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1.0 Nuclear Subsidies

The previous Government persistently claimed that it would not subsidise new reactors. Lord Hunt, for example, said on 21st January 2010 in a [Guardian web discussion](#) that "*Taxpayers' money is not going into nuclear power stations.*" EDF says it does not need subsidies to build new reactors. But a report by the influential investment company – Citigroup – entitled "[New Nuclear - the Economics Say No](#)" says new nuclear can only be built with huge public subsidy, financing guarantees and minimum power prices. And the [National Audit Office](#) (NAO) has cast doubt over whether new reactors can be built without public subsidies. The NAO points out that if EDF cannot pay clean up costs, the Government is still liable. Professor of Energy Policy at Greenwich University, [Stephen Thomas](#), says "*what the government and EDF believe constitutes a subsidy is very different to the usual definition*".

For a full exploration of hidden subsidies to the nuclear industry see the December 2009 [report by Energy Fair](#).

The [coalition agreement](#) reached by the Conservatives and Liberal Democrats says the Conservatives are committed to allowing the replacement of existing nuclear power stations provided "*they receive no public subsidy*". The new Liberal Democrat Secretary of State for Energy and Climate Change, Chris Huhne, admitted to [The Today Programme](#) on 13th May that he may oversee a new wave of nuclear reactor construction, despite previously being anti-nuclear, if nuclear companies can come up with a feasible plan which genuinely involves no subsidy. Huhne stressed there is agreement within the coalition Government on the principle there will be no public subsidy. **The question now is: will Chris Huhne's definition of a subsidy be closer to Steve Thomas's "usual definition" or the same as the previous Government's?**

Huhne says [even support in the event of a disaster](#) is 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.*" This is an important hardening of the position held by the Labour administration and could make it much harder for companies to finance the plants.

But the real answer appears to be that the coalition Government will [rig the carbon market](#) which 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. 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.

Immediately after the coalition was formed [concerns were expressed](#) about the political uncertainties caused by appointing a Liberal Democrat Secretary of State which might delay investment in new reactors. But by the end of May, EDF Energy announced it had received sufficient reassurances from Huhne to continue planning new reactors. EDF continued to insist it didn't need subsidies, yet it welcomed plans to introduce a floor to the carbon price. The coalition has agreed to implement a [floor price for carbon](#) in the European emissions trading scheme, which some nuclear utilities have argued is essential to keep nuclear new-build cost-competitive. This will also favour renewables, but could

make the costs of nuclear electricity far more competitive, even without subsidy. The extra cost of the floor-price, of course, will be passed on to consumers through energy bills. Huhne, it seems, may have ruled out using the public purse to fund the new reactors, but doesn't mind asking us to do it instead. [Geoffrey Lean](#) says the carbon floor price is likely to benefit renewables more than nuclear and any further measures or subsidies are ruled out.

But setting a carbon floor price [may not be as straightforward as it seems](#). The idea was explicitly welcomed across the energy industry, particularly by would-be nuclear builders, who, faced with a weak current carbon price and little regulation beyond the end of the EU ETS phase three, in 2020, may have trouble building a viable business case for such a vast, long term investment. A carbon price floor could solve their problem. But *“the devil will be in the detail”*. If the floor price is set sufficiently high to act as a real incentive to develop new nuclear, it could quickly become unaffordable for the Government. But there are also issues about the unintended consequences. The measure runs the risk of undermining the whole EU ETS market. It may also produce windfall profits elsewhere.

Meanwhile, it is still not clear whether the new coalition Government will go-ahead with the £80 million loan to Sheffield Forgemasters, which makes massive steel forgings for nuclear power plants, [announced by Lord Mandelson](#) in March. One MP commented at the time: *“that’s an interesting way to avoid subsidising the nuclear industry – subsidise their suppliers instead.”*

An [Early Day Motion](#) on nuclear subsidies has been put down in the House of Commons.

2.0 Fixed Unit Price for Waste Disposal

The UK Government held two consultations between 25th March 2010 and 18th June 2010 looking at the possible financing arrangements for radioactive waste management and decommissioning. The first one looked at the methodology for determining how a [fixed unit price for disposal of nuclear waste](#) will be set, and the second one looked at regulations clarifying requirements set out in the Energy Act 2008 in relation to [Funded Decommissioning Programmes](#).

The consultation on determining a Fixed Unit Price follows the publication of three pre-consultation discussion papers. (See [New Nuclear Monitor No. 21](#)) But the consultation document sets out changes made as a result of feedback. In an effort to protect the taxpayer from having to pick up the tab, the government originally proposed charging a very high fixed unit price for waste disposal to allow for the uncertainties involved. But the [industry argued it was much too high](#). The revised proposal allows operators to set aside a much lower amount for the first 10 years of a reactor's operation in the hope that uncertainties will be reduced over that time. The second change being proposed is that the Government would take title to nuclear waste and spent fuel earlier, so that it is aligned with the operators decommissioning timetable rather than waiting for the Geological Disposal Facility (GDF) to be available. In effect the taxpayer will take title 60 years after the reactor starts rather than 110 years after.

June Update: The Nuclear Free Local Authorities (NFLA) has written to Chris Huhne urging him to withdraw the previous Government's proposed methodology for determining a Fixed Unit Price (FUP) for waste disposal from new nuclear reactors which effectively caps the cost to the operator and transfers the risks of cost overruns – a usual occurrence in the nuclear industry – to the UK taxpayer. In other words, it would be a hidden public subsidy for new nuclear build.

[Documents released](#) under a freedom of information request reveal the extent of behind-the-scenes lobbying last year in Whitehall by EDF Energy. The lobbying focused on the two key proposals which were revised in March (see box). In one meeting with officials from the energy department in

July last year, EDF Energy's presentation concluded that the original proposals were "*non-acceptable*" [sic]. In another meeting in October, the presentation warned: "*At current levels, [the proposed] fixed price model will significantly impact the economics of NNB [nuclear new build] in the UK and could make an investment unattractive.*" In a letter in July to the department, the company even warned that the cost calculations could "*be open to challenge in future on the grounds of prudence*".

Greenpeace says the documents "*blow EDF's claim that they won't need any subsidies for new nuclear clean out of the water. They know full well that the economics of nuclear don't stack up and that new reactors will only ever happen if the British taxpayer is forced yet again to carry the atomic can.*"

3.0 Draft National Policy Statements

The UK Government published its draft National Policy Statement on nuclear power ([Nuclear NPS](#)) in November, along with five other NPSs covering energy. The consultation period ended on 22nd February 2010. The new coalition Government says it is now considering the consultation responses and will publish a formal response document later in 2010 together with the final National Policy Statements.

Under the Planning Act 2008 the Nuclear NPS will establish the 'need' for new reactors, so the subsequent planning process will only deal with site specific issues. For an overview of the Nuclear NPS see [New Nuclear Monitor No.19](#), and the NFLA [response](#) to the consultation.

June Update: The [coalition agreement](#) reached by the Conservatives and Liberal Democrats "*will allow the Liberal Democrats to maintain their opposition to nuclear power while permitting the government to bring forward the national planning statement for ratification by Parliament so that new nuclear construction becomes possible*". This process will involve the government completing the drafting of a national planning statement and putting it before Parliament; a Liberal Democrat spokesman will speak against the planning statement, but Liberal Democrat MPs will abstain.

The election of a new Government hasn't removed the possibility of a Judicial Review on several grounds – mainly in connection with flaws in the consultation process. A freedom of information request by '*Planning*' magazine revealed that only 20 out of the 110 councils that should have been consulted were involved in the discussions, so the government breached rules spelt out in the Planning Act 2008. [Colchester Borough Council](#) is one of the nearly 90 authorities that were not consulted on the publicity requirements for the consultation as required under Act.

Greenpeace's [submission](#) to the NPS consultation says not only is nuclear power dangerous because of the intractable problems of radioactive waste and nuclear weapons proliferation, but there is also the danger of distraction from more effective measures. The overall emphasis of the Energy NPSs is skewed in such a way as to paint new nuclear in an overly positive manner, to the detriment of alternative renewable technologies. For instance, there are 39 references to the term "employment" in the nuclear NPS but no references to the same term in the renewable NPS.

4.0 Energy and Climate Change Committee

The House of Commons Energy and Climate Change Select Committee took the lead in scrutinising the six energy National Policy Statements (NPSs) issued in draft by the government on 9 November. The Committee held 10 morning and afternoon evidence sessions, interviewed 55 witnesses. Its [report](#) was published on 23rd March. (1)

June Update: The committee found the NPS process failed to consult the public adequately. It questioned whether effective arrangements were in place to deal with radioactive waste from nuclear

power stations and whether the new power stations are even necessary. Paddy Tipping, acting chairman of the committee before the election, said evidence given to the committee suggested that gas could provide enough energy in the future, therefore it may not be necessary to build 10 nuclear power stations or as much renewables.

[Plans to store waste for up to 160 years](#) before burying it permanently underground were condemned as “bizarre” by Paddy Tipping, acting chairman of the Committee. The committee demanded “*significantly more detail*” on what storing spent waste fuel for 160 years might mean for local communities. He said that the Department for Energy and Climate Change had failed to consult MPs or the public properly on a range of matters, including the handling of spent nuclear fuel.

The Committee said it received conflicting evidence on whether the Managing Radioactive Waste process would yield a suitable site and whether geological disposal was technically feasible. It said it is not convinced that the progress to date supports the Government’s robust assertion that suitable arrangements will be in place to manage the UK’s waste legacy. In a rather bizarre leap of logic it says:

“...the Government has no choice but to find a solution, regardless of a decision on nuclear new build [and] waste arising from new nuclear power stations will not pose a significant additional challenge in terms of finding a permanent storage solution.”

The possibility that there might not be a solution to the problem of nuclear waste disposal was not considered.

5.0 Infrastructure Planning Commission

Greg Clark, the new Communities Minister, has [confirmed](#) that the Infrastructure Planning Commission, created to streamline the planning system in England and Wales, would be disbanded. Mr Clark said that the Government was “committed to abolishing this unaccountable central planning quango”. He indicated that the IPC would be replaced in due course, but declined to say when this would happen or how it would be done. The decision has introduced new uncertainties for potential investors in new nuclear reactors.

Another [revised schedule](#) of dates by when the IPC expects to receive planning applications to construct new nuclear power plants and other infrastructure projects has been published, which suggests more delays. The first application - expected by EDF Energy to build a plant at Hinkley Point in Somerset – is now not expected until December this year, rather than August. The second, also from EDF Energy would be for Sizewell in Suffolk in June 2011. Horizon Energy (Eon and RWE) is expected to apply for permission to build at Wylfa on Anglesey in early 2012, but Oldbury in Gloucestershire has been delayed until 2014.

6.0 Generic Design Assessment

The nuclear regulators – the Health and Safety Executive (HSE) and Environment Agency – have been carrying out a new process called 'Generic Design Assessment' (GDA), which looks at the safety, security and environmental implications of new reactor designs before an application is made to build that design at a particular site. The GDA should be completed around spring 2011, when the regulators would issue statements about the acceptability of the designs. But progress has been [slow](#), partly due to [staff shortages](#), and partly due to “[significant delays](#)” in obtaining responses to technical queries from the so-called Requesting Parties (RPs). Further information on the GDA process is available [here](#). UK Nuclear Regulators Nuclear Reactor Assessment [web-pages](#).

June Update: The Nuclear Installations Inspectorate (NII) [has warned Westinghouse](#) it is still not satisfied with the robustness of the concrete reinforcements in its AP1000 reactor design.

Westinghouse will need to demonstrate it is strong enough to resist aircraft impact and other hazards. The NII raised its concerns in an official letter, which insisted that Toshiba-Westinghouse provide fresh evidence that the design [was sufficiently strong to withstand](#) “external shocks” before it could be considered for a UK licence.

Last October, federal regulators in the US discovered significant safety concerns in the AP1000 design. The [Nuclear Regulatory Commission \(NRC\) rejected](#) the reactor after determining that the shield design would not protect the reactor from earthquakes, tornadoes, hurricanes, and airplane crashes.

In a letter to NFLA dated 24th May 2010, the NII says “*we are not yet satisfied that the proposed construction methodology could protect the reactor’s safety systems from severe weather and other external hazards*”.

Another problem has [emerged in the US](#). The experimental “passive” emergency cooling feature in the AP1000 means the reactor is specifically intended to function as a chimney pulling air up and releasing it through the top of the building in order to remove heat during an accident. But if the AP1000 containment was already in a failed condition i.e. with one or more undetected holes, this could result in a large and unfiltered radiation release with the chimney effect drawing radioactivity directly into the environment.

Meanwhile the French Network for Nuclear Phase-out ([Réseau “Sortir du nucléaire”](#)) has released a series of confidential documents which show that the EPR design presents a serious risk of a major nuclear accident - a risk deliberately taken by EDF to increase its profitability. Because it is potentially vulnerable to a situation which could have uncontrollable consequences, the EPR reactor is extremely dangerous. “Sortir du nucléaire” has set up a group of experts to analyse the documents thoroughly. It says defects in the mechanism that controls the nuclear reaction could cause [an explosion of Chernobyl](#) proportions.

A [consultation had been planned to start](#) on 24th May on the Environment Agency’s findings on the environmental part of the assessment, but this has now been delayed by a month. It will include a review of the Nuclear Decommissioning Authority’s report on the disposability of spent fuel from the two reactor types.

7.0 The Justification Process

A [Justification exercise](#) is required under EU law to ensure that new reactors have an overall benefit which outweighs any health detriment caused by radiation. The Government held a [consultation](#) on the Nuclear Industry Association’s application to justify new reactors which closed on 25th March 2009. (See [New Nuclear Monitor No.15](#)). Several respondents questioned whether the Secretary of State should be acting as the Justifying Authority. A number of respondents called for a public inquiry, provision for which is allowed in the legislation. The Government launched a consultation on its [Proposed Regulatory Justification](#) decisions on two new types of reactors in November 2009. The consultation closed on 22nd February 2010. See [New Nuclear Monitor No.18](#).

June Update: Several respondents to the most recent consultation point out that in order to attempt to justify the anticipated radiation exposures the Government should have set out what the anticipated levels of radionuclide emissions are likely to be, estimate the doses and then discuss their adverse health effects. These should then be assessed in the light of any benefits of new reactors. Unfortunately, the consultation documents did not do this. In seeking to justify new build the consultation relies heavily on highlighting the disadvantages of fossil fuel, but does not open up for [examination the detriments](#) and advantages of nuclear power versus those of renewable energy or efficiency measures.

Pressure has been increasing on the government to organise an independent inquiry into the Justification for new reactor types. A group of [90 high-ranking academics](#), politicians and technical experts called for such an inquiry just before the election.

Simon Hughes, at the time the Liberal Democrat spokesman for energy and climate change, spoke at a [meeting in Westminster organized](#) by the Nuclear Consultation Group. He called for an independent public inquiry. [Hughes said](#) the reason he called for a Justification Inquiry was so that scientific evidence could be examined in the open.

There remains a sizeable ‘threat’, said [The Telegraph](#), that the new Lib-Dem Secretary of State for Energy and Climate Change, Chris Huhne, could force a time-consuming and costly public inquiry on Justification. Given that we are still waiting for an opinion from the Committee on Medical Aspects of Radiation and the Environment (COMARE) on the [German KiKK study](#) which provides irrefutable evidence that leukaemia risks are more than doubled among children living near nuclear reactors, the very least the Secretary of State can do is to order a Justification Inquiry.

8.0 Nuclear Costs and Finance

The Blair Government’s first Energy White Paper in February 2003 concluded that “...*the current economics of nuclear power make it an unattractive option*”. By January 2008, the White Paper on nuclear power said “...*on the basis of our cost-benefit analysis, we believe that nuclear power is likely to be an attractive economic proposition...*” What has changed?

An [October 2008 briefing](#) on nuclear costs and finances discusses this. In the US, nuclear costs are out of control as reported in this [February 2009 update](#) on costs and finances. [Dr Mark Cooper analysed](#) three dozen recent cost projections, and concluded that the likely cost of electricity from new reactors would be 12-20 cents per kilowatt hour (c/kWh) (8- 14p/kWh at June 2010 exchange rates) - considerably more expensive than the average cost of energy efficiency and renewable energies.

June Update: The Vogtle nuclear station outside Atlanta reminds us of the [insanity of nuclear economics](#). The original cost estimate was less than \$1 billion for four reactors, but eventually only two reactors cost nearly \$9 billion in 1989. The Southern Co. is finally trying to build the other two reactors at an estimated cost of \$14 billion. That’s why no Wall Street moneyman in his right mind would finance a new reactor. But President Obama has located an alternative financier: the American taxpayer. In mid-February Obama announced an \$8.33 billion loan guarantee for the new Vogtle reactors.

[EDF has been quoting](#) from a new report published by [Parsons Brinckerhoff Power](#) which shows typical generation costs from new reactors in the range of 6 to 8p/kWh. It says this compares favourably to offshore wind costs - quoted as between 15-21p/kWh. Of course these numbers would depend on achieving the optimistically short construction times and load factors quoted by EDF. The first EPR reactor being built – the reactor-type promoted by EDF – is the Olkiluoto reactor in Finland, which is now not expected to begin generating electricity [until 2013](#), three and a half years late.

7.0 Nuclear Diverting Attention from a Local Energy Revolution

A wide range of energy and carbon emissions scenarios for the UK and Scotland suggest that with the right combination of energy efficiency measures, renewable energy, transport measures, and possibly carbon capture from fossil-fuelled power stations, emissions reductions of over 80% by 2050 are feasible. Nuclear power is not a prerequisite of the UK meeting its climate change objectives. [Briefing on Alternatives to New Reactors in Scotland](#).

The danger of nuclear investment is that it will [crowd out investment in renewables](#) and undermine energy efficiency. If we divert attention political effort and resources from the urgent programmes

needed to effectively tackle climate change not only will we miss our targets, but as past experience suggests we could end up with carbon emissions still rising in 2025 because the nuclear programme has been hit by the usual problems and delays.

June Update: Europe could meet all its electricity needs from renewable sources by 2050 according to a new report by services giant [PricewaterhouseCoopers](#). A “super-smart” grid powered by solar farms in North Africa, wind farms in northern Europe and the North Sea, hydro-electric from Scandinavia and the Alps and a complement of biomass and marine energy could render carbon-based fuels obsolete without the use of nuclear energy even in France.

“The proper combination of decentralised local renewable power generation and large solar power plants in the deserts has the potential to provide all the energy that will be needed. The precondition for this energy revolution is both a smart grid to manage the volatility of decentralised renewable power generation and a Super Grid to link large renewable plants with the energy users over long distances.”

The European Renewable Energy Council (EREC) has [outlined](#) how the European Union could switch to a 100% renewable energy (not just electricity as in the PWC report above) supply by 2050. If the pathway set out in Re-thinking 2050 is followed, the renewable energy sector [would employ](#) more than 2.7 million people in the EU by 2020; about 4.4 million in 2030, and 6.1 million by 2050.

In a [letter to The Independent](#), 30 academics discuss the commonly held view that unless we start on new nuclear construction now, the lights will start to go out by 2015. They say the generation gap by 2015 identified in some recent policy papers is not supported by evidence, in that it assumes that no new generation capacity of any kind will be built over the next five years. In fact more non-nuclear generation is already under construction and will come on-line by 2015 than is scheduled to go off-line. A further 1GW of new capacity beyond 2015 is being planned, permitted or constructed. Although this is predominantly gas-fired, the International Energy Agency has made it clear that gas is available in an increasingly global market to deliver reliable and affordable access for the UK. Also, as National Grid has made clear, domestic demand for natural gas could be reduced significantly, and as anaerobic digestion biogas starts to come on-line, this will leave more gas capacity for the power sector (National Grid concludes that we can supply up to 18 per cent of UK gas demand from waste digestion).

8.0 Scottish Alternatives to Nuclear

It has been clear for a while that Scotland is well placed to meet [100% of its electricity](#) requirement from renewables in the not too distant future, and a report by [Scottish Natural Heritage](#) (SNH) suggests this might be relatively easy.

The Scottish Government’s target is to produce 50% of Scotland’s electricity from renewables by 2020 - around 8,000MW (8GW). There is already an installed renewable capacity of around 2834MW, plus 3739MW with planning permission but not yet built, bringing the total to 6573MW. A further 9,000MW is awaiting planning consent, with an additional 8,500MW of offshore wind and between 500MW and 2,000MW of marine renewables under development and scheduled for completion by 2020.

A [study undertaken](#) by the Boston Consulting Group for the Offshore Valuation Group suggests that Britain could not only keep the lights on but could also produce a surplus of electricity by 2050 from marine energy. Currently the lion’s share of renewable capacity is allocated to fixed wind turbines, with small amounts allocated to tidal stream and wave power. The study predicts that floating wind turbines have the most potential, possibly being able to generate 1,533 terawatt hours a year; 2,100 terawatt hours would have been enough to power the UK six times over in 2009.

[The Scotsman](#) described marine energy as a windfall within Scotland's grasp which could power the country seven times over by 2050. Meanwhile the [Scottish Government earmarked](#) 25 new sites for offshore wind development after 2020. The locations were revealed in the [Strategic Environmental Assessment and Development Plan for Offshore Wind](#), which was published for consultation. The report also paved the way for the next step in developing the ten existing sites, allocated by the Crown Estate to energy firms last year.

A new prototype wave power machine was [unveiled by Alex Salmond](#). The Vagr Atferd, which can produce 750kW, was manufactured by the Leith-based firm Pelamis Wave Power (PWP) for E.On. The device's development and construction was part funded by the Carbon Trust. It will now be transported to Orkney, where it will be tested for three years to prepare it for commercial use. [Ten marine renewable projects](#) with the potential to power almost a third of Scotland's homes were granted leases in the Pentland Firth earlier this year by the Crown Estate. The leasing scheme - the first initiative of its kind in the world - has paved the way for the embryonic marine energy sector to take off in Scotland. It could result in 1,000 wave and tidal energy devices being installed. The seven winners ranged from global utility giants including Eon, Scottish & Southern Energy and ScottishPower to small Scottish renewables firms such as Pelamis and Aquamarine Power, which is also based in Edinburgh. This could herald the "[dawn of a new era](#)" with Scotland becoming a world-leader in the fledgling industry, which has huge potential for growth.

In order to facilitate the transition from research and development to scaling up and delivery, and in response to the Government's Marine Energy Action Plan, Renewable UK has produced a [document](#) called "The Next Steps for Marine Energy." The document recommends that the government commits a minimum of £220 million in capital support for technology development over the next five years, with the aim of powering 1.4 million homes with marine energy by 2020, and producing an annual sector turnover of £900 million by 2030.

A [YouGov survey](#) for EDF Energy shows more than eight out of ten Scots backed offshore wind farms and 69 per cent are in favour of onshore turbines, but fewer than half - 47 per cent - support replacing nuclear plants when they close. 74 per cent said their impression of wind farms was favourable, compared to just 43 per cent for nuclear.

9.0 Scottish Waste Consultation

The Scottish Government consultation on proposals for managing higher activity waste in Scotland closed on 9th April 2010. The three consultation documents: (1) [a Consultation Document](#) (2) [An Environmental Report](#) and (3) [Supplementary Information](#). Scottish Government policy since June 2007, in contrast to England and Wales, has been to support the long-term management of higher activity in long-term near surface, near site storage facilities so that waste is monitorable and retrievable and the need for transporting it over long distances is minimal. But new proposals, although not returning to deep geological disposal, abandon the storage only commitment and appear to prioritise near surface, near site disposal over storage.

The NFLA model response to the consultation is available [here](#). A submission by Nuclear Waste Advisory Associates is available [here](#).

The Scottish Government has been [challenged to explain](#) its change from supporting 'near-surface' facilities for nuclear waste to accepting facilities over 100 metres underground. The Government's chief radioactive waste official, Elizabeth Gray, told the Dounreay Stakeholder Group in March the waste might go "a hundred [metres underground] but not much more". This prompted Shetland Islands Council to write to Mr Lochhead asking for clarification on exactly what is Government policy. Shetland MSP Tavish Scott also wrote to the minister supporting the council and Friends of the Earth Scotland condemned the policy u-turn.

Liam McArthur, the MSP for Orkney, [asked Alex Salmond](#) on 15th April 2010 “*why his Government and its advisers appear to be advocating to the Dounreay stakeholder group and others that disposal of some nuclear waste will now take place to depths of up to 100m?*” The First Minister responded that “*...we support long-term near surface, near site storage facilities so that the waste is monitorable and retrievable ... would it not be best to base views on the Government’s clearly stated policy and objective and respond to the consultation rather than quote a newspaper report of what an official might have said to an individual meeting somewhere in Scotland?*”

Crucially, when the UK regulators consulted on a draft [Guidance for Near Surface Disposal](#) in May 2008 the plan was only to allow for the disposal of the short-lived Intermediate Level Waste (see para 3.4.1). But after representations by Energy Solutions – the company which is decommissioning Hunterston A and Chapelcross, as well as Magnox reactors south of the Border, the phrase “less radiotoxic” was added. ([See page 15 of the Response to the Consultation Document](#)). Energy Solutions highlighted in particular that “*...there is considerable interest currently in near surface disposal as a long-term management option for reactor graphite.*”

Part of the explanation for this “considerable interest” is explained by the [Committee on Radioactive Waste Management \(para 6.4\)](#) which explains that “*...bulk graphite would occupy a great deal of space in a GDF [Geological Disposal Facility]. It is therefore important to explore treatment options that would reduce the volume of graphite for geological disposal.*”

In fact, the [NDA estimates](#) that, by volume, 30% of the repository could be taken up by graphite. (Of course this depends on the size of the repository, which must be uncertain due to new reactor construction plans in England and Wales). Clearly, near surface disposal of graphite could save the NDA and British Energy a lot of money. The principal radionuclides contained in long-lived waste graphite are Carbon-14 (C-14) which has a half-life of 5,730 years, and chlorine-36 (Cl-36) which has a half-life of 301,000 years. Nuclear Waste Advisory associates suggest that including graphite in the Geological Disposal Facility could significantly complicate the safety case because these isotopes are chemically unstable and difficult to confine over long periods of time.

So, clearly there are significant incentives to keep graphite waste out of the GDF. But it is not clear why near-surface disposal is a better alternative. In fact for Scotland which is not planning to use GDF, this offers no advantage whatsoever. It appears that Scotland may be getting set up to act as a guinea pig for near surface disposal south of the Border.

10.0 Managing Radioactive Waste Safely Process

The UK Government began the ‘[Managing Radioactive Waste Safely](#)’ process in September 2001 to decide how to develop radioactive waste policy following the 1997 decision to reject plans for a so-called Rock Characterisation Facility at Sellafield. This culminated in the publication of a [White Paper](#): *Managing Radioactive Waste Safely: A Framework for Implementing Geological Disposal*, in June 2008. A briefing on the “Managing Radioactive Waste Safely” process is available [here](#).

The Scottish Government does not accept it is right to bury nuclear waste in an underground site: “*This out of sight, out of mind policy should not extend to Scotland*”. The [West Cumbria Managing Radioactive Waste Safely](#) (WCMRWS) Partnership has been set up as an advisory body aiming to “*make recommendations to Allerdale Borough Council, Copeland Borough Council and Cumbria County Council on whether they should participate or not in the geological disposal facility siting process, without commitment to eventually host a facility*”.

[History of Radioactive Waste Dumping Proposals.](#)

June Update: The WCMRWS Partnership has asked DECC to commission the British Geological Survey (BGS) to carry out a geological screening study on the whole of West Cumbria (Copeland and Allerdale), and a peer review of the screening study. The [desk study has now started](#). It is envisaged

that the output from the screening study, including the peer review process, will be ready for publication in September. The study will not be a detailed site identification process. It will simply determine whether it's worth continuing with an area at all based purely on the geology – in other words it will determine areas that are unsuitable for a GDF. It has also been agreed with the Crown Estate that the study will include sub-surface areas out to sea, up to 5km offshore from Allerdale and Copeland.

Elaine Woodburn, the leader of Copeland Borough Council [told a meeting of the Partnership](#) in February that building a GDF in West Cumbria is “not a done deal.” She stressed that Copeland, Allerdale and Cumbria county council had expressed an interest in the possibility of hosting a deep underground repository that's all. A decision about whether or not west Cumbria should participate in the Government siting process is then likely to be taken in the second half of 2011.

Britain [may not find a suitable place](#) to bury radioactive waste according to the Committee on Radioactive Waste Management (CoRWM), and it is still “unclear” what will happen to waste in the long-term - “insufficient attention” has been paid to public confidence in disposal of radioactive materials. While “some plans exist” to deal with the UK's high-level waste, whether they are effective is “a matter of judgment”. It also raised fears that the Government may try to impose a giant waste storage facility on a hostile community, if no UK region agrees to take on the waste.

From a standpoint of strong support for a GDF the House of Lords Science and Technology Committee has [reported](#) on its inquiry into how CoRWM has performed since 2007. The Lords made a series of recommendations designed to strengthen CoRWM, enabling it to better hold the Government to account on progress in developing a GDF to make sure the MRWS programme is implemented rapidly. The Lords express concern that neither the Government nor CoRWM, give the impression of having any sense of urgency, they want CoRWM to play a more active role in driving forward the MRWS programme through. Greenpeace expressed concerns to the Lords that CoRWM was not able “*to undertake stakeholder work, or independent research, to the extent it would like*” due to a lack of funding. But Chairman of CoRWM, Professor Robert Pickard, rather undermined this bid to increase CoRWM's budget: “*I think we would say that our funding is adequate at present for the task we have in hand*”.

10.1 Deep Geological ‘Disposal’

The Committee on Radioactive Waste Management (CoRWM) describes ‘disposal’ as emplacing waste in a facility without the intention of retrieving it. The dictionary definition of disposal is “*the act or means of getting rid of something*”. So-called radioactive waste ‘disposal’ involves the eventual dilution and dispersion of radionuclides throughout the environment, so this is a misnomer. It does not ‘get rid’ of waste. This goes to the heart of the fundamental difference between an environmental and nuclear industry approach. Supporters of deep ‘disposal’ argue it is this generation's responsibility to ‘get rid’ of waste we have created. An environmental approach argues we have a responsibility to give future generations a choice about how to deal with it, rather than leaving a radioactive waste dump which will contaminate the environment at a poorly predictable rate.

June Update: The Environment Agency of England and Wales was planning to consult on its part of the Generic Design Assessment for new reactors beginning on 24th May, but this has now been postponed by a month due to the General Election. The consultation will include the EA's review of the NDA's disposability assessment for spent fuel from new reactor types.

Nuclear Waste Advisory Associates – an independent group of consultants which includes two former CoRWM members and several people that worked for NGOs during the Nirex inquiry – has produced a list of [101 outstanding scientific and technical issues](#) which it says still need to be resolved before a safety case can be made for a GDF.

The Government's [summary of evidence](#) on the disposal of waste from new reactors produced as part of the National Policy Statement consultation claims that programmes in Finland and Sweden should see GDF's in operation by 2020. But close observers are now asking themselves whether Sweden has reached a dead end on nuclear waste disposal. (The Finnish safety case work relies almost entirely on Swedish work.). The "preliminary" environmental impact statement (EIS) fails to meet even the most rudimentary requirements of an EIS. In particular there is evidence that copper canisters will corrode and uncertainty about the behavior of the clay buffer in the repository after closure.

The European Commission is consulting on two possible options for binding EU legislation on the treatment of nuclear waste. The commission has said it will table a legislative proposal by the end of the year. One of the options could involve specifying a disposal route for spent fuel – making deep geological disposal compulsory. For a briefing on the consultation see the Nuclear Free Local Authorities [Radioactive Waste Policy Briefing No. 24](#)

11.0 Low level waste

The UK's main low-level waste dump, operated by [The Low Level Waste Repository \(LLWR\) Ltd](#), is located 7km south east of Sellafield near Drigg. The site is owned by the NDA, but operated by UK Nuclear Waste Management Ltd - a consortium led by Washington Group International with Studsvik UK, Serco and Areva. Vault 9 is currently being constructed.

LLWR Ltd set up, in partnership with the NDA, the [National Low Level Waste Strategy Group](#) in April 2008. The Strategy Group provides information on the development and implementation of a National Low Level Waste (LLW) Strategy. SCCORS and NuLeaf are both [listed](#) as members of the Strategy Group. The NDA has been [consulting](#) on how to manage low-level radioactive waste (LLW). It sets out a framework for the flexible management of LLW, which is likely to lead to a proliferation of smaller dumps for LLW around the UK. See [Radioactive Waste Briefing No.20](#)

[Scotland's National Planning Framework](#) (Para 172) states that a low level waste disposal facility, in addition to the one at Dounreay, will be needed in the South of Scotland for radioactive waste.

June Update: The corporate sector is already considering the opportunities presented by a wider use of landfill for radioactive waste. Leading waste management firms such as the French-owned Sita group and the American company, EnergySolutions, are trying to press ahead with plans to use Cumbrian facilities at Keekle Head and Lillyhall for dealing with waste from Sellafield and elsewhere. Recent press reports suggest that even Cumbria County Council is not happy about the proliferation of low level waste dump sites and may refuse permission for disposal at Lillyhall and Keekle Head.

These plans received a major setback when it was discovered that [five bags of radioactive waste from Sellafield were dumped](#) at Lillyhall after a faulty scanner wrongly passed them as safe. The bags contained waste collected in restricted areas at Sellafield where disposal of all items, including protective clothing, is strictly controlled because of the risk of radioactive contamination. The waste should have been sent for storage in concrete vaults at the Low Level Waste Repository near Drigg.

SEPA has just completed a [consultation exercise](#) on the disposal of radioactive waste from the decommissioning of Chapelcross. Magnox North, which is carrying out the decommissioning on behalf of the NDA, has applied to dispose of low level waste at Drigg, including sending some to Winfrith in Dorset and Sellafield for compaction first; sending contaminated metal to Germany and Lillyhall near Workington, and disposing of very low level waste at Lillyhall.

12.0 Radioactive Discharges

The UK Government published a [Strategy for Radioactive Discharges 2001-2020](#) in July 2002, as a response to its commitments, agreed at the 1998 Ministerial meeting of the Oslo and Paris (OSPAR) Commission - the treaty for the protection of the marine environment of the North-east Atlantic - to achieve “*substantial reductions or elimination of discharges*” by the year 2020, “*to levels ...close to zero*”.

In July 2009 the Government (including the devolved administrations) published a [revised strategy](#). The 2002 strategy was written in the context of a declining UK nuclear industry, but this new strategy allows for expansion, and accepts the UK’s failure to close some of the most polluting facilities in the world. The revised strategy will not deliver the UK’s commitments to OSPAR. The NFLA (Scotland) response to the consultation on the draft of this document (September 2008) is available [here](#).

The next [OSPAR](#) Ministerial Meeting will take place in Bergen 20th – 24th September 2010.

June Update: KIMO International submitted a paper entitled “Potential increases in radioactive discharges into the North- East Atlantic by the United Kingdom” to a meeting of the Radioactive Substance Committee which was to have been held in Stockholm in April. Unfortunately the meeting had to be postponed until 13th July due to volcanic ash. KIMO argue that the downward trend in emissions from Sellafield over recent years has had more to do with technical problems than specific measures designed to reduce radioactive discharges. Efforts to resolve these technical problems are continuing, so levels of discharges could increase again. And discussions about the management of future spent fuel arisings are continuing in the UK, with the option of extending reprocessing still firmly on the table.

One thing which has rung alarm bells for KIMO is an NDA [discussion paper](#) published in March on options for spent oxide fuel management, including both overseas fuel, for which the NDA has commercial contracts to reprocess, and waste fuel from the British Energy’s AGR power stations. The NDA is carrying out a ‘lifecycle assessment’ to decide whether spent oxide fuel should be declared a waste; reprocessed or stored for a while before a final decision is made. The options being considered include reprocessing all AGR spent fuel – not just the fuel currently contracted for reprocessing. Since the lifetime of the AGR power stations may extend beyond the predicted lifetime of Thorp, this would require either major refurbishment of Thorp and associated plant, new contracts with overseas reprocessing facilities or the building a new reprocessing plant. Another option is to reprocess as much of the oxide fuels as possible by operating Thorp for as long as practicable. It is difficult to see how the UK will meet its commitments to achieve ‘close to zero’ concentrations of radioactivity in the marine environment by 2020 unless it ends reprocessing.

13.0 Plutonium Options

The future of the UK’s stockpile of over 100 tonnes of plutonium was supposed to have been decided by the Government during 2009. The Scottish Waste consultation does not consider plutonium, even though a small part of the stockpile is located at Dounreay. The NDA began consultations on this in August 2008, with the publication of a [plutonium options study](#). This was followed by its [Plutonium – Credible Options Technical Summary](#) in January 2009. The Nuclear Free Local Authorities briefing on options for dealing with plutonium stockpiles available [here](#).

In July 2009 the [Department of Energy and Climate Change](#) DECC published the first of two informal discussion documents on plutonium. The first [pre-consultation discussion paper](#) looked at the key factors that could be used to compare long term plutonium management options. In [response to the paper](#) the NFLA said its preferred option would be to treat the plutonium as a waste. A [second discussion paper](#) considered the decision methodology and timetable for decision making. The NFLA

response to this is available [here](#). Comments on both papers should be taken into account when the Government runs a formal consultation soon.

June Update: The nuclear facility described as “Blair’s Folly” might be saved by the Japanese. The Sellafield MoX Plant (SMP) which has been an [economic and technical failure](#) is a constant reminder of why the nuclear industry has become notorious for making wildly exaggerated claims and should be treated with extreme scepticism and mistrust. Designed to manufacture 120 tonnes of mixed plutonium and uranium oxide fuel every year, for overseas customers, the plant has produced a total of little over 10 tonnes in 8 years of operation at a cost to the taxpayer of more than £1bn. Now the NDA has [announced](#) that contracts with 10 Japanese power companies have been secured. But the deal is [far from being ‘done and dusted’](#) and will be entirely dependent on the installation of new equipment and extensive modifications to the plant, all of which will be paid for by the Japanese.

14.0 High Level Waste (HLW)

The HLW facility at Sellafield has the potential to wipe out much of northern England and southern Scotland. Extremely dangerous liquid high level waste is stored in 21 stainless steel tanks, which contain around 2,100 kilograms (kg) of Caesium-137 in 1998, according to an [NFLA briefing](#) by the Institute for Resource and Security Studies, compared with the 30 kg released during the Chernobyl accident. The waste must be constantly cooled and ventilated, because it is so radioactive it generates its own heat, otherwise the liquid could boil and start escaping, contaminating the surroundings. The Institute for Resource and Security Studies submitted [evidence](#) to the House of Commons Defence Select Committee in January 2002, following 9/11, about the terrorist threat represented by the tanks. Estimates vary – but [some commentators have reported](#) that such an attack may require the evacuation of an area between Glasgow and Liverpool, and cause [around 2 million fatalities](#).

June Update: Details of a [troubled shipment of vitrified High Level Waste](#) (HLW) from Sellafield to Holland earlier this year have emerged. Operators of the nuclear cargo vessel fleet International Nuclear Services (INS) provided some clarification as to why the sailing from Barrow of the Atlantic Osprey – already loaded with one transport flask containing 28 canisters of vitrified HLW and scheduled to leave port on 11th March – had to be delayed by 24 hours, and why it then took the ship almost two days longer than expected to reach the Dutch port of Vlissingen with its hazardous cargo. Apparently, as the HLW was loaded onto the Atlantic Osprey, a similar consignment had just arrived in Japan but it was found that the contents of the transport flask did not fully tally with the official paperwork – an unspecified number of canisters being ‘out of position’ within the holding channels of the transport flask. After consultation with its overseas customers and Sellafield, and having obtained clearance from the UK’s Department for Transport, the Atlantic Osprey was allowed to leave Barrow on the evening tide of the 12th March. Arriving four days later in Vlissingen (16th March), some Dutch HLW canisters were also found to be out of position within the transport flask. But this doesn’t explain why a voyage that should have taken little more than 2 days, actually took 4 days.

According to [The Guardian](#) the HSE is cracking down on Sellafield after a series of radioactive leaks and safety blunders. The [HSE has closed down](#) the Waste Vitrification Plant Line 3 after finding that its safety case was inadequate. HSE has also taken enforcement action after cooling water needed to prevent highly radioactive waste tanks from overheating leaked twice in 10 months. Sellafield has been ordered to rectify an alleged breach of its safety licence – failing to give staff proper training – by 18 June. HSE has taken further regulatory action over a leak of radioactively contaminated water from a pipe during nuclear fuel reprocessing operations. Along with another government watchdog, the Environment Agency, it has ordered Sellafield to correct breaches of radiation rules that enabled the leakage to occur. The HSE has also rejected the latest Lifetime Plan for cleaning up Sellafield because of proposed delays in dismantling ageing and potentially hazardous facilities.

Britain is facing a [£4bn black hole](#) in unavoidable nuclear decommissioning and waste costs. The NDA’s shortfall is due to slowly rising expenditure on nuclear decommissioning, and falling income

due to the closure of ageing power plants. In current financial year the NDA's budget is expected to be in balance. From 2011-12, the deficit suddenly rises to £850m, in 2012-13 the gap increases further to £950m and then to £1.1bn in the two subsequent years. Energy Secretary, Chris Huhne, has told the Treasury it will be very hard to avoid the expenditure: "There are genuine nuclear safety issues here that means it has to be paid for." SNP Westminster Energy spokesperson, [Mike Weir MP](#), said the situation validated the Scottish Government's energy strategy of capitalising on Scotland's vast clean, green energy potential.

15.0 Dounreay

Dounreay in Caithness was the UK's centre of Fast Reactor research between 1955 and 1994 but is now [described](#) as Scotland's largest nuclear clean-up project. Fast reactors, generally fuelled by plutonium, can, at the same time as generating electricity, convert a useless form of uranium into more plutonium. In 1988 the programme was cancelled, officially because of costs, but Fast Reactors have been a disaster world-wide with serious technical problems.

An underground, 65-metre deep, shaft was used to dump intermediate level waste (ILW) between 1959 until 1977, when a chemical explosion brought the practice to an end. A second facility, the ILW silo - a concrete-lined box built just beneath the surface - was used to dispose of waste between 1971 and 1998. Both of these need to be emptied and the contents made safe. [Contractors started to prepare the ground](#) for a major new plant to be built to retrieve waste from the shaft and silo in March 2009.

Another major problem is the appearance of [radioactive particles](#) in the environment. These small fragments of irradiated nuclear fuel have been mostly found on the seabed, on the Dounreay foreshore and on Sandside Beach west of Dounreay, which is open to the public. All but [four of the particles](#) found off site have been on the Sandside beach. Two have been found at Murkle Beach and another two at Dunnet Beach - both east of Dounreay. 142 particles have been found on Sandside Beach up to November 2009. It will be around 200 years, before the activities of the larger particles have decayed sufficiently for them to no longer be considered a potential hazard. [Radioactive particles will keep polluting public beaches for decades to come](#). Improved monitoring of the beaches and the seabed and recovery of particles are really the only viable options. [Restrictions on seafood](#) from a two kilometer zone around Dounreay remain in place.

June Update: [Amec has emerged](#) as a front runner to take over the running of Dounreay after switching consortia. The international project management company has joined forces with Energy Solutions in a venture called Caithness Solutions in a bid to land the contract to manage the decommissioning of the site. Amec had originally been part of the Pentland Alliance consortium with UKAEA and CH2M Hill, but pulled out earlier this year following the takeover by Babcock International of UKAEA, which Amec itself had hoped to acquire.

Geoffrey Minter, the owner of Sandside Beach, [announced](#) that his dispute with Dounreay over access to the beach for radioactive monitoring has finally been resolved. Contractors restarted monitoring of the beach in mid-May. Two nuclear fuel fragments were detected on the first day, and at least 4 more have been found since bringing the total up to around 155.

16.0 Submarine Decommissioning

Up to five sites in Scotland have been considered by the Ministry of Defence for storing radioactive waste from decommissioned nuclear submarines according to documents obtained by the [Sunday Herald](#). In total 12 possible storage sites in the UK have been considered by the MoD. There are already 15 decommissioning submarines lying at Rosyth or Devonport and a further 12 are due to leave active service by 2040. Rosyth and Devonport will be used to cut up and dismantle the submarines, but the MoD's problem is what to do with the waste, especially the large reactor compartments which are the most heavily contaminated. In Scotland the MoD is apparently considering Dounreay, Faslane, Coulport, Rosyth and Hunterston. Among possible sites in the England are Devonport, Aldermaston and Burghfield. The MoD is planning further [consultation](#) during 2010.