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1. **UK Nuclear Programme – not dead yet as Government tries to save face.**

The Times reported in mid July that, according to “well placed industry sources”, EDF Energy wants a subsidy of £2.8 billion a year for the next 25 years to build two new nuclear reactors at Hinkley Point in Somerset, England at a cost of £14 billion. (1) The French, mostly state-owned company, will only build the two European Pressurised Water Reactors (EPRs) with huge subsidies, paid for through fixed levies on electricity bills.

In May the UK Government published a Draft Energy Bill (see NuClear News No.41) which details plans for so-called Electricity Market Reform. The proposals include the introduction of a complicated support mechanism for low carbon electricity called “Contract for Difference” (CfD). Basically if the market price for electricity falls below a guaranteed “strike price” the nuclear or renewable energy operator would be paid the difference, but would also have to pay money back if the electricity price goes above the strike price. The Government doesn’t expect the Energy Bill to be passed into legislation until towards the end of next year, and strike price rates won’t be finalised until then. However, under the terms of the draft Bill, the government can issue a likely strike price in advance of formalising the rate and introducing CfD in 2014.

EDF Energy and its junior partner Centrica want to make their final investment decision on Hinkley before the end of 2012. So talks have begun between the Department of Energy and Climate Change (DECC) and the two companies to provide them with some firmer guarantees in order to make sure plans for Hinkley Point go ahead. With RWE and EON having recently dropped their UK nuclear plans, EDF Energy has the Government over a barrel, and will no doubt be telling DECC what strike price it wants before going ahead – in effect writing its own subsidy cheque from consumers.

According to *The Times*, EDF says it needs about £165 per megawatt hour (£/MWh), almost four times the existing wholesale price of electricity, if it is to go ahead. This works out at a subsidy of £68 billion over 25 years, or an average of about £50 extra a year on every household bill. According to EDF Energy chief executive, Vincent de Rivaz, speaking to *The Telegraph* that figure is “utterly rubbish” – between £100/MWh and £140/MWh would be more accurate. (2)

Let's not forget that the Coalition Agreement between the Tories and Liberal Democrats pledged to not subsidise nuclear power. (3) Despite this, the Secretary of State for Energy and Climate Change, Liberal Democrat Ed Davey, now seems to be prepared to agree a high strike price with the nuclear industry, whilst pretending the Government is not planning to subsidise dangerous new reactors at all.

The Times says the Government has warned EDF Energy, and its junior partner Centrica, that nuclear power subsidies must be lower than offshore wind power, but EDF is arguing that the giant new offshore wind projects planned for the North Sea will cost £180/MWh, making nuclear slightly cheaper. In fact currently under the UK Renewables Obligation, offshore windfarms now being installed are being paid around £135 per MWh. According to senior lecturer on Energy Policy at Birmingham University, David Toke, EDF has been forced to come clean on nuclear costs, so now it is making dubious claims about offshore wind. (4) A Government and Industry taskforce set up to reduce offshore wind costs says offshore wind costs can be reduced to £100/MWh by 2020. (5)

Ed Davey says “*nuclear will not receive a higher price than comparable generation technologies whether they be renewables or indeed gas generation once its emissions have been abated by carbon capture and storage.*” (6) If it is more expensive to get electricity from new nuclear power stations than offshore wind then the government's commitment to nuclear will become difficult to maintain – we might as well just build more offshore wind farms. (7)

Toke asks “*will the British Treasury sign off on this plan to increase average British electricity prices by 8 per cent for 25 years to produce 6 per cent of UK electricity from nuclear power?*” The Government claims that energy bills will have to go up whatever we do. Its answer to this was supposed to be The Green Deal. But this now looks increasingly unlikely to deliver the savings to consumers promised. The plan is to offer Green Deal loans of up to £10,000 to help consumers insulate their homes and reduce fuel bills, but the interest charged will be at the usual rate of around 7.5%. So consumers will have to spend £22,000 to pay the loan back over 25 years requiring households to deliver energy-efficiency savings of £900 a year to cover the cost of annual loan repayments. (8)

In contrast, in Germany, where nuclear power is being phased out by 2022, loans at very low interest rates of 1-2%, have helped insulate over 2m homes, employing 200,000 people a year in the process, and German homeowners can borrow up to €75,000 to give them a very cosy and efficient home indeed. (9)

Greenpeace and WWF wrote to *The Times* pointing out that the costs of nuclear power are going up not down. The EPRs at Flamanville and Olkiluoto are now £2.7 billion and £2.6 billion over-budget respectively. The huge subsidy of £2.8 billion per year being sought for two reactors at Hinkley was in stark contrast to another fight within Whitehall over levels of support for onshore wind power with the Treasury pushing for a reduction in support for wind power that would save less than £20 million per year. (10) (The Treasury lost the battle, but only after DECC made concessions on gas)

EDF denied that it was negotiating for a strike price of £165/MWh. It said it expects to reach a transparent agreement with the Government that is fair and balanced. It will show that nuclear is affordable and cost-competitive. (11) The Nuclear Industry Association (NIA) said “*if it were true, the figure of £165/MWh would make new nuclear virtually untenable. Fortunately, it is not true. Rather, it is spectacular speculation.*” (12) But NIA does not speculate on what the real price might be.

The cost of the EPR being built at Flamanville, has already doubled to €6 billion (about £4.5 billion) from €3 billion and the project is four years behind schedule. Flamanville-3 is the reference design for the UK EPR. At £5 billion, Ian Jackson of Chatham House estimates that EDF would need

£91.50/MWh just to break even on a Hinkley Point reactor. In addition to breaking even, EDF is expecting to earn a return on its investment which would bump the final strike price up to about £148/MWh. Other analysts, notably Peter Atherton of Citibank, have publicly projected a strike price of between £150 and £200/MWh. (13) *The Financial Times* says a person close to the negotiations on the level of government support energy companies should receive reckons that EDF Energy and Centrica will need a price of at least £100/MWh – more than double the present wholesale power price of about £41/MWh – to justify the huge investment needed in new nuclear plants. He said the upper limit of any such support would be about £130-£140/MWh – the cost of electricity generated by offshore wind farms. *“If you can’t do [nuclear] for that price, then you might as well build more wind farms”*. (14)

David Toke says the Government could hardly set the strike price any higher than £100/MWh because this is the figure the Treasury wants offshore wind power to come down to. This would be a soft landing for a policy retreat. The Government may say that £100/MWh is profitable for nuclear power, but it is unlikely to lead to any being built. Lots of rumours, hopeful stories, yes, because the British Government (and the nuclear industry) does not want to admit that nuclear power is a dead duck. (15)

The latest news is that the chief executive of General Electric, has described nuclear power as so expensive compared with other forms of energy that it has become *“really hard”* to justify. *“It’s really a gas and wind world today,”* said Jeff Immelt, referring to two sources of electricity he said most countries are shifting towards as natural gas becomes *“permanently cheap”*. At the same time, a 75 per cent fall in solar panel market prices in the past three years has made solar power competitive with daytime retail electricity prices in some countries, according to a recent report by Bloomberg New Energy Finance, while offshore wind turbine prices have steadily declined. (16) Steve Kidd, deputy director-general of the World Nuclear Association, says: *“Cheap gas prices make it difficult for new nuclear plants to compete economically but we would question the likelihood of these price levels continuing much longer and their relevance to the situation elsewhere in the world”*. But as Peter Atherton, utilities analyst at Citigroup in London reminds us if you have to pay £7bn per reactor, it becomes a real challenge to justify building them – both economically and politically. The Financial Times concludes that private sector interest in nuclear is cooling and governments are scrutinising the costs of building the next generation of reactors more closely, so nuclear power has a long way to go before proving Mr Immelt wrong by showing it can compete with gas and renewable energy. (17)

Now EDF says it is considering looking for more partners for its UK nuclear projects to help it share costs and limit its debt burden – an admission perhaps that French state-owned industry is no longer able to afford the huge nuclear costs on its own. (18) The Telegraph says the cost of new reactors has now spiralled to £7.5bn and that ratings agencies have warned they could downgrade both EDF and Centrica if they go ahead with the project. (19)

- (1) The Times 15th July 2012. <http://www.thetimes.co.uk/tto/business/industries/utilities/article3476326.ece> (A subscription only newspaper so look here: <http://www.no2nuclearpower.org.uk/news/daily12/daily.php?dailynewsid=197>)
- (2) Telegraph 12th Aug 2012 <http://www.telegraph.co.uk/finance/newsbysector/energy/9471193/EDF-Energy-puts-price-cap-on-Hinkley-Point-nuclear-plant.html>
- (3) Spinwatch 22nd May 2012 <http://www.spinwatch.org/-articles-by-category-mainmenu-8/67-nuclear/5501-when-is-a-subsidy-not-a-subsidy>
- (4) David Toke’s Green Energy Blog 16th July 2012 <http://realfeed-intariffs.blogspot.co.uk/2012/07/its-official-nuclear-power-is-more.html>
- (5) Offshore Wind Cost Reduction Taskforce Report June 2012 http://www.bwea.com/pdf/publications/Offshore_Task_Force_Report.pdf
- (6) Liberal Democrat Voice 20th April 2012 <http://www.libdemvoice.org/there-will-be-no-public-subsidy-for-nuclear-28150.html>

- (7) Left Foot Forward 18th July 2012 <http://www.leftfootforward.org/2012/07/leaked-report-nuclear-energy-ed-davey/>
- (8) Business Green 17th July 2012 <http://www.businessgreen.com/bg/news/2191949/exclusive-which-warns-of-green-deal-s-devastating-impact-on-efficiency-efforts>
- (9) Guardian 24th May 2012 <http://www.guardian.co.uk/environment/damian-carrington-blog/2012/may/24/green-investment-bank-energy-efficiency>
- (10) The Times 18th July 2012 <http://www.thetimes.co.uk/tto/opinion/letters/article3478465.ece>
- (11) The Times 19th July 2012 <http://www.thetimes.co.uk/tto/opinion/letters/article3479871.ece>
- (12) NIA Blog 18th July 2012 <http://uknuclear.wordpress.com/2012/07/18/lies-damned-lies-and-speculation/>
- (13) i-Nuclear 19th July 2012 <http://www.i-nuclear.com/2012/07/19/edf-says-reported-strike-price-of-165mwh-is-wrong-decc-silent-on-upper-limit/>
- (14) FT 23rd July 2012 <http://www.ft.com/cms/s/0/3dda6692-d29d-11e1-8700-00144feabdc0.html>
- (15) David Toke's Blog 24th July 2012 http://realfeed-intariffs.blogspot.co.uk/2012_07_01_archive.html
- (16) FT 30th July 2012 <http://www.ft.com/cms/s/60189878-d982-11e1-8529-00144feab49a,Authorised=false.html>
- (17) FT 2nd August 2012 <http://www.ft.com/cms/s/0/5f849de4-dbf8-11e1-86f8-00144feab49a.html>
- (18) Reuters 31st July 2012 <http://www.reuters.com/article/2012/07/31/edf-results-idUSL6E8IV2LX20120731>
- (19) Telegraph 1st August 2012 <http://www.telegraph.co.uk/finance/newsbysector/energy/9442516/EDF-looks-to-spread-UK-nuclear-costs.html>

2. Select Committee says Energy Bill “unworkable”

The proposals in the Government’s draft Energy Bill could impose unnecessary costs on consumers, lead to less competition and deter badly needed investment, according to MPs on the Energy and Climate Change Committee who have examined the draft legislation.

Tim Yeo MP, Chair of the Energy and Climate Change Committee, said "*The Government is in danger of botching it*" because the Treasury refuses to act as the ‘counterparty’ to underwrite the strike price. The new model for contracts will spread the liability across various energy companies instead; raising concerns that the plans are now too complex and possibly not legally enforceable. The MPs are calling on the Government to use its AAA-credit rating to underwrite the new contracts in order to keep the costs of energy investment down for consumers.

The Committee is also concerned that the new contract system will reinforce the dominance of the "Big Six" energy companies and prevent new entrants into the electricity market. The Government says it wants to increase competition and improve the opportunities for new entrants in the electricity market. But witnesses told the Committee that the Energy Bill as it stands will in fact deliver the exact opposite of this ambition, threatening the viability of smaller-scale independent energy companies. (1)

MPs now say the Energy Bill is "*unworkable*". Tim Yeo says George Osborne is sacrificing green energy plans in order to placate Conservative backbenchers, many of whom are campaigning against wind farms and new pylons in their constituencies. Without sweeping changes, the energy bill could provoke a crisis within the energy industry that would raise consumer bills and imperil climate change targets, wrecking the confidence of investors in the process. (2)

The Select Committee said DECC was being "*disingenuous, to say the least,*" when it claimed that it was never DECC’s intention for government to underwrite the proposed new feed-in tariff with contracts for difference. Instead, the committee said it believes a conflict with Treasury led to the about-face on how the contracts would work. The committee said political considerations and questions about violating EU state aid rules had driven DECC to design the contracts for difference (CFD) in such a way as to allow "*policy and financial support for nuclear to be rolled up with that for renewables.*" Nuclear power should be treated separately from renewable energy under the electricity

market reforms and the government should return to its original proposals to underwrite the long-term contracts that will provide guaranteed power prices to nuclear and other low carbon energy generation projects, the committee said. Including nuclear and renewables together was widely seen as a fig leaf to cover support for new nuclear and still obtain EU state aid approval and maintain a government pledge not to subsidise new nuclear, the committee said. Because the CfDs are available to all low carbon energy generation, the government has maintained it is not subsidising new nuclear power. (3)

The committee also called for greater scrutiny of the private negotiations between EDF Energy and DECC about the strike price for Hinkley Point C. *“We are concerned that the proposed process for setting the nuclear strike price lacks sufficient transparency,”* the committee said. *“The perception that decisions are being made ‘behind closed doors’ could be highly damaging to the low-carbon agenda and may further undermine consumer trust in energy companies”.*

Both EDF Energy and Minister of State for Energy Charles Hendry have promised *“full transparency”* on the CfD for Hinkley Point, but in both cases they were referring only to the outcome of the negotiations. In his public statements to date, Hendry has not said whether the evidence used to determine the power price EDF would be given would be subject to public scrutiny. But he has said that under the draft electricity market reform bill DECC *“may not disclose information that consists of trade secrets or sensitive commercial information, unless the person to whom the information relates consents to the disclosures.”* (4)

Alan Whitehead MP, a Labour member of the Select Committee says one reason for doubting the Bills ability to deliver is that whilst claiming to be about Electricity Market Reform, the bill does not reform the electricity market at all. It leaves the present, non-transparent bilaterally trading, vertically integrated, Big Six-dominated energy market arrangements exactly as they are. Renewable suppliers, particularly independent companies, need to flourish if the aim of perhaps 18 to 20GW of wind capacity on the system in the 2020s is to be realised. But CfDs work very badly for renewables. Renewable Obligation Certificates will disappear after 2017. The end of the RO which by definition excludes nuclear is very much bound up with the Government’s perceived need to develop its ambition of 16GW of new nuclear capacity by the mid 2020s without overt ‘subsidy’. CfDs tangle renewable and nuclear together in the hope that by so doing will protect nuclear from the accusation (quite rightly) that it will be subsidised. This would break the Coalition Agreement, and almost certainly fall foul of EU ‘State aid’ rules. (5)

- (1) Energy and Climate Change Select Committee Press Release 23rd July 2012 <http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/news/energy-bill-report-published/>
- (2) Guardian 22nd July 2012 <http://www.guardian.co.uk/politics/2012/jul/22/george-osborne-green-plans-tory>
- (3) i-Nuclear 23rd July 2012 <http://www.i-nuclear.com/2012/07/23/conflict-between-treasury-and-energy-dept-makes-uk-energy-policy-unworkable/>
- (4) i-Nuclear 24th July 2012 <http://www.i-nuclear.com/2012/07/23/greater-scrutiny-urged-for-negotiations-to-subsidise-edfs-hinkley-point-c-reactors/>
- (5) Alan Whitehead MP 24th July 2012 http://www.alan-whitehead.org.uk/articles/articles_2012/thesoundoffallingpillars.htm

3. Osborne’s Dash for Gas

George Osborne has written to Ed Davey, making clear that unabated gas should remain a dominant part of the UK's energy mix until 2030. This position, the culmination of more than 18 months of backroom manoeuvrings by the gas industry and the chancellor and his advisors, would be fatal for the UK's climate change targets, but would play well to Tory backbenchers.

Yeo said: "*The Treasury has never been signed up to the green agenda, but this has got much more serious in the past year. Their interventions on the energy bill, and clear interference over [renewable energy subsidies] ROCs have shown this – it all adds up to a clear sign that they are not supportive of progress on the low-carbon energy sector.*" (1)

A bitter row between the Treasury and the energy department over subsidies for wind energy appeared to end in a victory for the Lib Dem energy secretary, Ed Davey. (See NuClear News No.42) The row centred on the level of support channelled to companies providing wind energy to the grid and had escalated into a bruising confrontation between the chancellor, George Osborne, and the Liberal Democrats, which threatened to derail the coalition's environmental and energy agendas. Finally the coalition announced that onshore wind subsidies, paid for through energy bills, would be cut by 10% and not by the 25% that Osborne had been demanding. (2)

But Friends of the Earth said "*Treasury arm-twisting has forced [Ed Davey] to give his backing to new gas-fired power stations - which is completely at odds with his fuzzy rhetoric on clean British energy.*" The government's official advisers on the Climate Change Committee have said that the increased use of gas could lead to targets being breached unless carbon capture technology is advanced to clean up emissions from gas. (3)

In a letter sent to Davey in July, Osborne said he would agree to cuts to onshore wind power subsidies of just 10 per cent, but in return DECC must agree to review wind farm subsidy levels again during the course of this parliament, send out clear signals that the government wants unabated gas power plants to play a "core" role in the UK's energy mix through to 2030 and beyond, and defy the Committee on Climate Change's recommendation for a target requiring the electricity sector to be largely decarbonised by 2030. (4)

The coalition row over UK energy policy could resume after the summer, because Ed Davey, insists it would be "presumptuous" to rule out a 2030 electricity carbon target. Mr Osborne is opposed to what he calls "inflexible" new targets for the power sector, which the government's climate advisers say are needed by 2030 to meet legally binding climate goals. However, Mr Davey told reporters such a target "hasn't been ruled out" and will be debated as the energy bill was finalised later in the year. (5) According to *Business Green*, despite DECC's victory it 's clear that there is now going to be an almighty row in the autumn over numerous aspects of the Energy Bill, not least the proposals for a decarbonisation target for the electricity sector, which according to the Treasury will now never see the light of day. The Chancellor is effectively attempting to tear up the Climate Change Act and fire the trigger on a full scale dash for gas - the mood music for green investors is appalling. (6)

Davey continued to stress that gas has a key role to play in the UK's energy mix, insisting DECC's own carbon plan shows that it should be possible to support between 10GW and 20GW of unabated gas capacity in the UK during the 2030s without breaching the country's legally binding carbon targets. He argued that DECC's modelling shows we can burn significant amounts of gas and still hit our climate targets. But it emerged that DECC has not published the relevant scenarios, and isn't going to. DECC's press release said: "*The Government ... is today confirming that it sees gas continuing to play an important part in the energy mix well into and beyond 2030, while meeting our carbon budgets.*" The phrase "well into and beyond 2030" is vague, but suggests that DECC believes gas can have a significant role well into the 2030s without exceeding the UK's carbon budgets. DECC itself states: "*From 2030 onwards, a major role for gas as a baseload source of electricity is only realistic with large numbers of gas CCS plants.*" The government is due to produce a Gas Generation Strategy in the Autumn. Perhaps then more detail will be available about the future for gas. (7)

Away from the big ticket wind and marine energy subsidy announcements, developers from some of the emerging renewable energy industries were left mulling a mixed bag of reforms to support levels.

Lobbyists were particularly disappointed with the level of support for geothermal, which will fall from 2 ROCs in 2013 to 1.9 ROCs in 2015 and 1.8 ROCs the following year. Dr Ryan Law, chief executive of Geothermal Engineering, said he was "shocked" by the cuts, insisting geothermal is a developing industry worthy of similar support to wave and tidal energy, which will from next year enjoy more than double the level of support at 5 ROCs per MWh. (8)

Meanwhile, SSE no longer expects to develop any new conventional hydro electric schemes and has put plans for four small-scale hydro-electric schemes in Scotland "on hold" in case the Scottish Government agrees to the same reduction in support for hydro. (9) SSE says the scope to increase generation of electricity from biomass at coal-fired power stations is significantly reduced. In addition, it says the decision to limit the guarantee of 0.9 Renewable Obligation Certificates to electricity from onshore wind farms commissioned between April 2013 and March 2014 introduces a new uncertainty that could potentially restrict the future development of this technology. (10)

George Osborne is now facing fresh questions after it emerged that his father-in-law is the head of a lobbying organisation for big oil and gas companies. Lord Howell of Guildford, who is an energy minister at the Foreign Office, is also the president of the British Institute of Energy Economics (BIEE), which is sponsored by Shell and BP – prompting suggestions of a conflict of interest. (11)

Greenpeace has submitted Freedom of Information Act questions in a bid to discover how many times Lord Howell has met the Chancellor and discussed energy questions. A Greenpeace spokesman said: *"We feel there could be conflict of interest because the institute has backing from oil and gas companies. Has he been bending the Chancellor's ear on behalf of fossil fuel interests? What conversations have there been over the dinner table?"* Lord Howell is said to be sceptical about climate change. (12)

The Deputy Prime Minister Nick Clegg dismissed claims of rifts within the coalition Government over its commitment to cutting carbon emissions in a speech at the energy-focused global business summit. *"The coalition is sometimes presented, in the press, as if it is riddled with debate and division with regard to greening the economy. That isn't the case."* (13)

- (1) Guardian 22nd July 2012 <http://www.guardian.co.uk/politics/2012/jul/22/george-osborne-green-plans-tory>
- (2) Guardian 24th July 2012 <http://www.guardian.co.uk/environment/2012/jul/24/victory-libdems-onshore-wind-subsidies?intcmp=122>
- (3) BBC 25th July 2012 <http://www.bbc.co.uk/news/business-18979330>
- (4) Business Green 24th July 2012 <http://www.businessgreen.com/bg/news/2193568/green-businesses-slam-chancellor-for-meddling-with-uks-low-carbon-future>
- (5) FT 25th July 2012 <http://www.ft.com/cms/s/0/434437ee-d634-11e1-b547-00144feabdc0.html>
- (6) Business Green 26th July 2012 <http://www.businessgreen.com/bg/james-blog/2194362/decc-wins-the-wind-energy-battle-but-the-fight-for-gasland-uk-continues>
- (7) Carbon Brief 26th July 2012 <http://www.carbonbrief.org/blog/2012/07/did-the-dog-eat-deccs-homework>
- (8) Business Green 25th July 2012 <http://www.businessgreen.com/bg/news/2194216/developers-fear-for-geothermal-under-new-subsidy-regime>
- (9) Scotsman 28th July 2012 <http://www.scotsman.com/business/management/sse-hydro-schemes-on-hold-ahead-of-review-1-2436940>
- (10) SSE 26th July 2012 <http://www.sse.com/News/PressReleases/2012/InterimManagementStatement/>
- (11) Independent 29th July 2012 <http://www.independent.co.uk/news/uk/politics/osborne-accused-over-gas-lobbyist-fatherinlaw-7985001.html>
- (12) Telegraph 30th July 2012 <http://www.telegraph.co.uk/finance/newsbysector/energy/9436967/Is-George-Osbornes-energy-stance-influenced-by-Lord-Howell-Greenpeace-asks.html>
- (13) Independent 6th August 2012 <http://www.independent.co.uk/news/uk/politics/coalition-united-on-carbon-cuts-says-nick-clegg-8009546.html>

4. Radioactive Waste Dump for the Lake District?

The West Cumbria Managing Radioactive Waste Safely (MRWS) Partnership agreed its Final Report on 19th July. The report sets out the Partnership's opinions on the issues that would be involved in taking part in a search to see if there is anywhere suitable for a repository for higher activity radioactive waste. The report will now go to Allerdale Borough Council, Copeland Borough Council and Cumbria County Council who will decide whether to take part in detailed studies and investigations looking at geology and other factors.

It is now up to the three Councils, as the Decision Making Bodies in this process, to weigh up the evidence on all sides of the debate. The Councils will then decide whether to take part in a search to find out if there is anywhere in the Allerdale or Copeland areas that is suitable for a nuclear waste dump. If they do take part in the process the Councils would still have a right to withdraw up until the point where construction work could start. Cumbria, Copeland and Allerdale councillors have promised that the crucial decision will be made in public at Executive and Cabinet meetings (but not at full Council).

The Partnership has spent the last few months considering responses to the public consultation which ran from November 2011 to March 2012. Around 2,300 people and organisations contributed their views on the Partnership's initial opinions and a wide range of issues were raised. This has led to some significant changes to the Partnership's Final Report.

One of the most important changes was to advise that prior to a decision to take part in the search for a site there should be a commitment that the Government will make key parts of the Managing Radioactive Waste Safely process legally binding, in particular the right of the Councils to withdraw. The Partnership has received this commitment from the Government. Another change made as a result of the consultation was to advise that, if the process continues, funding would have to be made available by the Government so that independent reviews of technical work, such as the geological investigations, can be carried out on behalf of the community.

The full report runs to more than 200 pages and sets out the Partnership's opinion and advice on a wide range of issues. For example, the Partnership has developed a set of 'Inventory Principles' to ensure a community would be involved in decisions about the waste that will go into a repository. The Partnership says sufficient progress has been made towards agreeing these principles with the Government.

Some experts have argued that West Cumbria's geology is unsuitable and it would therefore not be worth taking part in further investigations. However, other experts have said that further progress is worthwhile because not enough is yet known about the geology of West Cumbria.

Other issues covered in the report include impacts and community benefits. The report points out that if a repository was to be sited in West Cumbria it could lead to a number of different negative and positive impacts. These include the immediate effects of construction such as noise and dust, traffic impacts, possible effects on the visual or physical environment and on tourism and effects on investment and jobs. The Partnership says: 'Our overall opinion is that, at this stage, we are fairly confident that an acceptable process can be put in place to assess and mitigate negative impacts, and maximise positive impacts'.

The report also says that areas within the National Park should not be considered for the facilities that would need to be sited above ground 'because of the likely impact this would have on the special qualities of the Park, which would not be consistent with current planning policies'.

Details of all the Partnership's opinions and advice can be found in the Final Report, which will be available at www.westcumbriamrws.org.uk in a few weeks. (1)

Tim Knowles (county council Cabinet member), Elaine Woodburn and Alan Smith (leaders of Copeland and Allerdale boroughs respectively) are adamant the final decision will not be a fait accompli in favour of going forward to search for a suitable geological site deep underground in West Cumbria. Ruth Balogh, representing the 'Save Our Lake District' campaign, referred to major reservations expressed both by the Cumbria Association of Local Councils and Churches Together in Cumbria.

Marianne Birkby, for Radiation Free Lakeland, said: *"I think it's horrendous, we shouldn't be here in the first place. To me this is being presented as a fait accompli but won't be if enough people say no – they've been very cunning, a bit like sitting a frog in a pan of water: if the frog could see the danger then it would be away immediately but because they haven't actually said it's going to be here then communities haven't been galvanised to oppose."* (2)

Meanwhile the burial of radioactive nuclear waste is to be fast tracked by the government despite warnings about the risks. Ministers have revealed an "enduring ambition" for Britain's first burial of waste from nuclear power stations to happen as early as 2029, instead of 2040 as originally planned. Opponents warn acceleration of the idea will mean cutting corners, and over-riding the views of people living near burial sites.

Under the original plans the first intermediate level waste would be buried in 2040, with high level waste and spent fuels going underground in 2075, followed by spent fuel from new build nuclear reactors in 2130. The project would close from 2175. Last year NDA said it had "confidence" the 2075 and 2130 dates could be brought forward, but shifting the 2040 date to 2029 was "more challenging" and required consideration of other approaches which bring "a higher degree of programme risk". However, a new report on Implementing Geological Disposal reveals the government is determined to press ahead with acceleration, despite "the inherent risks". "Acceleration remains an enduring ambition for ministers but no decisions will be taken until NDA's further work is complete," it said. (3)

- (1) West Cumbria MRWS 20th July 2012 http://www.westcumbriamrws.org.uk/news_more.asp?news_id=47
- (2) Whitehaven News 27th July 2012 <http://www.whitehavennews.co.uk/news/three-councils-to-decide-on-suitable-n-waste-burial-site-1.979389?referrerPath=news>
- (3) Independent 29th July 2012 <http://www.independent.co.uk/news/uk/politics/nuclear-dumps-are-fast-tracked-7985005.html>

5. Stress Tests

Thirteen nuclear power plants in Europe show significant weaknesses beyond those highlighted in recent "stress tests" and, depending on their age and situation, should be immediately upgraded or permanently shut, according to a study done for Greenpeace International.

Greenpeace hired independent consultants to analyse the results of 'stress tests' carried out on nuclear plants in Europe. They came to some alarming conclusions. There are alarming shortfalls in back-up power for nuclear plants, including multiple reactors relying on single emergency diesel generators in case of disaster. Some plants were found to be incapable of handling challenging earthquake or flood conditions. Radiation shielding was woefully inadequate in dangerous spent fuel storage across the continent. The Stress Tests have ignored multiple disaster scenarios, particularly plane crashes and all ignored emergency evacuation plans, despite the fact plants are as close as 10 kilometres to European cities. There is little consistency in the findings of the Stress Tests, making comparison between

plants difficult or impossible. Material degradation due to aging is often not factored into the tests meaning, for example, that Wylfa was tested as if it were a new plant.

The research focuses on example nuclear plants in Belgium, Sweden, France, the UK, Czech Republic, Slovakia, Germany, Slovenia and Spain. The authors recommended immediate shutdown of the two Wylfa reactors, which are scheduled for closure next year as well as the four units at Ringhals in Sweden, and two at Fessenheim in France and the Belgian reactors Doel-1 and -2 and Tihange-1.

- Wylfa has been given the go-ahead to transfer fuel between its reactors to allow one of the reactors to continue operating until September 2014, almost four years beyond its original closure date. Reactor 2 was shut down in April because of limited fuel stocks, following the final shipment of Magnox fuel – which is no longer manufactured. (2) Dylan Morgan, of anti-nuclear group Pobl Atal Wylfa B (Pawb), says the decision will see Wylfa operating for 18 years beyond its original design life, increasing the risk of an accident. He said the plan poses a “totally unacceptable” safety risk in order to eke every last drop of life out of the station that started operating in 1971. (3)
- Belgian nuclear regulator AFCN has called a meeting of national nuclear watchdogs and nuclear experts in Brussels on 16 August to discuss safety issues raised by the discovery of potential cracks on the reactor vessel of Belgium's Doel 3 nuclear unit. The reactor must stay off line until its operator, French utility GDF Suez's Belgian subsidiary Electrabel, can prove that the multiple defects discovered following the first use of ultrasonic inspection on the unit do not jeopardise the reactor's integrity. It would not be possible to repair the reactor vessel, and a reactor vessel has never been replaced, according to AFCN, which does not rule out permanent closure of the unit. Defunct Dutch manufacturer Rotterdamsche Droogdok Maatschappij (RDM) supplied the reactor vessel for Doel, which first went on line in 1982. There are 22 nuclear units worldwide with key components supplied by RDM, and AFCN has warned national watchdogs of countries with reactors supplied by RDM that similar issues may be discovered on these reactor vessels. RDM supplied the reactor for Belgium's 1,008MW Tihange 2, which came on line in 1983. Swedish state-controlled utility Vattenfall's 866MW Ringhals 2 in Sweden also has an RDM reactor vessel. (4)

- (1) Nuclear Stress Tests, Flaws, Blind Spots and Complacency, Greenpeace International, June 2012 <http://www.greenpeace.org/eu-unit/Global/eu-unit/reports-briefings/2012%20pubs/Pubs%20%20Apr-Jun/Nuclear%20Stress%20Tests%20-%20flaws,%20blind%20spots%20and%20complacency.pdf>
- (2) Nuclear Engineering International 9th August 2012 <http://www.neimagazine.com/story.asp?sectioncode=132&storyCode=2062890>
- (3) Wales Online 10th August 2012 <http://www.walesonline.co.uk/news/wales-news/2012/08/10/campaigners-slate-unacceptable-risk-as-wylfa-stays-open-91466-31590800/>
- (4) Argus Media 10th August 2012 <http://www.argusmedia.com/pages/NewsBody.aspx?id=809624&menu=yes>

6. Thorium: Not ‘green’, not ‘viable’, and not likely

Journalist, Oliver Tickell, author of the *Kyoto2* climate initiative, (1) editor of the Nuclear Pledge website (2) and Green Party candidate for Oxford City Council in three elections, has published a new briefing on Thorium reactors.

A number of commentators have argued that most of the problems associated with nuclear power could be avoided by both, using thorium fuel in place of uranium or plutonium fuels and using ‘molten salt reactors’ (MSRs) in place of conventional solid fuel reactor designs. The combination of these two technologies is known as the Liquid Fluoride Thorium Reactor or LFTR, because the fuel is in form of a molten fluoride salt of thorium and other elements.

The briefing examines the validity of the optimistic claims made for thorium fuel, MSR and the LFTR in particular, and finds that they do not stand up to critical scrutiny - these technologies have significant drawbacks including: very high costs; marginal benefits for a thorium fuel cycle over uranium; serious nuclear weapons proliferation hazards; the danger of both routine and accidental releases of radiation, mainly from continuous 'live' fuel reprocessing in MSR and the very long lead time for significant deployment of LFTRs of perhaps 50 years – rendering it irrelevant in terms of addressing current or medium term energy supply needs.

The thorium-uranium fuel cycle has some advantages over the dominant uranium-plutonium cycle, in terms for example, of the reduced production of long-lived actinides and somewhat diminished radio-toxicity overall. However, it also creates new hazards of its own. As far as radioactive fission products are concerned, there is little to choose between the two.

Thorium reactors do not produce plutonium. But an LFTR could (by including ²³⁸U in the fuel) be adapted to produce plutonium of a high purity well above normal weapons-grade, presenting a major proliferation hazard. Beyond that, the main proliferation hazards arise from the need for fissile material (plutonium or uranium) to initiate the thorium fuel cycle, which could be diverted, and the production of fissile uranium ²³³U.

LFTRs are theoretically capable of a high fuel burn-up rate, but while this may indeed reduce the volume of waste, the waste is more radioactive due to the higher volume of radioactive fission products. The continuous fuel reprocessing that is characteristic of LFTRs will also produce hazardous chemical and radioactive waste streams, and releases to the environment will be unavoidable. Spent fuel from any LFTR will be intensely radioactive and constitute high level waste. The reactor itself, at the end of its lifetime, will constitute high level waste.

The UK's National Nuclear Laboratory (NNL) believes that considerable research, development and testing lies ahead before thorium fuels will be ready for operational use. As the NNL states, "*Thorium reprocessing and waste management are poorly understood. The thorium fuel cycle cannot be considered to be mature in any area.*" It estimates that 10-15 years work is required before thorium fuels will be ready for use in current reactor designs, and that their use in new types of reactor is at least 40 years away. (3)

(1) <http://www.kyoto2.org/>

(2) <http://www.nuclearpledge.com/>

(3) Thorium: Not Green, Not Viable and Not Likely, Oliver Tickell, June 2012
http://www.nuclearpledge.com/reports/thorium_briefing_2012.pdf

7. Finland – more delays at Olkiluoto

Finnish utility Teollisuuden Voima Oyj (TVO) says Olkiluoto-3, the Areva EPR reactor under construction, will not achieve regular electricity production in 2014 as planned. The EPR project was supposed to be producing electricity in 2009, about four years after the start of construction in 2005. However, delays continue to plague the project with both sides blaming the other. The project is now five years behind schedule and the original €3.3 billion projected cost has more or less doubled.

In April TVO said it was still awaiting Areva proposals on how to close out instrumentation and control (I&C) concerns on the EPR reactor. In 2009, regulators in Finland, France and the UK had issued a rare joint letter of regulatory concern about the I&C on the EPRs under construction or proposed in the three countries. In April, French regulators, Autorité de Sûreté Nucléaire (ASN), became the first to resolve their concerns when they lifted their reservations on the Flamanville-3

(FA3) EPR under construction in France. But TVO officials say “*It is important to note that the I&C of OL3 is somewhat different than FA3. So, even though we are co-operating with our French colleagues, our reviews are progressing at a different pace.*” (1)

The revelation that Olkiluoto is facing new delays has raised concerns that the same problems could disrupt the timetable for Hinkley. The lack of progress on the reactor’s installation and plant automation controls, which are vital for safety, is at fault. Independent nuclear expert John Large said the Finnish delay could have “serious implications for Hinkley”. University of Cambridge researcher in nuclear energy and former UKAEA employee Tony Roulstone said the timetable for delivery had been made even more challenging following the Olkiluoto delay. “*There’s a lot of work to do,*” he said. “From the 40,000ft level everything looks okay [with the approval process],” added Roulstone. “But there are still a lot of outstanding issues...and the ONR [Office for Nuclear Regulation] is being very tough with its approval.” (2)

- (1) i-Nuclear 17th July 2012 <http://www.i-nuclear.com/2012/07/17/planned-2014-start-of-olkiluoto-3-off-the-table-tvo-says-on-project-5-years-behind-schedule/>
- (2) New Civil Engineer 26th July 2012 <http://www.nce.co.uk/news/energy/experts-fear-finnish-reactor-delays-could-affect-hinkley/8633553.article?blocktitle=Exclusive-news-from-NCE-magazine&contentID=204>

8. Plutonium Developments

The Department of Energy and Climate Change (DECC) is consulting on its proposed process for making applications, and the decision-making process for justification decisions concerning the reuse of plutonium as a means of long-term management of the UK’s separated civil plutonium stockpile. The Nuclear Free Local Authorities have produced a briefing on the consultation which closes on 20th August. (1)

The Government has already set out its preferred policy on the UK’s stockpile of around 100 tonnes of ‘weapons-useable’ plutonium – re-using it as Mixed Oxide (MoX) fuel – but says there is not yet sufficient information to decide whether to proceed with procuring a new MoX fuel fabrication plant. Only when the Government is sure its preferred option can be implemented safely and securely, that it is affordable, deliverable, and offers value for money, will it be in a position to proceed with a new MoX plant.

To confuse things the Nuclear Decommissioning Authority (NDA), which has responsibility for managing the UK’s plutonium stocks, announced on 27th June 2012 that it is looking at the merits of two proposals to build new reactors – the PRISM fast reactor and the Enhanced CANDU 6 (EC6) reactor – as a means of plutonium disposition - alongside plutonium reuse as MoX in Light Water Reactors. Discussions have taken place with General Electric-Hitachi (GEH) and Candu Energy inc. regarding their proposals. (2)

The NDA says it has “engaged” General Electric-Hitachi (GEH) and Candu to provide further information regarding their proposals.” *It is anticipated that the work on both proposals agreed at this stage will be concluded later this year. NDA will subsequently assess the information and consider how best to proceed with alternative proposals alongside the preferred option of reuse as MOX*”. (3)

An initial application to build a PRISM (Power Reactor Innovative Small Modular) reactor at Sellafield was reportedly rejected in January with the NDA claiming the technology was years away from being commercially viable. After robust lobbying by GEH and a further softening of attitude by the NDA, a Memorandum of Understanding with GEH was signed in early April 2012 under which the NDA agreed to pay an undisclosed sum for four months of further studies to be undertaken by GEH to demonstrate that PRISM was indeed a ‘credible alternative’ to the MoX option. GEH is

adamant its reactor offers a more cost effective solution than the MoX route and has submitted a 1,000 page feasibility report in an attempt to persuade the NDA to support the proposal. GEH says the reactor would not only generate around 600MW of electricity, but also be cheaper for UK taxpayers. The company envisages the project would be funded by a private consortium, with the government paying per tonne of plutonium processed, although some public funds are still likely to be needed for construction. The NDA is expected to make a recommendation to government by the end of the year, after which officials will select a final proposal. (4)

The submission by Candu Energy proposing the use of its CANDU reactors does not itself offer much of an alternative, because a new 700MW EC6 reactor would still require the construction of a MoX fuel fabrication plant. In contrast the PRISM does offer an alternative to MoX. But whilst it would certainly replace the need to build a new fabrication plant, it would instead require the construction of a new conversion plant to convert Sellafield's existing stockpile of plutonium dioxide to a metal form for use in PRISM. GEH's claim that PRISM will also burn its own spent fuel suggests that some process or reprocessing plant will be needed if that is to be achieved. PRISM is a small, modular, sodium-cooled reactor producing 311MW of electricity. GEH plans two modules combined to form one PRISM power block of 600+ MWe. Under a 60-year plan this '£multi-billion' power block would be built at Sellafield within a timeframe of 10 years and 'would burn through the UK's huge stockpile of plutonium in about five years'. During the remaining 55 years of its plan, GEH claims that the spent fuel arising from the first 5 years of operation would itself then be used to fuel the fast reactor.

PRISM sceptics include Adrian Simper, the NDA's strategy director. Simper warned last November in an internal memorandum that fast reactors were "not credible" as a solution to Britain's plutonium problem because they had "*still to be demonstrated commercially*" and could not be deployed within 25 years. The technical challenges include the fact that it would require converting the plutonium powder into a metal alloy, with uranium and zirconium. This would be a large-scale industrial activity on its own that would create "*a likely large amount of plutonium-contaminated salt waste*". Simper is also concerned that the plutonium metal, once prepared for the reactor, would be even more vulnerable to theft for making bombs than the powdered oxide. (5)

This last minute look at reactor options appears to be clutching at straws and a belated recognition of the problems and pitfalls that lie ahead for its preferred 're-use as MOX' option - an option that would not only require the contentious construction of a new MOX plant and the raising of its estimated £5Bn - £6Bn costs, but also finding a market for the fuel – a market currently conspicuous by its absence. In addition, the NDA must still be smarting from recent humiliation suffered at the hands of the failed Sellafield MOX Plant (SMP) on which some £1.4Bn of tax-payers money was wasted. (6)

The NDA has already turned its back on the several viable plutonium immobilisation options which would see plutonium treated as a waste and put 'beyond reach' in terms of non-proliferation risk. If the NDA can look again at reactor options, it should re-open its investigation on these plutonium immobilisation methods. In an article in '*Nature*' by Prof. Allison Macfarlane, now confirmed as Chair of the US Nuclear Regulatory Commission, and others including Professor Frank Von Hippel, say "*Britain should seriously evaluate the less costly and less risky method of direct plutonium disposal, and take the opportunity to lead the world towards a better solution for reducing stockpiles.*"

The Government says the current cost estimates for the MoX option, including disposal, are comparable with the estimated costs of procuring and operating the necessary facilities for the immobilisation option, including disposal. Both options would cost around £3bn, but the costs of the MoX option would be reduced by the sale of MoX fuel. This is disputed by the *Nature* authors who say immobilization should be easier and cheaper than MoX production. The failure of the UK MoX

plant and the soaring costs of the Areva-designed MoX plant in the US' however, suggest that immobilization is a lower risk. (7)

Meanwhile, in a move that overturns one of the major contractual obligations of Sellafield's overseas reprocessing customers, DECC has announced a deal that will see German-owned plutonium already stored at Sellafield transferred into the UK stockpile rather than being repatriated to German utilities as required under the original contracts. Such contracts, until now, have been robustly defended by Government as being sacrosanct with no leeway for renegotiation. (8) Britain risks being turned into a "nuclear laundry" by taking ownership of German plutonium in return for cash, according to Pete Wilkinson, an independent environmental consultant. (9)

- (1) Management of the UK's Plutonium Stock: NFLA model response to the Government's consultation on the proposed justification process for the reuse of plutonium. NFLA Radioactive Waste Policy Briefing No.34 http://www.nuclearpolicy.info/docs/radwaste/NFLA_RWB_34_Plutonium_reuse.pdf
- (2) i-Nuclear 27th June 2012 <http://www.i-nuclear.com/2012/06/27/uk-in-talks-to-burn-plutonium-in-candu-reactor/>
- (3) NDA 27th June 2012 <http://www.nda.gov.uk/news/plutonium-management-alternatives.cfm>
- (4) Business Green 10th July 2012 <http://www.businessgreen.com/bg/news/2190361/study-waste-fuelled-nuclear-reactor-feasible-uk>
See also –Nuclear 9th July 2012 <http://www.i-nuclear.com/2012/07/09/ge-hitachi-says-prism-feasible-could-be-built-in-uk-with-us-government-support/>
- (5) Guardian 30th July 2012 <http://www.guardian.co.uk/environment/2012/jul/30/fast-breeder-reactors-nuclear-waste-nightmare>
- (6) CORE Briefing 3rd July 2012
<http://www.corecumbria.co.uk/newsapp/briefings/briefsmain.asp?StrNewsID=303>
- (7) Von Hippel, Ewing, R. Garwin, R. Macfarlane, A. Time to Bury Plutonium, Nature, Vol 485, 10th May 2012. <http://www.nature.com/nature/journal/v485/n7397/full/485167a.html> (Abstract only on web)
- (8) CORE 15th July 2012 <http://www.corecumbria.co.uk/newsapp/newsmain.asp?StrNewsID=305>
- (9) Guardian 13th July 2012 <http://www.guardian.co.uk/environment/2012/jul/13/uk-takes-ownership-of-german-plutonium>

9. Horizon - China syndrome?

There has been further confirmation this month that at least two consortia have expressed an interest in bidding for Horizon Nuclear. But the process seems to be dragging on with at least three different deadlines set for bids, which means there is a danger of skilled staff drifting away from the company. (1)

The first consortium is led by Toshiba Westinghouse, the Japanese-owned nuclear reactor manufacturer, in partnership with State Nuclear Power Technology Corp (SNPTC) of China and Exelon, the US power generator. SNPTC already has joint ventures with Toshiba-Westinghouse building AP1000 reactors in China. The second consortium comprises Areva, and China Guangdong Nuclear Power Corp (CGNPC), possibly in partnership with other energy groups and investors. CGNPC is building new reactors with Areva in southern China.

It is thought that GE Hitachi, the US-Japanese nuclear joint venture, is also interested in bidding, but it would be at a disadvantage as it has not started the long process of getting its reactor technology licensed in the UK, unlike Areva and Toshiba Westinghouse. The same applies to Russia's Rosatom. (2)

Originally it was reported that the deadline for bids was 15th June. (3) Now Areva and CGNPC say they put in a £15bn joint bid by the closing date of 25th July 2012. (4) Most recently a new deadline for bids at the end of September has been reported. (5)

Whether these changing deadlines reflect the need for more detailed bids as the process progresses or whether deadlines have had to be extended to elicit any interest at all is unclear. Either way a decision on the winner isn't expected until the end of the year.

In a letter to the FT Emeritus Professor Barry Jones, University of Reading, warns that Chinese companies are not "normal" commercial enterprises as they are understood elsewhere, but entities with complex, and often close, connections with the country's government. Their ability to consider costly investments under conditions of considerable commercial uncertainty reflects this peculiar character. In the event of conflict with China, nuclear power stations with a significant Chinese presence could pose serious threats to the UK: at the minimum, the disruption of power supplies; at the maximum, explosive sabotage of the facilities. (5)

Sources close to the Chinese companies say they are also interested in other locations at Bradwell in Essex, Heysham in Lancashire and Hartlepool in County Durham. (6)

Meanwhile internal emails have revealed that Government officials worked closely with E.ON and RWE to soften the impact of their pull-out from Horizon Nuclear - a major blow to the new nuclear programme. The revelation is further evidence of how Westminster has collaborated with the industry to try and protect nuclear power from bad news, first exposed in the aftermath of the Fukushima accident in Japan last year. Hergen Hays, head of new nuclear at DECC, wrote to E.ON and RWE to ask if he could be informed when the companies had told Carwyn Jones, Labour's first minister for Wales, of their decision. He wanted to know how the companies would respond to journalists questioning whether the UK government could have done something differently to prevent the pull out. "Do you think it is possible for new nuclear to be built in the UK?" E.ON responded the next morning by saying it believed that ministers were "putting in place a framework which will make it possible for new nuclear". Its withdrawal was "not a reflection on the work done by the UK government". (7)

- (1) FT 23rd July 2012 <http://www.ft.com/cms/s/0/e491987a-cc44-11e1-839a-00144feabdc0.html>
- (2) FT 22nd July 2012 <http://www.ft.com/cms/s/0/19dd4f1e-d425-11e1-942c-00144feabdc0.html>
- (3) City AM 20th June 2012 <http://www.cityam.com/latest-news/china-set-fund-uk-nuclear>
- (4) Equities Spotlight 18th July 2012 <http://www.equities.com/news/headline-story?dt=2012-07-18&val=283810&cat=energy>
- (5) Gloucester Citizen 24th July 2012 <http://www.thisisgloucestershire.co.uk/Skills-loss-firm-sale-drags/story-16583616-detail/story.html>
- (6) Guardian 20th July 2012 <http://www.guardian.co.uk/environment/2012/jul/20/china-uk-nuclear-power-plants>
- (7) Guardian 19th July 2012 <http://www.guardian.co.uk/environment/2012/jul/19/emails-nuclear-power>