



Newsletter

December 2014

Hinkley C hovers on the brink - Europe's nuclear giants face meltdown

Ecologist, 25 Nov

Doubts are growing that the Hinkley C nuclear power station, the EU's biggest construction project, will get the final go-ahead from the UK government. And that's leaving the European nuclear industry, already in serious financial difficulties, facing a struggle for survival.

Plans to build two giant nuclear reactors at Hinkley Point in south-west England are being reviewed as French energy companies now seek financial backing from China and Saudi Arabia - while the British government considers whether it has offered vast subsidies for a white elephant.

A long-delayed final decision on whether EDF will build two 1.6GW European Pressurised water Reactors at Hinkley Point was due in the new year, but is likely to drift again.

Construction estimates have already escalated to £25 billion, which is £9 billion more than a year ago, and four times the cost of putting on the London Olympics last year.

Costs escalate. And escalate ...

Two prototypes being built in Olikuoto, Finland, and Flamanville, France, were long ago expected to be finished and operational, but are years late and costs continue to escalate.

Until at least one of these is shown to work as designed, it would seem a gamble to start building more, but neither of them is expected to produce power until 2017.

With Germany phasing nuclear power out altogether and France reducing its dependence on the technology, all the industry's European hopes are on Britain's plans to build 10 new reactors. But British experts, politicians and businessmen have begun to doubt that the new nuclear stations are a viable proposition.

Steve Thomas, professor of energy policy at the University of Greenwich, London, said: "The project is at very serious risk of collapse at the moment. Only four of those reactors have ever been ordered. Two of them are in Europe, and both of those are about three times over budget.

One is about five or six years late and the other is nine years late. Two more are in China and are doing a bit better, but are also running late."

Tom Greatrex, the British Labour party opposition's energy spokesman, called on the National Audit Office to investigate whether the nuclear reactors were value for money for British consumers.

Cold feet in the Treasury as liabilities are set to soar

Finding the vast sums of capital needed to finance the project is proving a problem. Both EDF and its French partner company, Areva, which designed the European Pressurised water Reactor (EPR), have money troubles. Last week, Areva suspended future profit predictions and shares fell by 20%.

Chinese power companies have offered to back the project, but want many of the jobs to go to supply companies back home - something the French are alarmed about because they need to support their own ailing nuclear industry. Saudi Arabia is offering to help too, but this may not go down well in Britain.

On the surface, all is well. Preparation of the site is already under way, with millions being spent on earthworks and new roads. The new reactors would produce 7% of Britain's electricity.

But leaks from civil servants in Whitehall suggest that the government may be getting cold feet about its open-ended guarantees. The industry has a long history of cost overruns and cancellations of projects when millions have already been spent - including an ill-fated plan to build a new nuclear station on the same site 20 years ago.

The Treasury is having a review because of fears that, once this project begins, so much money will have been invested that the government will have to bail it out with billions more of taxpayers' money to finish it - or write off huge sums.

The whole project is based on British concern about its ageing nuclear reactors, which produce close on 20% of the country's electricity.

£37 billion subsidy package approved by EU - but is it legal?

In order to induce EDF to build them, it offered subsidies of £37 billion in guaranteed electricity prices over the 60-year life of the reactors. This would double the existing cost of electricity in the UK.

The European Commission gave permission for this to happen, despite the distortion to the competitive electricity market. But this decision is set to be challenged in the European Court by the Austrian government and renewable energy companies, which will further delay the project.

Since the decision was made to build nuclear power stations, renewable energy has expanded dramatically across Europe and costs have dropped. Nuclear is now more costly than wind and solar power. In Britain alone, small-scale solar output has increased by 26% in the last year.

In theory, there are a number of other nuclear companies - from the US, China, Japan and Russia - keen to build stations of their own design in Britain, but they would want the same price guarantees as EDF for Hinkley Point.

With a general election in the UK looming in May next year, no decisions will be reached on any of these projects any time soon. And a new government might think renewables are a better bet.

Qatar considering investment in Hinkley Point nuclear plant

The Telegraph, 27 Nov

Qatar's energy minister has said the gas-rich Persian Gulf sheikhdom would consider investing in the £25bn Hinkley Point nuclear project in Somerset.

Speaking to The Telegraph, Mohammed bin Saleh Al-Sada said: "We are looking at making further energy investments in Europe and the UK" adding that backing the construction of Britain's first atomic plant in over 25 years was one of the options under review.

News of the potential investment in the project from Qatar comes as the consortium behind the project led by EDF Energy and fellow French state-owned Areva seek additional funding from investors.

Saudi Electric has been identified as one of the parties that may seek to take a 10pc stake in the venture amid difficult negotiations with potential Chinese investors.

IEA Report: Future of Nuclear Energy Industry "Uncertain"

The global nuclear energy industry is facing an increasingly uncertain future according to the International Energy Agency's recent World Energy Outlook 2014 — owing to a number of different coalescing factors.

These factors — economic uncompetitiveness, lack of public confidence, massive subsidy reliance, changing government policy, "financing in liberalized markets," and the approaching closure of old facilities — have resulted in the current flagging state of the industry in Europe and the US, and the aggressive exportation of the industry to India, China, and the Middle East.

The majority of nuclear projects currently under development are in India, Russia, China, and South Korea. While the "poster child" — more or less — of the industry, France, is actually now looking to cut its home nuclear capacity by one-third by 2025. And, of course, Germany is quickly pulling out of nuclear completely. This shift is partly a result of the high (and rising) costs of the technology, and partly environmental concerns/public opinion.

While proponents of nuclear like to argue that it's the only non-fossil-fuel-reliant generation technology that could possibly provide enough power to keep the globalized world going, they almost invariably leave out the facts that the technology is incredibly capital-intensive, reliant on government subsidy (the private market will not finance or insure it), takes long to develop, is water-intensive, and is of course susceptible to catastrophic failure. These issues are largely not shared by nuclear's competitor technologies — solar, wind, geothermal, etc.

What then is the upside to nuclear? If you were an investor choosing between investing in a large solar project that could be built and online within just a few years (or less), that didn't involve the use of materials that constitute a public health danger, that didn't require close access to a major waterway; or a renewable energy project that was none of these things, why would you choose the nuclear option?

Taking these questions into account, it isn't hard to see why the technology is facing an increasingly "uncertain" future — as the IEA put it.

The Hindu provides some interesting comments on that note: <http://www.thehindu.com/opinion/lead/false-promise-of-nuclear-power/article6612000.ece>

False promise of nuclear power: *The need for costly upgrades post-Fukushima and for making the nuclear industry competitive, including by cutting back on generous government subsidies, underscore nuclear power's dimming future.*

Cambridge nuclear engineer casts doubt on whether Hinkley Point EPR nuclear plant can be constructed

October 22, 2014 by Chris Goodall

'The EPR is safe, very safe' said Tony Roulstone at a lecture in Oxford on Tuesday 21st October. But the complexity of the design means it is extraordinarily difficult to build. This type of reactor is, he said, perhaps in an unguarded moment, 'unconstructable'. Roulstone, who runs the Master's programme in nuclear engineering in Cambridge, described the proposed EPR nuclear power station at Hinkley Point as similar in concept to 'a cathedral within a cathedral' which would stretch the ability of any business to build it. With two sets of 6 metre thick concrete walls towering 70 metres above Somerset, the building would survive a direct hit from an airliner but at a very high price in terms of construction timetable and cost.

He went on to say that Areva, the French company that owns the EPR design, is no longer actively selling power stations of this type. In those countries still looking to expand nuclear power, such as Saudi Arabia, China and Turkey, Areva is now pushing an alternative reactor. In China, where several EPRs are currently being constructed, the authorities have indicated that they will not use the design for future power plants. In other words, the Hinkley Point design is already regarded as a failure by those with most knowledge of it. In Finland and in Normandy, where the EPR is already under construction, delays of several years and enormous cost overruns are crippling the projects.

The latest estimates for the cost of Hinkley Point are still rising. The EU recently indicated it thought the total bill might be higher than £24bn, although EdF still says that its figure is about £16bn. Using the lower number, the cost per kilowatt of capacity is almost £5,000. Gas-fired power stations could be built for about an eighth of this price.

EdF, the most experienced operator of nuclear power stations in the world, is expecting to pay about four times as much for Hinkley Point as it did for the last nuclear power stations to be constructed in France fifteen years ago. But larger nuclear plants were supposed to be cheaper to build per unit of generating capacity. This theory, said Roulstone, underlies the political decision to support the EPR in the UK over the course of the last ten years. Actually, he went on to say, unlike any other energy technology in the world, global power station builders are seeing very little benefit from constructing larger nuclear power stations. And, crucially, the cost reductions derived from building multiple power stations of a single type (the so-called 'learning' effect) are turning out to be small or non-existent.

Roulstone mused on why this might be. He said that learning effects are usually observed for goods made in factories. The fact that nuclear power stations are almost entirely constructed on individual sites meant that the expertise gathered in one place are not transferred to the next construction project.

Recent experience, such as at the Finnish EPR construction site, shows that management is particularly difficult when large bands of workers, sometimes speaking different languages, try to work productively together in a relatively small and cramped area. The workforce is unused to the extremely demanding construction quality requirements imposed by the safety engineers.

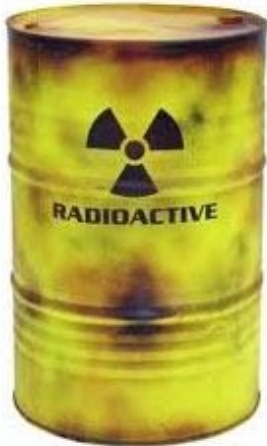
Interestingly, he spoke of building nuclear stations, the largest civil engineering projects in the world as requiring 'craft' skills that are usually associated with tiny factories. And craft learning is extremely difficult to transfer from place. The Chinese are trying to encourage this by transferring workforces from one finished nuclear power station to the next construction project. I suspect this would be much more difficult in the UK.

Much of Tony Roulstone's lecture was about other types of reactor which he thought deserved much greater investigation. Small reactors have been opposed, he suggested, because they contravene the standard wisdom that bigger is always better in nuclear. But a much larger percentage of the plant can be constructed in factories away from the site and therefore might be able to capture the benefits of much greater 'learning' effects. He showed that for relatively small amounts of money – at least by comparison to the big nuclear programme - the UK and other countries could see if cost reductions in small reactors, possibly using thorium, could be attained that might match or beat the price of EPRs or other giant reactors.

This is unlikely to happen. Roulstone said the central assumption of the UK government now appears to be that the country will build about 16 gigawatts of large nuclear plants (providing about 25% of UK electricity) at a cost of around £100bn. EdF will bring in Chinese investors to help finance its share of this expenditure. Chinese companies will then get much of the business constructing other plants that will built after EdF's EPRs at Hinkley and Sizewell. And, he concludes, future plants may be constructed using alternative technologies, including variations of the Westinghouse AP1000. By their actions, Tony Roulstone wrote to me in an email this morning, Chinese companies 'appear to have rejected EPR as a staple of their future build programme'.

Most scenarios, though not all, show the UK needing a large nuclear programme to meet its power and decarbonisation needs. But by focussing on the increasingly unpopular EPR design, the country may have saddled itself with an unmanageable and hugely expensive construction project that will sour the prospects of all other nuclear technologies for another generation. Perhaps those of us who still believe in the value of nuclear power should pray that sceptical investors refuse to commit their funds to the Hinkley project.

Radioactive Waste: The Big, Unresolved Problem of Nuclear Power



Nuclear waste is a world wide problem. There is no disposal site to securely contain radioactive waste.

The nuclear industry in Britain has already produced a pile of hazardous material to be guarded well beyond our lifetimes. Now it wants to make even more, yet no scientific solution to nuclear waste storage is in sight.

What is Radioactive waste?

When spent uranium fuel comes out of a nuclear reactor, it is highly radioactive. On top of this, nearly all aspects of nuclear power are contaminated with radioactivity. If Hinkley C were built, there would be a huge increase in radioactive waste production.

Radioactivity naturally decays over time, so radioactive waste has to be stored in appropriate facilities until it no longer poses a risk to human health. This period depends on the type of waste and the radioactive isotopes present. It can range from a few days for very short-lived isotopes to millions of years for spent nuclear fuel.

What is currently done with radioactive waste?

Each power station has its own nuclear waste dump as there is nowhere safe for the waste to be stored long term, i.e. millions of years. Old reactors send their most radioactive waste to Sellafield, which is running out of space. There it is treated, in a very dangerous process, to extract the weapons material plutonium.

Low level waste goes to Drigg near Sellafield, which is at risk from rising sea-level as it is near the coast. At Sizewell, the most radioactive waste is stored on site, but a new storage facility will have to be built as they are running out of space. At the planned Hinkley C nuclear power station, the waste fuel would also be stored on site. It will have to be kept safe for millions of years and no-one knows how.

Financial Problems

The continually increasing cost of trying to keep the waste safe will be a financial burden on tax payers and consumers forever. No one can predict the final cost. At present, the Nuclear Decommissioning Agency spends £3billion per annum.

The Sellafield site needs to be made safe and this requires huge annual financial investments. Two thirds of the Government's DECC budget is used on the clean-up of nuclear facilities.

Radioactivity and Health Problems

Radioactivity can cause damage to the DNA structures and enzymes in living cells and can lead to cancers and many other ill-health effects. Just standing next to the waste fuel taken out of a reactor would be enough to kill you.

Radioactive releases into the local air and sea from every nuclear power station are routine. Due to licensed emissions from reactors, health issues have developed in the locality of nuclear power stations. In 2008, a German government study reported an increased level of leukaemia and other cancers among children living within 5km of all 16 German reactors.

Since the 1986 accident at Chernobyl in Belarus, life expectancy there has gone down by 20 years. This is due to the multitude of health problems from the nuclear disaster where radioactive releases spread into the environment.

Following the 2011 Fukushima disaster in Japan, radioactive waste water is contaminating the Pacific. We have yet to see the full detrimental health effects from the radiation emissions. Children are already showing changes in their thyroid glands.

Security

Nuclear power stations have to be kept safe from terrorists. The site also has to be secure from earthquakes, tsunamis and flooding as well as aircraft or missile strike. Computer control is vulnerable to cyber terrorism.

Transporting waste around the country from nuclear reactor sites to Sellafield on rail or road poses a serious security issue. The waste passes through densely populated urban areas. It is vulnerable to accidents and is potentially a terrorist target.

The Unsolved Problem

There is no scientific solution to nuclear waste in sight. Not for the legacy waste from the last 60 years of production, nor future waste. The planned reactors would be run at a higher intensity and so the waste problems would be worse. Nobody wants nuclear waste stored in their back yard - and who can blame them! Hinkley C would turn Somerset into a high-level radioactive waste dump.

Stop Hinkley publish leaflets on Rad Waste and other topics, available to download here

<http://www.stophinkley.org/Leaflet.htm>.

*Please print and distribute
or contact us for copies.*

Renewables Talk at Forum 21 meeting

On 20th November Stop Hinkley was invited to Minehead by Forum 21, who promised an exciting speaker for the evening - Howard Johns. <http://www.southernsolar.co.uk/>

For those who don't know, Forum 21 is a sustainability group in West Somerset who work for good ethical and environmental projects and have achieved great success in the area. To see their work and find out more, <http://www.west-somerset-forum21.org.uk/>

Howard started his career protesting against things he didn't agree with (of course he is anti-nuclear, one of his first statements was "globally, nuclear is in decline"). He struggled with the decisions that were being made about our precious world and his frustration at what to do about it. We can all relate to this can't we?! His life path took him to work for good clean energy projects, firstly in his home area and then around the world. Four years ago Howard founded OVESCO, a pioneering local energy co-op project in his home town of Lewes. OVESCO successfully built one of the country's first community owned PV power stations in 2011, installing 100kW on the roof of the local brewery, Harveys.

His energy and passion for the wonder of renewables making a difference to the planet left no doubt for the audience. Despite our governments decisions and the media coverage we are exposed to, other countries are pushing forward with renewable energy. In Africa it is changing their lives, simple solar lights replacing dangerous Kerosene lamps and allowing them to make sustainable choices. Examples of where people have got together and decided, on a local basis, to choose renewable energy, locally made and distributed, and so shut the door to large corporate energy companies dictating what profit they require the consumer to pay, showed the possibilities.

Countries that are already generating 100% renewable energy, are models we can all follow. Those countries that are closing down nuclear and moving to renewables are finding so many other benefits, in boosting local economies. The speed of this renewable revolution is very fast, the research and technology is improving all the time and so making decisions to preserve rather than destroy our environment.

The presentation of the solar revolution by Howard Johns was so inspiring we all left the evening feeling totally energised *in a hugely sustainable way* by his story.

His forthcoming book sounds equally inspiring, so watch this space.....

Press Activity

In October two Italian journalists spent four days working with SH members on a documentary about Hinkley C. Many thanks to Roy Pumfrey Suki Lilienthal, Jo Smoldon, Allan Jeffery & Sue Aubrey for looking after them.

As Italy has closed all its nuclear power stations, they were intrigued that the UK is planning to go ahead with several new stations. SH members shared their insights with Luca Manes, a journalist, and Luigi, the cameraman. They were shown around the area, including a walk around all the Hinkley nuclear sites, A, B & C.

They met Dr Richard Lawson in Bridgwater who discussed health issues surrounding the nuclear power stations and Allan Jeffery explained alternative projects to them, especially the Swansea Bay tidal lagoon. They also went to Keith Barnham's talk on Solar Energy [there is a separate report about this] as well as a Parish Council meeting to see how one of the councils nearest to HP operates.

Luca had tried to arrange a meeting with EdeF before leaving Rome, but the London office declined. Roy tried to get David Eccles to meet them but EdeF appear reluctant to engage with media other than UK terrestrial TV and print.

Subsequently, Luca has produced an article for an Italian Journal, Pagina 99.

Allan and Roy also spent several hours with reporters from Russia Today, explaining issues around Hinkley C, showing them the site of the new bypass at Cannington and giving them a guided tour of the area around the existing stations at Hinkley Point. This resulted in a short piece on their new satellite channel.

Centraal Radio, Antwerp interviewed Roy (in English) on issues around HPC following the EU Commission's decision to approve the DECC arrangements with EdeF for subsidising construction of HPC.



Stop Hinkley member, **Theo Simon** of folk band Seize the Day, has been chosen as Frome and Somerton Green Party candidate for the 2015 parliamentary elections.

Theo may be known to you as one of our press spokesmen. He was born and grew up in Somerset and now lives in East Pennard.

Solar Alternative to Hinkley C

Report by Allan Jeffery

In October, Keith Barnham (Emeritus Professor of Physics at Imperial College London) gave a fascinating illustrated talk on the "Solar Alternative to Hinkley C" at Victoria Park Community centre in Bridgwater. This public meeting was organised by the local Green Party and Stop Hinkley members.

Keith explained how the rapid advancement in solar and other renewable technologies such as wind, tidal and biomass could produce low carbon energy much quicker and more cheaply than nuclear power stations like Hinkley C. Using the rapid exponential expansion of solar energy in Germany over the last 7 years, he showed how, though only being 3% of Germany's total energy, the availability of this solar energy at **peak demand times** was rapidly lowering the peak wholesale cost of electricity and that solar and wind were complimentary to each other.

The future for solar cell technology, for improving efficiency and lowering costs, is potentially great as it is based on the same chip, semi-conductor technology that has rapidly given us the flat screen TV's and mobile phones.

Keith believes that the continually rising costs of the Hinkley EPR nuclear reactors, along with not having a working prototype of this reactor anywhere in the world, will make it very difficult to obtain investors. There is likely to be legal challenges to the present deal between the UK government and EDF by the renewable industry.

With this uncertainty, Keith calls for us to put an alternative PLAN B to EDF and the government through the DECC, which should include a modified Atlantic Array offshore wind farm, along with Tidal energy lagoons as well as encouragement of Biomass methane from animal, food and crop wastes. The Hinkley site could be a huge reservoir to act as an energy storage system and government financial support for the renewable technologies such as solar should only be reduced gradually, allowing them to develop to self-sustaining maturity.

The audience then were keen to ask many questions and participate in the energy debate. We all left with a positive feeling for our energy future.

Keith's recently published book, The Burning Answer, is a mine of information on energy. It has readable sections covering the history of the science of changing developments in energy use, along with the politics of using fossil fuels, nuclear and renewables. It is also a manifesto to the solar power and renewables and a call to action for a sustainable and safe energy future.

Green gathering at Bridgwater Station Saturday 22nd November.

Report by Jo Smoldon

Stop Hinkley had a surprise visit from Julie Harvey-Smith, the Green Party's nominated candidate for the area. Julie met local campaigners and helped spread the message of all the problems with Hinkley nuclear waste.



We based ourselves on the green outside the station with a high visual impact display to road and rail. We were so lucky, the heavy rain that started in the morning cleared to sunshine, so passers-by were happy to stop and chat about why we were there. Local young parents expressed their concern on hearing the radioactive waste is transferred at the railhead next to the primary school, close to where their children leave the nursery school.

Later in the afternoon Julie visited the railhead to see for herself the proximity to the school and dense residential housing.

In the evening we celebrated with Julie Harvey-Smith at the vote count as she was elected as the Green Party Candidate for the Bridgwater and West Somerset constituency in the forthcoming General Election in May 2015.

Events

Stop Hinkley meetings
Mondays 19 Jan & 16 Feb at 7pm
West Bow House, Milton Place
Off West Street, Bridgwater

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