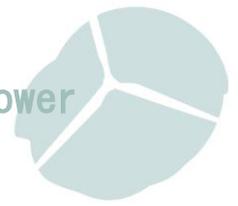


No.107 May 2018

1. Nuclear Subsidies – We Told You So
2. Hinkley grinds onwards through a sea of problems
3. Hunterston B cracking up
4. Radioactive Waste and Deep Geological Disposal
5. Load Following Nuclear



1. Nuclear Subsidies – We Told You So.

Ten years ago Steve Thomas, Professor of Energy Policy at Greenwich University predicted that nuclear companies would eventually insist on receiving subsidies to build new reactors, and the government would be forced to drop its refusal to give subsidies or abandon its nuclear ambitions. Regrettably his prediction has come true. (1)

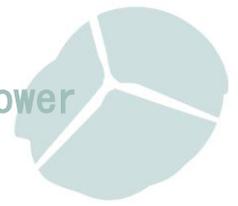
Hitachi Chairman Hiroaki Nakanishi had a face-to-face with Prime Minister Theresa May earlier this month, and according to the Japanese media the UK government has offered to shoulder 2 trillion yen (£13.3 billion) in loans and other means to cover a huge portion of the cost of new reactors at Wylfa. Whether that will be enough to persuade Hitachi to go-ahead remains to be seen. The Company is reported to be planning to decide week ending 19th May according to the Mainichi newspaper. (2)

Horizon was supposed to be submitting its application for Development Consent to the Planning Inspectorate by the end of March, but this has now been delayed until spring or summer. (3) Officially the application has been delayed by concerns over the plant's impact on colonies of protected seabirds. The Company said it needs to thrash out the impact building the power station will have on colonies of sandwich, Arctic and common terns. The species are protected under the EU birds and habitats directive. Nearby Cemlyn nature reserve is home to thousands of sandwich terns, which account for about fifth of the birds' UK population and is the biggest on the country's west coast. Wildlife groups are concerned about the effect of noise and light from the power station's construction, as well as a reduction in food for the birds to forage on. Land clearance for the vast site is also expected to displace potential predators, such as rats and foxes. The company says it hopes to resolve the issues and submit the Development Consent Order (DCO) application before the end of June. The delay is expected to be a bump in the road rather than major headache for Horizon, which, rather optimistically believes Wylfa could be generating electricity by the mid-2020s. (4)

Horizon might be telling the truth about the need to resolve these wildlife issues, but the delay gives the Company more time to lobby the Westminster Government for more financial support to build the reactors.

Hitachi now says it wants to slash its Horizon shareholding. The Chairman was apparently planning to ask Theresa May to take direct stake in Horizon. According to the Nikkei Asian review Hitachi expects the U.K. government to invite private British companies to participate and hopes to reduce its own stake to less than 50%.

Hitachi has recently concluded that the risk of proceeding with the Anglesey project, at an estimated cost of more than 3 trillion yen (£20 billion), is too great to manage on its own as a private company. It plans to withdraw from the project if restructuring negotiations fall through. Such a move would have significant repercussions for nuclear power policy for both Britain and Japan. In response to Hitachi's concerns, the British government earlier this month proposed that U.K. interests and Japanese public and private interests join with Hitachi to move Wylfa forward. The three sets of shareholders would each put 300 billion yen into the project, giving each a one-third stake. According to sources, the company and the Japanese government



see it as too risky for Japanese interests to retain a majority shareholding and hope that British interests will acquire a controlling stake. (5)

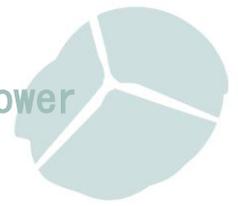
Number 10 remained tight-lipped over its negotiations with Hitachi, and a spokesman declined to comment on the latest talks. Hannah Martin, of Greenpeace, said the “*information blackout*” is “*unjustifiable*” because of the high costs to be paid by energy users to support the projects. “*The public have a right to know what the government is planning to do with their money and why,*” she said. “*Major Western economies are reducing their exposure to nuclear, so why is Britain doing the exact opposite? It would make no sense to waste yet more on expensive and outdated nuclear when technologies such as offshore wind can do the same job faster and cheaper*”. (6)

The *Times* reports that the entire £15bn-plus cost of Wylfa could land on the government’s balance sheet, even though taxpayers are expected to hold only a minority stake. The final deal with Hitachi may see taxpayers take an equity stake in Wylfa, possibly as much as 33%, alongside Hitachi and the Japanese government. Direct state exposure to the construction of a nuclear plant has faced stiff resistance from the Treasury because of fears about cost overruns and the impact on government debt. Industry insiders said a minority taxpayer stake could result in the entire liability landing on the state’s books, despite the Japanese partners, because official statisticians now take a more conservative approach to accounting for risk where the government is concerned. Any state stake in Horizon would be sold on once construction was completed. (7)

The Japanese Mainichi newspaper reported that Hitachi had received an assurance from the British government that it will guarantee loans for the construction of two reactors in Wales. But Hitachi is still pushing for the British government to take a stake in the project and guarantee electricity prices to ensure it is profitable, the Mainichi said. The cost of the Hitachi project in Wales has ballooned to 3 trillion yen (£20 billion) due to the tougher safety measures, the newspaper said. But BEIS said “*We don’t recognise these reports. Nuclear power remains a crucial part of the UK’s energy future but we have always been clear that this must be delivered at the right price for consumers and taxpayers.*” (8)

The *Times* concluded that Britain’s plans to offer financial support for Wylfa were mired in confusion amid conflicting reports of the meeting between the prime minister and Hitachi. Duncan Hawthorne, chief executive of Horizon, told The *Times* last year that loan guarantees would not make the plant viable and the company had been seeking direct government investment as well as a subsidy contract. Mainichi reported that the plant would cost more than £20 billion, making it even more expensive than EDF’s Hinkley Point C project. A Horizon source distanced itself from that figure. (9)

Caroline Lucas says if Theresa May has agreed to a £13.3 billion loan she’s doing it “*without any transparency or scrutiny*”, effectively lending out public money behind closed doors. (10) The SNP demanded the Government rule out public money on “*failing nuclear projects*”. Drew Hendry, their business spokesman, said: “*This is yet another damning report of the UK government’s misguided nuclear obsession. Hinkley Point is already set to cost consumers a fortune because of the appalling strike price deal the UK government made with EDF. The Prime Minister must now categorically rule out any public bail out of this, or any other nuclear project and put an end to secret discussions behind closed doors.*” (11)



Hannah Martin, Head of Energy at Greenpeace UK, said: *“No bank, hedge fund or insurer will touch the UK’s new nuclear programme with a bargepole. So Hitachi has no option but to ask the government for a taxpayer bailout to keep their collapsing reactor programme afloat. This would leave the British public to carry much of the cost and all of the risk. Any prudent investor would laugh at this request. After the Hinkley debacle, it’s vital that the government stops trying to keep our energy policy a secret and presents any offer of a deal to Parliament before the Hitachi board meeting at the end of May. Otherwise it’s difficult to know where their generosity to the nuclear industry might end.”*

Prof Stephen Thomas says Wylfa could provide a new model for UK nuclear projects. The Government needs something to demonstrate that Hinkley is the exception rather than the rule. Wylfa has 3 big advantages – support of the Japanese Government; unlike Areva and Westinghouse Hitachi-GE is not bankrupt and disgraced; and it is claimed that the ABWR is a proven technology. The project is a little bit cheaper than Hinkley but only because it’s smaller. Loan guarantees will be essential, and will reduce interest payable to banks. Hitachi is too small to own and operate a facility that is going to cost £25bn. And they don’t have the experience to operate it. The ABWR is actually quite an old reactor design. There are no other prospects for Hitachi to sell the ABWR. 4 reactors in Japan were completed in 4 to 5 years, but that’s the same for other reactors in Japan. There are 2 uncompleted reactors in Japan; and 2 reactors ordered for Taiwan but work suspended. The lifetime load factor of the 4 reactors has been very poor 47 – 71%. All have suffered long shutdowns. In 3 cases this was down to seismic issues. Two reactors had big turbine problems. Even if you take out those years when the reactors were shut performance was still poor. It’s a pre-Chernobyl; pre 9/11; pre-Fukushima design that we have a track record for. (12)

Steve Thomas’ briefing for Greenpeace on “The failings of the Advanced Boiling Water Reactor (ABWR) proposed for Wylfa Nuclear Power Station” is available here:

<https://www.greenpeace.org.uk/wp-content/uploads/2018/05/ABWR-briefing-final.pdf>

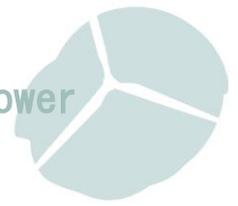
Greenpeace has also published a briefing on “Hitachi’s nuclear safety breaches and the case against public funding for the proposed Wylfa Nuclear Power Station.”

<https://www.greenpeace.org.uk/wp-content/uploads/2018/05/hitachi-briefing-final.pdf>

Moorside

Seeking a Government stake in Horizon has been a key lobbying strategy for Hitachi for well over a year now, but the UK government’s refusal to make even a commitment in principle on that front has many in the UK nuclear industry worried. None more so than those invested in the success of another nuclear developer: NuGen, the company Toshiba hopes to sell to exclusive bidder Korea Electric Power Co. (Kepco). Kepco appears to be losing enthusiasm for the project in the absence of support from the UK government — especially with prospects of a reactor deal in Saudi Arabia. (13)

The state-run Korea Electric Power Corp. (KEPCO) is now saying that it will finalise its purchase of NuGen by September after analyzing its potential profits and viability. Yet in December, when KEPCO was selected as a preferred bidder by Toshiba, the company said it would finalise the deal in early 2018. The Seoul government is involved in the negotiation and is delving into the nuclear project’s profitability and potential risks, while the two companies have been discussing the detailed



terms of contracts. Unlike KEPCO's UAE project, which only involves the construction of nuclear reactors, market watchers say the Moorside project is more risky because KEPCO has to come up with financial solutions for construction and operation. The state-utility firm plans to build two of its APR-1400 reactors on the site, which would have a combined capacity of up to 3 gigawatts. (14)

Back home KEPCO is struggling with snowballing losses because of the South Korean government's plan to shift to renewable energy from nuclear and coal power. (15)

Sizewell

Meanwhile EDF Energy appears to be going through the same process as Hitachi – demanding huge government subsidies to continue with the project and threatening to pull out if it doesn't get them; then denying that it was threatening and starting negotiations with a government obsessed with building new reactors.

EDF Energy told the *Times* at the start of April that it would reconsider plans for Sizewell C if it is unable to agree a viable financing model with the UK government. EDF threatened to abandon work unless it receives assurances from the government this year that a viable funding model exists. Simone Rossi, EDF Energy's UK chief executive, said that rapid progress was needed because promised cost savings would not materialise if there was a significant delay between work on Hinkley and work on Sizewell. Mr Rossi has promised that Sizewell should be a fifth cheaper to build than Hinkley Point because EDF will be able to replicate much of the design work and will have a fully qualified workforce and supply chain ready to transfer across. However, he warned that a delay could jeopardise this. A lull of six months could be surmountable, but two years or more would be a problem. (16)

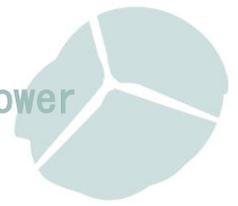
Later EDF denied it had threatened to abandon work on Sizewell C and distanced itself from a report that it may pull the plug on the project unless it receives financial assurances from the Government. (17) Emily Gosden, author of the *Times* story tweeted "*apparently EDF has 'distanced itself' from my story this morning... which reported what its chief executive told me on the record.*"



In May *Le Monde* reported that EDF had launched discussions with the British government to find a new way of financing new reactors in Sizewell. (18)

The GMB called on the government to stop dithering and get Sizewell built. It's an absolute no brainer that Britain will need at least six new nuclear plants, it said, because the National Grid has forecast up to 35 million pure electric vehicles will be on the roads by 2050 needing an extra 30 gigawatts of power — the equivalent of 10 Hinkley Point power stations. (19)

Dr Simon Evans of Carbon Brief tweeted in response: Energy-related press releases from GMB union are a sight to behold. They constantly repeat the same talking points, many of which are misleading or just plain wrong. Also of note: with rare exceptions, the quotes never end up in the papers. GMB union keeps saying National Grid has forecast a need for 30GW of extra power



for EVs. At best, this is hopelessly misleading. We explained why last year, but that hasn't stopped GMB. (See <https://www.carbonbrief.org/factcheck-how-much-power-will-uk-electric-vehicles-need>)



Simon Evans @DrSimEvans · Apr 5

Energy-related press releases from @GMB_union are a sight to behold. Already two today, attached. They constantly repeat the same talking points, many of which are misleading or just plain wrong. Also of note: with rare exceptions, the quotes never end up in the papers.



Simon Evans @DrSimEvans · Apr 5

Case in point: @GMB_union keeps saying @nationalgriduk has forecast a need for 30GW of extra power for EVs.

At best, this is hopelessly misleading. We explained why last year, but that hasn't stopped GMB. Go figure.

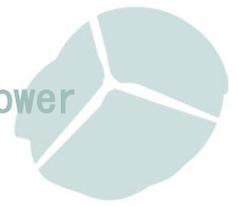
[carbonbrief.org/factcheck-how-...](https://www.carbonbrief.org/factcheck-how-...)

It is worth noting that Framatome (formally Areva NP, which is now owned by EDF, Mitsubishi Heavy Industries (MHI) and Assystem), is working on a 'new model' EPR, the EPR-NM, "*offering the same characteristics*" as the EPR but with simplified construction and significant cost reduction – about 30%. The basic design was 30% complete by March 2016, and EDF has said that it, not the complex EPR being built at Flamanville, would be the model that replaced the French fleet from the late 2020s. (20) EDF has already said it hopes to reduce the costs of Sizewell C by 20-30%. (21)

Since Sizewell C isn't expected to become operational until 2031, with construction starting around 2021, (22) it seems highly unlikely that EDF would try building anything other than an EPR-NM design. The question then is whether the EPR-NM would be required to undertake a new Generic Design Assessment.

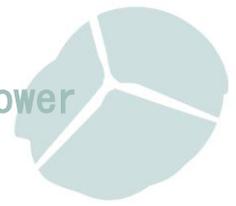
In April Caroline Lucas asked the Secretary of State for Business, Energy and Industrial Strategy, whether the Design Acceptance Certificate for the European Pressurised Reactor (EPR) could be used for a re-designed EPR. Energy Minister, Richard Harrington, replied that a GDA is not a statutory requirement of the nuclear licensing regime and any site specific elements of EPR design will be assessed by the Office for Nuclear Regulation as part of a site specific safety case ahead of any construction. (23) The DAC for the European Pressurised Reactor (EPR) was issued on 13 December 2012 and is valid for a period of ten years. Renewal of the DAC is not mandated. Harrington also noted that ONR expect to complete its assessment of the EPR site-specific safety case for Hinkley Point C in 2018. DAC renewal is not mandated and EDF has not informed Government that it plans to seek a renewal.

It is hard to see how such big cost reductions can be achieved without some dramatic changes sufficient to require a new safety case.

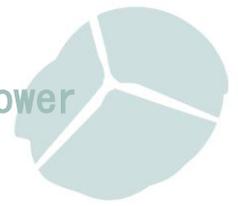


- According to the FT the Labour party is divided over whether to back new nuclear power stations. The high cost of Hinkley has prompted questions across Westminster about whether nuclear still represents value for money. Some MPs favour the industrial benefits of building power stations, while a growing faction wants to support only renewable wind and solar energy programmes. *“It’s like a wasp’s nest, the differences are really bad,”* said one shadow minister. *“The jury is out and personally I’m still not convinced that nuclear should be part of the mix.”* Rebecca Long-Bailey, shadow business secretary, remains adamant that Labour should continue to support Wylfa, as well as Moorside. *“Public investment in nuclear energy would bring huge benefits through the nuclear supply chain and energy security,”* she said. Ms Long-Bailey’s position is also supported by Sue Hayman, shadow environment secretary, whose constituency is in Cumbria. Large unions, including Unite and the GMB, are also strong advocates of nuclear energy. But other senior Labour figures are arguing for a U-turn, unless the cost of new nuclear plants can be reduced sharply. One compromise under consideration could see Labour keep the commitment it made in last year’s manifesto by supporting smaller “modular” reactors. Senior people in the nuclear industry said they remained confident about Labour’s continued support for their projects, because of the strength of union backing. (24)
- For a nice short Q&A on ‘What’s happening with UK’s new nuclear power projects?’ see the Greenpeace Unearthed website:
<https://unearthed.greenpeace.org/2018/05/16/wylfa-hitachi-build-wales-new-nuclear-project/>

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2. Hinkley grinds onwards through a sea of problems

EDF has detected quality deviations on certain welds at its new Flamanville-3 reactor – an EPR – the same type of reactor as the two being built at Hinkley Point. It has informed the French nuclear safety regulator ASN. Possible adjustments to the start-up timetable and costs can only be made after further checks and the licensing process by the ASN.

Flamanville-3 is currently expected to reach full power in Q4 2019 with fuel loading and first hot tests scheduled at the end of 2018. The quality deviations concern the welding of pipes on the main secondary system and are in addition to a deviation with respect to the correct application of “high-quality” requirements of the main secondary system that EDF flagged on February 22 to the ASN.

EDF has decided to carry out additional controls on the 150 welds in question and has ordered a full report into the causes and nature of the deviations. The additional controls and report will be completed by the end of May. The construction cost is currently estimated at £9.2bn. (1)

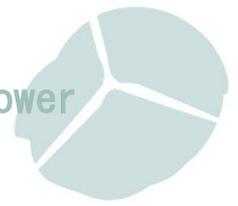
When EDF first reported welding problems on Feb. 22, it initially said there would be no impact on safety, costs or the reactor start-up schedule. However, France’s ASN nuclear regulator warned on Feb. 28 that the substandard welding could well have an impact the start-up. Even before the welding problems emerged, ASN had warned several times the reactor’s construction schedule was tight. *“Following the current checks and the licensing process by the ASN, EDF will be able to specify whether the project requires an adjustment to its timetable and its costs,”* (2)

The welding revelations come just a few short weeks after Britain’s nuclear regulator raised concerns about substandard quality control checks on EDF’s supply chain for Hinkley Point (See nuclear News No.106)

25 years after French engineers began working on the EPR, they have yet to get one running. Flamanville was due to start up in 2012 at a cost of €3.3 billion. EDF now hopes to switch it on next year and says that the reactor will cost €10.5 billion, though these targets could slip further in light of the latest setback.

Flamanville has faced several other setbacks, the most serious of which was the discovery that the reactor vessel was weaker than planned because of an excess carbon content. A raft of quality control failings at the Creusot Forge plant that made the vessel were found, including falsified documents. This triggered the Office for Nuclear Regulation’s decision to review the Hinkley Point supply chain, leading to a critical report last month.

The *Times* said one Flamanville is quite enough: The 1,650 megawatt European pressurised reactor is a mere six years late and three times over budget. And all the more exciting for it being the prototype for an even bigger nuclear disaster: the £20 billion, 3,200MW Hinkley Point C. At least the French nuclear guinea pig is finally on its home run, due to be loaded up with nuclear fuel in the last quarter of this year. Always assuming that EDF can sort out the dodgy welding on the cooling pipes. Anyway, it’s another EDF success story, up there with the carbon spots on the steel for Flamanville’s nuclear dome, the ones that potentially weakened it. Or the lost safety records from its Creusot



Forge supplier. And it does make you think. It's bad enough Theresa May signing us up to the world's most financially radioactive energy project, without monthly reminders of EDF's technical ineptitude. (4)

Hannah Martin, head of energy at Greenpeace UK, said: *"The reactor destined for Hinkley Point was supposed to be cooking turkeys by Christmas 2017. As yet more construction flaws are revealed at its sister plant under construction in France, it's starting to look like the only turkey the EPR reactor design is going to cook is EDF."*

Commenting on the news about defects in welding Stop Hinkley spokesperson Roy Pumfrey said

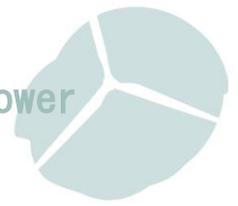
"The European Pressurised Water Reactor (EPR) reactor proposed for Hinkley Point C is like watching a car crash in slow motion. It is the unloved, unwanted, and unbuildable child of former EDF boss Vincent de Rivas. We can still stop this before it gets even worse. Although abandoning this ill-fated project now would incur cancellation costs consumers could still save almost £1.5bn per year for 35 years from 2027 onwards. Flamanville is seven years late, one in Finland is ten years late and even two in China will be at least five years late." (5)

Dave Toke, reader in Energy Policy at Aberdeen University says the welding problems could spell the end for Hinkley C. Treasury backed loan guarantees have been linked to a target date for commissioning of the Flamanville plant of the end of 2020. Yet the current target date of completion by the end of 2019 has been thrown in doubt by the freshly announced problems. According to the analyst Professor Steve Thomas, the rules agreed between the European Commission and the British Government stipulate that until Flamanville 3 was in commercial service, there would be a cap on the guaranteed loans effectively meaning funding would be primarily through equity. It is very difficult to see how EDF could build the plant without the Treasury loan guarantee - something like £17 billion (probably more) would be needed as a loan. EDF just won't have the ability to raise anything like £17 billion on the bond markets. Indeed the decision to go ahead with preliminary works on the site (building a jetty and a cement works) alone, without the loan guarantee being in place, was regarded as so risky that the firm's Finance Officer resigned in protest at the decision. But EDF will not start building the main parts of the power station until it has the necessary finance. (6)

New problems have arisen at the EPR in Finland where TVO is carting out hot tests at Olkiluoto 3. The connection line of the main pipework of the plant, the reactor cooling circuit, vibrates more than allowed. According to the Finnish regulator, STUK, the reason for the vibration is still under investigation. (7)

China has begun loading fuel at its EPR at Taishan - a sign that the long-delayed project could finally be close to completion. Fuel loading could take several months, meaning the reactor could go into full operation and be connected to the grid before the end of the year. China began building the EPR in Taishan in 2009, with the first of two units originally scheduled to be completed in 2013. (8)

Meanwhile, the Irish Parliament's (Oireachtas) Joint Committee on Housing, Planning and Local Government decided to investigate the possible transboundary effects on Ireland of Hinkley Point C. Professor John Sweeney of the National University of Ireland at Maynooth, Professor Stephen



Thomas of Greenwich University and Attracta Uí Bhroin of the Irish Environmental Network were invited to give evidence. The meeting coincided with a recent consultation, organised by the Irish Government and facilitated by Irish Councils, that allowed environmental groups and concerned members of the public to put forward their concerns to the UK Government over the transboundary effects of the proposed Somerset new nuclear site. (9)

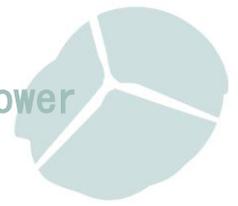
Attracta Uí Bhroin, of the Irish Environmental Network told the Committee that her intention was not to panic people or cause unnecessary concern, but her organisation wants to ensure Irish people's rights are upheld. Although the process for the new nuclear site at Hinkley Point, which is 250km from the coast of Ireland, began five years ago, it was only in 2016 that the news about the plans broke. Hinkley Point C was given the final investment approval by French energy giant EDF, which has a two-thirds share and which is building the plant in conjunction with a Chinese company. Speaking to TDs and senators Uí Broin pointed out that of the eight power plants the UK has planned as part of its energy expansion, *"five are on the west coast of the UK, facing Ireland on the most densely populated east coast"*. Some of these plants are planned in locations closer than Hinkley Point C. The potential economic impact of a nuclear leak or meltdown could be very serious, she explained.

A 2016 ESRI report considered a scenario where there was a nuclear incident, but with no radioactive contamination reaching Ireland. *"Even then they estimated that impact economically could be in the order of €4 billion,"* she said, explaining that an incident such as this would have serious implications for the agrifood and tourism industries in Ireland. In the event of an incident where there is a risk of contamination, she said there are no detailed plans in place to protect Irish people, the water supply, or the country's farm animals and produce.

Uí Bhroin was joined by Professors John Sweeney and Steve Thomas, who outlined some of the specific concerns around safety assessment and treatment of waste. Sweeney was critical of the models used in risk assessments – some older models were used in calculations, for example, despite the fact that more modern ones exist. Thomas spoke about some of the parts of the plant which are being made in France and which French regulatory authorities will not a clear for use in French nuclear plants. Uí Bhroin said there was an *"extraordinary level of frustration, anger and disappointment"* among environmental groups at the government's reaction to these plans. (10)

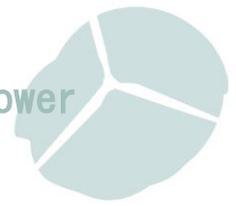
Prof Thomas added that the reputation of both Flamanville and Hinkley's supplier *"is in tatters"* after it emerged in 2015 that parts of the safety-critical reactor vessel supplied to Flamanville did not meet specification, he said. The French nuclear safety regulator, ASN, ordered the company to review its quality control procedures and *"it has emerged that quality control documentation had been falsified at Creusot"* for several decades, he added. In April 2018, EDF Energy also announced that up to 150 welds in key parts of Flamanville did not meet the required specification. Prof Thomas added: *"This has created major concerns about parts manufactured there for nuclear plants in France and elsewhere."* (11)

John Sweeney, emeritus professor of geography at Maynooth University and a climate change expert, told the Oireachtas committee on planning yesterday that estimates used by the UK to assess its impact were not credible. *"Combinations of rare events do occur, as was demonstrated by Fukushima [the nuclear incident in Japan in 2011], where total atmospheric releases are now estimated to be between 5.6 and 8.1 times that of Chernobyl,"* Professor Sweeney said. Meteorological data used was *"inadequate"*, he added, arguing they relied on wind figures for three years when 30 years was the standard period required. *"It's rather dangerous to draw conclusions from a very short period. Three*



years of data, even ten years of data, is insufficient to characterise the wind climate at an individual location, and any modelling based on this is highly suspect.” He claimed the UK government failed to take account of climate change in estimating extreme high and low water levels when the difference between the annual high water mark and a once in a 10,000-years high water level at the site of the plant was just 1.3 metres. The Intergovernmental Panel on Climate Change predicted sea levels would continue to rise for centuries, with increases of up to three metres possible, which meant the UK’s estimates were not credible, he said. He claimed the failure to acknowledge that there was a known flood risk meant there were “serious implications for the safety of spent fuel which is intended to be stored on site for up to a century” (12)

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 5. Stop Hinkley Press Release 11th April 2018 <http://www.stophinkley.org/PressReleases/pr180411.pdf>
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 9. NFLA 30th April 2018 <http://www.nuclearpolicy.info/news/nfla-welcomes-oireachtas-joint-committee-consideration-transboundary-effects-hinkley/>
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3. Hunterston B cracking up

EDF Energy has announced that the Hunterston B Reactor 3 will remain offline until around November this year to ensure that the longer term safety case reflects the findings of recent inspections.

In March 2018, the Office for Nuclear Regulation (ONR) was informed that additional keyway root cracks had been found during recent planned inspections of the graphite bricks that make up the core.

Donald Urquhart, Deputy Chief Nuclear Inspector and Director of ONR's Operating Facilities Division said: *"We welcome the decision by EDF to delay the return to service of Reactor 3 at Hunterston B pending further assessment of the significance of the most recently identified keyway root cracks. I view EDF's decision as responsible, conservative, and made in the best interest of public safety." EDF will require ONR's permission to restart Reactor 3, and we will be assessing the adequacy of EDF's safety case for the longer term operation of the reactor.*" (1)

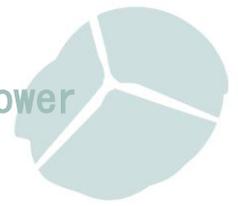
Electricity output from Hunterston B could fall by 40% this year. The BBC said dozens of cracks had been discovered in reactor 3. There were 3 cracks in 2015, now there are 39. EDF said the cracks have been developing at a slightly faster rate than anticipated. But the Station Director insisted the reactor would come back on-line and operate until 2023. (2)

Local communities should be given a say in the future of Hunterston, according to Green MSP Ross Greer. Greer urged the Scottish Government to carry out an Environmental Impact Assessment on the state of the plant. He said: *"This is obviously of major safety and economic concern to the local community. Last year I published a report urging the Scottish Government to review safety conditions at the site following earlier reports of cracks and the repeated granting of lifetime extensions to the plant. The local community currently has no say in decisions to extend a plant's lifetime as an Environmental Impact Assessment with a public consultation is not required. The government must reconsider its position on the need for an Environmental Impact Assessment to accompany decisions on the granting of lifetime extensions to ageing nuclear power stations and commit to a renewed transition plan for North Ayrshire which will prevent the community being left behind, as so many others have been, by the closure of aging power stations."* (3)

No 2 NuclearPower warned that EDF's optimism that the reactor will restart could be misplaced. *"Cracks could prevent control rods from being inserted causing the nuclear fuel to overheat, potentially resulting in a nuclear accident,"* Continuing to operate is *"all a bit of a gamble. Hunterston is already 42 years old – when it was only expected to operate for 30 or 35 years. It is clearly time to say goodbye to reactor three."*

Expert nuclear engineer John Large also suggested that the reactor should be closed down. *"The core at Hunterston may now be in such a poor structural state that its collapse during a relatively modest earthquake could result in a nuclear fuel meltdown and significant radioactive release,"* he said. *"All that EDF can do is permanently shut Hunterston, there being no alternative means to remedy this very serious situation."*

Professor Paul Bowen, a metallurgist from the University of Birmingham who advises the ONR, thought that the body was likely to insist on more frequent inspections rather than reactor



closure. *“I’m absolutely confident that the regulator will take a very conservative position,”* he said. According to Rita Holmes, a local resident who chairs the Hunterston site stakeholder group, people were worried. *“The local communities are unhappy that the reactor has any cracks, and certainly not happy that one with a growing number of cracks could be allowed to continue generation,”* she said. (4)

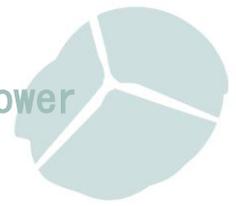
The temporary shutdown of reactor three is expected to burn an estimated £120m hole in the revenues of EDF Energy. Peter Atherton, an analyst at the consultancy Cornwall Insight, said: *“Let’s say worst-case scenario they found a big graphite core problem and Hunterston never comes back on. That would be a big hole in the plan [for electricity supplies]. The gas-fired power stations, we’ve probably got enough of them, but it would be pretty tight. It would also be a knock-back to carbon targets. You could build more windfarms, but that would take time.”*

EDF will not be the only energy company affected by the outage. Deepa Venkateswaran, an analyst at Bernstein bank, said she thought it would also hurt Centrica. Centrica recently said it hoped to sell its 20% share in Britain’s AGRs by 2020. So far, significant cracks have only been found at reactors three and four at Hunterston B. Hinkley Point B, which came online in the same year as Hunterston, is offline to carry out checks for cracks, which will be completed in three to four weeks. *“The one that will be worrying them is Hinkley [Point B],”* said John Large, EDF maintains that the prospect of more old reactors having a sustained outage is highly unlikely, but experts said it would pose a significant challenge to power supplies if they did.

See also: Plant Life-Time Extensions for Scotland’s Ageing Reactors the Lack of Public Participation in the Decision-Making Process, A report for the Green MSPs by Pete Roche, January 2017, <https://greens.scot/sites/default/files/Nuclear%20lifetime%20extensions%20-%20Pete%20Roche.pdf>

Nuclear Plant Life Extensions – the Risk of a Lifetime? NFLA, October 2017
http://www.nuclearpolicy.info/wp/wp-content/uploads/2017/10/A277_NB164_Nuclear_Plant_Life_Extensions.pdf

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4. Radioactive Waste and Deep Geological Disposal

The deadline for responding to the Government's two consultations on a Geological Disposal facility (GDF) has now passed. According to the GDF Watch website there was a lot of discussion around three particular areas: the role of Local Authorities; earlier funding for community engagement; and readiness of RWM to engage with communities. (1)

BEIS produced two FAQ briefings in response to a number of common and recurring questions raised at their regional consultation workshops.

The Working With Communities FAQ sheet is available here:

<http://www.gdfwatch.org.uk/wwc-faqs/>

and the National Policy Statement FAQ sheet can be accessed here.

<http://www.gdfwatch.org.uk/nps-faqs/>

See nuClear News No.105 http://www.no2nuclearpower.org.uk/wp/wp-content/uploads/2018/03/NuClearNews_No105.pdf

and the briefing from NFLA http://www.nuclearpolicy.info/wp/wp-content/uploads/2018/04/Rad_Waste_Brfg_71_UK_Welsh_radwaste_policy.pdf

The Cumbria Trust response is available here:

<https://cumbriatrust.files.wordpress.com/2018/03/final-wwc-consultation-response-document-ii.pdf>

CoRWM consultation responses are also now available: on the draft National Policy Statement on geological disposal infrastructure.

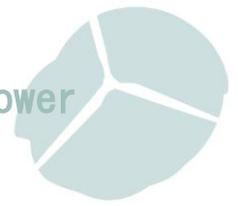
<https://www.gov.uk/government/publications/corwm-consultation-response-to-beis-on-the-draft-national-policy-statement-on-geological-disposal-infrastructure>

on 'Working With Communities: Implementing Geological Disposal'.

<https://www.gov.uk/government/publications/corwm-consultation-response-to-beis-and-daera-on-working-with-communities-implementing-geological-disposal>

on the Welsh Government consultation on 'Geological disposal of radioactive waste: working with communities'. <https://www.gov.uk/government/publications/corwm-response-to-welsh-government-consultation-on-geological-disposal-of-radioactive-waste-working-with-communities>

MPs from both major parties have attacked the government's latest incentive to entice communities into volunteering to host Britain's first deep underground store for nuclear waste as "*completely inadequate*". Ministers have offered up to £1m per community for areas that constructively engage in offering to take part in the scheme, and a further sum of up to £2.5m where deep borehole investigations take place.



Critics say the inducements offered by the government are “simply not good enough”, and point to the example of France, which has a similar amount of nuclear waste. It offers around €30m (£26.5m) a year as local support for districts neighbouring the site at Bure, in north-east France, and has also offered €60m in community projects. “The government’s offer in its consultation is simply not good enough. These communities are being asked to perform an important public service and should be properly recompensed,” said Rebecca Long-Bailey, the shadow business secretary.

Geoff Betsworth, chairman of the Cumbria Trust points out that a 10% dent in tourism in Cumbria “would cost £270m a year. The offer of £1m in community benefits, rising to £2.5m when boreholes begin, is absurdly low.”

The plan was also criticised by the Conservative MP Zac Goldsmith, who said the UK should stop making nuclear waste and stop building new reactors. “We are still pouring untold billions of taxpayer money into propping up an industry that the free market would have killed off years ago,” he said. “In return, we will be compounding the catastrophe of a nuclear waste build-up, which we are no closer to solving than we were when the industry was born.” (2)

Burial under National Parks?

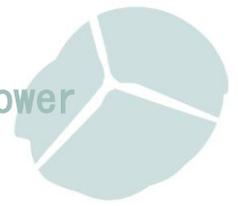
Ministers have also been attacked for refusing to rule out burying nuclear waste under national parks. The government’s response to a question in the House of Lords was branded “absolutely shocking” by Green Party co-leader Caroline Lucas. Labour peer Lord Judd asked ministers to promise national parks, protected areas and areas of outstanding natural beauty will be excluded from the search. But energy minister Lord Henley said he was “not excluding” those areas yet while a National Policy Statement is finalised. He insisted: “Development for a Geological Disposal Facility should only be consented in nationally designated areas in exceptional circumstances and where it would be in the public interest to do so. “Even if such development were consented, the developer would be required to take a number of measures to protect and where possible improve the environment.” (3)

Burial under the seabed

In response to another written question, Lord Henley said a GDF could also be placed under the sea: “The design could allow the underground facilities to extend offshore if accessed from onshore surface sites.” (4)

The former chair of the Cumbria Managing Radioactive Waste Partnership, Tim Knowles, mentions that the idea of looking for a site under the sea off the coast of Cumbria has been discussed. Cumbria Trust says “while we have had expert advice that West Cumbria does not contain an adequate onshore site, we accept that it is possible that a good site may be found further offshore.” (5)

The Trust says: “It is quite possible that an onshore GDF is simply politically undeliverable anywhere in the UK, so the expansion of the offshore search area is to be welcomed. An offshore GDF would need significant surface facilities on land, occupying around one square kilometre. The obvious location for these would be on the Sellafield site, but only if the offshore geology proves suitable, and if the local population agrees. The tunnel to the offshore GDF should begin at Sellafield to avoid the need to package radioactive waste for transportation outside a nuclear site.

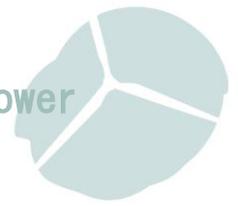


This would also minimise any blight on local businesses, properties and tourism – the waste would remain on the Sellafield site until it was ready to enter the GDF via the tunnel.” (6)

Folkestone & Hythe District Council (FHDC) has asked the Government for more information on its Geological Disposal Facility (GDF). It is apparently considering volunteering Romney Marsh as a site for nuclear waste. This isn't the first time nuclear waste has been up for debate on the marsh, the Department for Energy and Climate Change (DECC) asked councils to come forward as potential sites four years ago, but after some deliberation Shepway council scrapped the plans. Then, councillors voted 21 to 13 against formally expressing interest in the project. The issue had split residents, with 63% of people rejecting it in a survey. (7)

Fears have also been raised Derbyshire, Leicestershire and Nottinghamshire. A sedimentary basin known as the Widmerpool Gulf – which extends across the three East Midland Counties could be a potential site A response to a Government package of incentives designed to get communities to agree to 'host' a storage complex has been discussed by Leicestershire County Council, according to the Leicester Mercury. Any facility would look to bury waste at least 200 metres below ground somewhere in a geological area which stretches from the eastern fringes of Derby across the countryside to the south of Nottingham and on to the west of Melton Mowbray in north Leicestershire. Leicestershire County Council has said there are no specific proposals for a GDF in Leicestershire at this stage but it has asked for further information on the issue from the Department of Business, Energy and Industrial Strategy. A Leicestershire County Council report said: *"Building and operating a GDF is a multi-billion pound, intergenerational, national infrastructure project, which is likely to bring substantial benefits to its host community, with skilled jobs for hundreds of people over many decades."*(8)

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 2. Observer 12th May 2018 <https://www.theguardian.com/environment/2018/may/12/incentive-compensation-nuclear-waste-boreholes-communities>
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5. Load Following Nuclear

European nuclear trade body Foratom is calling for the European Union's energy policy to create the right market and regulatory conditions to allow flexible nuclear power plant operation combined with the use of variable renewable energy sources to ensure security of energy supply while reducing its greenhouse gas emissions.

Foratom says there is a general misconception that nuclear can only provide baseload energy, but they can also be operated flexibly, *"providing a large-scale solution to the need for network stability and flexibility. Analysis shows for a fact that [nuclear power plants and variable renewable energy sources] can be highly complementary if the right framework is adapted."* (1)

Predictable that just when it is becoming increasingly that it is possible to run an energy system entirely on renewables that the nuclear industry should start talking about load following reactors. For instance, researchers from the Karlsruhe Institute of Technology, the South African Council for Scientific and Industrial Research, Lappeenranta University of Technology, Delft University of Technology and Aalborg University have now analysed hundreds of studies from across the scientific literature to demonstrate that there are no roadblocks on the way to a 100% renewable future. (2)

The old argument, as articulated by Tom Greatrex of the Nuclear Industry Association ad infinitum that we *"...need to have...the low-carbon baseload power that nuclear is able to provide, and has provided for many years, is going to continue into the future"* seems to be quietly getting dropped, the closer you get to Germany. (3)

It is also important to remember that according to the EPRs Generic Design Assessment (GDA) submission the EPR reactor has a target availability of 90%. (4) Judging by the operating experience of other reactors this is extremely optimistic. And yet Hinkley Point C still requires a strike price of £92.50. Obviously reducing the load factors of reactors by operating them in a load following mode is going to increase the cost of electricity produced.

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