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1. GDA - Generic Delay Assessment

The Office for Nuclear Regulation (ONR) and the Environment Agency (EA) published their most recent quarterly report on the Generic Design Assessment (GDA) in mid February, covering the period October to December 2011. This was the first routine quarterly progress report that describes how GDA close-out work is proceeding since the interim Design Acceptance Confirmations (iDACs) and interim Statements of Design Acceptability (iSoDAs) were issued. (1)

Current work targets the EPR reactor design as Westinghouse is not presently addressing GDA Issues for the AP1000, and is not going to address them until it secures a UK customer, at which point it will make suitable funding available. Accordingly, the AP1000 resolution plans do not have start dates assigned to them.

As far as progress on resolving the remaining GDA Issues for the EPR is concerned, some of the deliverables from EDF and Areva have been late or do not provide the quality of information or depth of evidence that was expected. Consequently if no action is taken to improve matters, it is unlikely the GDA Issues will be closed-out on the timescales indicated in the resolution plans.

The EPR design has 15 unresolved safety issues, including cracking risks in key components, fault studies of cooling and electrical failures and the dangers of flooding. These have to be resolved before ONR will licence the construction of the new reactor but the programme for achieving this has slipped by two months. This is because more work than expected has been needed to address the issues raised

by the Fukushima accident. It has coded two issues as red, meaning that “*delays cannot be recovered and will impact on the target closure date*”. One red issue is the “*avoidance of fracture*” from cracks that could threaten the structural integrity of the reactor plant. The other is the need for possible faults in a series of essential support systems to be properly analysed. ONR has coded a further 13 issues as amber “*signaling that significant, prompt action is required to avoid delays to the target closure date*”. They include “*internal flooding and operator actions*”, “*absence of adequate control and instrumentation architecture*”, “*spent fuel pool safety case*” and “*inadequate substantiation of human-based safety claims*”. (2)

ONR quotes EDF and Areva as saying that “*these delays have resulted from their resources being deployed on assessment of the impact of the Fukushima event*” and other work. Allowances for these factors were included in a planned programme in July 2011, but “*a greater workload has been required to address them than was previously envisaged*.”

A graph in the ONR report shows that the safety assessment programme had slipped by two months as at the end of December. It suggests that the programme was originally scheduled to end in November 2012. “*This graph is indicative and does not necessarily imply a two-month delay*,” said an ONR spokesman. “*In some areas for example, it may be possible for time to be made up*.” The delays in resolving these issues could push final resolution into 2013 and delay planned construction at the Hinkley Point C site. NNB Genco, the EDF-Centrica subsidiary that would build and operate the two EPRs planned for Hinkley Point C, has asked EDF and Areva to speed up the resolution of outstanding issues. It wants “*earlier confirmation that the methodologies and strategies for the GDA Issues will result in positive and early outcomes that align with the Hinkley Point C programme. This is necessary to provide timely support to the Hinkley Point C design engineering sequence and the contracting process*.”(3)

EDF was expected to make a final investment decision on building the two EPRs at Hinkley Point C at the end of this year and start construction in 2013. Site preparatory works are already under way.

(1) GDA Progress Report, HSE, EA 1st Oct to 31st Dec 2011

<http://www.hse.gov.uk/newreactors/reports/gda-q4-11.pdf>

(2) Rob Edwards.com 27th Feb 2012 <http://www.robedwards.com/2012/02/delay-to-safety-approvals-for-new-nuclear-stations-in-uk.html>

(3) iNuclear 29th Feb 2012 <http://www.i-nuclear.com/2012/02/29/uk-epr-design-issues-could-push-resolution-into-2013-delay-construction-of-hinkley-point-c/>

2. Investment decision could be delayed

EDF’s final investment decision to proceed with two EPRs at Hinkley Point C could be delayed by several other factors besides delays in dealing with GDA issues. It is currently planned for the end of 2012 – already a year behind the original schedule.

The list of obstacles yet to be overcome includes finalising electricity market reform, the funded decommissioning plan along with securing a site licence and planning permission. But question marks also remain about finance and timing. (1)

On Electricity Market Reform the Government has promised new reactor operators a guaranteed price calculated through a complex instrument called a contract for difference (with consumers underwriting the guarantee through our bills to avoid accusations of state subsidy). But no one knows what this price will be. When and how this will be communicated to EDF so it can commit funds to start building in time for a planned switch on in 2018, is unknown. (2)

While it is expected that EDF will finance the construction mainly from its balance sheet, the French elections in April and May might lead to a change of priorities. French ambitions for spending on UK

nuclear may look rather different under Francois Hollande, the socialist challenger, if he wins the election. On top of this EDF is expecting a 20% investment from Centrica, but the company has been showing distinct signs of wobbling lately.

Centrica's shareholders may well start to question the company's nuclear investment plans which, if they materialise at all, risk being late and less ambitious than before. The company has already been warned by some City analysts "*not to touch nuclear power with a barge pole*". (3) *The Telegraph* recently reported that Centrica might need to reassure the City that its nuclear ambitions remain on track to create expected returns. (4)

Sam Laidlaw, Centrica's chief executive, warns that "*It is vital that the Government provides the clarity and assurance that will be needed if the industry is to step up and deliver the massive investment – an estimated £200bn in total by 2020 – that the country requires*". There was "*much detail to be resolved*" on Electricity Market Reform (EMR) proposals. He revealed doubts about whether an investment decision on a new nuclear plant at Hinkley Point would be taken this year. Nick Luff, Centrica's finance director, said that the decision hinged on securing licences, confidence EDF can deliver on appropriate cost estimates, and government assurance of a "*sufficiently attractive electricity price*". "*There is an awful lot to do to be able to make an investment decision,*" he said. "*Not all of those things may happen in time.*" (5)

Two government decisions will be crucial. The first relates to the level of "price support" that nuclear power generators can expect to get. The other is the "carbon floor price", to be introduced in April next year. This will determine the minimum amount that the big coal and gas power plants must pay for their carbon emissions, which, in turn, will influence the price of electricity – and which will dictate the profits made by low-emissions nuclear power plants and, in turn, their viability. (6)

- (1) iNuclear Monthly Vol1 Issue No.2 March 2012
<http://www.i-nuclear.com/i-nuclear-monthly/>
- (2) Telegraph 17th Feb 2012 <http://www.telegraph.co.uk/finance/comment/damianreece/9089887/Centrica-faces-big-questions-on-nuclear-despite-Franco-British-summit.html>
- (3) Guardian 25th July 2011 <http://www.guardian.co.uk/business/2011/jul/25/centrica-nuclear-power-stations>
- (4) Telegraph 17th Feb 2012 <http://www.telegraph.co.uk/finance/comment/damianreece/9089887/Centrica-faces-big-questions-on-nuclear-despite-Franco-British-summit.html>
- (5) Telegraph 23rd Feb 2012
<http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/9102378/UK-power-plant-investment-needed-to-keep-lights-on-warns-Centrica-chief-Sam-Laidlaw.html>
- (6) Independent 26th Feb 2012 <http://www.independent.co.uk/news/business/news/battle-against-emissions-gives-nuclear-a-new-chance-7440803.html>

3. Britain has handed over control of its energy future to the French government

"It is just David Cameron's bad luck to have chosen to back a nuclear future for Britain at a moment when it is becoming increasingly unlikely that it will happen", says former Friends of the Earth Director and Government advisor Tom Burke.

The justification for British homeowners and businesses being forced to pay for a French industrial policy was a supposed electricity generation gap. Without French nuclear power stations, Britons would be freezing in the dark by 2015 according to energy ministers. This was always nonsense but has been made totally ridiculous by several recent developments. EDF has now announced that it is going to extend the life of the AGRs. There are 30GW of new gas planned or under construction and the world is experiencing a 'glut' of gas according to the IEA. So long generation gap. (1)

The severe economic slowdown and increased energy efficiency in Britain now means the feared power blackouts between 2015 and 2020 will be avoided, according to Bloomberg New Energy Finance. (2) The energy supply/demand picture has partly been changed by a "dash for gas", which could see 15GW of new gas-fired power plants coming on-stream by 2016 - 11GW of new gas could be built from now through 2016 and 4.5GW has been built in 2010-11. That will easily make up for the 12GW of coal-powered plants being closed down for environmental reasons or nuclear facilities that have reached the end of their natural life. Beyond 2016 Britain will be relying on a huge rise in the number of windfarms coming on-stream, both onshore and offshore. (3)

Burke says "*for all their protestations to the contrary, it is clear that none of the non-French projects have much chance of going ahead. None of the proposers have the balance sheet strength to finance such risky capital intensive investments in these increasingly risk averse times*". Even EDF has had its credit rating downgraded.

The much anticipated life extension for the current fleet of French reactors was very good for EDF but terrible for Areva – the reactor maker. It could mean a 20 year gap with no new reactor orders. So the solution was supposed to be that EDF would build reactors in Britain instead. So the revival of nuclear power in Britain has been driven primarily by the government of France. To deal with the risks DECC officials have put huge effort into dreaming up ever more devious ways to disguise the level of public subsidy needed to guarantee construction. Leaving aside the thought that the Treasury might not be so accommodating as the full cost to the UK economy is revealed, there are two other reasons why DECC may be disappointed: Centrica may find it hard to keep up its end of the bargain and EDF may find better things to do with its capital than building EPRs in the UK. (4)

- (1) Tom Burke 17th Feb 2012 <http://tomburke.co.uk/2012/02/17/no-more-nukes/>
- (2) Bloomberg New Energy Finance 29th Feb 2012 <http://bnef.com/WhitePapers/download/64>
- (3) Guardian 29th Feb 2012 <http://www.guardian.co.uk/environment/2012/feb/29/uk-power-blackouts-now-unlikely>
- (4) ENDS Report March 2012 <http://tomburke.co.uk/2012/02/22/tom-burke-political-commentary-nucleaire-nouvelle-generation-non-merci/>

4. Westinghouse in last ditch attempt to win UK contracts

According to *The Times*, Horizon, the joint venture between Eon and RWE, had been due to announce on 27th February that it had chosen Areva's EPR reactor for its proposed new nuclear power stations at Wylfa and Oldbury. But apparently Westinghouse has taken legal advice about whether it has ground for a complaint to the European Competition Commissioner should it lose out to Areva, and it has been lobbying UK Ministers about French state-controlled businesses being given a stranglehold over the UK's nuclear programme. (1)

Even after Horizon has selected a reactor consortium, there is no guarantee Wylfa and Oldbury will be built – it has put off its final investment decision until 2015. *The Guardian* says it has seen the Westinghouse legal advice which says that if Areva secures a market monopoly this should trigger an inquiry. The document argues that awarding the contract to the world's largest reactor builder will have a detrimental effect on UK jobs because Areva has existing supply chains in France and their UK commitment would be significantly less.

The document also argues that when EdF took over British Energy (BE) in 2008, it was ordered to sell land it owned at Wylfa and elsewhere. Given EdF and Areva's common ownership, EdF would have the same control of UK nuclear sites as when it was made to divest the sites at Wylfa and elsewhere in 2008. (2)

The European Commission ordered EdF to dispose of land at either Heysham or Dungeness as a condition for its approval of the EdF takeover of BE. The UK government required EdF to dispose of

land at Bradwell, Wylfa, Dungeness and Heysham in a complicated and conditional “sites agreement”. To date, the only site to be turned over to another operator was some land at Wylfa. Coincidentally, the EdF land sale to Horizon at Wylfa may have enabled the company to consider buying the French EPR reactor. An RWE spokeswoman said in 2009 that Horizon’s private landholding at Wylfa may have been sufficient for two AP1000 reactors, but only one EPR because of the larger footprint of the French EPR. Horizon Nuclear Power has grid connections to accommodate up to 3,600-MW at Wylfa. To meet that capacity, Horizon would need to build two EPRs there if it chose that technology, or three AP1000s.

EdF obtained land at Wylfa through its acquisition of BE, but it also privately bought up land at Wylfa because it planned to use Wylfa as a back-up site to Hinkley and Sizewell to build twin EPRs and it needed more land there than it had acquired from BE. The NDA also owned land at Wylfa, but EdF was prohibited from buying it under its agreement with the UK government. Instead, in 2009 Horizon bought a parcel of land at Wylfa that included the NDA-owned land and part of a plot belonging to BE/EdF, totalling 438 acres (178 hectares). But a separate EDF parcel, adjoining the NDA property, was sold to Horizon only on condition that the government’s nuclear plant siting policy didn’t preclude EdF from using Hinkley, Sizewell and Bradwell for its own EPRs. In October 2011, EdF sold the land it owned at Wylfa to Horizon, fulfilling a commitment it made to the UK government when taking over BE, EdF said. EdF then successfully negotiated with the European Commission to allow it to substitute the Wylfa land sale in place of the EC requirement to sell either Dungeness or Heysham land, according to EdF. (3)

- (1) Times 1st March 2012 <http://www.thetimes.co.uk/tto/business/industries/utilities/article3336330.ece>
- (2) Guardian 4th March 2012 <http://www.guardian.co.uk/business/2012/mar/04/areva-competition-inquiry-nuclear-reactors>
- (3) i-nuclear 5th March 2012 <http://www.i-nuclear.com/2012/03/05/horizon-to-choose-ap1000-or-epr-this-month-amidst-accusations-of-french-hegemony/>

5. Emergency Planning

One year on from the Fukushima Nuclear Disaster Greenpeace says that although the Great East Japan earthquake and the following tsunami triggered it, the key causes of the nuclear accident lie in the institutional failures of political influence and industry-led regulation. The accident exposed deep and systemic failure of the very institutions that are supposed to control nuclear power and protect people from its accidents. At any time, an unforeseen combination of technological failures, human errors or natural disasters at any one of the world’s reactors could lead to a reactor quickly getting out of control.

Experience tells us that major nuclear accidents occur about once every decade, yet the nuclear industry continues to use risk models which predict a major nuclear accident about once every 250 years.

Professor David Boilley, chairman of the French Association ACRO (an independent radiation monitoring laboratory), documents how even Japan, one of the most experienced and equipped countries when it comes to handling large-scale disasters, found that its emergency planning for a nuclear accident was not functional, and its evacuation process became chaotic, which led to many people being unnecessarily exposed to radiation.

Key points on nuclear emergency planning from the report are:

- Emergency planning for dealing with the nuclear accident at Fukushima was not functional, and the evacuation process became chaotic, leading to many people being unnecessarily exposed to radiation.

- Despite early public announcements that the radiation releases would not harm public health, the evacuation radiuses changed several times.
- Evacuation planning based on circles with diameters of several kilometres is too rigid and hopelessly inadequate in the case of nuclear power plants. Highly contaminated areas had to be evacuated up to 50km from the nuclear plant, and this was still not enough.
- Special software for predicting fallout patterns was not used correctly. In some cases, people were evacuated to areas with more, not less, radiation.
- Evacuation procedures of vulnerable people failed. Patients from one hospital and a nearby home for the elderly were sent to shelters: 45 of 440 patients died after staff fled. In another incident, more than 90 elderly people were left without carers. Hospitals in Fukushima Prefecture have had to suspend services because hundreds of doctors and nurses in the area resigned to avoid radiation.
- The Fukushima crisis also exposed that one of the key principles of nuclear emergency plans – confinement (recommending people to stay in their homes to avoid radiation exposure) – simply does not work in practice. Communities where people were confined for up to 10 days ran out of food, as well as fuel needed for eventual evacuation. In addition, specialised workers – such as drivers, nurses, doctors, social workers and firemen, who were needed to help those confined – were not prepared to stay in an area receiving large amounts of radiation.
- The post-emergency situation is also riddled with problems – including dealing with contaminated food and land, higher radiation safety limits, insufficient monitoring of radiation levels and major problems with long-term decontamination.
- Authorities were not able to adequately control and regulate the radioactivity of the various goods that are sold on the market, in particular food, which can have serious consequences.
- The authorities don't know how to cope with the extended contaminated territories and the huge quantity of radioactive waste.

A full review of UK emergency planning was expected to be completed by the end of 2011, but to date it has still not been published. (2) Some of these issues are also being considered by nuclear site stakeholders groups across the UK. (3) (4)

A meeting of the Sizewell Site Stakeholder Group (SSG) on 1st March agreed to recommend to the Suffolk County Council Emergency Planning Department that a 20km Detailed Emergency Planning Zone (DEPZ) should be considered as a minimum. The Sizewell SSG also wants consideration given to a full-scale mock evacuation involving the local population. In addition, it is calling for the routine issue of anti-radiation tablets to be extended to local schools, whether or not they lie within any revised emergency zone. At present the Sizewell emergency zone – the area subject to a detailed major accident response plan – extends to just 2.4 kilometres, within which up to 900 people live or work, depending on the season. The zone does not cover most of the built-up area of Leiston and its four schools. As a result of the Fukushima disaster 170,000 people were evacuated from within a 20-km radius and thousands more self-evacuated from a wider area. The SSG says in a letter to be sent to emergency planners this week: *“While the SSG does not feel competent to propose an exact area which should form an extended emergency planning zone, it does feel that an area of up to 20 kilometres should be considered.”*

Andy Osman, head of emergency planning for Suffolk County Council, said: “*I will be looking at emergency planning zones as part of the review of the Sizewell off-site emergency arrangements, but I am still waiting for the Office of Nuclear Regulation (ONR) and the Department of Energy and Climate Change (DECC) to confirm what changed guidance I should be applying based on the UK learning of the events in Fukushima.*” Mr Osman said that under Government regulations, Suffolk County Council could not make a “unilateral” change. (5)

- (1) Lessons from Fukushima February 2012
<http://www.greenpeace.org/international/en/publications/Campaign-reports/Nuclear-reports/Lessons-from-Fukushima/>
- (2) NFLA Press Release 28th Feb 2012
http://www.nuclearpolicy.info/docs/news/NFLA_PR_nuclear_EP_concerns.pdf
- (3) See Emergency Planning – Post Fukushima, NuClear News No.37
<http://www.no2nuclearpower.org.uk/nuclearnews/NuClearNewsNo37.pdf>
- (4) See also talk by Sean Morris
http://www.nuclearpolicy.info/docs/events/120224/Nuclear_EP_NFLA_presentation.pdf
- (5) East Anglian Daily Times 5th March 2012
http://www.eadt.co.uk/news/sizewell_n_plant_neighbours_want_evacuation_drill_1_1227406

6. Potential for Flooding

The Environment Agency (EA) says there are still unresolved issues with regard to flooding over the proposed twin-reactor Hinkley Point C in Somerset. Project manager for the EA, Brian Payne, says a number of “important issues” relating to flood risk have yet to be addressed by NNB Generation Company Limited (NNB). (1)

Sea level rises of between 30 and 40cm in the Severn Estuary over the next 60 years could cause more than three-quarters of the estuary’s intertidal area to be lost according to a report called The State of the Severn Estuary. (2)

Meanwhile the Department for Environment Food and Rural Affairs has published the UK Climate Change Risk Assessment (CCRA) - the first assessment of its kind for the UK and the first in a 5 year cycle. (3) The underpinning evidence for the Risk Assessment was collected using eleven ‘sectors’ or research areas - each of these has its own Sector Report. One of the sectors is energy. (4) According to this sectoral report five of the eight sites designated for new nuclear stations have a high risk of flooding.

According to the Institution of Mechanical Engineers coastal sites for new nuclear station such as Sizewell ‘*may need considerable investment to protect them against rising sea levels, or even abandonment or relocation in the long term*’. (5)

- (1) Western Morning News 1st Feb 2012 <http://www.thisissomerset.co.uk/Hinkley-Point-Flood-risk-8216-resolved-8217/story-15098257-detail/story.html>
- (2) Western Mail 16th Feb 2012 <http://www.walesonline.co.uk/news/wales-news/2012/02/16/three-quarters-of-the-severn-estuary-s-mudflats-could-be-lost-to-sea-level-rises-91466-30340954/#ixzz1mYGasYXc>
- (3) DEFRA 25th Jan 2012 <http://www.defra.gov.uk/environment/climate/government/risk-assessment/>
- (4) <http://randd.defra.gov.uk/Document.aspx?Document=CCRAfortheEnergySector.pdf> (see page 49)
- (5) Climate Change: Adapting to the Inevitable? IMech 2012
http://www.imeche.org/Libraries/Key_Themes/ClimateChangeAdaptationReportIMechE.sflb.ashx

7. Plant Life Extensions (PLEX)

The EDF Group said on 16th February that it expects to extend the operating lives of its 14 advanced gas-cooled reactors (AGRs) by an average of seven years -- two years longer than its previous

estimates. This means the AGR fleet could retain the equivalent of at least 6.5 gigawatts of nuclear electrical capacity on the national grid, equivalent to at least four 1,600-MW EPR reactors beyond 2020. In its national energy policy statements last year, DECC said it expected to lose 10GW of nuclear power capacity on the grid over the next 20 years. However, EDF's plans could significantly delay the loss of existing nuclear capacity. It could mean the only nuclear capacity to be lost between now and 2021 are the four Magnox reactors at Oldbury and Wylfa, all of which are scheduled to close permanently this year, and Dungeness B. Dungeness B got a 10-year life extension in 2008 and is now scheduled to close in 2018. (1)

There was disappointment amongst Scottish environmentalists with the publication of a new Scottish government plan for electricity generation. Scottish Government Ministers say they will not block applications by operator EDF to continue running Torness and Hunterston beyond their current licences. The SNP administration has been opposed to building new reactors, but keeping older ones in operation is seen as a way of retaining sufficient generating power in Scotland. The Scottish government wants renewable energy to provide the equivalent of 100% of Scotland's electricity needs by 2020. (2) The concession to sceptics about this ambitious target is that baseload capacity will be provided by nuclear and other thermal power stations to ensure power supplies when renewable are not generating.

- (1) i-Nuclear.com 16th Feb 2012 <http://www.i-nuclear.com/2012/02/16/urgent-and-speedy-action-still-needed-on-uk-new-build-despite-edf-plant-life-extension/>
- (2) BBC 5th March 2012 <http://www.bbc.co.uk/news/uk-scotland-scotland-business-17266084>

8. Dounreay Transports

The Nuclear Decommissioning Authority (NDA) has published another "Credible Options Study" covering the remaining nuclear materials at Dounreay referred to as 'exotics'.

A proposal to move "breeder material" by train from Dounreay to be reprocessed in the old Magnox reprocessing plant at Sellafield was approved by the NDA last November following a consultation on an earlier "Credible Options Study". (1) Trains are to start moving in the summer. (2) Forty-four tonnes will be moved in about 40 journeys between Scotland and Cumbria over a four or five year period. (3) The NDA will need regulators to approve the plans before they start moving the nuclear fuel. (4)

Breeder material which formed the uranium-238 blanket in the Prototype Fast Reactor at Dounreay is not thought to be terribly radioactive, but there is concern the plutonium formed by the neutron bombardment of the uranium could be a prime target for theft. The NDA says the exact timing of the trains and security measures will remain confidential. Nuclear Engineer John Large condemned the proposed transports:

"We're talking about bomb-grade material that would be a target for terrorists. It is also fuel from an experimental reactor which will have got broken up and will have been in storage in an uncertain condition. It will be very difficult to inspect it before it is transported and the only safeguard is based on their assumption that they would not encounter an accident with a big enough impact to break open the flask." (5)

Dounreay's other materials containing plutonium, which are the subject of this second credible options paper, could also be transported to Sellafield. It says the analysis of the credible options shows that the option to transport the exotics from Dounreay to Sellafield offers many advantages, and these need to be discussed with regulators before any approved strategic decision can be made. Under this option, the number of transports would depend on the mode, but as a guide, there would be in the region of 30-60 journeys during a 6 year period, commencing probably around 2014/15. A decision on the preferred option by NDA will take place in March / April 2012. (6)

Anti-nuclear campaigners in Cumbria reacted with fury to plans to empty Dounreay's stockpile of nuclear fuel by sending it all to Sellafield. If this latest proposal is approved, the total inventory being moved would be around 100 tonnes including plutonium and bomb-grade highly enriched uranium. It would be surprising if the NDA decides against the extra transports. Cumbrians Opposed to a Radioactive Environment (CORE) says Cumbria shouldn't be the waste-bin for everybody else's nuclear waste. (7)

The NDA says that the storage facilities housing the materials, which include unirradiated plutonium and weapons grade uranium bearing fuel, will need to be replaced in 10 to 15 years, with new storage taking about eight to ten years to design and build. (8)

- Meanwhile a piece of radioactive fuel with potentially "significant" health risks has turned up on Sandside beach near Dounreay. This is the first time a radioactive particle of this category has been discovered on public land locally – with its unusual chemical make-up also raising questions. The particle was twice as "hot" as the previous highest find since beach monitoring started nearly 20 years ago. (9) The particle was detected at the water's edge at Sandside, where more than 200 particles have been found in the last 15 years. Provisional checks carried out on the beach indicated the particle had a higher than normal beta dose rate. Any particle with radioactivity above one million Becquerel (Bq) units is classed as significant.

- (1) STV 21st November 2011 <http://news.stv.tv/scotland/highlands-islands/281153-trains-will-transportnuclearfuel-from-dounreay/>
- (2) BBC 21st Nov 2011 <http://www.bbc.co.uk/news/uk-scotland-highlands-islands-15825467>
- (3) Carlisle News and Star 22nd Nov 2011 <http://www.newsandstar.co.uk/news/nuclear-fuel-to-be-taken-bytrain-through-cumbria-from-scotland-1.899495?referrerPath=/news-round-up-1.50001>
- (4) Scotsman 22nd Nov 2011 http://www.scotsman.com/news/transport/dounreay_nuclear_fuel_set_to_be_taken_from_scotland_by_train_1_1978061
- (5) John O Groat Journal 23rd November 2011 <http://www.johnogroat-journal.co.uk/News/Green-light-fortransfer-of-spent-nuclear-fuel-from-Dounreay-22112011.htm>
- (6) NDA 7th February 2012 <http://www.nda.gov.uk/news/exotics-dounreay.cfm>
- (7) STV 8th Feb 2012 <http://news.stv.tv/scotland/highlands-islands/296866-activists-blast-nuclear-waste-disposal-plan/>
- (8) Cumberland News 10th Feb 2012 <http://www.cumberlandnews.co.uk/dounreay-nuclear-leftovers-could-be-sent-to-sellafield-1.923794?referrerPath=business>
- (9) John O'Groat Journal 22nd Feb 2012 <http://www.johnogroat-journal.co.uk/News/Hottest-radioactive-spot-so-far-turns-up-at-Sandside-21022012.htm>
- (10) Scotsman 21st Feb 2012 http://www.scotsman.com/news/environment/major_radioactive_find_at_dounreay_beach_1_2128558
Herald 21st Feb 2012 <http://www.heraldscotland.com/news/home-news/highly-radioactive-particle-found-on-dounreay-beach.16812181>

9. Calls for more efficiency

Action to dramatically enhance the energy efficiency of buildings is an essential step to reducing demand for energy. It will also create healthier and more affordable environments, a great many jobs and stimulate economies. Only with demand reduction, led by action on building energy use, can energy supply be decarbonised rapidly enough to make effective action on climate change a possibility, so says a new report called Refurbishing Europe from East Anglia University. (1)

Energy efficiency has delivered far more greenhouse gas saving in recent decades than transformation of supply even without any serious attention by governments. A key message of this paper is that progress in energy efficiency has been dramatic but slower than it could have been and there is far more saving still to be had. Making this saving is now absolutely necessary if there is to be effective

action on climate change. Across the EU, the current ambition of a 20% reduction in energy consumption by 2020 is unlikely to be achieved. Projections indicate a reduction only 10% or less is more likely. The reason for this lack of action is lack of political and financial support for energy efficiency and for energy efficient buildings. The report suggests an achievable target of a 40% cut by 2050 in order to galvanise near-term action.

Nearly 27 million homes in the UK are responsible for over a quarter of the UK's carbon dioxide emissions. Buildings are responsible for 40% of EU energy related greenhouse gas emissions. Heating is responsible for over half of UK domestic carbon dioxide emissions whilst heating, hot water and lighting together account for four-fifths of the total. There is huge scope for both increased energy efficiency and greatly reduced carbon emissions in our existing homes and other buildings.

We know what to do to make buildings more efficient, the challenge is to overcome the barriers that presently mean best practice is found in just a few isolated examples. It would be eminently sensible to spend far more than we do on energy efficiency. A similar figure to the £200billion investment needed up to 2020 in the UK to develop new energy supply capacity and to strengthen the electricity and gas grids might be roughly what it would cost to bring the entire UK housing stock up to or near to maximum standards. Almost no energy will then be needed for heating and cooling homes. Similar arguments will apply in other countries.

Germany seeks to cut electricity consumption by 25% by 2050, which will be possible if there is sustained and ambitious progress in energy efficiency. In the UK, in contrast, electricity consumption is projected to at least double by 2050. A major reason for the difference is the lack of UK ambition for energy efficiency.

The UK Committee on Climate Change has estimated that an additional 6TWh of renewable electricity supply will be needed by 2030, costing consumers in excess of £100m at today's prices, because of the weakening of the UK standard proposed for so-called "zero carbon homes". This extra investment in supply may be compared with the potential saving of £40billion suggested by WWF in a recent report if there is effective action in the UK on energy efficiency and, in particular, on energy efficiency in the building stock. Across the EU, such saving could possibly be multiplied ten-fold: around €500billion no longer needing to be spent on constructing new energy supply.

Professor of Energy Policy at Exeter University, Catherine Mitchell, has pointed out that it is simply not in the interests of the handful of dominant energy companies and their shareholders to dramatically transform the energy system, whether on the supply side (as in pervasive penetration of solar PV) or the demand side (via 'deep' low-energy whole-house refurbishment). At present, energy policy, both for supply and for use, seems still dominated by 20th century ideas of large centralised electricity generators and relatively inefficient infrastructure. Building or refurbishing buildings to very high energy standards is often cost effective, and will almost certainly be so over a period of decades. Very many energy efficiency actions save costs almost from day one. It is mind-sets – influenced by decades of fossil fuel plenty, by massive subsidies for fossil fuels and for nuclear technologies, and by a centralised electricity system that institutionalises inefficiency – that must change.

- (1) Refurbishing Europe, Build with CaRe: Energy Saving Buildings, 27th Feb 2012
<http://www.buildwithcare.eu/news/231-refurbishing-europe>

10. UK waste liabilities several billion pounds higher than necessary due to mistakes

The rising costs of managing the UK's nuclear liabilities are due to delays by past governments and public bodies in implementing effective policy measures, according to Gordon MacKerron of the Science and Technology Policy Research Unit. The report was commissioned by the UK's Department of Energy and Climate Change. Delays in tackling nuclear liabilities led to a progressive

escalation of costs and deterioration of facilities, which has only begun to be addressed in recent years, says the report. (1)

Professor Gordon MacKerron said: *“The history of managing and funding our nuclear legacy has, until very recently, been dire. Funds collected from consumers for decommissioning and waste management were diverted to other ends. And for decades minimal attention was paid to deteriorating nuclear facilities - and the cost of remediating them is consequently now much higher, probably by several billion pounds, than it would have been had serious work started up to two decades ago. Continuing commitment to separating plutonium from spent fuel, long after any economic justification had ceased, compounded the problem.”* (2)

Energy secretary Edward Davey used the report’s publication as an opportunity to underline the government’s commitment to deal with the UK’s nuclear legacy and to ensure that the nuclear new-build programme learns from past mistakes.

- (1) Evaluation of nuclear decommissioning and waste management by Prof Gordon Mackerron. SPRI March 2012 <http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/nuclear/4496-mackerron-report-evaluation-of-nuclear-decommissi.pdf>
- (2) DECC 2nd March 2012 http://www.decc.gov.uk/en/content/cms/news/pn12_018/pn12_018.aspx

11. Plutonium Competition

The Nuclear Decommissioning Authority (NDA) continues to seek alternatives to DECC’s preferred strategy for plutonium of reusing it as mixed-oxide (Mox) fuel for future nuclear power stations. It says the government remains “open” to other options provided they can offer better value or less risk. The NDA announced last year it was shutting its existing Mox plant – built for the export market – following the disaster at the Fukushima nuclear power plant in Japan. Engineering giant GE Hitachi Nuclear Energy (GEH) unveiled plans to re-use the UK’s legacy plutonium stockpile for a new nuclear power station at Sellafield last year. Interested parties have until the end of March to submit expressions of interest in alternatives. (1) (2)

NDA said it will undertake an initial discussion to establish if, in its opinion, any proposal it receives could represent a credible alternative to the preferred policy. *“As part of this discussion, NDA will require information as regards the capability of the organisation proposing the solution,”* the statement said. If NDA considers there is merit in progressing the proposal, then further detailed discussions will take place. In order for NDA to assess credibility at the conclusion of this process, the following information would need to be provided, the statement said: A comprehensive outline of the lifecycle plutonium management option, including key assumptions; licensability of facilities; full lifecycle management plan for waste from the manufacture of fuel and spent fuel including disposability; any commercial structures proposed; a comprehensive process flowsheet; cost data for process blocks and associated uncertainty; technical maturity assessed using the technology readiness level approach; and lead time for implementation. (3)

- (1) New Civil Engineer 27th Feb 2012 <http://www.nce.co.uk/news/energy/nda-seeks-alternatives-for-mox-fuel/8626946.article>
- (2) NDA Press Release 23rd Feb 2012 <http://www.nda.gov.uk/news/alternative-pu-proposals.cfm>
- (3) i-Nuclear 28th Feb 2012 <http://www.i-nuclear.com/2012/02/28/uk-nda-in-new-call-for-proposals-for-plutonium-disposition-at-sellafield-with-march-31-deadline/>

12. Liability Shifting

The nuclear industry is shifting its waste liability to the steel industry, the most successful recycling industry in the world. The Steel Manufacturers Association said in its 2009-2010 Policy Statement.

Euratom has succeeded in forcing member states (even those that oppose nuclear power) to adopt regulations allowing nuclear waste to get into commerce says Diane D'Arrigo of the Nuclear Information and Resource Service (NIRS) in Washington. (1) Metal pipes and components exposed to neutrons in the core of nuclear reactors become “activated,” meaning that the originally stable metal atoms are transformed into radioactive elements such as Nickel-59 and Niobium-94 with half lives of 76,000 years and 20,300 years, respectively. Radioactive Cobalt-60 with a 5 year half life thus 50 to 100 year hazardous life also forms. Some of the radioactivity lasts for such long periods of time that for practical purposes, it requires permanent isolation from our environment and living systems. In other parts of the reactor and the fuel chain, metal can get contaminated on the surface with radionuclides.

In Canada, the Bruce nuclear power reactors were refurbished. Eight radioactively contaminated steam generators were removed with the intent to ship them to Studsvik in Sweden to be melted and most of the metal released into the commercial metal recycling market. It is not possible to remove all of the radioactive contamination, thus Canada’s nuclear power waste would make its way via Sweden into everyday household and personal use items sold around the world. The immediate concern is about the dangers and precedent for transporting the enormous nuclear power components on the world’s largest fresh water body, the Great Lakes and St. Lawrence Seaway through treacherous waters of the North Atlantic, through the narrow straits of Denmark into the Baltic Sea to Nyköping, Sweden where Studsvik would melt and release the majority of the metal. (2)

Now the decommissioned nuclear power station at Berkeley in Gloucestershire is planning to remove its five huge 300 tonne boilers and ship them to Sweden for smelting and recycling. It is estimated up to 90 per cent of the metal will be put back into the market for reuse. (3) It had been planned to leave the boilers on the site until its final clearance in 2074 after Berkeley. But they will now be taken to Sweden for decontamination and recycling. Studsvik has signed an £8 million contract with the Low Level Waste Repository for the transport to Scandinavia and treatment of five of the 15 redundant boilers at its processing plant. The first two boilers, which measure 21 metres (nearly 70ft) in length and contain low levels of radioactivity, will be moved on March 19, with two further journeys to carry the others away. They will be moved by road to Sharpness docks in an operation that could take three hours. They will then be loaded onto a barge and taken to Portbury for shipping to Sweden. (4)

(1) Nuclear Monitor No.743

(2) See NFLA Briefing No.85 26th July 2012

[http://nfnsc.gn.apc.org/docs/briefings/A199_\(NB85\)_Canadian_waste_shipments.pdf](http://nfnsc.gn.apc.org/docs/briefings/A199_(NB85)_Canadian_waste_shipments.pdf)

(3) Gloucestershire Echo 28th Feb 2012 <http://www.thisisexeter.co.uk/story-15341395-detail/story.html>

(4) Waste Management World 27th Feb 2012 <http://www.waste-management-world.com/index/from-the-wires/wire-news-display/1612537603.html>