals were deeply unpopular with the industry, so in March 2010, the government published revised proposals that made significant concessions. (57)

Firstly it was proposed to defer the setting of the Fixed Unit Price (FUP). Nuclear operators would instead be offered an “expected Fixed Unit Price” with a smaller risk premium. The Expected Price will be reviewed every five years. The reason given for the deferral is because setting a Fixed Price later - after a waste disposal site has been selected – should be much more accurate.

Secondly it was proposed that the Government would take title to 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 don’t 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.

The latest revision of the methodology (58) has two significant changes. Firstly the Deferral Period before setting the Fixed Price will be 30 years after the start of generation rather than 10 – the Government hopes the upfront costs of constructing the GDF will be known by then, but with the history of delays in projects connected to the nuclear industry, this appears optimistic. Given that the operational ‘life’ of most reactors to date has been approximately 30 years, the deferral period is too long, and risks leaving too little time to make up costs if there is a deficit or if reactors close earlier than anticipated. There is a risk of the taxpayer having to find the additional money if the industry is allowed too much time before it has to commit to a final price.

Secondly the Final Price will be subject to a Cap, and in return a Risk Fee will be charged. The final price each company expects to pay will not exceed the cap, no matter what happens! Offering a

maximum price cap before construction of a GDF even begins, presents too much of a risk of taxpayers ending up funding for any shortfall.

Nuclear consultant Ian Jackson has looked at the costs of spent fuel disposal, the prices energy companies will be charged by government and what public subsidies may need to be paid in the future. Looking at the cost of disposal of spent fuel from a new generation of nuclear reactors, Jackson says the Government's pricing structure consists of three main elements: a base cost of £193,000 per tonne of uranium (/tU) (this is what it is actually expected to cost the Nuclear Decommissioning Authority); then there is the utility disposal price set at £312,000/tU; finally this is subject to a maximum price cap of £978,000/tU. The idea is that the base cost and utility price will gradually increase over time as more is learnt about the cost of siting, constructing and operating a Geological Disposal Facility (GDF) but the prices will remain capped at £978,000/tU. Costs will rise with inflation. But nuclear costs are escalating above inflation at present. NDA nuclear liabilities, for example, have escalated at about 4.5% above inflation. So the obvious question is: will nuclear disposal costs rise higher than the maximum price cap? If disposal costs do rise by 4.5% more than inflation they will eventually reach the price cap by 2047.

So, how much subsidy will be needed to pay for losses made by the NDA after 2047? Assuming a reactor starts in 2020 and operates for 40 years, the Government would make a loss of £131m for a 1.35GW Pressurised Water Reactor (PWR).

Next, looking at the costs of disposing of spent fuel from existing reactors, the total cost of a GDF strongly depends on the amount of spent fuel it contains. Spent fuel is only 2.3% of the total volume of waste in a shared repository, but the spent fuel makes up around 44% of the total repository cost. The spent fuel unit cost is around £659,000/tU. As more nuclear power stations are built, the unit costs of spent fuel disposal gradually go down from £659,000/tU to £473,000/tU for a reactor fleet of about 10 PWRs. Estimates of the cost of spent fuel disposal have generally been quite high until recently. In 2005 Nirex estimated the cost at £952,000/tU, but now the NDA estimates that legacy spent fuel disposal will cost around £659,000/tU. This drops to £473,000/tU if we assume a programme of ten PWRs. However DECC's costs are even lower than this around £193,000/tU.

Why are the costs of disposing of spent fuel from Britain's new nuclear reactors expected to be half that of legacy spent fuel? This is supposedly because the spent fuel disposal canister is optimised for PWR spent fuel assemblies rather than AGR spent fuel assemblies. However the £193,000/tU figure used by DECC (compared with the £659,000/tU cost of AGR spent fuel disposal) may be a significant underestimate. For a 1.35GW PWR operating for 40 years the taxpayer may lose around £296m.

Looking at the total public subsidy that may be needed for spent fuel disposal there may be two different kinds of subsidy. Firstly there is the £131m per reactor which arises because costs escalate over the maximum price cap. Secondly the Government may have underestimated spent fuel disposal costs by £296m per reactor. The total subsidy needed could be £427m per reactor. (59)

The only way to guarantee utilities pay the full costs of disposal is to charge them the actual cost. Estimating realistic disposal prices 100 years into the future is fraught with difficulty. (60)

Underwriting Commercial Risks

The Energy Act (2004) allows the Government – via the Nuclear Decommissioning Authority - to bailout private nuclear operators if they fail to properly fund their nuclear waste and decommissioning liabilities. (61) The Government refused to remove the provisions which allow for future nuclear bailouts from the Energy Act. (62)

In September 2002 the government was forced to step in to rescue British Energy by implementing a complex financial restructuring that effectively renationalised the company. This included the

government underwriting financial responsibility for £14 billion of decommissioning and spent fuel liabilities that it thought it had privatised in 1996. British Energy makes payments into a government-backed Nuclear Liabilities Fund—essentially a pension fund for reactor clean-up—and any future shortfall will be picked up by the taxpayer. (63) As Lord Whitty told the House of Lords in 2004:

“...there may again be circumstances in which a private sector operator cannot meet its nuclear obligations.” (64)

Conclusions

The Government appears to be planning to force consumers to subsidise nuclear power through its electricity market reforms, driving an extra million households into fuel poverty and failing to help those already there. Subsidising nuclear power is bad enough, but impoverishing at least 20% of the population in the process is risible.

Any limit on liability on the costs of nuclear accidents eases the burden on nuclear operators. If the government reinsures those costs, in the absence of commercial insurers, then the nuclear operators will be absolved of most, if not all, of their ultimate liability. Paying for commercial insurance could add around half a euro to the cost of a unit of electricity, so a cap on liability represents a subsidy.

Offering new nuclear operators a fixed unit price for the cost of spent fuel management and disposal represents a subsidy of around £427 million per reactor.

Underwriting nuclear operators' nuclear waste and decommissioning costs also represents a subsidy.

Pete Roche 24th May 2011

References

- (1) Jowit, J. Labour, *Conservatives and Lib Dems clash over environment policies*, Guardian 22nd April 2010 <http://www.guardian.co.uk/environment/2010/apr/22/climate-change-environment-debate-election>
- (2) Radio 4 Today Programme 13th May 2010 http://news.bbc.co.uk/today/hi/today/newsid_8679000/8679504.stm
- (3) Mason, R. *Coalition Government: Nuclear plans destabilised by Lib Dem Energy Minister*, Telegraph 13th May 2010 <http://www.telegraph.co.uk/finance/newsbysector/energy/7716666/Coalition-Government-Nuclear-plans-destabilised-by-Lib-Dem-energy-minister.html>
- (4) Macalister, T. *EDF to press ahead with nuclear plans after assurances from Chris Huhne*, Guardian 27th May 2010 <http://www.guardian.co.uk/business/2010/may/27/edf-nuclear-huhne>
- (5) Box, D. *The Government has found a backhanded way to subsidise nuclear power*, The Ecologist 24th May 2010. http://www.theecologist.org/blogs_and_comments/commentators/Dan_Box/491424/the_government_has_found_a_backhanded_way_to_subsidise_nuclear_power.html
- (6) Marlow, B. *Secret boost for nuclear plants despite coalition split*, Sunday Times 16th May 2010 http://www.thesundaytimes.co.uk/sto/business/energy_and_environment/article290274.ece
- (7) Thomas, S. *Blair's nuclear dream faces financial meltdown*. Parliamentary Brief, January 2010. <http://www.parliamentarybrief.com/articles/1/new/mag/77/1037/blairs-nuclear.html>
- (8) Sylvester, R. and Thompson A. *Nuclear will not get atom of help from this Government says Chris Huhne*, Times 15th May 2010 <http://www.thetimes.co.uk/tto/news/politics/article2512856.ece>
- (9) Kamiya, T. and Nakano, K. *Tepco compensation means higher electric bills*, Asahi 4th May 2011 <http://www.asahi.com/english/TKY201105030093.html>
- (10) McCurry, J. *Fukushima evacuees demand compensation*, Guardian 13th April 2011. quoting from the Yomuiiri Shimibun newspaper: <http://www.guardian.co.uk/world/2011/apr/13/japan-nuclear-plant-evacuees-compensation>
- (11) New Nuclear Monitor No.21, *UK Government Consultations on the financing arrangements for radioactive waste management and nuclear reactor decommissioning*, NFLA, May 2010 http://www.nuclearpolicy.info/docs/nuclearmonitor/NFLA_New_Nuclear_Monitor_No21.pdf

- (12) Irving, A. *MP to use Queen's speech debate to oppose cutbacks*, Whitehaven News 26th May 2010 <http://www.whitehaven-news.co.uk/news/mp-to-use-queen-s-speech-debate-to-oppose-cutbacks-1.712972?referrerPath=news>
- (13) Moss, R. *MPs hidden nuclear power station subsidy claim*, BBC 16th May 2011, <http://www.bbc.co.uk/news/uk-england-13413684>
- (14) Tom Burke, "Say yes to negawatts, no to nuclear subsidy". ENDS reports March 2011
- (15) Mason, R. *UK Government agrees to subsidise nuclear power companies prices*, Telegraph 16th December 2010 <http://www.telegraph.co.uk/finance/newsbysector/energy/8204683/UK-government-agrees-to-subsidise-nuclear-power-companies-prices.html>
- (16) Forston, D. *Energy policy in meltdown*, Sunday Times 1st May 2011 http://www.thesundaytimes.co.uk/sto/business/energy_and_environment/article615632.ece
- (17) *Coalition should be up front about nuclear subsidy*, House of Commons Energy and Climate Change Committee Press Release 16th May 2011, <http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/news/emr-report-findings/>
- (18) House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1 Summary page 4, 16th May 2011 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (19) House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1, 16th May 2011 para 129 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (20) House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1, 16th May 2011 para 132 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (21) Forston, D. *Energy Policy in meltdown* Sunday Times 1st May 2011 http://www.thesundaytimes.co.uk/sto/business/energy_and_environment/article615632.ece
- (22) Murray, J. *Energy bills to rise £500 due to low carbon plans – or more likely not*, Business Green 17th December 2010 <http://www.businessgreen.com/bg/james-blog/1933425/energy-bills-rise-gbp500-low-carbon-plans>
- (23) McGhie, T and Rees, J. *Fuel poverty to hit 5.5m homes after coalition's green energy bill*, Daily Mail 18th Dec 2010 <http://www.dailymail.co.uk/money/article-1339771/Fuel-poverty-hit-5-5m-homes-Coalitions-green-energy-bill.html>
- (24) Forston, D. *Energy Policy in meltdown* Sunday Times 1st May 2011 http://www.thesundaytimes.co.uk/sto/business/energy_and_environment/article615632.ece
- (25) EDF put a price tag of "more than £9bn" on the two reactors it is planning to build at Hinkley in Somerset. See Hollinger P. *EDF reveals strategy for UK nuclear expansion*, FT 17th December 2011 <http://uk.finance.yahoo.com/news/EDF-reveals-strategy-UK-ftimes-1700153737.html?x=0>
- (26) House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1 para 52, 16th May 2011 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (27) *Fuel Poverty: Government Response to the Committee's 5th Report*, Energy and Climate Change Committee, 19th October 2010 <http://www.publications.parliament.uk/pa/cm201011/cmselect/cmenergy/541/541.pdf>
- (28) Wright, O. *Householders offered £10,000 to improve energy efficiency*, Independent, 10th May 2011 <http://www.independent.co.uk/environment/green-living/households-offered-16310000-to-improve-energy-efficiency-2281615.html>
- (29) Jowit, J. *Green deal is not a good deal for all homeowners*, Guardian 24th November 2010 <http://www.guardian.co.uk/environment/cif-green/2010/nov/24/green-deal-is-not-a-good-deal?INTCMP=SRCH>
- (30) Hulme, J and Summers, C. *An investigation of the effect of rising block tariffs on fuel poverty*, BRE October 2009 http://downloads.theccc.org.uk/Rising%20block%20tariffs%20and%20fuel%20poverty_051009FINAL.pdf
- (31) Warren, A. *Is this green deal the start of a revolution?* Energy in Buildings and Industry, November/December 2010. [http://www.ukace.org/publications/ACE%20Warren%20Report%20\(2010-11-12\)%20-%20Is%20this%20Green%20Deal%20the%20start%20of%20a%20revolution.pdf](http://www.ukace.org/publications/ACE%20Warren%20Report%20(2010-11-12)%20-%20Is%20this%20Green%20Deal%20the%20start%20of%20a%20revolution.pdf)
- (32) House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1, 16th May 2011 para 240 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (33) *Public response to Green Deal will be underwhelming*, Low Carbon Economy, 6th May 2011 http://www.lowcarboneyconomy.com/profile/the_low_carbon_economy_ltd/low_carbon_blog/public_response_to_green_deal_will_be_underwhelming/14169
- (34) Holmes, I. *Financing the Green Deal*, E3G May 2011 http://www.e3g.org/images/uploads/E3G_Financing_the_Green_Deal_May_2011.pdf

- (35) Harvey, F. *Home owners will reject Green Deal for its high cost*, Environment Groups warn, Guardian 19th May 2011 <http://www.guardian.co.uk/environment/2011/may/19/green-deal-high-cost-interest>
- (36) Mitchell, C. *UK must shake off the dominance of energy giants*, Guardian 13th December 2010 <http://www.guardian.co.uk/environment/cif-green/2010/dec/13/uk-energy-efficiency-green-deal>
- (37) Revised Draft Overarching National Policy Statement for Energy (EN-1), DECC, October 2011. <http://webarchive.nationalarchives.gov.uk/20110302182042/https://www.energynpsconsultation.decc.gov.uk/docs/RevisedDraftOverarchingNationalPolicyStatementforEnergy%28EN-1%29.pdf>
- (38) Warren, A. Letter to the Guardian 29th March 2011 <http://www.guardian.co.uk/theguardian/2011/mar/29/the-cost-of-nuclear-power>
- (39) The Warren Report, February 2011 [http://www.ukace.org/publications/ACE%20Warren%20Report%20\(2011-02\)%20-%20Thirty%20years%20on%20and%20still%20waiting%20for%20an%20answer.pdf](http://www.ukace.org/publications/ACE%20Warren%20Report%20(2011-02)%20-%20Thirty%20years%20on%20and%20still%20waiting%20for%20an%20answer.pdf)
- (40) Ekins, P & Skea, J *Making the Transition to a Secure and Low Carbon Energy System*, UKERC, 2009 http://www.ukerc.ac.uk/Downloads/PDF/U/UKERC_Energy2050/0906UKERC2050.pdf
- (41) Memorandum submitted by WWF-UK. House of Commons Energy and Climate Change Committee, *Electricity Market Reform*, Volume 1, 16th May 2011 Ev 162 <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/742/742.pdf>
- (42) Thorpe, D. *Low Carbon Kid Blog*, June 8th 2010 http://lowcarbonkid.blogspot.com/2010_06_01_archive.html
- (43) Nuclear Subsidies, Energy Fair Group May 2011 http://www.mng.org.uk/gh/private/nuclear_subsidies1.pdf
- (44) See <http://www.nonukes.org.uk/actions>
- (45) Consultation on the implementation of changes to the Paris and Brussels Conventions on nuclear third party liability. DECC January 2011 <http://www.decc.gov.uk/assets/decc/Consultations/paris-brussels-convention-changes/1182-cons-implement-changes-paris-brussels.pdf>
- (46) Webb, T. *Nuclear power generators will face £1bn clean up costs after an accident*. Observer 23rd January 2011 <http://www.guardian.co.uk/business/2011/jan/23/nuclear-power-accident-clean-up-costs>
- (47) Tepco compensation means higher electric bills, Asahi 4th May 2011 <http://www.asahi.com/english/TKY201105030093.html>
- (48) McCurry, J. *Fukushima evacuees demand compensation*, Guardian 13th April 2011, quoting from the Yomiri Shimibun newspaper: <http://www.guardian.co.uk/world/2011/apr/13/japan-nuclear-plant-evacuees-compensation>
- (49) Green Facts: <http://www.greenfacts.org/en/chernobyl/1-3/5-social-economic-impacts.htm>
- (50) Baetz, J *As Fukushima bill looms, nations weigh dilemma: nuclear plants viable only when uninsured*
As Fukushima bill looms, nations weigh dilemma: nuclear plants viable only when uninsured, Washinton Post 21st April 2011. Same article here: <http://www.globalnews.ca/Nuclear+plants+viable+only+when+uninsured/4653983/story.html>
- (51) Schultz, S. *Researchers calculate horrendous liability costs for nuclear power*, Der Spiegel, 11th May 2011 <http://www.spiegel.de/wirtschaft/soziales/0,1518,761826,00.html#ref=nldt>
- (52) Letter from Prof Barry Jones, to the FT 3rd February 2011 <http://www.ft.com/cms/s/0/dfb8e1ec-2f28-11e0-88ec-00144feabdc0.html>
- (53) NFLA Press Release 20th April 2011 http://www.nuclearpolicy.info/docs/news/NFLA_PR_Nuclear_Liabilities.pdf
- (54) NFLA Submission http://www.nuclearpolicy.info/docs/consultations/NFLA_P_B_Liability_Response.pdf
- (55) Consultation on revised Funded Decommissioning Programme Guidance for New Nuclear Power Stations, DECC December 2010 <http://www.decc.gov.uk/assets/decc/Consultations/fdp-guidance-new-nuclear/985-consultation-revised-fdp-guide.pdf>
- (56) Consultation on an updated Waste Transfer Pricing Methodology for the disposal of higher activity waste from new nuclear power stations, DECC 2010 <http://www.decc.gov.uk/assets/decc/Consultations/nuclear-waste-transfer-pricing/984-consultation-waste-transfer-pricing-method.pdf>
- (57) Consultation on a Methodology to Determine a Fixed Unit Price for Waste Disposal and Updated Cost Estimates for Nuclear Decommissioning, Waste Management and Waste Disposal. DECC March 2010. http://www.decc.gov.uk/assets/decc/Consultations/nuclearfixedunitprice/1_20100324145948_e_@@_ConsultationonFixedUnitPricemethodologyandupdatedcostestimates.pdf
- (58) Consultation on an updated Waste Transfer Pricing Methodology for the disposal of higher activity waste from new nuclear power stations, DECC 2010 <http://www.decc.gov.uk/assets/decc/Consultations/nuclear-waste-transfer-pricing/984-consultation-waste-transfer-pricing-method.pdf>
- (59) Spent Fuel Disposal Costs, Prices and Subsidies, Jackson Consulting. You Tube 29th March 2011 A presentation based on his Research Report “Subsidy Assessment of Waste Transfer Pricing for Disposal of Spent Fuel from New Nuclear Power Stations” (March 2011). Economic modelling was performed using

our Fixed Unit Price Simulation (FUPSIM) model developed by Jackson Consulting.
<http://www.youtube.com/profile?gl=GB&user=jacksonconsult#p/a/u/0/EmlSEYeTOIE>

- (60) “Fixed Unit Price Simulation for Disposal of Spent Fuel from New Nuclear Power Stations in the UK (FUPSIM)”, Jackson Consulting Research Report, Greenpeace 2010.
<http://www.greenpeace.org.uk/files/pdfs/nuclear/gpuk-fupsim-report.pdf>
- (61) The Explanatory Notes for the Energy Act 2004 explain that Section 3 is framed in general terms so that, in addition to the BNFL and UKAEA sites described in the White Paper, the Government could in future give the NDA ... with the consent of the company concerned ... responsibility for securing the decommissioning and cleaning up of sites operated by companies in the private sector. This last point reflects both recent experience with BE and responses to the White Paper which suggested that it would be in the public interest if the NDA’s responsibilities could go wider than public sector civil nuclear liabilities as proposed in the White Paper. <http://www.legislation.gov.uk/ukpga/2004/20/notes/division/5/1/3>
- (62) On 15 January 2004 Lord Whitty told the House of Lords (Column GC170) that “*there may again be circumstances in which a private sector operator cannot meet its nuclear obligations ... we must retain the possibility of the Government meeting such costs*”
- (63) Ian Jackson, *Nukenomics: the commercialisation of Britain’s nuclear industry*, Sidcup: Nuclear Engineering International Special Publications, 2008, ISBN 978-1-903077-55-9, page 10
- (64) On 15 January 2004 Lord Whitty told the House of Lords (Column GC170) that “*there may again be circumstances in which a private sector operator cannot meet its nuclear obligations ... we must retain the possibility of the Government meeting such costs*”