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1. Hinkley Point C: expensive and risky

To no one's great surprise, following a "full review" carried out over several months, it has been announced that the cost of Hinkley Point C (HPC) has increased, yet again, and there is a possibility of another 15 month delay. The cost could now reach £20.3bn (£19.6bn if there is no delay) – up from the £18bn quoted last year and the £16bn figure set in 2015. EDF says £1.5bn of the increase is due to a "*better understanding*" of the construction work needed and UK regulatory requirements. The French energy group is still hoping to complete the project by the end of 2025 but further delays could stretch this to 2027. In 2007, Vincent De Rivaz, EDF Energy Chief Executive predicted that by Christmas in 2017, turkeys would be cooked using atomic power from new reactors at Hinkley.

Nick Butler in the FT (1) said "*£1.5bn is an awful lot of better understanding*", particularly when the project has been in preparation for the last eight years. Prime Minister Theresa May's review of the project last year confirmed that the cost of any overruns or delays would fall on the company rather than on the UK taxpayer or consumer. As a result, EDF's margin on Hinkley will fall from 9% to 8.2%, but the company's shareholders must be wondering how many more cost increases and delays there will be if the project goes ahead. However, Britain's deal with EDF could lead to requests for more cash. According to the National Audit Office (NAO) there is a risk the project will need further financial support: "*The UK government could come under pressure to provide more support or take on additional risk, particularly given (Hinkley's) potential importance for ensuring energy security,*" it said. (2)

Nothing in EDF's statement seems to take account of any consequences from Brexit or from rising inflation. The continuing failures and setbacks afflicting the EPR raise serious questions for energy policy in the UK and France. The prospect of 16 -18GW of new nuclear by the mid 2030s now looks unattainable. In France, the fleet of old reactors that will need replacement over the next 25 years is on an even bigger scale. But, given the cloud of doubt over the viability and cost of the EPR, what technology can fill the gap? The simplest answer would be for the French and UK governments to abandon Hinkley before any more money is wasted. (3)

EDF blamed changes made to the design of the EPR (control, ventilation, etc.) required by the British nuclear safety authority and the revision of the "*volume and sequencing of work on site*" According to the French newspaper, Les Echos, this explanation doesn't hold water. It was already known at the time of the investment decision that ONR had requested changes to the ventilation system for instance. (4) And another French newspaper, La Croix, said EDF's Board discussed at the beginning of 2016 a paper by Yannick Escatha, the former Atomic Energy Commission (CEA) boss, who was particularly concerned about the many changes requested by ONR. (5) It is therefore questionable whether the margins foreseen at the time of signing the contract were accurate. Similarly, the new cost estimate includes savings and optimizations made on the project, but these are not yet guaranteed and haven't even been identified. La Croix also quotes an internal source who refers to poor relations between the French and British teams of EDF.

The additional cost is expected to be shared pro rata between EDF, which finances 66.5% of the project, and its partner China General Nuclear Power Corporation (CGN), which finances one

third. The French Minister of Economy Bruno Le Maire has asked EDF's CEO, Jean-Bernard Lévy, to submit a "*rigorous action plan*" to him by the end of July to ensure control of the project. This plan should make it possible to "*reinforce the timetable*" and "*to reduce as far as possible the financial impact of this reassessment and to ensure a rigorous control of the risks of the project*". He also wants the "*precise causes of this re-evaluation*" as well as "*the risk factors and the content of the review of the project*" to be "analyzed" by EDF's board of directors. (6)

According to Le Monde the extra 15 month delay is inevitable because the UK EPRs are different from Flamanville, and British industry has not built a reactor for twenty years. (7)

According to Mediapart the UK EPR will become extremely complex for two reasons: firstly because the Flamanville site has revealed many design errors that have had to be remedied, and secondly because of the changes requested by ONR. In other words the UK EPR model will be a new complex hybrid - a new prototype. It is not a question of applying cost-saving methods in the light of lessons learned from Olkiluoto and Flamanville. EDF employees are increasingly concerned because lessons from past experiences do not seem to have been learnt. The Escatha Report advocated including a total reorganization of the EDF and Areva teams, to better control the project. But nothing has been done. (8)

In June, the National Audit Office (NAO) said the HPC project had locked generations of British consumers into a "*risky and expensive*" deal. It said the government had "*increasingly emphasised Hinkley Point C's unquantified strategic benefits, but it has little control over these and no plan yet in place to realise them*". (9)

The NAO said HPC would provide "*uncertain strategic and economic benefits*" and Brexit could make the situation even worse, by triggering taxpayer compensation for EDF or a more generous deal for the French state-controlled company. The watchdog condemned the past two governments for failing to look at alternative ways of financing the power station, such as taking a stake in the construction. Taking a stake would have posed its own risks but could have reduced the total project cost according to NAO. If the government had taken a 50% equity stake in the construction it could have almost halved the guaranteed power price to as low as £48.50 per megawatt hour, according to the NAO.

The NAO was also critical of ministers' decision to negotiate bilaterally with EDF, rather than waiting for other new-build nuclear consortia to compete. Delays to Hinkley and falling wholesale prices, caused by a two-year oil price slump, meant the total costs to consumers for the 35-year deal ballooned from £6bn in 2013 to £30bn now. (10)

Nils Pratley, writing in *The Guardian* says NAO does not use excitable phrases like "*utter shambles*." But the spending watchdog's verdict on HPC amounts to the same thing. The government "*has locked consumers into a risky and expensive project with uncertain strategic and economic benefits*". The 80-page report confirms one's worst fears about how ministers fell in love with Hinkley. First, they wedded themselves to an inflexible financial model. Then they agreed commercial terms with developer EDF in 2013, when energy prices were sky-high, and ploughed on regardless when the economic case for Hinkley started to crumble. The document tells a depressing tale of inadequate scrutiny and successive governments ignoring the energy revolution taking place beyond their spreadsheets. (11)

Ross Clark in the Spectator argued that HPC demonstrates how far the privatisation of utilities has fallen short of creating free markets. There is no involvement in markets in the decision to go for HPC. It wasn't consumers who decided to buy nuclear energy; the government made the decision on their behalf, and committed them to this expensive option for 35 years. Moreover, the government itself didn't even use the market to select a firm to construct the power station – it simply opted for the first potential supplier which came into its head, which happens to be another country's state-owned electricity company. It is rather as if, rather than having a choice of whether to go the Tesco, Sainsbury's or Waitrose, the government had decided on our behalf that we will all have to eat food bought in bulk purchase from state farms in Kazakhstan. At the same time, Theresa May is telling us that the market in consumer electricity prices hasn't worked and that she will have to cap the costs. Unless the government can demonstrate that there is some kind of advantage from privatisation of utilities, the stronger public support will grow for the Corbyn option of renationalising them. (12)

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2. Hinkley Plan B is already happening

With Hinkley Point C (HPC) already behind schedule a Plan B is urgently required says James Murray writing on the *Business Green* website. Luckily the government's imminent Clean Growth Plan provides the perfect opportunity to deliver one.

The Department for Business, Energy and Industrial Strategy (BEIS) has now confirmed that it expects renewable power deployment to be significantly higher than previously thought after 2020, primarily due to the plummeting cost and surging popularity of solar power and storage technologies. BEIS' projections now expect cumulative new build renewables capacity from 2016 to 2035 to reach 45GW, marking a sharp increase in the 2015 projection for 33GW of new capacity. The energy supply gap expected from HPC delays is already narrower than feared just a few months ago. And later this autumn the results of the government's latest clean power contract auction for offshore wind projects is expected to be extremely competitive, promising to deliver offshore wind at a price well below the guaranteed rates being offered to HPC. (1)

The falling cost of offshore wind power could mean that it turns out to be 25% cheaper than energy from HPC. Developers behind a series of proposed offshore wind farms are vying to secure government contracts that will guarantee a price for the electricity they generate for 15 years. Dermot Nolan, chief executive of Ofgem, said he hoped the winning projects would emerge at a price of "£70 or less" per megawatt-hour (MWh). That would compare with £92.50/MWh that was last year awarded to Hinkley Point for a 35-year contract. Just a few years ago offshore wind was one of the most expensive technologies in the market. In 2014 the government awarded some projects a price of £150/MWh. Technological advances, including bigger, more efficient turbines, economies of scale in manufacturing and the introduction of a competitive "reverse auction" process to award subsidies to the cheapest projects have helped to bring costs down rapidly. (2)

Solar power, once so costly it only made economic sense in spaceships, is becoming so cheap that it will push coal and even natural-gas plants out of business faster than previously forecast according to the Bloomberg New Energy Finance (BNEF) outlook. The research group estimated solar already rivals the cost of new coal power plants in Germany and the U.S. and by 2021 will do so in quick-growing markets such as China and India. Green energy is taking root more quickly than most experts anticipate which means fossil fuels may decline after 2026 - a contrast with the International Energy Agency's central forecast, which sees consumption rising steadily for decades to come. Electricity from photovoltaics costs almost a quarter of what it did in 2009 and is likely to fall another 66% by 2040. Onshore wind, which has dropped 30% in price in the past eight years, will fall another 47% by 2040. (3)

Here's another key conclusion from BNEF: "*Gas is a transition fuel, but not in the way most people think*." Other than in the Americas, where cheap gas is plentiful, gas plants won't act as a replacement for "baseload coal," but will "*increasingly act as one of the flexible technologies needed to help meet peaks and provide system stability in an age of rising renewable generation*." (4)

Last autumn, Michael Grubb, Professor of International Energy and Climate Change Policy at University College London, told the House of Lords Selected Committee on Economic that, although he had supported new nuclear during his time on the Committee on Climate Change, he felt "*times and conditions had substantially changed … renewables are now clearly cheaper. Committing to a 35-year contract at that level was economically inappropriate*" (5)

He continued: "renewable energy costs … appear almost to have halved in the past few years … We now have more than 10 gigawatts of solar, when the cost projections were that we would get 1.5 gigawatts by about this time … It is now clear that in the electricity sector we will be delivering more renewables than the Government planned for or expected by 2020." (6)

On 4th July, former Energy Minister, now chairman of the pro-nuclear industry group New Nuclear Watch Europe, Tim Yeo, told the BBC's *World Tonight* that the last 5 years of renewables contracts were more expensive than the HPC strike price. But this is a totally false comparison. We should be looking at the expected price of renewables contracts at the time of HPC's completion in 2025-2030, which may well be a low guaranteed price probably at or less than average wholesale power price (AWPP), and only for 15-20 years, not 35 as for HPC. The effect of these cheap renewables will be to depress AWPP to new lows, in turn massively increasing the cost to energy users of the index-linked £92.50 HPC price at a time when AWPP may well be a quarter or less of the HPC price. (7)

Renewables vs Nuclear – the fight for market share

The electricity system has changed radically in the years since the project to build new third-generation nuclear in Britain was initiated, says Michael Grubb in a paper he wrote with Andrew ZP Smith, Deputy Director & Academic Head of the RCUK Centre for Energy Epidemiology. National Grid's (NG) Future Energy Scenarios (2016) show a steadily declining need for 'baseload' generation. By 2030 there will be growing periods when wind and solar meet all projected demand. The capacity of 'firm' inputs (like gas, nuclear, biomass, interconnectors, storage etc) required to operate more than half the year is reduced to 20GW overall. (8) On June 17th Tom Burke told the CND "No Need for Nuclear" Conference that renewables could soon be producing enough electricity to power the grid from April to October. (9) The implication is that for most of its contracted operating life (which will run out to c.2060), HPC would increasingly be competing with other, lower cost low-carbon sources.

For efficient system operation either HPC would have increasingly to 'load follow', adjusting its output up and down to follow changes in demand, or alternately, baseload nuclear would displace other and cheaper sources, for example forcing wind and solar off the grid, if it cannot operate flexibly, or if the £92.50/MWh (indexed) contract is allowed to determine its operation (the plant with biggest payment has most incentive to run). By 2030, around 20GW of capacity is required for less than 10% of year, to cover peak net demand, for which nuclear power is manifestly unsuitable. The dominant need in the majority of National Grid scenarios post 2030 will be for adequate responsive capacity displacing coal and gas, and more efficient approaches to balancing demand and supply. (10)

Michael Grubb told the House of Lords: "If you are worried about how to provide power during winter periods when there is a cold dark windless night, you do not want to build a spanking

new plant designed to run 100% of the time; you build something that is cheap to construct and expensive to run." (11)

Mind the Gap?

Andrew Warren, chairman of the British Energy Efficiency Federation argues that when the UK government first endorsed Hinkley Point C, (HPC) it was projecting an increase in electricity consumption of 15% by now, whereas in practice we are consuming 15% less than a decade ago. In other words it made a 30 % error. This is despite a 13% increase in GDP over the last decade and the increase in the number of gadgets we all own. HPC is only due to deliver 7% of consumption. So we don't need to keep arguing for new power stations to replace the gap left by HPC – there isn't one. (12)

This consumption revolution has been prompted by vastly improved electricity efficiency in industry, in consumer white and brown goods, and in areas like lighting, where household consumption has dropped from 20.7 terrawatt hours (TWh) in 2007 to 14.2TWh this year. In 1990 when Compact Fluorescent Lightbulbs (CFLs) were scarce in UK homes 26.6TWh of electricity were consumed in UK domestic properties for lighting.

The average household is spending £87.36 per year on lighting, but if consumption levels had remained at 1990 levels that figure would have been £164 per year. This trend is set to continue. By 2025 LEDs will probably have replaced most CFLs and incandescent light bulbs, and LEDs themselves are becoming more efficient. Consumption is expected to fall a total of 89% compared to the year 2000, and annual expenditure will fall to just £16. (13)

A crash programme to replace all the lights in the UK with LEDs could cut peak electricity demand by about 8GW, a saving of another 15% of all power consumption. LEDs produce less waste heat and so can sometimes cut the need for air conditioning in places such as hotels and large office buildings. Even a much more restricted national campaign that just focused on domestic houses would have a dramatic impact. If we switched the lights in the parts of the house that are in use in early evening - essentially the kitchen and living areas - we would reduce home demand by more than 50%. Importantly, these rooms are the places where we now often use halogen downlighter bulbs, the most inefficient lights currently on the market. A standard halogen GU10 bulb uses 50W of power. The LED equivalent does the same job with just 5W. (14)

Tom Burke of the E3G Consultancy points out that:

"*If there is even a feeble effort to improve energy efficiency electricity demand will fall further below the 30% Andrew Warren has pointed out. This means that a future energy minister will face the daunting task of explaining to consumers why he or she is having to pay renewable generators to switch off cheaper electricity in order to take the expensive electricity we have already bought from HPC. Imagine how much more difficult that task will be if we have by then bought the rest of the Government's proposed programme*." (15)

Professor Keith Barnham says

"*Despite the cuts [in renewable subsidies], it is possible the renewables will expand faster than the government hopes and the wholesale electricity price could continue to fall. A calculation that*

assumes the renewables merely expand with their worst year's performance in the past decade, suggests that, when the first new nuclear reactor starts in 2025, the UK could have about as much renewable power as Germany has now. This calculation predicts UK bill-payers could be funding 7p of the 9.25p per kilowatt-hour guaranteed nuclear price." (16)

Amory Lovins, Chief Scientist at the Rocky Mountain Institute, argues that: "One needn't argue about whether it's proliferative or unsafe or whether we know what to do with the waste if there's no point building it because it's a money loser…. If you built a new nuclear plant you would actually be making global warming worse than it should have been, because you are buying a lot less solution per dollar … nuclear is both costlier and slower than modern renewables, or, for that matter, energy efficiency which is typically cheapest of all. If you close … distressed nuclear plants, buy efficiency instead with the saved operating costs, you will save money and carbon."

He says Hinkley Point C will simply be one of those other great money-wasting projects we wished we never heard of but nobody had the guts to stop. "It speaks to the utter dominance of nuclear theology over British energy policy. This has been going on for over half a century: some scholars believe it's because of the links between the civil and military nuclear capabilities of the United Kingdom; some think it's nothing to do with that, but simply the way that a hermetic group of influencers and civil servants and politicians all talk to each other and reinforce their biases and find it difficult to accept that this is a "future" technology whose time has passed, the world has moved on. There's no business case for it. Let's cut our losses and let markets actually work." (17)

Energy Storage

Nick Butler, in an article entitled "*Why Batteries are more important than Brexit*" says an important issue for ministers to deal with is the development of a strategy for batteries and the wider technology of electricity storage. Electric vehicles are the initial target but storage could also dramatically reduce the cost of renewable supplies, remove the burden of intermittency and make solar and wind power fully competitive with any other source of electricity generation. The cost of reducing carbon emissions could be dramatically reduced. Research is crucial but the real prize in terms of industrial capacity comes with the development of large-scale manufacturing facilities. This means plants like the Gigafactory being developed by Elon Musk in Nevada, which is being designed to produce 35GW hours of battery capacity a year by 2020 to supply the 500,000 electric vehicles Tesla plans to produce by then. Securing this capacity will create several thousand skilled jobs.

Full-scale co-operation in the development of battery research and technology would be far more appropriate than the engagement of companies controlled by the Chinese government in the nuclear sector, which is part of the UK's national strategic infrastructure. Collaboration with Europe would also make sense, if relations are not too damaged by the Brexit negotiations. The election provides a break point, and an opportunity to reassess priorities and focus attention and resources. In the energy world, no technology within reach has more potential impact — on the energy sector and on the wider economy — than the ability to store material amounts of power. Of course the terms of Brexit matter, but on any rational long-term view the science and

engineering challenge of battery technology will have a much greater impact on Britain, and on the wider world. (18)

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3. The trials and tribulations of the EPR

A group of experts at the French nuclear safety authority – the ASN - have cleared EDF's Flamanville 3 nuclear reactor to start as planned at the end of 2018 – despite weak spots in its steel. The group's non-binding recommendation will be used by ASN, to formulate a final ruling in October. Completion of the EPR reactor had been thrown into doubt after the discovery in 2015 of weak spots in the steel which prompted an extensive safety review by the ASN. The stakes are high for French nuclear groups EDF and Areva because it would cost billions of euros to fix if the ASN had ruled that the steel was too brittle. The sign off by the ASN is also a European Commission pre condition for approving EDF's planned takeover of Areva's reactor business. The group of experts did recommend, however, that EDF put in place a new pressure vessel by 2024.

On the basis of the technical analyses carried out, ASN said it considered the mechanical characteristics of the pressure vessel bottom head and closure head are adequate with regard to the loadings to which these parts are subjected, including accident situations. However, the anomaly in the chemical composition of the steel entails a reduction in the margins with respect to the fast fracture risk. ASN therefore considers that EDF must implement additional periodic inspections to ensure that no flaws appear subsequently. ASN observes that such inspections can be performed on the vessel bottom head and therefore considers that they must be implemented. However, the technical feasibility of similar inspections on the pressure vessel closure head is not established. ASN therefore considers that the use of the closure head must be limited in time. It notes that it would take about seven years to manufacture a new closure head, which could thus be available by the end of 2024. In these conditions, ASN considers that the current closure head shall not be operated beyond that date. (2)

Greenpeace called the decision "*aberrant*" and "*irresponsible*". Yannick Rousselet said "*It is often considered that the ASN (Nuclear Safety Authority) is doing its job very well, but unfortunately this time it was under considerable pressure*" (3) from EDF and AREVA because the very survival of the French nuclear industry is at stake. (4)

The decision by France's nuclear watchdog threw a renewed spotlight on to growing safety concerns at the heart of the French atomic industry. Flamanville is running six years behind schedule and 7 billion euros over budget. However, ASN said: "The anomaly . . . entails a reduction in the margins with respect to the fast fracture risk." Anticipating the ruling, EDF is understood to have ordered a replacement pressure vessel head at a cost of several hundred million euros. (5)

Pierre-Franck Chevet, chairman of ASN, said components made for other EPRs, notably in China, might be similarly affected. The pressure vessels for the two EPRs being built at Taishan were manufactured at the same forge as the Flamanville vessel - Le Creusot. Representatives of the Chinese authority and CGN were in Paris to the conclusions of the ASN review of the Flamanville EPR. They will have to decide whether they also impose changes to the lids of the Taishan EPRs. These two reactors are due start between the end of 2017 and the end of 2018. (6) This could cause an expensive dispute with China. (7)

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4. Bradwell B

Professor Andy Blowers writes: at the beginning of the year the Office for Nuclear Regulation (ONR) announced it had received a request from the Government to commence a Generic Design Assessment (GDA) of the UK HPR reactor technology. This somewhat gnomic statement fires the starting gun for the China General Nuclear Power Corporation (CGN) and its partner Electricité de France (EDF) to begin the long process that may ultimately lead to new nuclear power reactors at Bradwell, the project now known as 'Bradwell B'. In a very real sense this feels like Groundhog Day. Years ago, nine years to be precise, when BANNG was set up to oppose the Government's identification of Bradwell as a site 'potentially suitable' for the deployment of new nuclear reactors, it seemed clear we were in for a long haul, years rather than months. And so it has proved.

We fought long and hard in every possible way to prevent Bradwell being nominated. We responded to consultations, held public meetings, enlisted supporters from far and wide, gathered signatures for a mass petition presented to the Minister for Energy, lobbied councils and MPs, pressured government and the nuclear regulators, provided press releases and articles for the media and assembled a carefully researched and authoritative set of papers. It is fair to say that BANNG has developed as a well regarded, professional and effective organisation. Despite all our efforts Bradwell was one of the sites nominated by the Government in 2011. For a while it seemed that nothing was happening and that the site was so low on the list of possibilities that it might fall by the wayside. Until, in the autumn of 2015, the President of the People's Republic of China and the Prime Minister of the UK set out the terms of their future 'golden relationship'. And, the jewel in the crown, at least for the Chinese, was involvement in the UK's nuclear programme and the invitation to develop their own reactor design at Bradwell provided they could secure regulatory approval. The UK would thus secure Chinese inward investment while China would gain the passport, endorsed through a rigorous regulatory regime, to a platform for selling its reactors to a world market.

Seen from above, at the rarified level of government, it was a win-win situation; seen from below, where the environmental and safety impacts would be felt, it was a potential disaster for the Blackwater. There is little doubt this agreement, forged at the highest level, moves the Bradwell site higher up the pecking order in three ways. First, it is backed by a state with funds to invest abroad. Second, the Chinese see this as a prestige project and will not want to lose face in the event of failure. And, third, the other sites currently in the ring are each meeting with problems. Hinkley Point C has been a disaster financially and serves as a warning to the others. With Toshiba and Hitachi seemingly falling by the wayside, Moorside in Cumbria and Wylfa in Wales still have a way to go in securing investors and overcoming other obstacles. And, up the east coast at Sizewell, EDF (and its junior partner, CGN) may get cold feet after their experience with Hinkley Point. So, Bradwell, though furthest away in terms of process, may make up ground given its Chinese backing.

1. BANNG Newsletter July 2017 http://www.banng.info/wp/wp-content/uploads/2015/11/BANNG-Up-To-Date-Summer-2017.docx

5. Wylfa: who will invest?

Hitachi is scrambling to divest from Horizon after the Toshiba fiasco, according to the Nikkei Asian Review. (1) However the BBC says the company has denied it is trying to distance itself from the scheme. (2)

Hitachi will curtail its financial risk in the construction of two nuclear power plants in the U.K. by divesting itself of its Horizon subsidiary, according to the Nikkei Asian Review. If Hitachi fails to find a partner before construction starts in 2019, forcing it to bear practically all the financial risk of the project, it will suspend its plans for the project. Hitachi is appealing to energy companies and others to invest in Horizon so it can turn the company into an unconsolidated subsidiary and is prepared to reduce its stake to as low as zero. Operation of the power plants would be entrusted to Horizon.

On the other hand the BBC reports that Horizon has denied its owner is trying to distance itself from the scheme. Horizon said it was confident the project would proceed. A spokesman for Horizon told BBC Wales' that Hitachi had made it clear from the start that new investors would be required to complete the Wylfa Newydd scheme. "It's not Hitachi's intention – and never has been – to completely sell Horizon," he added. "We're very confident that we will attract the investment required for this project."

A third and final consultation into the plans has been held and Horizon hopes to submit a planning application, known as a development consent order, later this year.

Meanwhile the North Wales Wildlife trust has called on the public help to protect Cemlyn Nature Reserve and the international and nationally important wildlife of the north Anglesey coast from the damaging nuclear power station proposals. The NWWT does not believe the current proposal represent the highest environmental standards with minimal impacts to the coast of north Anglesey and its iconic wildlife. (3)

Concerns have also been raised about Wylfa's potential impact on tourism. The 10-year long development s expected to create 4,000 construction jobs, with up to 9,000 workers required around peak period at the end of 2023. However, the Managing Director of North Wales Tourism, Jim Jones, is calling for Horizon to review its proposals to house thousands of workers in Anglesey's holiday accommodation as concerns have been raised over the adverse impact this could have on tourism. (4)

1. Nikkei Asian Review 9th June 2017 http://asia.nikkei.com/Business/Companies/Hitachi-scrambles-to-divest-UK-nuclear-risks-after-Toshiba-fiasco
2. BBC 28th June 2017 http://www.bbc.co.uk/news/uk-wales-north-east-wales-40437707
3. North Wales Wildlife Trust (accessed) 18th June 2017 http://www.northwaleswildlifetrust.org.uk/node/5672
4. Construction News 14th June 2017 http://www.construction.co.uk/construction-news/230815/concerns-raised-over-tourism-impact-of-10bn-wylfa-newydd-scheme

6. Moorside: is the AP1000 dead?

South Korea's largest power company is in talks with Toshiba to prop up its plans to build a new nuclear station at Moorside in Cumbria but it would want to use its own reactor design. A deal between Kepco and Toshiba, the last remaining group behind the NuGeneration venture, could rescue the £10bn project. But a change in reactor design would delay the 2025 start date by at least two years. (1)

Park Jong-hyuck, chief nuclear officer of Kepco, confirmed at a nuclear industry conference that his company was in negotiations with Toshiba about buying "some shares" in its NuGen subsidiary, which is developing the Moorside project. Kepco's interest was called into question by the election of Moon Jae-in as South Korean president last month, because he has vowed to wind down the country's domestic nuclear industry. Nevertheless, Mr Park made clear in his remarks to UK nuclear leaders that Kepco remained committed to selling its reactor technology overseas. He said Kepco intended to submit its APR1400 reactor to the UK's Office of Nuclear Regulation for review early in 2018 – starting an approval process that typically lasts four years. This would pave the way for Korean-led construction of Moorside with an aim of generating electricity by the late 2020s.

South Korea's president Moon Jae-in has suspended construction of two partially built nuclear reactors in South Korea for three months, during which the government will seek views from the public on their future. The suspension of the construction of the two reactors – with about one-third of construction already finished – came after Mr Moon pledged to stop building nuclear reactors, with the goal of making the county nuclear free by 2060. Kepco had been seen by industry experts as the only potential acquirer of the bankrupt US nuclear power plant builder Westinghouse. But experts caution the political shift on nuclear energy will probably discourage the state-run company from pursuing any attempt to buy Westinghouse. Kepco has not ruled out buying Westinghouse but said it was mulling how the government's changed nuclear stance may affect its bid. "It would be difficult for the state-run company to even raise the possibility of bidding for Westinghouse, when the government sees nuclear energy as a doomed industry," said Suh Kyun-ryul, professor of atomic engineering at Seoul National University. (3)

1. Telegraph 28th June 2017 http://www.telegraph.co.uk/business/2017/06/28/kepco-confirms-talks-toshiba-uk-nuclear-but-reactors/
2. FT 28th June 2017 https://www.ft.com/content/c4417b54-5c03-11e7-9bc8-8055f264aa8b
3. FT 28th June 2017 https://www.ft.com/content/a5d7ab48-5bd6-11e7-9bc8-8055f264aa8b

7. ESPOO Shambles

A meeting of the parties to the UN convention on environmental impact assessment in a transboundary context (Espoo) took place in Minsk, Belarus at the end of June. This showcased the influence that the pro nuclear lobby has over decisions that have potentially severe impacts on European citizens' health and environment. The meeting with over 200 people, including government delegates, civil society, EU officials and business – ended with an unprecedented failure to endorse any of the decisions of the implementation committee, despite worrying evidence of the non-compliance of several governments. With many more decisions coming up in Europe on either the construction of plants, or the lifetime extension of old nuclear units, the lack of any decision leaves no legal precedent for countries to follow. It also provides the public with even less clarity about participation procedures that ought to be followed.

This year's meeting had several sensitive findings on the agenda, especially related to controversial nuclear energy plans all across Europe. It included Hinkley Point C in the UK, the Astravetz nuclear power plant project in Belarus, as well as cases of lifetime extension of ageing nuclear power stations in Ukraine. For the past year, all three cases have been at the centre of demands, from neighbouring governments and civil society, for accountability and participation in decision-making. These demands have been rooted in the very poor public participation processes, which have left little space for governments and citizens to engage in decisions that will shape the future of nuclear energy in Europe. The manner in which the deliberations unfolded during the Espoo meeting of parties sent a clear signal to all delegates that the EU, under pressure from its nuclear member states, does not intend to endorse the critical findings of non-compliance in the cases mentioned above. 93 ageing nuclear units across Europe are lined up for lifetime extension over the next decade. The EU needs to overcome narrow political interests and business pressure, which comes especially from nuclear countries, and do their job correctly. They need to use the convention's provision to set clear rules on compliance. Only in this way can the EU prove to its citizens that it is open to protecting them, the environment, and supports democracy across borders. (1)

1. EU Observer 3rd July 2017 https://euobserver.com/opinion/138404 and Open Democracy 3rd July 2017 https://www.opendemocracy.net/od-russia/dana-marekova/nuclear-safety-in-europe-decision-making-behind-closed-doors

8. A Just Transition

On 17th June at the CND "No Need for Nuclear" Conference in London, Chris Baugh, Assistant General Secretary of the Public and Commercial Services Union (PCS) spoke about the "madness of Hinkley Point C" and the need to ensure there is no compromise between protecting the climate and jobs. He said his union is keen to challenge the argument that we need a "balanced energy policy".

It is not enough to argue for shutting things down, whether nuclear power stations or fossil fuel infrastructure. We need to engage workers and demand a "Just Transition". Opposing nuclear power wouldn't be seen as a threat to jobs if you have an alternative energy plan.

The PCS has released a new pamphlet called "*Just Transition and Energy Democracy*" which it hopes will generate debate and open up discussion with other unions. (1)

As with Naomi Klein, who sees climate change as an "*historic opportunity … to advance policies that dramatically improve lives, close the gap between rich and poor, create huge numbers of good jobs, and reinvigorate democracy from the ground up* …" the PCS pamphlet declares that:

"*The real solutions to the climate crisis are also our best hope of building a much more enlightened economic system— one that closes deep inequalities, strengthens and transforms the public sphere, generates plentiful, dignified work and radically reins in corporate power*".

The Union says "*switching from fossil fuels to renewables is not enough. We need to address climate change as a toxic byproduct of capitalism* [and] *unfettered growth*." PCS believes an energy transition should be based on real workers participation, public ownership and democratic control – a workers and public partnership.

As part of the global Trade Unions for Energy Democracy (TUED) initiative, PCS supports its founding principles that we need to reclaim, resist, and restructure our energy system. This means an end to corporate ownership and control, eradicating fuel poverty, 100% renewable energy and unionised jobs with workers paid living wages.

The pamphlet highlights the shift to municipal energy which is already happening. Nottingham City council set up Robin Hood Energy in 2015. The UK's first local authority owned energy supply company offers lower tariffs than the Big Six on a not for profit basis. Energy is currently sourced from its own incinerator, solar panels and food waste along with gas and electricity bought on the market. However the long-term aim is to source entirely from renewable energy. Leeds City Council have partnered with Robin Hood Energy to establish White Rose Energy – a not-for-profit company that has a focus on providing affordable energy and tackling fuel poverty.

Bristol Energy set up in early 2016, is like Nottingham wholly owned by the City Council on a not-for-profit basis. They are also going beyond a standard business model with wider social and economic aims such as tackling fuel poverty and promoting renewable energy generation. Pressure from the London energy democracy campaign Switched on London (SoL), supported by trade unions including PCS and anti-poverty groups is paying results. The London Mayor,

Sadiq Khan has committed to a municipal energy company – Energy for Londoners – which would be by far the biggest and challenging yet.

As the One Million Climate Jobs pamphlet argues, with the right investment and political will, workers can be put to work building wind turbines, retrofitting and insulating our homes and public buildings, creating an integrated transport network run on renewable energy. Energy democracy provides the foundation upon which to carry forward this transformation.

- Jonathan Bartley, co-leader of the Green Party, writing in the *New Statesman* said "*The New Economics Foundation has suggested that Britain could provide more than six times its annual electricity needs through a Blue New Deal, getting renewable offshore energy through wind and wave while rejuvenating coastal communities with 160,000 new jobs. Green MEP Molly Scott Cato has shown how the South West of England alone could meet all its energy needs through renewables, creating more than 100,000 new jobs. This puts the 900 full-time posts expected to be available at Hinkley, if construction is ever completed, into sharp perspective*." (2)

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1. Just Transition and Energy Democracy, PCS June 2017 https://www.pcs.org.uk/sites/default/files/site_assets/resources/green_workplaces/2017/Just%20Transition%20%26%20Energy%20Democracy%20-%20a%20civil%20service%20trade%20union%20perspective.pdf
2. New Statesman 4th July 2017 http://www.newstatesman.com/politics/energy/2017/07/hinkley-c-nuclear-power-plant-will-be-costly-mistake-we-can-still-stop-it

9. Renewable Notes

- Renewable energy generated a record amount of electricity in the first three months of this year, making up more than 26% of the total produced in the UK, according to new government figures. In total, some 24.8 terawatt-hours (TWh) of electricity came from wind, solar, hydro and other forms of clean energy, up by more than 5% on the same period last year. Onshore wind set a new record for a three-month period, providing 8.3% of the UK's electricity. (1)

- Germany has raised the proportion of its power produced by renewable energy to 35% in the first half of 2017 from 33% the previous year. (2)

- Aldi has announced it will install 96,000 solar panels across more than 50 UK stores by the end of 2017. (1) The supermarket has already installed more than 85,000 solar panels on all nine of its regional distribution centres and more than 275 stores across the UK, generating over 17,500 MWh of electricity a year. (3)

- Europe's largest community battery is to be installed at an innovative regeneration scheme in Nottingham. A 2MWh Tesla battery will be installed in September as part of a housing scheme alongside community solar. The £100 million Trent Basin project is a new housing development built at the site of an inland dock previously derelict for around two decades. It is expected to deliver 500 homes over five phases with 375kW of rooftop and ground mounted solar and the Tesla battery to be installed by EvoEnergy. In an innovative use of the solar farm, planning permission has been granted on the basis that the site shall be cleared by 28 February 2020. By this time, the panels from the ground mounted installation will be removed and installed on new homes built as part of the development. (4)

- Moixa secured £2.5 million of funding in the first quarter of 2017 which it will use to pursue a goal of installing 50,000 home battery systems by the end of the decade. A £1 million funding facility from Greater Manchester Combined Authority (GMCA) will see Moixa open a regional sales and delivery centre in the city, with around 20 local staff expected to be employed within a year. The office will drive the company's growth in the north west by offering solar and storage products to private customers and pursuing multi-thousand unit deployments with social housing clients. (5)

- Solarplicity has launched a low-subsidy residential solar model aimed at social housing, claiming individual tenants could save £240 a year on average on their energy bills. The Company will partner with social housing providers to create a Community Energy Scheme providing energy saving solutions. In addition, the company will offer 'simply lower energy bills' using a 100% renewable energy tariff following its acquisition of independent supply firm Lo CO2 Energy last month. (6)

- More than 200 community energy organisations are now operating enough solar, hydro and wind schemes across the UK to power 130,000 homes. The first ever Community Energy State of the Sector report today reveals that a total of 222 community energy

organisations are operating renewable energy schemes in England, Wales and Northern Ireland boasting collective capacity of 121MW, or the equivalent to the domestic consumption of 85,500 homes. When that capacity is combined with Scotland's estimated community energy capacity of 67MW, it means the UK community energy sector can power 130,000 homes, or as many households as there are in Cardiff or Coventry. (7)

- The Government has been strongly criticised for its lack of action on climate change by the Committee on Climate Change. A new Clean Growth Plan setting out how Britain will cut carbon emissions in the late 2020s and early 2030s was now "urgently needed". Such a plan was legally required to be published as soon as possible after the Government announced new targets last year, but is not now expected until September. Claire Perry, the newly appointed Climate Change Minister, told Parliament that she wanted the Clean Growth Plan to be "as ambitious, robust and clear" as possible, describing the document as "vitally important". The CCC's report said many existing Government policies were "running out" and new ones were needed. It recommended a string of different measures including policies to boost electric vehicle ownership, which the report said should make up around 60% of new car and van sales by 2030. To achieve those targets, the Government needed to provide some financial support, preferential tax rates and ensure the "*effective roll-out of charging infrastructure*". Other measures included helping to develop a carbon capture and storage system, having a contingency plan to delays to planned project – "for example of new nuclear power plants" – and the tight regulation of fracking operations to ensure a rapid response to leaks. (8)

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1. Independent 30th June 2017 http://www.independent.co.uk/environment/renewable-energy-new-record-uk-electricity-generation-power-green-global-warming-environment-a7816361.html
2. Independent 3rd July 2017 http://www.independent.co.uk/news/world/europe/germany-green-technology-record-power-generation-35-per-cent-renewables-solar-wind-turbines-a7820156.html
3. Edie 5th July 2017 https://www.edie.net/news/6/Aldi-to-install-96-000-solar-panels-across-UK-stores-this-year/
4. Solar Power Portal 28th June 2017 https://www.solarpowerportal.co.uk/news/tesla_install_to_bring_europes_largest_community_battery_to_nottingham
5. Solar Power Portal 29th June 2017 https://www.solarpowerportal.co.uk/news/moixa_readies_50000_installs_by_2020_with_millions_in_new_funding
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7. Business Green 20th June 2017 https://www.businessgreen.com/bg/news/3012277/report-community-energy-powering-130-000-uk-homes
8. Independent 29th June 2017 http://www.independent.co.uk/environment/government-climate-change-experts-unjustifiable-lack-action-environment-global-warming-fossil-fuels-a7813741.html