nuClear news

No.53 August 2013

1. Zero Carbon Britain: Rethinking the Future

This updated report from the Centre for Alternative Technology looks at new research in two key areas: 'keeping the lights on' with a variable renewable energy supply, and 'feeding ourselves properly' on a low carbon diet. By combining cutting edge technology with a smart approach to agriculture and land use, energy supply and demand, buildings and transport, the report shows that it is possible for the UK to meet the challenge of climate change and acknowledge our responsibility as a long-industrialised nation to set the pace. By making changes to our buildings, transport systems and behaviour, and by investing in a variety of renewable energy generation technologies suited to the UK (without a nuclear component), the report shows that we can provide a reliable zero carbon energy supply without negatively impacting on quality of life.

Even with a significantly reduced energy demand and a broad mix of renewable electricity generation technologies, supply and demand do not change in unison – there are times when our energy systems produce a surplus and others when they fall short of demand. Hourly modelling research shows that this imbalance can be managed with a combination of demand management techniques, some short-term energy storage, and the provision of a small amount of back up generation.

The research also shows that constant power output (such as that from nuclear power plants) is not helpful in balancing a variable energy supply – it simply leads to further overproduction of energy at times when renewable systems can meet demand. Present gas infrastructure, including storage facilities and gas power stations that can quickly ramp up output, provide the best solution for this, and can be made completely carbon neutral – using synthetic gas created with surplus electricity from renewables and UK-grown biomass.

The low carbon diet research shows that a healthier diet is also lower in greenhouse gas emissions, and demands less of our land. This is a win-win situation which releases land for other uses such as providing biomass for our energy system, and safe and proven carbon capture to balance our remaining emissions.

Zero Carbon Britain (ZCB) uses more optimistic numbers for a global carbon budget than the Carbon Tracker numbers used in nuClear News No.52. Even so a projection of Greenhouse Gas (GHG) emissions in line with current policy targets, shows that the UK will emit about 15,800 $MtCO_2e$ (16,000 $MtCO_2e$ including emissions from international aviation and shipping – currently not counted under the Kyoto Protocol) by 2050. This is well over the amount for even a 50% chance of avoiding the 2°C limit. Such a budget would not be acceptable in international negotiations, especially in view of the fact that most of the present atmospheric GHGs were generated by wealthy countries like the UK during their development process. From this perspective even 8,400 $MtCO_2e$ (a budget compatible with an 80% chance of avoiding temperature increase above 2°C) might be considered generous. The report calls the difference between the two budget figures - 7,400 $MtCO_2e$ - the 'physics-politics gap'.

In 2010 the UK's net carbon emissions were around 628.3 $MtCO_2e$, so without any reductions Britain will use up its budget by 2026. So it seems perfectly reasonable for the ZCB scenario to expect the UK to reach zero carbon emissions by 2030.

We use roughly 1,750 TWh of energy every year, which requires a supply of about 2,530 TWh once losses in the system are taken into account. Our energy comes principally from fossil fuels: coal, oil and natural gas. This energy use creates 82% of our GHG emissions, and is comprised of energy use in households, businesses and industry, and transport. Under the ZCB scenario annual energy demand is reduced by about 60% from the current 1,750 TWh to around 665 TWh per year. An additional 105 TWh or so of ambient heat is used by heat pumps, making total energy use about 770 TWh per year.

Together, heating and hot water accounted for 34% of total UK energy demand in 2010. Heat loss from existing buildings must be reduced, since the vast majority of today's buildings will still be in use in 2030, and beyond. Retrofitting existing buildings can include: cavity wall or solid wall insulation; floor and loft insulation; improved glazing (all of which reduce the 'fabric heat loss' of a building); and draughtproofing (which reduces the 'ventilation heat loss' of a building). A programme to retrofit all dwellings with the above measures, as required, could reduce the average heat loss of the UK's housing stock by 50%.

Even if we do manage to reduce energy use to 770 TWh per year it is still a large amount of energy compared to, for example, the amount of energy produced by wind turbines in the UK today (around 10 TWh in 2010). In the ZCB scenario the largest contribution would come from offshore wind turbines, which can produce around half of the energy we need (530 TWh). Matching supply and demand in the scenario with a large share of energy from variable sources is technically challenging, but possible, incorporating chemical processes that create synthetic gas from biomass and hydrogen as back up. Biomass (274 TWh per year) and ambient heat (around 105 TWh per year, extracted from ground, water and air by heat pumps) also play major roles. Other contributions are made from solar thermal and geothermal heat (about 40 TWh per year).

ZCB shows the scale and seriousness of the challenges ahead. Recognising the magnitude of our predicament forms the cornerstone of our response. The report encourages readers to look at the many ways of being part of a transition to a zero carbon Britain. There are lots of community and domestic scale choices and a wide range of campaigns and organisations to join and make our voices heard.

1. Zero Carbon Britain 16th July 2013 http://zerocarbonbritain.org/index.php/current-report

2. Nuclear Negotiations Drag On

Given that the next 15 years will be so crucial in the fight against climate change it is all the more depressing that the Government has already spent at least six years trying to get a new nuclear programme off the ground. Discussions between the Government and EDF over the guaranteed price for electricity from the proposed Hinkley Point C nuclear station are now expected to last until the end of 2013.

Steve Thomas, Professor of Energy Policy at Greenwich University says the process has been so long and tortuous that political hubris demands at least one plant will be built, even if the rest are quietly forgotten. (1)

Former Labour MP and energy policy consultant Alan Simpson says the Government is set to offer EDF huge subsidies, and EDF expect the guaranteed 'strike' price to be index linked, But negotiations currently appear to be on hold and are not expected to reopen until the end of the year. Liberal Democrat Energy Secretary Ed Davey insists that Britain will get a good deal from EDF: "*I am not going to sign any deal with EDF unless it is value for money, is affordable and meets the coalition agreement of no public subsidy*," he said. But the Government is desperate to be seen to be doing something to quell growing fears over an energy crisis caused by the market-obsessed private utilities that EDF certainly has the upper hand. (2)

The City website, 4-traders confirmed that talks between the Government and EDF are expected to last until the end of the year. Whether EDF and the UK can reach an agreement is seen as a litmus test for the economic viability of nuclear energy in Europe. The website said the need to add extra power production capacity in the U.K. is becoming urgent. (3) Adrian Bull of the government-owned National Nuclear Laboratory says the rest of the world is watching Britain "very avidly" as it struggles to secure a commercially viable deal for nuclear energy in an open market. (4) EDF confirmed at the end of July that it expected talks with the Treasury over price to complete "*by the end of the year*" a comment widely interpreted as yet another delay. (5)

Strike Price

Energy and Climate Change Secretary of State Ed Davey has denied that the Government is offering EDF a blank cheque for Hinkley C. He says "*I am determined that the consumer or the taxpayer will not bear the risk of construction over-runs. Nuclear will get no preference in comparison with other low-carbon technologies*."

Senior Lecturer in Energy Policy, Dave Toke, says the Government appears not to be keeping to the second part of that statement. Nuclear power is being offered much more favourable terms compared to renewables since nuclear looks like being offered a 35 year contract with premium prices. Moreover, the Treasury has announced that EDF will be offered £10 billion worth of loan guarantees. Meanwhile contracts offered to renewable generators are only to last for 15 years, a reduction compared to the Renewables Obligation where the premium prices last for 20 years. And of course, renewables have not been offered £10 billion of loan guarantees! (6)

But that still leaves the point that the Government says that it will not underwrite EDF's construction costs. That is very significant and barring some incredibly high 'strike' price, should be enough to stop

the project. There is tremendous uncertainty about how much the plant will cost and how long it will take investors to get their money back. So the city will downgrade any investment that is dependent on hopeful cost estimates for construction costs. That is why 'underwriting' is so important for new nuclear power. It seems the Government has not offered (yet) to guarantee to pay for any construction costs overruns, according to Toke. Barring some national French Government priority being made for Hinkley C (that seems unlikely) investing in the plant looks like a very unattractive prospect for EDF unless the construction costs are underwritten.

The government had hoped to make a positive announcement before the summer on the strike price but it is now looking at the prospect of more months of further talks. A deal, intended by ministers in London to represent a final offer, was put on the table in June. EDF in Paris, where all the energy company's decisions are made, failed to respond. Frustrated by the unwillingness of EDF to engage, the Government, which wanted to do a deal and thought an agreement was possible after the last Anglo-French summit in May, has now effectively stepped back and is talking to other possible suppliers.

Nick Butler in the FT complained that:

"*We have not been told why the costs of EDF's ill-starred plant at Flamanville have risen so high, and why Hinkley rather than benefiting from everything learnt there is now projected to cost even more. We have not been told how the project will be financed. We have not been told why an expensive reactor design is preferable to other cheaper designs which are clearly already working effectively in other countries.*" (7)

According to the Daily Mail after the discovery that shale gas resources in the north of England are double the previous estimates, the Government now feels able to take a tougher negotiating stance with EDF. (8)

The French state owned utility has larger debts than it can comfortably sustain, it has to make big investments in its 58 French reactors to take account of the lessons from Fukushima and it has to make decisions about life-extensions of these plants, which will begin to reach their expected lifetime in only 4 years. Neither life-extension nor replacement will be cheap. So making an investment of at least £14bn in the UK is not likely to be attractive to its owners unless the deal is extremely low risk. (9)

Chief Secretary to The Treasury, Danny Alexander, confirmed that the Government is prepared to guarantee £10bn of the expected cost of building the two new reactors. (10) Speaking to Le Monde, EDF Chief Executive Henri Proglio claimed the company had secured a deal with the British Government to guarantee 65% of the project's debt and confirmed that contracts would last 35 years. (11) Does this mean the cost of Hinkley has jumped to £15.4bn?

Meanwhile, Labour MP Alan Whitehead says the new nuclear programme is taking so long to complete that it is in danger of becoming a "museum" piece by the time it is due to come on line in 2020. A lot of the generation issues will have been solved by the time Hinkley Point C starts generating and the UK "*will have in theory a lot of wind, demand-side reduction, storage backup and interconnectors - the lights will have either gone out or we will have substantially resolved our supply problems anyway*." (12)

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3. Europe & State Aid

The European Commission is considering a radical change in the rules on state aid to nuclear power which would make it easier to build new reactors in Britain. The proposals, drawn up by the EU's Competition Commission after pressure from the UK and France, were leaked to a German newspaper. (1) Rebecca Harms MEP, co-chair of the Green parties in the European parliament, alleged a pro-nuclear camp around German energy commissioner, Günther Oettinger, and competition commissioner Joaquín Almunia were "*leading the charge*" for a U-turn on energy policy.

By exempting all nuclear projects from general restrictions on state aid, the EU's competition commission will prompt relief in Britain, but fury in Germany and Austria. (2) At the moment, even if the contractual wrangling about a strike price for Hinkley can be sorted, another potential stumbling block would be whether or not the deal is legal under European Union (EU) State Aid rules. The EU has a swathe of guidelines in place to stop governments unfairly favouring particular industries, so any agreement between the Government and EDF would need to get permission from the European Commission. (3)

But now the European Commission, reputedly under pressure from Britain and France, has prepared a draft paper titled "*Paper of the Commission Services containing draft guidelines on environmental and energy aid for 2014-2020*", which proposes to allow governments to provide direct state aid for nuclear power. The paper is not scheduled to come before legislators until later in the summer, and is still a 'work in progress' but the draft leaked to the Greens-European Free Alliance bloc in the European parliament, has been published by the German newspaper , Sueddeutsche Zeitung. (4)

The Commission paper says that aid may be compatible with EU rules and that "*these guidelines apply to state aid for environmental protection, including CO_2 capture, transport and storage (CCS), energy infrastructure, capacity mechanisms and nuclear energy*". But Germany's chancellor Angela Merkel has said in response that she is opposed to nuclear subsidies. (5) Austrian Chancellor Werner Faymann said Austria would resist the plans as there was no future for nuclear energy in Europe.

The European Commission was forced to play down its plans with a letter to the *Financial Times* (6) and a Blog. (7) It said that the commission has no plan whatsoever to "exempt" nuclear power from "*the general restrictions on state aid*" or even to facilitate the granting of such subsidies compared to the present situation. But State Aid for nuclear power is not currently prohibited by EU rules, so the commission is considering whether or not new guidelines should include specific provisions on state aid for nuclear energy, and it will launch a public consultation in the autumn to gather the views of member states and stakeholders.

The Commission's arguments were attacked as flawed by Greenpeace. (8) They paper over legal inconsistencies and are misleading about the effects that changes to European competition rules would have on the energy market. Under EU competition rules, state aid is only legally justified if it supports a common EU interest. The first article in the *"aid to nuclear energy"* section of the leaked guidelines – seen by Greenpeace – clearly describes subsidies to nuclear energy as a

"common EU objective". Given the number of countries opposed to nuclear power in Europe, this definition can only be interpreted as a signal that the Commission intends to carve out specific state aid provisions for nuclear power.

Nowhere does EU law say that nuclear power is eligible for state aid. The Commission appears to have decided to act on behalf of countries like the UK and France that want to subsidise nuclear power. And against the interests of other countries – like Germany, Austria, Italy, Denmark, Ireland and Luxembourg – that are opposed to the development of nuclear power and are instead investing in renewables and the modernisation of the energy system. As they stand, the guidelines would expose these and other EU countries to market distortion as a result of state aid for nuclear power. They also threaten to derail the EU's objective of creating a single European energy market. (9)

All this means that even if a deal between the UK Government and EDF on the strike price can be struck, it could still be 2-3 years before a decision can be reached by the European Commission.

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8. Greenpeace 26th July 2013 http://www.greenpeace.org/eu-unit/en/blog/debunking-the-commissions-claims-on-nuclear-state-aid/blog/46072/ FT 29th July 2013 http://www.ft.com/cms/s/0/8fa484fe-f61d-11e2-8388-00144feabdc0.html
9. For more info see Greenpeace 19th July 2013 http://www.greenpeace.org/eu-unit/en/News/2013/European-Commission-attempts-to-open-door-for-subsidies-to-nuclear-energy/

4. Energy Costs

It has been another month of attacks on the Government's estimate that energy bills will be on average £166 per year lower than they would otherwise have been without its policies in 2020. Average bills in 2013 are around £1,267; in 2020 they will be £1,331, but without policies they would be £1,496. (1)

The Taxpayers' Alliance – described by some as Britain's Tea Party - says the average will be £1,900 by the end of the decade. The increases mean that by 2020 around £7.6 billion will be raised from energy bills to be spent on green energy subsidies. The Alliance wants the Government to cut subsidies for expensive green energy and instead open up new affordable energy sources like shale gas and coal power plants. (2)

The Energy Secretary, Ed Davey, accused the Taxpayers' Alliance of making "*dodgy*, *back-of-fag-packet claims*". He wrote to group saying "*Your calculations are wrong and there is no good foundation to your claim that by 2020 green charges and tax will account for £620 of average energy bills. It is disingenuous to seek to pin the blame on government policies using inflated assessments of their impacts while ignoring the main driver for price increases – rising global fossil fuel prices*." (3)

RWE npower CEO Paul Massara called on government and industry to come together to give consumers a clear message about rising energy costs, to help rebuild trust and give consumers the information required to take action. An npower report sets out how energy bills are expected to rise between now and 2020, to explain precisely what is driving energy costs up, where a customer's money goes, and why action needs to be taken to save money and reduce consumption. (4)

Npower's report "*Energy Explained*"(5) says the average energy bill will rise from £1,247 today to £1,487 by 2020 in real terms – not taking into account inflationary increases if usage remains static. Npower reckon that official predictions of future energy savings are over-optimistic. It says £144 of that £240 increase will be attributable to green policies. The energy giant says it wants to tackle the "myth" that suppliers are to blame for rising bills, after finding consumers believed they made far higher profits than they actually did.

The main thrust of his argument is that rising costs will largely be beyond suppliers' control, despite what the public may think. Npower's projection places blame for the cost increase at the government's feet, based on an assumption that energy efficiency policies won't deliver any reduction in demand. This is not the first time the argument has been made, and the general view seems to be that it has some merit. Slow take-up of the Green Deal programme will only reinforce that view. But coming from one of the big six power companies, this report may be an effort to shift blame for price hikes away from energy company profits and back onto the government.

The amount of money households are expected to save due to government policies makes up the biggest difference between the npower projection and the Government's. DECC expects consumers to save money through the Green Deal and EU Product Policy. The Green Deal has

been slow to catch on, and of course not everyone can afford to replace their kitchen white goods with new efficient models in the next seven years. (6)

Greg Barker, the energy minister, said: "*Global gas prices not green policies have been primarily pushing up energy bills. That is why it is vital we crack on with securing investment in a diverse energy mix that includes renewables and new nuclear, as well as gas*." (7)

Greg Barker moved quickly to challenge RWE npower's predictions, arguing that energy efficiency measures will help to offset upward pressure on electricity prices, while also stressing that recent increases in bills have predominantly been the result of rising gas prices. There is no consideration of the potential impact of energy reduction policies on average bills in the npower projections. (8)

Leo Hickman in *The Guardian* says despite what they might tell you the price of oil, gas, nuclear, etc, in a decade is extremely uncertain. Therefore, all such assumptions and projections must be viewed with a degree of scepticism and perspective. But there needs to be more transparency for consumers about the various components that make energy the price is it today. (9)

A new poll by Cardiff University suggests that the public is willing to pay extra for clean and reliable energy. The report is issued coincidentally as the academic body, the UK Energy Research Centre, warns that plans for a clean energy future risk being undermined by lack of trust. Openness and transparency are essential if trust is to be maintained. (10)

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5. Offshore Wind's Potential

Despite the "stubbornly expensive" label it is often given, offshore wind offers a huge potential to reduce its costs and contribute to the UK's objectives on energy security, growth and climate change, but the Government needs to adopt a decisive "can do" attitude to unlock these benefits, argues Nick Molho of WWF. (1)

Offshore wind currently costs almost three times the market price of about £50 per megawatt hour (MWh). The Government wants this reduced to £100/MWh by 2020, but DONG Energy which has just built the world's largest (630MW) wind farm in the Thames Estuary – the London Array - believes it can undercut this and reach £85/MWh by then. Part of the answer is scale: bigger turbines and bigger wind farms. If energy policy was decided by price alone, the London Array would never have been built, but the Government backs a major expansion of offshore wind from 3.3GW of installed capacity now to as much as 16GW by 2020. High subsidies reflect the fact offshore wind is a "young" technology compared with, say, nuclear. An industrial strategy on the issue is expected soon. This is intended to help ensure that a bigger share of the costs of future wind farms – as much as 50% – is spent in the UK. For the London Array, it was just 10% with most of the parts shipped in from elsewhere in Europe. (2)

The London Array, opened by the Prime Minister on 4th July, has 175 turbines, each taller than the London Eye and costing about €4m. This is typical of the UK's odd position at the centre of the international offshore wind industry; it has more installed capacity than the rest of the world combined, but only a relatively small number of domestic builders of the farms. (3)

The UK's offshore renewable energy resource represents six times the UK's electricity consumption in 2009. It is true that offshore wind is an expensive technology today and reducing its cost must undoubtedly be a priority for industry, but an in depth study last year by the Crown Estate found that the cost of offshore wind could go down by a third for projects approved in 2020, with greater cuts possible in the 2020s as well. Shortly after, a report by Cambridge Econometrics also found that a stable deployment of offshore wind could increase UK GDP by some £20bn annually by 2030, reduce UK gas imports by £8bn a year and provide higher net employment compared to a scenario where the UK produced most of its electricity from gas plants. (4)

Portraying offshore wind as "stubbornly expensive" ignores the fact that there is an awful lot that can be done to reduce the costs of the technology in the near-term. A significant chunk of its cost comes from the financing of a project, mainly in the form of interest rates. To illustrate this, the Crown Estate study found that for every 1% reduction in the costs of borrowing, the overall costs of offshore wind farms was likely to go down by around 6%.

Whilst the costs of borrowing are partially linked to how mature a technology is perceived to be, a lot of it is also to do with investors' perception of political risk. By providing the right political "mood music" and showing that it is committed to helping the sector grow over the long-term, the Government can play a key role in reducing the current cost of borrowing for offshore wind projects. Looking further ahead, a stable deployment of offshore wind over the next 20 years could significantly reduce its costs through learning by doing, harnessing economies of scale,

developing a more co-ordinated offshore grid infrastructure and critically, by supporting the development of a local supply chain.

The development of a supply chain is often encouraged for the sizeable economic growth benefits that it could bring to the UK. However, of equal importance, is the fact that a growing domestic supply chain could reduce the UK's current exposure to transport costs, currency risks and bottlenecks in the international supply chain, all of which could significantly reduce the cost of offshore wind.

But as pointed out in a recent report by the Institute for Public Policy Research (IPPR), these benefits can only materialise if the Government puts forward a set of long-term and coherent policies for offshore wind with clear commitments in terms of deployment, funding, skills development and the upgrading of critical infrastructure such as ports.

The Government's draft Electricity Market Reform (EMR) Delivery Plan, (5) outlined three technology scenarios with a wide range of decarbonisation trajectories, failing to provide the certainty industry craves. So energy providers – and consumers- are not really any wiser to the government's plans for the energy mix than before. (6)

One of the scenarios envisages the UK power sector having a carbon intensity four times higher than recommended by the Committee on Climate Change for 2030. This is not the best way to provide the long-term support needed by offshore wind or any other low-carbon technology. As the IPPR warned, a failure to provide the industry the support it needs could result in the UK *"achieving a 'worst of all worlds' outcome: low volume, high cost, and a low share of manufacturing activity from domestic suppliers."* (7) IPPR say the Government has done too little to attract wind turbine manufacturers to set up in the UK, with the result that only a small proportion of the tens of billions of expected investment in offshore wind will benefit British manufacturers. Consequently, the public subsidy for wind, paid for on energy bills – and which will also run to billions – will reap much less in jobs and benefits to the UK economy than it could have. (8)

Ed Balls seems to have recognised the potential. He says the UK could gain a world leading position in offshore wind, wave and tidal power.

"By refusing to agree a decarbonisation target in the Energy Bill, by raising the prospect of a new 'dash to gas' instead of renewables, by shackling the Green Investment Bank, and by failing to implement the scale and certainty of policy needed to effectively de-risk investment, the government has actively undermined business plans to create jobs and growth."

Balls says Osborne has fostered exactly the kind of policy uncertainty that scares away long-term investment. By talking up the possibility of an implausible shale gas bonanza to justify tacking away from renewables after the 2020 renewable targets run out, he has cast further doubt on the government's long-term commitment to a low carbon future. Business is being denied the confidence of knowing they will have a market and a price structure they can rely on over the investment horizon they need. (9)

Referring to Green Alliance's recent analysis of low carbon infrastructure, (10) Balls himself said he was "*particularly struck by the fact that, in offshore wind alone, investment planned and in the pipeline is worth more than all planned spending on gas, roads and airports combined*". (11)

According to the latest projections from the International Energy Agency, by 2016 global electricity generation from wind, solar, hydro and other forms of renewable power will exceed that from natural gas – and should be double that provided by nuclear plants. (12)

Catherine Mitchell, Professor of Energy Policy at Exeter University says Ed Balls' recent statement give some cause for hope. European energy policy is a key driver of Member States energy policies. At the moment, the key European Union energy policy is the so-called 20-20-20 policy: to cut carbon dioxide emissions by 20%; to provide 20% of energy from renewable energy; and a 20% improvement in European energy efficiency, and all by 2020. Discussions of a 2030 target are already underway with the green groups arguing for 50-40-30 (50% cut in CO_2, 40% of energy from renewable and a 30% increase in efficiency by 2030). The Coalition Government is teaming up with Poland to minimise all European 2030 targets. The strategy is said to be arguing for no renewable energy and energy efficiency targets while supporting a 50-40% CO_2 reduction target. This would allow for a nuclear expansion with no further renewables targets. (13)

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3. FT 4th July 2013 http://www.ft.com/cms/s/2a4046aa-e4c2-11e2-a74d-00144feabdc0.html
4. Huffington Post 17th July 2013 http://www.huffingtonpost.co.uk/nick-molho/wind-power-environment_b_3609803.html
5. DECC Press Release 17th July 2013 https://www.gov.uk/government/news/davey-plan-for-energy-infrastructure-increases-investor-certainty-and-keeps-bills-down--2
6. Carbon Brief 18th July 2013 http://www.carbonbrief.org/blog/2013/07/the-government's-differing-visions-of-the-uk's-energy-future-fails-to-bring-clarity-to-electricity-market-reforms
7. IPPR 4th July 2013 http://ippr.org/publication/55/11006/pump-up-the-volume-bringing-down-costs-and-increasing-jobs-in-the-offshore-wind-sector
8. Guardian 9th July 2013 http://www.theguardian.com/environment/2013/jul/09/future-uk-offshore-wind-power
9. New Statesman 10th July 2013 http://www.newstatesman.com/politics/2013/07/labour%E2%80%99s-vision-green-economic-future
10. The Future of UK Infrastructure, Green Alliance, July 2013 http://www.green-alliance.org.uk/uploadedFiles/Publications/reports/The%20future%20of%20UK%20infrastructure_WEB.pdf
11. Business Green 23rd July 2013 http://www.businessgreen.com/bg/opinion/2283664/the-return-of-the-politicians-to-the-green-economy-fray
12. New Scientist 27th June 2013 http://www.newscientist.com/article/dn23770-renewable-energy-to-eclipse-gas-by-2016.html
13. IGov 16th July 2013 http://projects.exeter.ac.uk/igov/new-thinking-blog-the-structural-barriers-to-a-sustainable-economy-what-the-political-parties-have-to-overcome/

6. Moorside

Bids for a stake in NuGen, the nuclear joint venture between Spanish utility Iberdrola and France's GDF Suez, are expected to be tabled soon, according to the *Financial Times*, after the co-owners started talks with potential new investors to buy all or some of their shares in the UK project.

The NuGen project has progressed more slowly than expected. It was created in 2009, won an option on land adjacent to Sellafield later that year, and was supposed to submit a planning application for a new plant by the end of 2014. But it is widely thought unlikely to meet that deadline. If it fails to, experts said that the land optioned by NuGen would revert to the government and could be re-auctioned. NuGen is understood to be seeking a five-year extension on its option. But officials said that Iberdrola and GDF Suez must first convince the government that they have a project that can be delivered on time, has strong financial backing and, preferably, is based on a licensed reactor design.

The Chinese group SNPTC, is reportedly interested in buying Iberdrola's holding. Westinghouse might also be interested. (1) (2)

1. FT 12th July 2013 http://www.ft.com/cms/s/0/6005a05a-ea26-11e2-b2f4-00144feabdc0.html
2. Telegraph 12th July 2013 http://www.telegraph.co.uk/finance/newsbysector/energy/10177523/China-eyes-stake-in-UK-nuclear-project.html

7. World Nuclear Industry Status

Only 1.2GW of nuclear generation capacity was installed last year globally compared to 32GW of solar, according to the World Nuclear Industry Status Report 2013. (1) Global nuclear electricity generation dropped by 7% in 2012 and is down nearly 12% from its 2006 peak. As of 1st July, 427 reactors were in operation across 31 countries around the world, with a combined installed capacity of 364 GW. Global nuclear capacity peaked in 2010 at 375 GW, the report said, while reactor numbers peaked in 2002 at 444. Annual nuclear electricity generation peaked in 2006 at 2,660 TWh, dropping to 2,346 TWh in 2012. (2)

The World Nuclear Industry Status Report 2013 (WNISR) provides a reality check of the current situation and trends of an industry in great difficulties. The 140-page report provides many different health indicators of the global nuclear industry and, for the first time, an essential status report on the complex situation that arose from the triple meltdown in Fukushima.

Peter Bradford, former commissioner at the US Nuclear Regulatory Commission, writing in the foreword and *The Guardian* says the nuclear renaissance was "*just a fairy tale*". By early 2009, applications for 31 new reactors were pending at the US Nuclear Regulatory Commission. The promises came garnished with tales of remorseful changes of heart from oft-obscure nuclear converts. The 31 proposed reactors are now down to four actually being built and a few others lingering on in search of a licence, which is good for 20 years. Those four are hopelessly uneconomic but proceed because their state legislatures have committed to finish them as long as a dollar remains to be taken from any electric customer's pocket. Operating US reactors are being closed as uneconomic for the first time in 15 years. (4)

1. PV Tech 12th July 2013 http://www.pv-tech.org/news/solar_overtakes_nuclear_in_global_energy_output
2. Platts 11th July 2013 http://www.platts.com/latest-news/electric-power/london/global-nuclear-power-output-drops-7-in-2012-status-26092751
3. World Nuclear Industry Status Report 11th July 2013 http://www.worldnuclearreport.org/
4. Guardian 11th July 2013 http://www.theguardian.com/environment/2013/jul/11/nuclear-renaissance-power-myth-us

8. Emergency Planning

The Office for Nuclear Regulation (ONR) is expected to make an announcement soon on whether the emergency zone around the Sizewell nuclear site should be extended. (1) Suffolk emergency planners and officials from the site operators, EDF Energy and Magnox, recently met at the headquarters of the ONR to discuss whether the existing 2.4km zone should be extended to 4km. The Suffolk Resilience Forum, (2) comprising the county's emergency services and local authorities, put forward the idea of extending the zone in a public consultation following a review of the existing plan. The proposals also included the pre-distribution of "anti radiation" tablets to schools in the area. There was general support for the proposals from members of the public who responded to the consultation. But, despite people being evacuated from a 20km zone following the Fukushima disaster in Japan, EDF made clear that it considered the existing 2.4km zone for Sizewell to be "appropriate".

1. East Anglian Daily Times 11th July 2013 http://www.eadt.co.uk/news/sizewell_b_nuclear_watchdog_could_soon_make_a_decision_on_n_plant_safety_zone_extension_1_2273116
2. http://www.suffolkresilience.com/

9. Nuclear Benefits

UK communities could be paid millions of pounds to host nuclear power plants, but at a rate only a fifth of that offered to residents living near a windfarm. Eight sites in England and Wales could be in line to receive up to £1,000 per megawatt hour of electricity produced for up to 40 years after the reactors come online. The funds will be tailored to the areas and focus on ensuring a local economic legacy from the projects, the government said. Overall payments to an area like Hinkley, earmarked for two reactors, could reach £128m. (1)

But it would be taxpayers rather than energy companies that will foot the £1 billion bill. (2) The money would come from the business rates the developer has to pay anyway, or from central government funds. This is in contrast to wind farm developers or shale gas drillers, which have promised to pay generous compensation packages out of their own profits in addition to their business rates. Greenpeace said that the deal amounted to another subsidy for new nuclear. Doug Parr, its chief scientist, said: "*We can't go on like this*." Taxpayers should not have to foot the bill for new nuclear. "Whilst wind farms and even shale gas developers have to pay community benefits, only nuclear stations will get a fat taxpayer subsidy to fund them," he said. "Our entire energy policy is now absurdly distorted by the desperation to prop up EDF's faltering Hinkley C project, with the government piling the costs onto the taxpayer to avoid the embarrassment of admitting they backed the wrong technology."

Dale Vince, founder of green electricity company Ecotricity, complained that wind developers had to pay five times more in community benefits, and accused the government of "rigging" the energy system in favour of nuclear and gas. "*The Government shouldn't be picking winners in the energy industry, they should be providing a level playing field for competition*," he said. "*Are they really saying the impact of nuclear power in one fifth that of wind power*?" (3)

Campaigners opposed to Hinkley dismissed the funding as a "social bribe" that only amounted to £3.3m annually over 40 years. Theo Simon, a spokesman for the Stop Hinkley campaign, said the offer to Somerset county council comes at a time when £20m is being cut from its budget this year alone. "…it's really an acknowledgement that people in Somerset still feel profoundly unhappy about the whole plan for Hinkley C". (4)

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1. DECC 17th July 2013 https://www.gov.uk/government/news/communities-to-benefit-from-hosting-nuclear-power-stations Guardian 17th July 2013 http://www.theguardian.com/environment/2013/jul/17/hinkley-nuclear-power-community-benefits Telegraph 17th July 2013 http://www.telegraph.co.uk/finance/newsbysector/energy/10186485/Communities-near-planned-Hinkley-Point-nuclear-plant-in-line-for-128m-benefits.html
2. Times 17th July 2013 http://www.thetimes.co.uk/tto/business/industries/utilities/article3819094.ece
3. Business Green 17th July 2013 http://www.businessgreen.com/bg/news/2282958/nuclear-communities-to-receive-payouts-for-hosting-reactors
4. Guardian 17th July 2013 http://www.theguardian.com/business/2013/jul/17/hinkley-point-nuclear-plant-windfall-bribe

10. Will the Lights Go Out?

The risk of power blackouts could increase from once every 47 years now, to once every four years by 2015 if government policies fail to bring down electricity demand, energy regulator Ofgem has warned. (1) *The Times* says "*Britain faces blackout*" in a front page story. (2) And according to the *Daily Mail* (3) the National Grid has plans to "ration" electricity. But Ofgem says disruption to supplies is not "*imminent or likely*", and National Grid argues its proposals for coping with the problem have been misinterpreted by the media.

It's not the first time Ofgem has issued a warning about tightening electricity supply margins. Old coal power stations are shutting down because of European Union regulations designed to limit sulphur dioxide pollution. With renewables yet to ramp up and new nuclear too late to be any help, the country is facing a short term supply squeeze. The Ofgem report (4) highlights what it calls a "*faster than anticipated*" tightening of electricity supply towards the middle of this decade.

National Grid has issued a consultation (5) suggesting how it can get round the problem. In its preferred option, businesses would be paid to not consume energy during certain periods - helping to balance demand. National Grid doesn't agree that this means electricity will be rationed. The scheme would be voluntary. Businesses would be given the option to enter into a contract where they promise not to consume electricity when demand is unusually high. This would be "*a very rare occurrence*" – perhaps a few hours once or twice a year.

Michael Fallon, the energy minister, insisted the Government would not allow blackouts to happen, although he admitted there was a risk of power shortages in the next three years. He said there is going to be less reserve capacity in three years' time but we have got time to deal with that. (6)

Utilities could be paid to bring mothballed power stations back into commission under government plans to bridge the looming power supply gap, according to Ed Davey. Utilities might need financial incentives to fire up gas-fired power stations. (7)

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1. Carbon Brief 28th June 2013 http://www.carbonbrief.org/blog/2013/06/will-britain-have-blackouts-and-power-rationing-or-not
2. Times 28th June 2013 http://www.thetimes.co.uk/tto/business/industries/utilities/article3802095.ece
3. Daily Mail 27th June 2013 http://www.dailymail.co.uk/news/article-2349719/Blackout-alert-Electricity-rationed-Power-cuts-2-years-unless-industry-cuts-warns-regulator.html
4. Ofgem 27th June 2013 http://www.ofgem.gov.uk/Media/PressRel/Documents1/27June2013.pdf
5. National Grid 27th June 2013 http://www.nationalgrid.com/NR/rdonlyres/432E936B-ABDF-48A0-9021-9B34455918C2/61220/130627BalancingServicesConsultationfinal.pdf
6. Telegraph 30th June 2013 http://www.telegraph.co.uk/finance/newsbysector/energy/oilandgas/10151385/The-lights-will-stay-on-insists-energy-minister.html
7. FT 30th June 2013 http://www.ft.com/cms/s/6f32ca20-e009-11e2-bf9d-00144feab7de.html

11. Plutonium

The US General Accountability Office (GAO) says the MoX fuel fabrication plant at Savannah River is more than three years behind its 2016 completion deadline and is now expected to cost $3 billion more than planned. The GAO said the project's price tag had ballooned to $7.7 billion. The Obama administration says the high costs "*may make the project unaffordable*" and is looking for different ways to dispose of plutonium. (1) The cost of keeping the plant running for 15 to 20 years is likely to be another $8 billion to $12 billion, bringing the total price to nearly $20 billion. Consequently after an expenditure of $3.7 billion — the incomplete facility is on the brink of being cancelled.

US Energy officials told Congress in 2002 that the design of the plant was 60 percent complete and its technology had been proven by decades of operations by two MOX facilities in France. Areva owns 30 percent of the US contractor Shaw Areva MOX Services LLC. (2)

For the past decade, Washington has known how to dispose of excess U.S. plutonium at a cost estimated to be hundreds of millions of dollars less than what the Energy Department is spending on a South Carolina MoX Plant. Instead of burning the plutonium, the cheaper alternative mixes it with glass or ceramics and some other materials, so it can be buried deep underground. The government — until now — has rejected that option. But the immobilization alternative is now getting a closer look. (3)

Friends of the Earth USA has released a 30-second ad which portrays supporters of the MoX Fuel Fabrication Facility as pigs in "lobbyist suits." (4)

Meanwhile, in the UK Paul Flynn, MP for Newport West has tabled a motion on the proposal to build yet another MoX Plant at Sellafield:

The motion suggests: "*That this House believes that proposals to build a second mixed oxide (MOX) plant at Sellafield at a cost of up to £5bn of taxpayers' money would be an outrageous waste of money following the lamentable failure of the first MOX plant, which had an efficiency of less than seven per cent.*" (5) (6)

1. San Francisco Chronicle 17th April 2013 http://www.sfgate.com/news/article/Federal-regulators-MOXplant-making-good-progress-4441513.php
2. Centre for Public Integrity 10th July 2013 http://www.publicintegrity.org/2013/06/25/12816/nuclear-waste-1-billion-energy-department-project-overshoots-its-budget-600-percent
3. Tuscon Sentinel 5th July 2013 http://www.tucsonsentinel.com/nationworld/report/070513_nuclear_waste/nuclear-waste-dc-has-ignored-cheaper-way-dispose-plutonium-until-now/
4. FoE USA 19th June 2013 http://www.youtube.com/watch?v=d2PTwods3Y4&feature=youtu.be
5. Whitehaven News 15th July 2013 http://www.whitehavennews.co.uk/labour-mp-blasts-outrageous-sellafield-plan-1.1070232
6. Early Day Motion No. 397 http://www.parliament.uk/edm/2013-14/397

12. Community Energy

In less than a decade ordinary Germans have raised €63bn through people-powered finance to fund their country's renewables revolution. By embracing renewable energy crowdfunding in the UK, we could replicate this success, meet our energy investment challenge, and make the "Big 60,000" become a reality. In a recent interview for *Business Green*, Greg Barker, Minister for Energy and Climate Change, described crowdfunding as "*an incredibly powerful*" funding model with the capacity "*to help deliver my ambition for a far more decentralised energy system and achieve the goal of turning the Big Six into the Big 60,000*". (1)

The German *Energiewende* is the world's most ambitious programme to move rapidly to a low carbon energy system. Although not without its problems, this transformation has meant that Germany already gets 25% of its electricity from renewable sources. And the extent of citizen financial participation is striking. Almost half (46%) of the country's renewable power capacity is currently owned by private citizens and farmers.

The UK has so far maintained centralised power generation and reducing carbon emissions mainly by switching to gas, but has had a fairly difficult time getting fast growth in renewable energy. This route has been cheap (whether it continues to be so in future depends on the price of gas), but hard to sustain. A major part of the underlying reason for this is that the system remains highly centralised and in the hands of large companies that are generally unpopular with the public. There is support for renewable energy, but that support is quite thin, in the sense that people feel much of the benefit of policy support goes to developers and large generating companies. In Germany, by contrast, decarbonisation has been driven by a much deeper penetration of renewables, but these are largely in the hands of individuals, farmers, small businesses, cooperatives and municipalities. This creates an enormous constituency that has a vested interest in renewable energy, added to by the fact that Germany has engineered an industrial policy that means that a lot of the equipment installed is made by German workers. (2)

Decentralised electricity generation will need to be an important part of the transition to a low carbon economy. The transition will require smaller-scale planning and action at the local level and our city authorities have a great opportunity to take ownership of their local energy practices, by working with the private sector to deliver sustainable, low-carbon solutions. (3)

There is now enough privately generated electricity in the UK to power most of the Midlands, and it is farmers and wind turbines that increasingly are making Britain a nation of independently owned mini power stations. Britain now has more than 2,000 independently owned commercial-scale power projects – that's an increase of 24% in one year of the number of mini power stations' owned by businesses, farms, cooperatives and local authorities, and not the Big Six energy companies. Those power plants, are capable of producing 4.7 gigawatts of electricity — enough to keep the lights on in 3.9 million homes. (4) They include Anaerobic Digestion plants which turn organic waste into biogas, community wind turbines, and solar

installations on the roofs of factories and schools. Combined, they now generate £768m worth of electricity each year. (5)

Community Energy Scotland has helped 1400 projects get up and running in eight years, some of them micro schemes where affordable forms of renewable energy have kept schools, church halls and other vital local resources warm and usable, often making popular village hubs out of semi-derelict freezing husks. But others, some of which grew out of the confidence generated by micro schemes, are now sources of serious income for communities who use profits from selling green energy to build capacity and resources. The earliest ones like Ghigha and Westray are shining examples while the £100,000 annual profit from the Shapinsay project has funded a local transport system and an out-of-hours ferry service. Slightly bigger schemes, though still involving a handful of turbines, can treble that income for 25 years. The beauty of all of this is that local people determine local priorities, having planned and built small local wind energy schemes to their own specifications and spent the proceeds according to their own priorities. (6)

Abundance Generation is looking for investors seeking a green approach to profits. They are being invited to put as little as £5 into a project that could, organisers say, deliver a return estimated at up to 8.6%. The company describes itself as a "community finance platform" allowing small investors to put money into UK renewable energy schemes and receive a regular cash return based on the energy produced. Their latest project is run by Oakapple Renewable Energy, based in Leeds. The money will fund a portfolio of rooftop solar panel systems on new-build homes across the UK that are eligible for the government's feed-in tariff. Homeowners can use as much of the electricity generated as they need, for free, while investors get an "estimated return" of 7.35% to 8.6%. (7)

There are also a number of community co-operatives around the country that allow people to invest in renewable energy and, hopefully, share in the financial benefits. The Spirit of Lanarkshire Wind Energy Co-operative has unveiled a public share offer to raise up to £2.7m for stakes in the Nutberry and West Browncastle wind farms near Coalburn and Strathaven respectively. The co-operative has been created by Energy4All, a not-for-profit organisation which helps communities around the UK develop renewable energy schemes. Individuals and organisations can invest between £250 and £20,000 by buying shares. A spokesman says: "If these wind farms perform as well as existing Energy4All Scottish co-ops, we can expect an average annual return of around 8.5%."

In early July the Government announced plans to allow communities to earn cash-back for generating power from larger renewable energy projects. This went by largely unnoticed by the press; picked up by just a handful of trade websites. But community power is not to be sniffed at. Community energy projects up to 10MW capacity now stand to benefit from the Feed-in Tariff scheme - guaranteed cash back from energy companies for generating electricity from renewable energy projects. This is fairly big stuff; we're talking solar farms and small groups of wind turbines. (8)

Meanwhile Citigroup says subsidies for rooftop solar installations are becoming redundant. Citi forecast that this technology is on course to becoming cheaper than gas. Citigroup point out that residential scale solar has already achieved grid parity in Germany, Spain, Australia and South West America. They forecast it will do so in Japan within three years and South Korea and Britain by around the end of the decade. Britain's electricity consumers thus face the prospect of being

compelled to pay more than a billion pounds a year to subsidise Hinkley at a time when Dixon's will be offering them a far better deal on their rooftop. (9)

1. Abundance Generation 28th June 2013 http://blog.abundancegeneration.com/2013/06/if-the-germans-can-do-it-so-can-we-its-time-for-renewable-energy-crowdfunding/
2. Political Climate 28th June 2013 http://politicalclimate.net/2013/06/28/the-german-tortoise-and-the-british-hare/
3. Scottish policy Now Issue 6. http://www.scottishpolicynow.co.uk/article/energy-master-planning-and-sustainability
4. Times 8th July 2013 http://www.thetimes.co.uk/tto/business/industries/industrials/article3810586.ece
5. Abundance Generation 12th July 2013 http://blog.abundancegeneration.com/2013/07/rise-of-indie-generators-shows-game-changing-power-of-renewable-energy/
6. Herald 4th July http://www.heraldscotland.com/comment/columnists/to-much-hot-air-opposing-community-energy-plans.21516074
7. Guardian 6th July 2013 http://www.theguardian.com/money/2013/jul/06/renewable-energy-investors-abundance
8. FoE 8th July 2013 http://foe.co.uk/green_blog/community_power_up_40701.html
9. Tom Burke 23rd June 2013 http://tomburke.co.uk/2013/06/23/nuclear-nonsense-3/