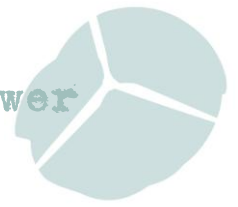


No.61 April 2014

1. **Hinkley – extremely bad value for consumers**
2. **Carbon disconnect**
3. **ESPOO**
4. **Nuclear security**
5. **Thorium, uranium and “safe” reactors**
6. **Much ado about Russia**
7. **The Vulcan saga**
8. **WIPP failure has global implications**
9. **Dungeness – inadequate sea defences shut reactors for two months**
10. **Connecting smart grids to cut the cost of renewables**
11. **ABWR – Justifying the Unjustifiable**
12. **Magnox Payday**
13. **Radiation and health – Fukushima**
14. **The Politics of Wind Power**



# 1. Hinkley - extremely bad value for consumers

Evidence has poured into the European Commission as it investigates whether the deal with EDF on Hinkley Point C breaks EU competition rules. Many objectors, who made submissions by 7<sup>th</sup> April, claim that the contract will wreck Europe's chance of building up renewable energies to avert the worst impacts of climate change. (1)

In a damning and succinct demolition of the UK Government's case in favour of state-aid for Hinkley C, Friends of the Earth (FOE) show how the Department of Energy and Climate Change's (DECC's) central projections assumes a tailing off in the growth of renewables after 2020. (2) Such projections are out of step with reality around the world as installation of wind power and solar power accelerates and nuclear electricity production actually falls. The UK Government clearly favours nuclear over renewables as it commits the consumer to paying massive bills for Hinkley C (from 2023) but has no plans for any premium prices for renewables after 2020. It seems the Government doesn't expect renewable costs to fall, but does expect that nuclear costs will!

FOE dismisses the notion that offering the Hinkley C developers £92.50/MWh over 35 years with a £10 billion loan guarantee, could be justified on environmental grounds. They say the deal '*represents extremely bad value for UK citizens*' because the cost of various renewable energy technologies will be far cheaper with costs falling fast by the time that Hinkley C is deployed.

FoE says while it supports interventions in the electricity market to drive decarbonisation, nuclear power has problems with nuclear waste for which there is no robust plan for safe management over the timescales required, along with other risks and impacts, which are unnecessary because there are multiple other pathways to decarbonisation, at similar or lower cost.

FoE argues that the amount of new-build renewables plus nuclear will be limited by the Treasury's Levy Control Framework (LCF). If Hinkley is built, then from 2023 (or later) it will be competing directly with renewable generation for a limited pot of subsidy. DECC's own analysis shows there are multiple routes to decarbonisation, so we could meet the same objectives with more renewables and less nuclear, but DECC's central projection for electricity generation to 2030 assumes a tailing off in growth in renewables after 2020, and a rapid growth in nuclear post 2025. Yet it would be more realistic to assume continued growth in UK renewables capacity on a similar or faster growth trajectory, given the falling costs of the main renewable technologies.

The Hinkley deal will give nuclear power a clear competitive advantage over solar pv in the growing market of providing electricity for motor vehicles, according to Dave Toke, reader in energy politics at Aberdeen University. The combination of declining costs of solar pv and the growth of effectiveness and use of electric vehicles (EVs) will mean that within 15-20 years (maybe even sooner) solar pv, operating by then without any guaranteed premium prices at all, will be attracting large portions of the electricity market. However, the premium prices paid to



Hinkley C under the deal agreed by the UK Government will mean that the prices that can be offered under the 'night time' tariff that will be used to charge EVs will be relatively lower compared to what prices would be without the deal.

It is plausible that by sometime in the 2030s homeowners in energy efficient households with a developing generation of cheap efficient battery systems will not need the grid at all, but a major hurdle in achieving this will be the 35 year premium price contracts (with loan guarantees assuring low interest bank loans) handed out for Hinkley C and whatever other similar contracts our governments decides to grant the nuclear developers. (3)

Andrew Warren of the Association for the Conservation of Energy argues that if any European government is permitted to distort the marketplace so heavily as the UK now is proposing to do, it will create a precedent for every other government to provide special case subsidies for each and every uneconomic pet project. Writing in Lib Dem Voice he says:

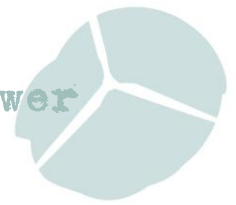
*“The creation of a truly liberalised Single Market has long been one of the key benefits accruing from the EU. It would be a supreme irony were it to be the political party fighting the European elections as very much the “Party of In”, to be the successful champion of a policy that if implemented would so overtly undermine some of the best arguments for continued involvement with the entire European project.”* (4)

Another submissions, from the Nuclear Consulting Group, with more than 100 signatures from MPs from six parties in the UK and European Parliaments, plus engineers, academics and energy experts, says the proposed aid to guarantee nuclear's profitability is incompatible with EU State Aid rules. The NCG says it unfairly discriminates in favour of nuclear and will damage renewable energies with far greater potential. Given that this level of support is unavailable to other low carbon technologies, it is certain to significantly distort competition and strongly affect trade between member states. (5)

The European Renewable Energies Federation (EREF) says State aid to nuclear power plants such as Hinkley Point C would create a threat to competition and trade in the internal energy market. State aid to nuclear energy is not necessary for decarbonisation and cannot help with security of supply. EREF also finds it clear from what has been made available that the measure is neither appropriate, as it would result in a total shield from risk and due to uncertain costs and hidden subsidies would in fact most likely lead to overcompensation. (6)

Separately, Joan Walley MP, who chairs the House of Commons Environmental Audit Committee, has written to the European Competition Commissioner, Joaquin Almunia, about the state aid investigation. (7) She said *“the Government was wrong to insist that Hinkley Point was not being subsidised”*. She has pointed Mr Almunia to a critical committee report published in December to convince him that Hinkley should not go ahead under its current financing arrangement.

She added: *“As our Energy Subsidies report made clear, our own inquiry concluded that the Government's proposed deal for Hinkley Point constituted a subsidy... The Government's policy is to provide no public subsidy for new nuclear.”* The report argued that the strike price would enable EDF to raise capital at a lower cost than under normal circumstances, meaning that it was *“already clear that new nuclear is being subsidised”*. (8)



A report by Scottish and Southern Energy (SSE), in response to Labour's plan to reset the Energy Market says the Hinkley deal will see increased energy bills for the next 35 years – adding "considerable costs" to consumer energy bills for decades to come. (9) (10)

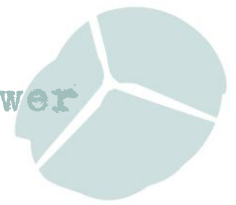
Meanwhile, EDF expects to miss its own deadline for deciding whether or not to build Hinkley Point C. It had been hoping to take the decision in July, but now this has been delayed until the autumn, because it now believes that the ongoing European Commission investigation into whether the subsidies are illegal state aid will not be fully resolved until autumn. The delay could threaten EDF's plans to deliver first power from the plant in 2023 – a timescale it had said was "*subject to a final investment decision by July 2014*". (11)

EDF's chief executive Vincent de Rivaz once said Hinkley Point C would be powering Britons to cook their Christmas dinners in 2017. Yet de Rivaz has shrugged off the embarrassment of repeated delays to the first power date (six years and counting). Indeed, he has continued to set optimistic project milestones in the face of warnings from partners and rivals alike that they will not be met. EDF insisted through much of 2012 that its investment decision would come by the end of the year - raising more than a few eyebrows at partner Centrica. That slipped to early 2013 and then, as Centrica pulled out and subsidy talks dragged on, to the end of 2013. When EDF decided last October to publish a new target of July - leaving itself just nine months to complete the state aid process - it did so despite months of warnings from rivals, such as SSE, that the European Commission deliberations would take at least a year. The deadline-setting may well be a deliberate policy: first, it was to pressure the Government, now to crank up pressure on the EC to act. But it does little to inspire confidence that we won't be safer relying on the gas oven for our turkeys come Christmas 2023. The EC's January verdict made clear that many key details of the contract are simply not yet finalised. "Autumn", in Whitehall terms, stretches at least as far as November. It would be little surprise if, in EDF terms, it may mean next year. (12)

EDF has insisted that the European Union investigation into the strike price for energy at Hinkley C is proceeding to the timetable it envisaged. EDF says it expects a positive outcome to the investigation, whether it comes in the summer or autumn. (13)

Business minister Michael Fallon infuriated renewable energy executives after "inviting" them to lobby Brussels on behalf of the government's deal to underwrite nuclear power with billions of pounds in subsidies. Fallon took the extraordinary step gathering together a group of top executives at a meeting in Westminster to urge them to make supportive submissions to the Brussels consultation. He also sent a letter, seen by *The Sunday Times*, highlighting the national importance of Hinkley. Fallon adds that it is "*dependent on a positive state aid decision from the European Commission*", imploring executives to "*support our case*" by writing to Brussels. One industry source said: "*The renewables industry is somewhere between bemused and appalled ...He is living in cloud-cuckoo-land*". (14)

Just as we go to press it has been revealed that Michael Fallon also sought to block the Scottish Government making a submission to the European Commission. He warned Scottish Energy Minister, Fergus Ewing, that any representation to Brussels on Hinkley would be viewed as a "hostile act". The Scottish Government is understood to be concerned about the project, not least because it could pose competition to renewable exports from north of the Border. Alex



Salmond has now written to Prime Minister David Cameron accusing Mr Fallon to trying to silence Mr Ewing in a February phone call. In a letter seen by The Herald, the First Minister said: "I am deeply concerned to learn that Mr Fallon made clear the purpose of his call was to discourage any direct representation from the Scottish Government to the EC concerning these issues. ... I would invite you to explain exactly what the UK Government would do if we choose to express our views to the Commission. At best, this could be interpreted as an inept attempt to stifle legitimate views from the Scottish Government. At worst, it is a direct threat with implied retribution". (15)

Jonathon Porritt told members of Together Against Sizewell C (TASC) that completely insane economics would kill off EDF's plans for two more reactors at Sizewell in Suffolk. Porritt highlighted the way the current "obsession" with nuclear power deflected attention away from alternative energy sources. "That obsession diverts so much political energy and diverts away from the whole sense of there being alternatives, just at the very time when those alternatives are beginning to look really exciting and absolutely astonishing," he said. (16)

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  2. Dave Toke's Blog 31<sup>st</sup> March 2014 <http://realfeed-intariffs.blogspot.co.uk/2014/03/friends-of-earth-decc-assumes-tailing.html> and FoE 1<sup>st</sup> April 2014 <https://www.foe.co.uk/sites/default/files/downloads/foe-response-eu-state-aid-investigation-nuclear-hinkley-46130.pdf>
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  4. Lib Dem Voice 23<sup>rd</sup> March 2014 <http://www.libdemvoice.org/european-commission-nuclear-power-38777.html>
  5. Climate News Network 7<sup>th</sup> April 2014 <http://www.climateneutralnetwork.net/2014/04/nuclear-subsidy-deal-will-kill-renewables/> and UCL Energy Institute 4<sup>th</sup> April 2014 <http://www.bartlett.ucl.ac.uk/energy/news/european-commission-consultation> See also Ecologist 8<sup>th</sup> April [http://www.theecologist.org/News/news\\_analysis/2347944/hinkley\\_c\\_a\\_nuclear\\_subsidy\\_too\\_far.html](http://www.theecologist.org/News/news_analysis/2347944/hinkley_c_a_nuclear_subsidy_too_far.html)
  6. EREF letter to European Commission 7<sup>th</sup> April 2014
  7. Joan Walley's letter to the Competition Commissioner dated 18<sup>th</sup> March 2014 [http://www.parliament.uk/documents/commons-committees/environmental-audit/0208\\_001.pdf](http://www.parliament.uk/documents/commons-committees/environmental-audit/0208_001.pdf)
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  10. Newsnet Scotland 27<sup>th</sup> March 2014 <http://www.newsnetscotland.com/index.php/scottish-news/8952-nuclear-will-add-considerable-cost-to-energy-bills>
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## 2. Carbon Disconnect

A cross-party think-tank called Carbon Connect has updated its estimate of the overnight costs of Hinkley Point C from £12.4 billion to £14 billion after a response from EDF Energy. (1)

Overnight cost is the cost of a construction project if no interest was incurred during construction, as if the project was completed "overnight." An alternate definition is: the present value cost that would have to be paid as a lump sum up front to completely pay for a construction project.

Carbon Connect had assumed that of the £16bn price tag for Hinkley £1.6bn was for interest accrued on borrowing during the construction period. £2 billion of the £16bn covers all non-construction costs that will have been sunk by the time construction is complete, such as site acquisition, preparatory work for regulatory authorisations and the training of future employees for the plant. But EDF has now said that the £16bn estimate does not include interest during construction.

In light of this revelation, Carbon Connect has updated its analysis revising the estimate of the overnight construction cost of Hinkley Point C from £12.4 billion to around £14 billion (£3875/kilowatt to £4375/kilowatt). (2)

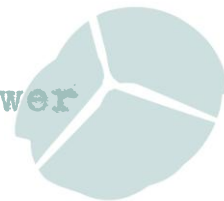
In the original report Carbon Connect said returns for EDF and other investors in Hinkley C will be much higher than for other projects - up to 21% over the lifetime of the project - "substantially higher" than the 12 to 15% typical of private finance initiatives. (3) Carbon Connect, which was chaired by former Conservative energy minister Charles Hendry, said the way in which the Government and EDF struck their preliminary agreement was not transparent. Competition is desirable both for affordability and to provide a more transparent guide as to how revenue support is allocated. (4)

In a statement EDF insisted the assumptions made by Carbon Connect about financing and returns for the project were "*not correct*" and not validated by the company, adding equity investors could achieve returns "*closer to 15 per cent.*" (5)

After EDF's response Carbon Connect appears to be more satisfied that the returns on investment will be more reasonable. In the update to its report it says:

*"EDF has indicated that Carbon Connect underestimated the cost of debt likely to be achievable for Hinkley Point C. We originally estimated that the project could achieve a cost of debt of 4 to 5 per cent - including insurance fees - but now believe it could be nearer 7 to 8 per cent (post-tax nominal). This revised estimate has not been verified by EDF but we believe it is more consistent with equity returns of nearer 15 per cent."*

The original report said it is "*too early to say*" whether Hinkley Point C gives value for money. Carbon Connect called for political consensus on nuclear to make nuclear cheaper, by reducing the risk for investors. Baroness Worthington said: "*At this stage it is impossible to tell which will be the cheapest [source of electricity] in the future so we need an 'all of the above' energy policy, including nuclear power.*" Other recommendations included more urgency in reusing the UK's



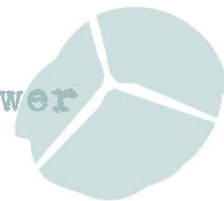
plutonium stockpile, exploring other technologies and fuels, revisiting nuclear waste storage plans. (6)

*“Consensus is vital for pursuing nuclear alongside renewables and carbon capture storage as we transition away from unabated fossil fuels,”* said the report. *“If nuclear is to keep its place in this portfolio of low carbon options however, it must buck the trend of delays and remain competitive.”* (7)

The Carbon Connect report notes that the *“UK strategy is broadly to facilitate deployment of current nuclear technologies up to 2030, whilst supporting reactor and fuel cycle innovations which could unlock new technologies to compete for deployment beyond 2030.”* It says the construction of between 23 GW and 55 GW of nuclear capacity in the UK could help the country *“decarbonize most cheaply.”*

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  4. Telegraph 18th March 2014 <http://www.telegraph.co.uk/finance/newsbysector/energy/10704516/EDFs-Hinkley-Point-returns-substantially-higher-than-other-projects.html>
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### 3. ESPOO

A letter from the United Nations Convention on Environmental Impact Assessment in a Transboundary Context (ESPOO) to the UK Department of Communities & Local Government has accused the UK Government of 'suspicious actions' over plans to develop Hinkley Point C. (1) The letter expresses concern about a lack of consultation with neighbouring countries, including Ireland, over potential risks posed by Hinkley and a failure to notify countries which could potentially be affected by fallout or pollution from Hinkley, regardless of how unlikely an accident is. Under UN and European rules, neighbouring countries must be contacted unless such risks can be ruled out.

The £16 billion nuclear facility would only be 150 miles from the Irish coast if built. The letter says "[t]he committee found that there was a profound suspicion of non-compliance". Vesna Kolar Planinsic, chair of the implementation committee of ESPOO said UK representatives will be called before a hearing in December to explain their actions. The committee said concerns have been raised over Hinkley by the Netherlands, Belgium, Spain and Norway. It found that, bar "informal exchanges" with the Irish Government and contacts with Austria following an official approach, Britain did not inform other neighbouring states of its plans.

Ireland's national trust - An Taisce - lost a judicial review in the UK courts last year over the Hinkley plan. (2) But after a brief hearing in London on 27<sup>th</sup> March, An Taisce was granted leave to take its legal challenge to the Court of Appeal. The case is likely to be heard before the end of the summer. An Taisce argues that the UK government's decision to approve Hinkley Point C nuclear plant (on England's west coast) without first consulting the public in Ireland is contrary to international, EU and English law. The High Court in London found against An Taisce's arguments in December 2013, ruling that there was no need to consult the public in Ireland in the circumstances. But the UN letter provided strong support for the arguments advanced in An Taisce's legal challenge. In light of this letter and An Taisce's arguments, Sullivan LJ concluded that leave to take the case to the Court of Appeal should indeed be granted, overturning an earlier decision on the papers. (3)

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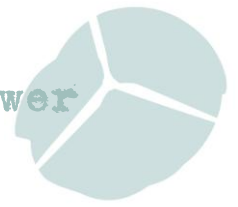
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## 4. Nuclear Security

A new report by Jan Willem Storm van Leeuwen (1) looks at the unique hazards and security issues involving nuclear power. Areas of concern include the terroristic use of nuclear explosives; the proliferation of critical nuclear technology to politically unstable countries and armed conflicts involving nuclear installations and materials or terroristic attacks with conventional weapons on nuclear installations.

Worryingly the report highlights the fact that neptunium-237 and americium can be used to fabricate nuclear explosives, as well as plutonium, highly enriched uranium and uranium-233. A principal concern is that a civilian reprocessing facility or a waste treatment facility in full compliance with its safeguard obligations could extract neptunium or americium that would not be under any international inspections. In essence, a non-weapons state could accumulate significant quantities of separated nuclear explosive materials outside IAEA verification.

Storm van Leeuwen asks: *“Do the benefits of reprocessing outweigh the security and health risks it generates plus the costs of safeguarding the separated dangerous materials? Without reprocessing the only way to acquire fissile bomb material would be enrichment of uranium”*. He concludes that: *“Reprocessing of spent fuel is a superfluous, extremely costly and exceedingly polluting technology, raising severe security problems. These security problems can be avoided by keeping the spent fuel elements from nuclear power stations intact.”*

World leaders from 53 countries - including U.S. President Barack Obama - met in The Hague at the end of March for the third nuclear security summit since 2010. They made clear that many challenges remain and stressed the need for increased international cooperation to make sure that highly-enriched uranium (HEU), plutonium and other radioactive substances do not fall into the wrong hands. (2)

As of late last year, 30 countries had at least 1 kg of HEU in their civilian stocks, including several Western states and others such as Pakistan, Uzbekistan, Kazakhstan and Belarus, and twenty-seven nations still had different types of research and other reactors using HEU, with Russia having the most. (3) Nearly 2,000 metric tons of plutonium and highly enriched uranium are spread across 25 countries. With an amount of plutonium the size of a grapefruit, or enough highly enriched uranium to fit into a five-pound bag of sugar, a terrorist could make a bomb that could level a city. We know that Al Qaeda, groups in the Northern Caucasus and other terrorist organizations have tried to acquire these materials. (4)

Greenpeace pointed out the irony of the fact that the US and Russia with stockpiles of nuclear weapons that could end the existence of mankind many times over are apparently not a threat. The world will never be safe from nuclear terrorism if world leaders are doing everything in their power to keep the nuclear industry alive and expand their markets. If you really want to make sure terrorists don't go nuclear, make sure there is no nuclear to go to. (5) David Lowry says UK ministers do not see their policies as promoting nuclear proliferation, and probably would be vociferous in rejecting this grave charge. But proliferators they are, just as ministers in the predecessor Labour Government were. It is part of the problem that under-informed ministers do not recognise the impact of their promotional policies. (6)



Japan announced at the Conference that it would hand over hundreds of kilograms of weapons-grade plutonium and uranium to the United States for dilution and disposal. Belgium and Italy also announced agreements with the US on the removal of surplus fissile material, as part of a continuing Washington-led effort to reduce global stockpiles and the number of sites around the world where they are stored. Since 2010, when the first of three nuclear security summits was held in Washington, 10 countries have rid themselves completely of plutonium and HEU: Chile, Serbia, Turkey, Austria, Mexico, Sweden, Ukraine, the Czech Republic, Hungary and Vietnam. The deadline was extended with the announcement there would be a fourth summit in Washington in 2016. (7)

More than four decades after the creation of its "safeguards," the International Atomic Energy Agency (IAEA) still cannot confidently detect the removal from fuel facilities of many bombs' worth of fissionable material in time to prevent the manufacture of one or more nuclear weapons. That is the key finding of a new study – "*Can the IAEA Safeguard Fuel-Cycle Facilities?*" published by the Nuclear Proliferation Prevention Project (NPPP), at the University of Texas at Austin, co-authored by the NPPP's coordinator, Alan J. Kuperman, David Sokolow, and Edwin S. Lyman, Senior Scientist in the Global Security Program of the Union of Concerned Scientists.

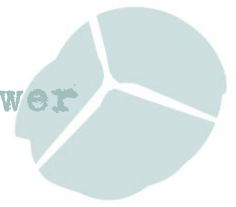
Kuperman urged action: "*If the Nuclear Security Summit is to justify its name and all the resources poured into it, participating countries should agree to freeze expansion of spent-fuel recycling, to avoid creating more reprocessing and MOX fuel facilities that cannot be adequately safeguarded against nuclear proliferation and nuclear terrorism.*" (8)

Thomas Cochran, a Washington-based physicist and nuclear contrarian, who helped kill off reprocessing in the US in the 1970s is worried about Japan's plans to open the Rokkasho Nuclear Fuel Reprocessing Facility, perhaps as early as October this year. The plant will be capable of churning out 96 tons of plutonium metal in the next dozen years, an amount greater than all the stocks that remain in the United States as a legacy of the Cold War's nuclear arms race. Rokkasho would be the fifth-largest such facility in the world, but the only one in a country without nuclear weapons. (9)

Japan has renounced any desire to make nuclear weapons, but Cochran and others worry that by creating a huge plutonium stockpile — and shuttling it all over the country — the utilities there will be creating a tempting, perhaps irresistible, target for nuclear terrorists. Japan has not been immune to terrorism. The Aum Shinrikyo doomsday cult, which carried out the Sarin gas attack on the Tokyo metro in 1995, was obsessed with acquiring nuclear weapons. Investigators reported that the group was prepared to pay as much as \$15 million for a warhead. In 1993, the group bought a sheep ranch in Australia, where 25 cult members tried to mine uranium. (10)

Although Japan is perhaps closest to finishing a new reprocessing plant its ambitions are far from unique. Iran is building a research reactor near the western city of Arak capable of producing enough spent fuel to make about 20 pounds of high-grade plutonium a year — the equivalent of nearly three bombs a year. Tehran says nothing in the Nuclear Non-Proliferation Treaty prevents it from acquiring peaceful nuclear technology, but its plans have provoked widespread Western condemnation and are the focus of continuing international negotiations.

Japan seems happy to let neighbours like China and North Korea believe it is part of the nuclear club, because it has a "bomb in the basement" -- the material and the means to produce nuclear



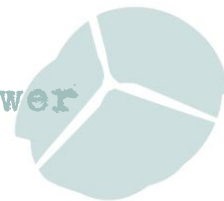
weapons within six months. And with tensions rising in the region, China's belief in the "bomb in the basement" is strong enough that it has demanded Japan get rid of its massive stockpile of plutonium and drop plans to open a new breeder reactor this autumn.

The NPPP's report documents alarming failures of international and domestic nuclear material control and accounting in Japan, France, the UK, and Iran. It also compiles data on all of the world's large-scale civilian nuclear fuel-cycle facilities. The report concludes: *"If the prospect of an undetected diversion or theft of fissile material is unacceptable to the international community, then it is imprudent to permit the construction of additional nuclear fuel-cycle facilities, or expansion of existing ones, especially in states of proliferation concern, unless and until safeguards can be substantially upgraded to meet their explicit detection goals."*

Victor Gilinsky, a former member of the US Nuclear Regulatory Commission, noted in 2009 that *"even so-called arms controllers fall over themselves trying to establish their bona fides by supporting nuclear energy development and devising painless proposals ..."* (11) That mentality was in evidence at the Nuclear Security Summit. Gilinsky advocates a reversal of priorities: *"Security should come first – not as an afterthought. We should support as much nuclear power as is consistent with international security; not as much security as the spread of nuclear power will allow."*

Jim Green has written a longer article on the Nuclear Security Summit in Nuclear Monitor No.782 See here: <http://www.wiseinternational.org/nuclear-monitors>

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1. Nuclear Free Local Authorities 5th March 2014  
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  2. Reuters 17th March 2014 <http://www.reuters.com/article/2014/03/17/us-nuclear-security-summit-idUSBREA2G0SF20140317>
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  4. Wall St Journal 21st March 2014 <http://www.livemint.com/Opinion/jIyHnAsGQX5fLtL9Tv4tIN/Give-nuclear-security-a-chance.html>
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<http://blogs.utexas.edu/nppp/files/2014/03/NPPP-working-paper-2-PR-FINAL.pdf>
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  11. Victor Gilinsky, 27<sup>th</sup> Jan 2009, 'A call to resist the nuclear revival', Bulletin of the Atomic Scientists, <http://thebulletin.org/call-resist-nuclear-revival-0>



## 5. Thorium, Uranium and “Safe” Reactors

There's a modern mythology that suggests that thorium might be able to replace uranium and deliver a safer and cheaper nuclear reactor with more abundant fuel. In March press reports suggested that Chinese scientists have been told to accelerate plans to build the first fully-functioning thorium reactor within ten years, instead of 25 years as originally planned. *The Telegraph* said they “*may do the world a big favour. They may even help to close the era of fossil fuel hegemony.*” (1)

Jan Beránek, leader of Greenpeace International's Energy Campaign says we've heard all this before. Thorium technology is in principal based on nuclear fission and therefore keeps fission's inherent problems. While it partially addresses some of the downsides of current commercial reactors based on uranium (plutonium) fuel, such as limited reserves of uranium and unwanted production of plutonium and transuranic isotopes, it still has significant issues related to fuel mining and fabrication, reactor safety, production of dangerous waste, and the hazards of the proliferation of nuclear weapons. (2)

The Union of Concerned Scientists point out that thorium cannot be used by itself to sustain a nuclear chain reaction: it must be used together with a fissile material such as enriched uranium, uranium-233, or plutonium. The U.S. Department of Energy has concluded after a review that “*the choice between uranium-based fuel and thorium-based fuel is seen basically as one of preference, with no fundamental difference in addressing the nuclear power issues [of waste management, proliferation risk, safety, security, economics, and sustainability].*” (3)

UCS continues some people believe that liquid fluoride thorium reactors, which would use a high-temperature liquid fuel made of molten salt, would be significantly safer than current-generation reactors. However, such reactors have major flaws. There are serious safety issues associated with the retention of fission products in the fuel, and it is not clear these problems can be effectively resolved. Such reactors also present proliferation and nuclear terrorism risks because they involve the continuous separation, or “reprocessing,” of the fuel to remove fission products and to efficiently produce U-233, which is a nuclear weapon-usable material. Moreover, disposal of the used fuel has turned out to be a major challenge.

Even the UK Department of Energy and Climate Change commissioned a report which concluded in 2012 that the claims by thorium proponents who say that the radioactive chemical element makes it impossible to build a bomb from nuclear waste, leaves less hazardous waste than uranium reactors, and that it runs more efficiently, are “*overstated*”. (4)

### SMRs

Now the House of Commons Energy and Climate Change Committee has announced an inquiry into small reactors. It wants submissions by 16th April. (5)

Nuclear reactors that are small and modular—reactors that generate up to about a third the power of the typical commercial reactor—have received positive attention in the US Congress and elsewhere as a possible way of introducing nuclear generating capacity in smaller and more



affordable increments. But small isn't always beautiful says Ed Lyman in a new Union of Concerned Scientists report. (6)

Advocates assert that cost savings would be realised by mass-producing major components as standard modules in factories, and shipping the modules to sites for assembly rather than having each reactor custom-designed and built. Smaller-sized reactors would also have lower construction costs. Supporters also state that designs for small modular reactors (SMRs) would be inherently safer, so they could be located closer to densely populated areas than large reactors, even replacing coal-fired power plants at existing sites. Proponents even claim that certain safety regulations could be relaxed for SMRs.

But the safety of the proposed compact designs is unproven—for instance, most of the designs call for weaker containment structures. And the arguments in favour of lower overall costs for SMRs depend on convincing Nuclear Regulators to relax existing safety regulations.

SMRs will probably require tens of billions of dollars in federal subsidies or government purchase orders, according to the Washington-based Institute for Energy and Environmental Research (IEER). They will create new reliability vulnerabilities, as well as serious concerns in relation to both safety and proliferation, so they are unlikely to breathe new life into the increasingly moribund U.S. nuclear power industry. (7)

The report's author Arjun Makhijani says: "*SMRs are a poor bet to solve nuclear power's problems and we see many troubling ways in which SMRs might actually make the nuclear power industry's current woes even worse. SMRs are being promoted vigorously in the wake of the failure of the much-vaunted nuclear renaissance. But SMRs don't actually reduce financial risk; they increase it, transferring it from the reactor purchaser to the manufacturing supply chain.*" (8)

## PRISM

The U.S. corporation GE Hitachi (GEH) is promoting a reactor design called the PRISM (Power Reactor Innovative Small Modular) that its chief consulting engineer and fast-breeder guru, Eric Loewen, says is a safe and secure way to power the world using yesterday's nuclear waste – he means plutonium which hasn't officially been classified as waste in the UK. The Nuclear Decommissioning Authority has declared PRISM to be a "credible option" for managing the UK's plutonium stockpile. (9)

PRISM is the latest manifestation of much-hyped but non-existent 'integral fast reactors' (IFR). GEH says it offers PRISMs on the world market - but there aren't any takers, so none have been built. (10) It would require converting the plutonium oxide powder at Sellafield into a metal alloy, with uranium and zirconium. This would be a large-scale industrial activity on its own that would create "*a likely large amount of plutonium contaminated salt waste*", according to Adrian Simper of the NDA. Once prepared for the reactor, plutonium metal would be even more vulnerable to theft for making bombs than the plutonium oxide. (11) This view is shared by the Union of Concerned Scientists in the U.S., which argues that plutonium liberated from spent fuel in preparation for recycling "*would be dangerously vulnerable to theft or misuse.*"

Arjun Makhijani says recommending the use of sodium cooled-fast neutron reactors to denature plutonium reveals a technological optimism that is disconnected from the facts. Some of them

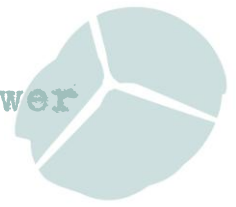


have indeed operated well. But others, including the most recent — Superphénix in France and Monju in Japan — have miserable records. Roughly \$100 billion have been spent worldwide to try and commercialize these reactors —to no avail. Liquid sodium has proven to be a problem coolant. Even small leaks of a type that would cause a mere hiccup in a light-water reactor would result in shutdowns for years in sodium-cooled reactors. That is because sodium burns on contact with air and explodes on contact with water. The PRISM reactor has a secondary cooling loop in which the fluid on one side is sodium; on the other it is water, which turns to steam to drive a turbine. (12)

Nuclear engineer Dave Lochbaum from the Union of Concerned Scientists says: *"The IFR looks good on paper. So good, in fact, that we should leave it on paper. For it only gets ugly in moving from blueprint to backyard."*

See also the No2 Nuclear Power briefing on PRISM reactors <http://www.no2nuclearpower.org.uk/wp/wp-content/uploads/2012/12/PRISM-reactors4.pdf>

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1. Telegraph 19th March 2014 <http://blogs.telegraph.co.uk/finance/ambroseevans-pritchard/100026863/china-going-for-broke-on-thorium-nuclear-power-and-good-luck-to-them/> and Guardian 19th March 2014 <http://www.theguardian.com/world/2014/mar/19/china-uranium-nuclear-plants-smog-thorium>
  2. Greenpeace 24<sup>th</sup> March 2014 <http://www.greenpeace.org/international/en/news/Blogs/nuclear-reaction/the-mythologies-of-thorium-and-uranium/blog/48625/>
  3. Union of Concerned Scientists Statement on Thorium-fueled Reactors [http://www.ucsusa.org/assets/documents/nuclear\\_power/thorium-reactors-statement.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/thorium-reactors-statement.pdf)
  4. Guardian 13<sup>th</sup> September 2012 <http://www.theguardian.com/environment/2012/sep/13/thorium-alternative-nuclear-fuel-overstated>
  5. House of Commons 4th March 2014 <http://www.parliament.uk/business/committees/committees-a-z/commons-select/energy-and-climate-change-committee/inquiries/parliament-2010/small-nuclear-power/>
  6. Union of Concerned Scientists September 2013 [http://www.ucsusa.org/assets/documents/nuclear\\_power/small-isnt-always-beautiful.pdf](http://www.ucsusa.org/assets/documents/nuclear_power/small-isnt-always-beautiful.pdf)
  7. Light Water Designs of Small Modular Reactors: Facts and Analysis by Arjun Makhijani, IEER, September 2013. <http://ieer.org/wp/wp-content/uploads/2013/08/SmallModularReactors.RevisedSept2013.pdf>
  8. IEER News Release 8<sup>th</sup> August 2014 <http://ieer.org/resource/nuclear-power/light-water-designs-of-small-modular-reactors-facts-and-analysis/>
  9. NDA 20<sup>th</sup> January 2014 <http://www.nda.gov.uk/news/pu-management-approach.cfm>
  10. Can PRISM solve the UK's plutonium problem by Jim Green, Ecologist 26<sup>th</sup> Feb 2014 [http://www.theecologist.org/News/news\\_analysis/2297881/can\\_prism\\_solve\\_the\\_uks\\_plutonium\\_problem.html](http://www.theecologist.org/News/news_analysis/2297881/can_prism_solve_the_uks_plutonium_problem.html)
  11. Guardian 30th July 2012 <http://www.guardian.co.uk/environment/2012/jul/30/fast-breederreactorsnuclear-waste-nightmare> Independent 20<sup>th</sup> August 2012 <http://www.independent.co.uk/news/science/untested-nuclear-reactors-may-be-used-to-burn-upplutonium-waste-8061660.html>
  12. Makhijani, A. *Counterpoint: Slow or Fast, Nuclear Fission is Not the Answer*, Yale Environment 360. 30<sup>th</sup> July 2012 [http://e360.yale.edu/counterpoint\\_say\\_no\\_to\\_fast\\_breed\\_nuclear\\_reactors.msp](http://e360.yale.edu/counterpoint_say_no_to_fast_breed_nuclear_reactors.msp)



## 6. Much ado about Russia

Hergen Haye, the head of new nuclear development at the Department of Energy and Climate Change (DECC), told Edinburgh University students in March, that despite the situation in the Crimea, active discussions with Rosatom are ongoing. *"I can tell you that, behind closed doors and with microphones switched off, there are interesting debates happening in Whitehall,"* he said. *"Russia wants to build a nuclear power station in the UK."*

Haye chairs a UK-Russian working group on nuclear power, and was in Russia recently for discussions. Haye regards the Russian VVER reactor proposed for the UK as "perfectly safe", but he cautioned that there would be problems convincing the public that a deal with Russia was acceptable, especially given the current crisis in the Crimea. *"It's a long road, a very long road,"* he said. (1)

Now DECC is reviewing its initial agreement with Russian state-owned nuclear company Rosatom because of the continuing political situation in Ukraine. UK energy minister Michael Fallon signed the initial deal with Rosatom in September 2013, to study the possibilities of agreeing nuclear "commercial co-operation" that would involve Rosatom building and maintaining nuclear power plants in the UK. Rosatom has since agreed to progress its UK nuclear plans in a joint venture with Finnish utility Fortum and UK engineering firm Rolls Royce. But the agreement is now "under consideration in the light of recent developments in Ukraine", according to DECC. (2)

DECC said *"No decisions have been made on how this work will be taken forward, which is under consideration in the light of recent developments in Ukraine."* (3)

Only around 1%-2% of Britain's gas imports currently come from Siberia, while one Russian nuclear power plant would provide perhaps 5% or 6% of the country's electricity needs. (4) But around 30% of the EU's gas comes from Russia and around a third of that goes through the Ukraine - which Russia's gas giant Gazprom is threatening with sanctions. A scenario with a 40% Greenhouse Gas target, a 30% renewables target and 'ambitious energy efficiency policies' could cut net imports by more than half by 2050. (5)

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1. Guardian 11th March 2014 <http://www.theguardian.com/environment/2014/mar/11/russian-nuclear-firm-build-power-station-uk> and Rob Edwards 11th March 2014 <http://www.robedwards.com/2014/03/whitehall-considering-russian-nuclear-deal-says-government-official.html>
  2. Argus Media 24th March 2014 <http://www.argusmedia.com/News/Article?id=895776>
  3. Telegraph 25th March 2014 <http://www.telegraph.co.uk/finance/newsbysector/energy/10722783/Plans-for-Russia-to-build-UK-nuclear-reactors-under-review-after-Ukraine-crisis.html>
  4. Guardian 12<sup>th</sup> March 2013 <http://www.theguardian.com/commentisfree/2014/mar/12/russian-nuclear-power-uk-gas-ukraine-britain>
  5. Energy Desk 4th March 2014 <http://www.greenpeace.org.uk/newsdesk/energy/data/how-can-europe-reduce-its-reliance-russian-gas>





## 7. The Vulcan saga

On 6<sup>th</sup> March Defence Secretary Philip Hammond announced that low levels of radioactivity had been discovered in the cooling waters of the nuclear submarine test reactor – Vulcan – located next to Dounreay in Caithness. Mr Hammond told MPs that no leak had occurred and there were no safety implications for staff working on the site, or risks to the environment. But, as a result, the Trident submarine HMS Vanguard would be refuelled with a new nuclear core at a cost of £120m. The problem was discovered in 2012. (1)

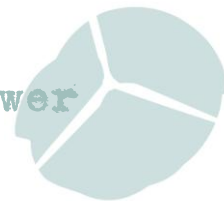
However, despite Hammond's statement to Parliament that there was no leak, the mishap caused a tenfold increase in emissions to the atmosphere. According to the Scottish Environment Protection Agency (SEPA) discharges of radioactive 'noble' gases like argon, krypton and xenon had been boosted by the incident. Official figures show that emissions of the gases to the atmosphere rocketed from 0.19 gigabecquerels of radioactivity in 2011 to 2.16 Gbq in 2012. (2)

Although SEPA was told about the incident in October 2012 the Agency was asked by the MoD to keep the matter secret "*on a strict need-to-know basis for security reasons,*" so the first Scottish Ministers knew about it was when Hammond made his statement to Parliament. *The Sunday Herald* also reported that the Office for Nuclear Regulation (ONR) wasn't informed of the problem at Vulcan until the summer of 2012, months after it happened.

According to Hammond, the incident resulted in the Vulcan reactor being shut down for a period in 2012. But it was of "*no safety significance*", he said, and Vulcan "*is, and remains, a very safe and low risk site.*" But former senior MoD safety official, Fred Dawson, pointed out that the MoD had not yet figured out the cause of the cooling water contamination. "*This being the case I have difficulty in believing their words of reassurance. If the leak is so insignificant and of no safety concern, why is the MoD planning early replacement of submarine reactor cores at great cost to the taxpayer?*" he asked.

Lieutenant commander Rory Stewart, deputy commander of Vulcan, told the Dounreay Stakeholder Group in March 2012 that "*There was little new to report.*" Now we know that Vulcan was shut down for investigations between January and November 2012. (3) Members of the Stakeholder Group were said to be outraged. (4) The Scottish Environment Secretary Richard Lochhead said "*Not only did the Ministry of Defence not inform the people of Scotland, the Scottish Parliament or the Scottish Government of this nuclear-related issue, they actually told the local community there was 'little to report' when clearly there was plenty to report.*" (5)

As a result of this deception Richard Lochhead has announced that the Scottish government is to end the Ministry of Defence's historic protection from regulation and prosecution for radioactive pollution. Under current law SEPA can only regulate plants like Vulcan under a "*flawed gentlemen's agreement*" with the MoD. This means that SEPA has no legal authority within the Vulcan site, and no power to force the MoD to take action if there are concerns. Lochhead argued that the exemption for the MoD under the 1993 Radioactive Substances Act was an anomaly. "*There is no good reason that radioactive substances should be treated any differently from other risks to the environment,*" he said. (6) The Scottish Parliament recently passed the Regulatory Reform (Scotland) Act, introducing a new environmental regulation



regime. *"We want to get rid of anomalies like Crown exemption and treat all those subject to regulation even-handedly,"* said Lochhead. *"We therefore propose to use the forthcoming regulations under the Regulatory Reform Act to leave behind the Crown exemption for MoD sites."*

Crown exemption used to be widespread in areas like environmental protection and health and safety, but has been reduced over the years. In Scotland, it applies to other MoD sites as well as Vulcan, including the Faslane nuclear submarine base and the Coulport nuclear weapons store on the Clyde and the Dundrennan military firing range near Kirkcudbright where depleted uranium shells have been fired. (6)

Defence Secretary Philip Hammond issued a correction in parliament to an answer concerning an incident at the Vulcan submarine reactor test site. Mr Hammond has corrected part of an answer he gave to a question from Labour MP Andrew Miller. The correction changes the line *"there has been no measurable change in the radiation discharge"* to *"no measureable change in the alpha-emitting particulate discharge"*. (7)

At the end of March a group of NGOs wrote to ONR about this incident. In the letter they said: *"The Secretary of State's recent announcement suggests that the security grounds for concealing the incident were flimsy and, as a champion of openness and transparency within the nuclear sector, we would have liked to have seen ONR robustly challenge the MoD claim that discussion of the incident should be on a 'need to know' basis."*

The groups say this matter strengthens the case for the appointment of an independent representative with a mandate from NGOs to the ONR Board with a remit to scrutinise the quality of corporate decision-making and act as a champion for openness, transparency, and accountability at all levels in the organisation.

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1. BBC 6<sup>th</sup> March 2014 <http://www.bbc.co.uk/news/uk-politics-26463923>
  2. Sunday Herald 9th March 2014 <http://www.robedwards.com/2014/03/salmond-accuses-defence-minister-of-deceiving-mps-on-radioactive-pollution.html>
  3. Rob Edwards 10th March 2014 <http://www.robedwards.com/2014/03/vulcangate-the-anatomy-of-deceit.html>
  4. Press and Journal 11th March 2014 <http://www.pressandjournal.co.uk/Article.aspx/3606636>
  5. Herald 11th March 2014 <http://www.heraldscotland.com/news/home-news/snp-ramp-up-pressure-over-cover-up-at-dounreay-plant.23663408>
  6. Rob Edwards 11th March 2014 <http://www.robedwards.com/2014/03/mod-immunity-on-radioactive-pollution-to-end.html>
  7. BBC 12th March 2014 <http://www.bbc.co.uk/news/uk-scotland-highlands-islands-26552046>



## 8. WIPP failure has global implications

When a radioactive waste truck caught on fire inside the Waste Isolation Pilot Plant (WIPP) on February 5, it seemed like it was probably an isolated incident, not the beginning of a saga that could affect U.S. radioactive waste policy permanently and even radwaste policy internationally.

But the truck fire was followed by a still-unexplained offsite radiation release—including plutonium on February 14. That was then followed by a second, for a time unrevealed, and also still-unexplained, radiation release on March 11. It became clear that the WIPP saga will have long-term ramifications, not only for the nuclear weapons radwaste WIPP was built to handle, but also for the far larger and much more radioactive inventory of commercial high-level nuclear waste, not only in America, but around the globe. WIPP is currently closed and will remain so for some time. (1)

WIPP has played a crucial part in the history of nuclear waste proposals in the UK. In 1989, in the run-up to a referendum in Caithness in November of that year on whether or not to allow Nirex to search for a deep disposal site in the County, the Head of Information Services at Dounreay used WIPP as an example of a successful waste disposal site in an article he wrote for the John 'O Groat Journal. In response a letter from the US Radioactive Waste Campaign described the article as “*an outright lie*”. McRoberts had claimed that WIPP was already receiving shipments and that the repository was dry. In fact the repository remained unopened at the time because in 1987 salt-laden water was found to be seeping inside. One State Senator told the New Mexico press that:

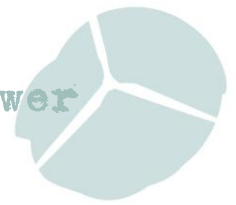
*“We have waste we aren't sure about, stored in containers that haven't been approved, travelling over roads that haven't been improved and being put in salt beds we don't know about. We'd like to put the brakes on before we get to the edge of the cliff.”*

74% of voters in the Caithness referendum voted against Nirex's plans in November 1989. (2)

Given that WIPP, until the recent problems was the only deep geologic disposal facility operating in the world (in Europe, especially Eastern Europe, it is frequently—and incorrectly—described as a “high-level” radioactive waste site by nuclear advocates), the lessons, whatever they turn out to be, from the series of WIPP failures surely will affect other proposed and potential sites for years to come.

Many New Mexicans fought the project, knowing that in the expected 10,000-year life of the project there eventually would be problems. A poll found residents of southern New Mexico oppose the project three to one, but because of considerable encouragement from local businessmen and politicians, the project eventually moved forward. Locals felt their concerns had been ignored, while local and state politicians used the depressed economic conditions in southern New Mexico to push the project forward since it promised jobs. Given that it is a mere 15 years since the site began receiving waste, the concern appears to be justified.

Don Hancock, director of the Nuclear Waste Safety Program at Southwest Research and Information Center, who has been monitoring WIPP since 1975 and is familiar with the



technical, policy, regulatory and legal issues related to the site, is reluctant to state there are any "guaranteed" methods of safely storing radioactive waste.

*"Given that long-lived nuclear wastes are dangerous for thousands of generations, emplacing them deep underground is a possible 'solution,' but it certainly isn't 'guaranteed,' " he said. "Neither WIPP, nor the proposed Yucca Mountain site in Nevada, are 'ideal' and meet publicly accepted standards. Both sites were picked for political, not technical, reasons, so it is not surprising that they are inadequate."*

Hancock believes that what is needed is a decades-long program to develop technical standards for any sites then a comprehensive national effort to identify the "best" sites that might meet the standards, then testing and establishing public "consent" for such sites (including a truck and train transportation system).

He also recommends careful state and national regulatory oversight of development, operation and decontamination and decommissioning of such facilities, and long-term safety procedures to help protect future generations, should nuclear waste operations be continued. (3)

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1. Green World 26th March 2014 <http://safeenergy.org/2014/03/26/the-wipp-story-will-be-a-saga/>
  2. See SCRAM Safe Energy Journal No.72, August September 1989.  
<http://www.no2nuclearpower.org.uk/wp/wp-content/uploads/2014/04/WIPP025.pdf>
  3. Truthout 24<sup>th</sup> March 2014 <http://www.truth-out.org/news/item/22599-radiation-leak-at-new-mexico-nuclear-waste-storage-site-highlights-problems>

See also: Bob Alvarez's article in the Bulletin of Atomic Scientists 23rd March 2014  
<http://thebulletin.org/wipp-problem-and-what-it-means-defense-nuclear-waste-disposal7002>



## 9. Dungeness – inadequate sea defences shut reactors for two months

In December 2012, EDF Energy notified the Office for Nuclear Regulation (ONR) that the primary sea defence at the Dungeness B nuclear power station (a shingle bank) was **not as robust as previously thought**. EDF Energy said it had initiated an investigation into the causes for this discrepancy, which would be reviewed by ONR.

After Fukushima the UK nuclear industry was required to review external flooding studies. In response, EDF Energy commissioned sea flooding studies using modern data and a modern and consistent method for all its sites. For Dungeness B, this analysis indicated higher over topping rates than previously thought (the rate at which sea water comes over the top of the primary sea defence).

On 14 December 2012, EDF Energy advised ONR that it no longer had confidence in this aspect of their safety case and agreed to provide ONR with a justification for continued reactor operation or to place the site into the safest state by 21 December 2012.

On 21 December 2012, EDF Energy provided ONR with a draft justification for continued operation at Dungeness B valid up to 31 January 2013, which ONR has reviewed and considered adequate. This was based on various actions such as shutting down reactors on receipt of a Severe Flood Warning. (1)

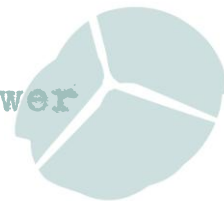
In May 2013 further modelling work indicated that outflanking of the primary sea defence could be a significant contributor to sea water levels on the site - this is where sea flooding to the sides of the primary sea defence in front of the site leads to water on the site. The new work indicated that the local flood protection work already completed needed to be extended and improved to further enhance the protection against sea flooding hazards. Having reviewed all aspects of the new hazard predictions, EDF Energy decided to shut down Reactor 22 whilst a programme of improvements to plant, procedures and training was implemented. Reactor 22 was shut down on 20 May 2013. At that time the other reactor on the site, Reactor 21, was already shut down on a planned refuelling outage. Reactor 22 returned to service under the sea flooding return to service safety case on 14 July 2013, but suffered an automatic trip on 16 July and returned to the grid on 27 July. Reactor 21 returned on 21 July. (2)

Reactor 22 didn't operate particularly well until November 2013, but it is not true to say that the sea defences issue kept it offline for five months as reported in much of the media. (3) The BBC correctly said two months. (4)

The Times reported that Dungeness defended its decision not to be more open about safety concerns by saying that it has a responsibility not to "*scare people in their beds*". EDF, the French company that operates most of Britain's nuclear power stations, was accused by environmental groups of being secretive about a two-month closure last year while its flood defences were being improved. (5)



1. ONR Quarterly Statement of Nuclear Incidents, October to December 2012.  
<http://www.onr.org.uk/quarterly-stat/2012-4.htm>
2. ONR Quarterly Statement of Nuclear Incidents, April to June 2013 <http://www.onr.org.uk/quarterly-stat/2013-2.htm>
3. Independent 18th March 2014 <http://www.independent.co.uk/news/uk/home-news/exclusive-dungeness-nuclear-power-station-quietly-taken-offline-for-five-months-over-fears-of-fukushimastyle-flood-disaster-9200494.html> and Daily Mail 19th March 2014 <http://www.dailymail.co.uk/news/article-2583997/Britains-Fukushima-EDF-accused-playing-flooding-threat-nuclear-plant-quietly-shut-down.html>. See also [http://www.edfenergy.com/about-us/energy-generation/nuclear-generation/nuclear-power-stations/station-reports/dungeness-b/Dungeness\\_monthly\\_report\\_July2013.pdf](http://www.edfenergy.com/about-us/energy-generation/nuclear-generation/nuclear-power-stations/station-reports/dungeness-b/Dungeness_monthly_report_July2013.pdf) and monthly reports for August, September, October and November here: <http://www.edfenergy.com/about-us/energy-generation/nuclear-generation/nuclear-power-stations/dungeness-b.shtml>
4. BBC 19th March 2014 <http://www.bbc.co.uk/news/uk-england-kent-26645490>
5. Times 20th March 2014 <http://www.thetimes.co.uk/tto/environment/article4038727.ece>



## 10. Connecting smart grids to cut the cost of renewables

A new analysis for Greenpeace suggests that it is possible to get 77% of Europe's electricity from renewable sources by 2030; through smart grids, demand management, gas backup and big changes in how our power grid works. The model suggests that by taking a European approach (rather than planning by country) and using a (relatively) new type of power cable the cost of integrating new renewables into the grid can be significantly cut.

The report suggests that by 2030 Europe's grid will be able to absorb a renewable share of 77% (equivalent to a 45% renewable energy target) with some countries, such as Spain, getting all their power from renewable sources. The UK would be on 70%. Around half of Europe's power (53%) would come from wind and solar PV panels rather than other renewable sources. Yet sometimes the wind blows hard and sometimes not at all. The solution to the problem, the report argues, is cables to import or export power between European countries.

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Energy Desk 20th March 2014 <http://www.greenpeace.org.uk/newsdesk/energy/analysis/report-how-can-you-build-lots-renewables-and-keep-lights-without-spending-too-much-money>



## 11. ABWR – Justifying the Unjustifiable

As we reported last month the Government has launched a consultation to seek responses to an application submitted by the Nuclear Industry Association (NIA) for a regulatory justification decision in relation to the Advanced Boiling Water Reactor (ABWR). The consultation runs until 25<sup>th</sup> May 2014 (1)

The Nuclear Free Local Authorities (NFLA) has published a briefing which provides an overview and model response to the consultation. It is available here:

[http://www.nuclearpolicy.info/docs/nuclearmonitor/NFLA\\_New\\_Nuclear\\_Monitor\\_No35.pdf](http://www.nuclearpolicy.info/docs/nuclearmonitor/NFLA_New_Nuclear_Monitor_No35.pdf)

Chair of the UK and Ireland NFLA, Councillor Mark Hackett, writing in *The Ecologist*, says the design is a dismal failure in Japan, costs more than alternatives, and brings serious health hazards. (2)

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1. DECC 18th Feb 2014 <https://www.gov.uk/government/consultations/nuclear-industry-association-application-to-justify-the-advanced-boiling-water-reactor>
  2. Ecologist 4th April 2014 [http://www.theecologist.org/News/news\\_analysis/2343733/nuclear\\_power\\_the\\_hitachi\\_abwr\\_is\\_not\\_justified.html](http://www.theecologist.org/News/news_analysis/2343733/nuclear_power_the_hitachi_abwr_is_not_justified.html)





## 12. Magnox Payday

A joint venture between Babcock and Fluor of the United States has won the 14-year contract to “decommission” Britain’s first generation of nuclear sites, says *The Times*. But rival bidders are considering legal challenges. (1)

The contract will confer ownership of Magnox Ltd and Research Sites Restoration Ltd (RSRL) on the winning bidder. Magnox Ltd is responsible for decommissioning 10 Magnox reactor sites, located in England, Scotland and Wales, which were the first generation of civil nuclear power plants in the UK built during the 1950s and 60s. RSRL is responsible for decommissioning two pioneering nuclear research centres at Harwell and Winfrith. (2)

The bidding process for the contract, which is expected to be worth up to £7 billion, attracted four candidates. Most industry insiders believed that the consortium of Bechtel and EnergySolutions was the front-runner because EnergySolutions was the incumbent in running and winding down the stations. EnergySolutions relies on the Magnox work for most of its income, which observers believe increases the likelihood of a legal challenge. But the inclusion of Bechtel in the bid may have had an impact because of the US company’s poor performance at the Hanford nuclear site in Washington state, where campaigners staged a break-in.

Two other groups of companies were involved in the two-year-long bidding process: Serco, Areva and CH2M Hill, and Amec, Atkins and Rolls-Royce. Amec and Areva may have been hindered by their role in the much-criticised Sellafield clean-up operation.

The formal award of the contract is scheduled for September 1. (3)

What the press has neglected to pick up on amidst all this talk of a £7bn 14yr-contract for Babcock and Fluor is that this will only get the Magnox reactors into a Care and Maintenance phase. The Magnox reactors won't be dismantled for another 50 years after they enter the Care and Maintenance phase (about 2070-80) and that will take about ten years - almost to the end of this century. So we will still be paying to decommission these reactors for a long time yet, even after spending £7bn. (4)

This slow process allows radiation to decay, making demolition easier, but it is also a way of putting off the bill. Stephen Thomas of the University of Greenwich would prefer a speedier clean-up, which might reduce the likelihood of future leaks and also ensure the skills needed to safely dispose of the stations will not decay. He regrets that each year NDA has only enough money to do “*the minimum needed to keep them out of court*”. (5)

- Meanwhile the cost of clearing four decades of nuclear waste at Dounreay has soared by £200m, after major changes were made only two years into a 10-year contract. The engineering firm managing Dounreay, Babcock International, is understood to have warned the Nuclear Decommissioning Authority that it cannot get away with significantly altering the clean-up programme without additional costs. Babcock is believed to have asked for the additional money in what is known as a “change order”, with negotiations set to last through the summer. A Dounreay site spokesman said the “information was as good as it could have been” when the contract was awarded, but



"more enhancements to security" are needed. There are also extra transportation costs in the earlier years of the project, as the fuel on the site is now being transferred to Sellafield. (6)

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1. Times 1st April 2014 <http://www.thetimes.co.uk/tto/business/industries/utilities/article4050415.ece>
  2. NDA Press Release 31<sup>st</sup> March 2014 <http://www.nda.gov.uk/news/magnox-rsrl-preferred-bidder.cfm>
  3. Times 1st April 2014  
<http://www.thetimes.co.uk/tto/business/industries/utilities/article4050415.ece>
  4. See <http://www.magnoxsites.co.uk/what-we-do/our-phases-of-work-overview/cm/>
  5. Economist 5<sup>th</sup> April 2014 <http://www.economist.com/news/britain/21600135-britain-paying-dearly-neglecting-its-nuclear-waste-glowing-review>
  6. Independent 6th April 2014 <http://www.independent.co.uk/news/business/news/cleanup-bill-for-dounreay-nuclear-plant-rises-by-200m-9241180.html>



## 13. Radiation and health – Fukushima

On April 2, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) published its long-awaited report on Fukushima. (1) Of prime importance are its estimates of collective doses to the Japanese population. These estimates appear to be relatively consistent with some independent estimates in Europe.

In terms of the fatal cancers these doses would cause, the new UNSCEAR estimates imply (via the Linear No Threshold theory) that in future about 5,000 people in Japan will die from Fukushima's fallout, if we applied a fatal cancer risk of 10% per Sv. (UNSCEAR and the World Health Organisation (WHO) used to apply a Dose and Dose Rate Effectiveness Factor (DDREF) of 2 to doses at low rates which would have reduced this to 5% per Sv but they don't do this anymore – basically because of increasing epidemiological evidence that they shouldn't)(See Section E.19 (b) of the report)

UNSCEAR rather downplayed the impact of these collective doses. According to *World Nuclear News* the study concluded that the rates of cancer or hereditary diseases were unlikely to show any discernible rise in affected areas because the radiation doses people received were too low. People were promptly evacuated from the vicinity of the nuclear power plant, and later from a neighbouring area where radionuclides had accumulated. This action reduced their radiation exposure by a factor of ten, said UNSCEAR, to levels that were "low or very low." (3)

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1. [http://www.unscear.org/docs/reports/2013/13-85418\\_Report\\_2013\\_Annex\\_A.pdf](http://www.unscear.org/docs/reports/2013/13-85418_Report_2013_Annex_A.pdf)
  2. Ian Fairlie 2nd April 2014 <http://www.ianfairlie.org/news/new-unscear-report-on-fukushima-collective-doses/>
  3. World Nuclear News 2nd April 2014 <http://www.world-nuclear-news.org/RS-UN-reports-on-Fukushima-radiation-0204141.html>



## 14. The Politics of Wind Power

The Tories appear to be heading towards the 2015 General Election with a manifesto commitment to oppose further onshore wind farms. Party Chairman Grant Shapps says he wants to make onshore wind farms a political dividing line between the Conservatives and Liberal Democrats. Conservative Central Office is increasingly confident the issue could help tilt some Tory-Lib Dem marginal seats in the south west, where there is a relatively high concentration of onshore wind farm developments.

The comments follow recent reports that David Cameron is planning to include measures to effectively block onshore wind farm development from 2020. Among the proposals being considered is some form of "cap" on onshore wind farm output that would allow the current pipeline of projects to proceed but would effectively block new developments post-2020. Meanwhile, a new commitment to support offshore wind and solar power would seek to head off accusations that the Tories were abandoning the green agenda. (1)

However, there doesn't seem to have been any consideration given to the cost implications of increased reliance on more expensive offshore wind, nor an acknowledgement that polls have shown around two-thirds of people consistently support onshore wind development. The wind energy industry has slammed the proposed ban on new developments, arguing that it will deal yet another blow to already fragile energy investor confidence.

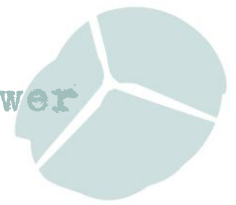
Writing in *The Guardian* Chris Huhne said George Osborne and the Conservatives have made a great play of trying to cut energy bills by axing the green levies that fund exactly the measures – energy-saving and cheap renewables – that will do most to protect households long term. Add to this bizarrely short-termist decision the desire of the Conservatives to put every possible obstacle – planning controls and subsidy cuts – in the way of onshore windfarms and you've got a policy that doesn't add up. You can't have cheaper bills by axing energy saving and pushing for the more expensive renewables instead of the cheaper one. He might, of course, have added that forcing consumers to pay for his expensive nuclear reactors isn't going to help much either. (2)

Earlier in April Deputy Prime Minister Nick Clegg was reported to have vetoed a Conservative proposal to block future onshore wind farms. Supporters say they are the cheapest way to produce clean energy. (3)

Labour's Shadow Minister for Energy and Climate Change, Julie Elliott says with these permanent internal rows, it is sadly no surprise that investment in renewable energy has halved on David Cameron's watch, costing jobs and threatening our energy security. And according to the Environmental Audit Committee, the current level of green investment is running at less than half of the £200bn needed over the next 10 years:

*"...if we properly support our nascent renewable energy industries, we can build a supply chain which supports hundreds of thousands of jobs in manufacturing, and deliver developments which benefit local communities."* (4)

The political risk to the wind industry is getting worse and worse. The attempt to negotiate a cap on the controversial "windmills" comes just weeks before local elections where the Tories



are set to lose many seats to UKIP, which has a vehemently hostile stance against wind farms. Ministers are also seeking to devise popular policies with an eye on the general election of May 2015. (5)

Onshore wind turbines are a significant and fast-growing source of electricity in the UK and are also the cheapest source available for the low-carbon energy needed to meet the country's legally binding carbon targets. David Cameron's reported desire to cap their numbers would mean building more offshore wind turbines or nuclear power stations, both of which are more expensive.

The UK's onshore wind capacity is currently around 7GW – 4,338 turbines. The most recent government "scenario" envisages significant growth in onshore windfarms to 11-13 GW. There are currently just over 3,000 new turbines in construction or with planning approval. If all were built, capacity would reach a total of 13GW. An additional 3,350 turbines (8GW) are in the planning system, although many are likely to be refused permission. (6)

At first glance it seems that the areas with the highest density of wind turbines are not traditional Tory areas. Over half of onshore turbines currently operational in the country are located in Scotland. The area with the second greatest proportion is Wales, where 13.5% of the UK's total is currently in operation. The UK's 4,338 wind turbines generated roughly 5% of the country's electricity in 2013. (7)

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1. Business Green 8th April 2014 <http://www.businessgreen.com/bg/news/2338685/tory-chairman-says-wind-is-moving-towards-anti-wind-farm-manifesto-commitment> and Telegraph 8th April 2014 <http://www.telegraph.co.uk/earth/energy/windpower/10752424/Wind-turbines-are-no-longer-environmentally-friendly-says-Tory-chairman.html>
  2. Guardian 6th April 2014 <http://www.theguardian.com/commentisfree/2014/apr/06/conservative-onshore-wind-green-energy-renewables>
  3. BBC 1st April 2014 <http://www.bbc.co.uk/news/uk-politics-26832380>
  4. Business Green 8th April 2014 <http://www.businessgreen.com/bg/opinion/2338562/tory-lib-dem-wind-farm-wars-are-catching-clean-energy-investors-in-the-cross-fire>
  5. FT 2nd April 2014 <http://www.ft.com/cms/s/0/73be4fca-b9ab-11e3-b74f-00144feabdc0.html>
  6. Guardian 1st April 2014 <http://www.theguardian.com/environment/2014/apr/01/restricting-onshore-windfarms-costly-policy-decision>
  7. Guardian 1st April 2014 <http://www.theguardian.com/news/datablog/2014/apr/01/where-are-the-uks-windfarms>