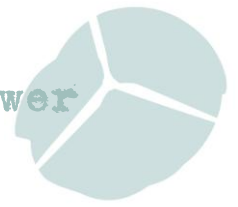


No.83 March 2016

1. **Labour and Nukes: conspiracy of hope killed off?**
2. **Nuclear threat to renewables**
3. **Germany 2016: Expanding renewables, stagnating decarbonisation**
4. **Letter from Stop Hinkley Campaign to EDF Energy, 15th February 2016**
5. **The Green Gas Alternative**



1. Labour and Nukes: conspiracy of hope killed off?

Lisa Nandy, the Shadow Secretary of State for Energy and Climate Change has called on the government to come up with a "Plan B" in case Hinkley Point C is never built. But instead of taking the opportunity to argue the case for more renewables she has called on the government to find cheaper ways to get more nuclear stations built in future. (1) She now wants the Government to look at new reactor types including Molten Salt Reactors, Heavy Water Reactors, and Fast Reactors (2) A far cry from Jeremy Corbyn's manifesto last summer which pointed to the 8 countries, 55 cities and 60 regions which are planning to go 100% renewable over the next few decades which Britain should be part of. He said Britain needs the Big 60 million not the Big 6. In his interview with Greenpeace's Energydesk he said "no" to new nuclear power stations. (3)

When she was first appointed Nandy signaled that the government could no longer count on the opposition's backing for Hinkley. But this has been the case for a while. In the run-up to the General Election shadow energy minister, Tom Greatrex, now Chief Executive of the Nuclear Industry Association, called for the Hinkley deal to be scrutinised by the National Audit Office (NAO) to make sure it was the best deal for the UK taxpayer. Baroness Worthington, shadow spokesperson for energy and climate change in the House of Lords attacked the deal with EDF saying it was having a "massive destabilising" effect on the energy market and causing a "crisis of confidence" in the future of energy production in the UK. Ed Balls who would have been Chancellor had Labour won was reportedly warned by Treasury officials that the costs for Hinkley were frighteningly out of control.

But her latest statements appear to be a backward step from commitments to the Labour Party Conference which looked encouraging. (4) She told the 2015 Conference about how the Tories were attacking the cheapest low carbon energy available to us – onshore wind, and pulling the rug from under the solar industry, wasting billions on an energy efficiency scheme that failed, and negotiating a deal to pay Chinese and French firms over the odds for nuclear power. Nandy said she and Jeremy don't want to nationalise energy – they want to democratise it.

"There should be nothing to stop every community in this country owning its own clean energy power station. Across the country schools are already taking the initiative and going solar. Generating power and heat for their own use. With the right support community-based energy companies and co-operatives could be a new powerhouse and a path to a more secure energy future".

She said the new front bench is determined to work with towns and cities across the country to follow the lead of train blazers like Nottingham City Council which has set up its own municipal energy company.

"We want secure, affordable energy designed built and owned by the people of our country drawing on inspiration from around the world."



By February this year in an interview with Carbon Brief, much of this support for a decentralised energy future seemed to have been kicked into the long grass. Instead she talked about nuclear power being an:

“... important as part of the energy mix. I think it’s particularly important when you look at how we’re going to meet the commitments we made in Paris.”

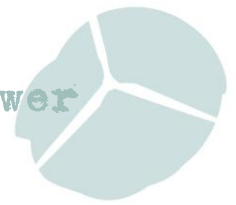
Even Jeremy Corbyn in an interview with the Carlisle News and Star last November seemed to accept the need for a new nuclear power plant in west Cumbria. (5)

Former Labour MP for Nottingham South, and decentralised energy advocate, Alan Simpson, writing in the *Morning Star* last August said: Corbyn’s plans for turning Britain into a clean energy economy are genuinely transformational - a fundamental rewrite of energy market rules — making energy “systems” more open, accountable, sustainable and affordable. It involves creating new social rights to the development of local energy systems and breaking the grip of Britain’s energy cartel. He wants towns, cities and regions to transform themselves into localised “virtual” power stations. He wants to create markets that sell “less” consumption before more, and take clean energy before dirty. Across the country, across generations, Corbyn has unleashed a conspiracy of hope — and that could be dangerous. It could be exciting. It could change everything. (6)

Nottingham City Council has launched its own Robin Hood Energy Company. It is a massive achievement for any local authority to get through the regulatory nightmare of obtaining a supplier’s licence. But it is not a game-changer. Leave aside the criticism that, in Nottingham at least, Robin is reliant on dirty energy rather than clean, the real problem is that it is illegal for the city to sell its electricity to local people — at least not at prices that could radically cut local electricity bills. This is the reality of today’s rigged British energy market. Other countries may allow localities to deliver increased energy security by generating their own “clean” energy, storing and sharing it locally, and selling it back to themselves at lower prices — but not Britain. Big energy runs the game, dictates the prices and walks off with all the subsidies. The Chancellor’s current plan to turn Britain’s renewable energy policies into a complete car crash comes at a time when he happily throws seven times more subsidies at non-renewable energy than renewables and strips people of their right to oppose dirty energy schemes. All this is what the Corbyn manifesto promised to overturn. What Labour has to grasp is that this isn’t just a departmental thing but a fundamental rethink of government and economics in the 21st century. (7)

But Nandy’s nuclear delusions stand in the way of the party engaging with the energy revolution. In Europe alone some 6,500 towns, cities and regions are committed to localised, “sustainable” energy systems. Nuclear advocates can’t bring themselves to admit that “smart” energy will sound the death-knell of both nuclear and fracking. Instead they trail around nuclear fictions about “baseload,” and fracking’s illusions of “security.” They live in denial of the extent to which technology, accountability and “clean” are already redefining the shape of tomorrow’s secure energy systems. (8)

Unfortunately last summer’s conspiracy of hope has melted away into a molten salt reactor.



1. FT 2nd March 2016 <http://www.ft.com/cms/s/0/4c68eb80-e094-11e5-8d9b-e88a2a889797.html>
2. Bloomberg 4th March 2016 <http://www.bloomberg.com/news/articles/2016-03-04/look-beyond-hinkley-for-britain-s-nuclear-future-labour-says>
3. Energydesk 7th August 2015 <http://energydesk.greenpeace.org/2015/08/07/jeremy-corbyn-interview-nationalise-the-big-six-a-solar-panel-on-every-rooftop-clean-coal/>
4. Labour Party 29th September 2015 <http://press.labour.org.uk/post/130122805099/speech-by-lisa-nandy-to-labour-party-annual>
5. Carlisle News and Star 7th Nov 2015 <http://www.newsandstar.co.uk/news/corbyn-we-need-to-protect-nuclear-jobs-and-regulate-the-industry-1.1230086>
6. Morning Star 15th Aug 2016 <http://www.morningstaronline.co.uk/a-d7fb-The-Corbyn-phenomenon-a-conspiracy-of-hope-1-2>
7. Morning Star 1st Oct 2015 <http://www.morningstaronline.co.uk/a-3bef-Politics-of-inclusion-is-important-but-so-is-politics-of-transformation>
8. Morning Star 24th Dec 2015 <http://www.morningstaronline.co.uk/a-ebf5-New-Labours-upper-crust-thought-they-were-born-to-rule-no-wonder-theyre-furious-with-Corbyn>



2. Nuclear threat to renewables

The Government's National Policy Statement (NPS) on Energy, published in July 2011, foresaw a need for 113 Gigawatts (GW) of electricity generating capacity in 2025 compared with 85GW now. 59GW of this would be new capacity, of which 33GW would need to be renewable energy, mostly wind, to meet commitments to the European Union. This would leave 26GW for industry to determine. At the time there was 8GW of non-renewable capacity under construction leaving a balance of 18GW still to be determined. The Government said it wanted a substantial portion of this to be nuclear. (1)

By the time the NPS was published the Government said energy companies had announced that they intend to put forward proposals to develop 16 GW of new nuclear power generation capacity by the end of 2025. (2)

By 2013 the Coalition Government's Nuclear Industrial Strategy admitted that 16GW of new capacity was unlikely to be complete until 2030. (3) With the announcement that Hinkley Point is not now expected to be generating until 2025 it looks unlikely that anything will be complete before then.

	Capacity	Annual output (90% load factor)	Investment Decision	Expected Opening Date
Hinkley Point C 2 x EPRs	3.2GW	25TWh	2016?	2025
Sizewell C 2 x EPRs	3.2GW	25TWh		2027 (4) - 2028 (5)
Wylfa 2 x ABWRs	2.7GW	21TWh	2018	2024 (6) First half of 2020s (7)
Oldbury 2 x ABWRs	2.7GW	21TWh		2027 (8) Construction not expected to begin until late 2020s or early 2030s (9)
Moorside 3 x AP1000s	3.4GW	27TWh	End of 2018	2024 – 2026. (10) 2025 (11)
Bradwell B 2 or 3 x Hualong One	2.3GW – 3.45GW	20TWh – 30TWh		No defined timetable
Total	17.5GW- 18.65GW	139TWh – 149TWh		Maximum by early 2030s

However, the Government has now made it clear that 16GW should be considered as only a first tranche of new nuclear reactors, and that up to 75GW could be installed by 2050. Firstly there are the plans for around 3 GW of Chinese reactors at Bradwell to be added to the original 16GW.

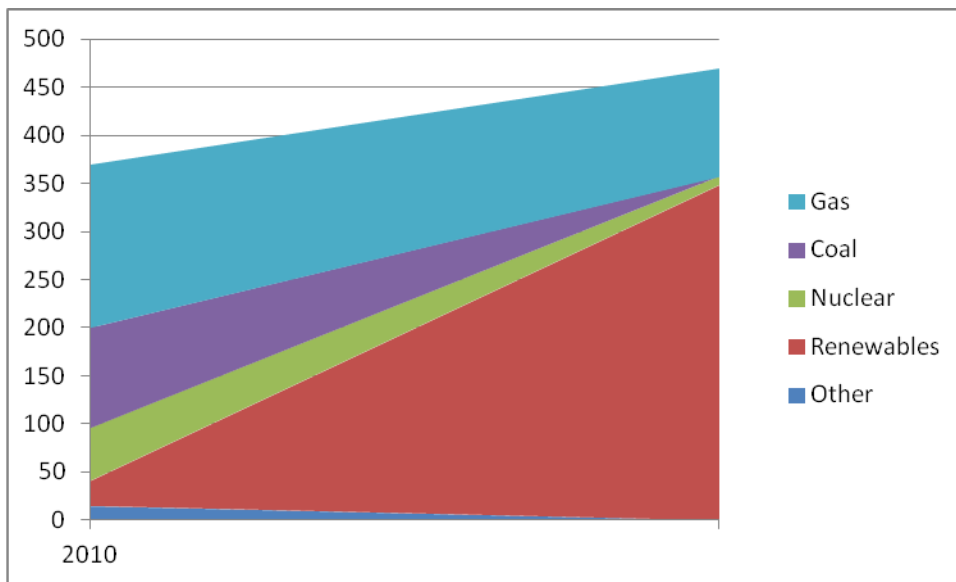


There is also discussion of around 7 GW of small modular reactors (SMRs) by 2035 with Trawsfynydd and Hartlepool mentioned of potential sites. There is also the possibility of a fast reactor “PRISM” reactor or CANDU plutonium “burner-breeder” reactor at Sellafield.

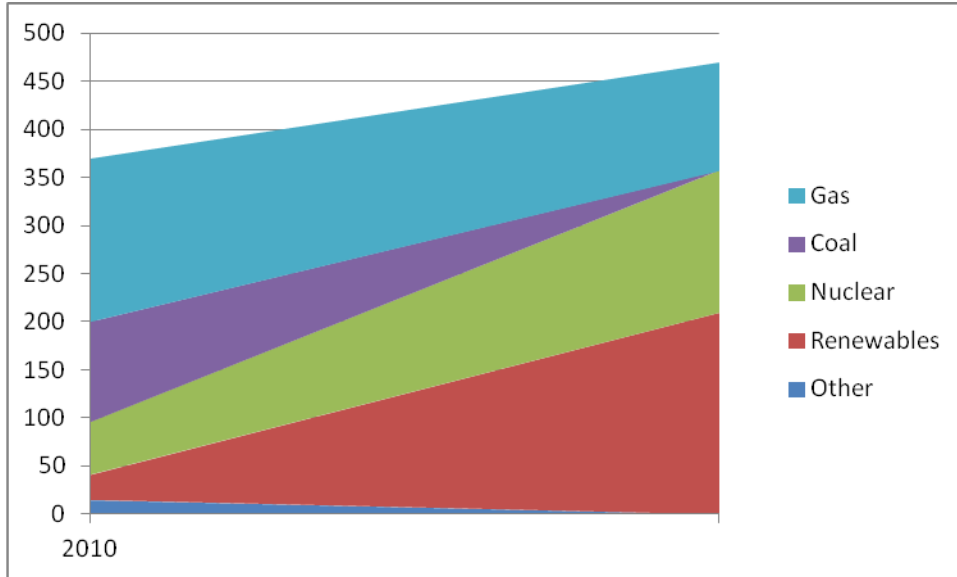
UK electricity demand was about 360TWh in 2014. But the NPS said that the Government expects a doubling of electricity demand – to around 720TWh - by 2050. In actual fact, as a recent report for Together Against Sizewell C has shown, the latest Government scenarios envisage increases in demand of only 29.6 to 52.9% by 2050 – taking demand to between 467TWh and 550TWh. (12)

Friends of the Earth’s September 2012 Plan for Clean British Energy, uses an electricity demand of 470TWh in 2030. It admits this is a higher demand than many other studies. It assumes the maximum energy efficiency under the Department of Energy and Climate Change model even though a report from McKinsey for DECC shows that much more could be achieved. However, using a conservative demand figure allows electricity to be used to promote faster decarbonisation in the heating and transport sectors. Here we will also use 470TWh to illustrate our argument.

Friends of the Earth’s non-nuclear Plan for Clean British Energy looks like this between 2010 and 2030. (13)

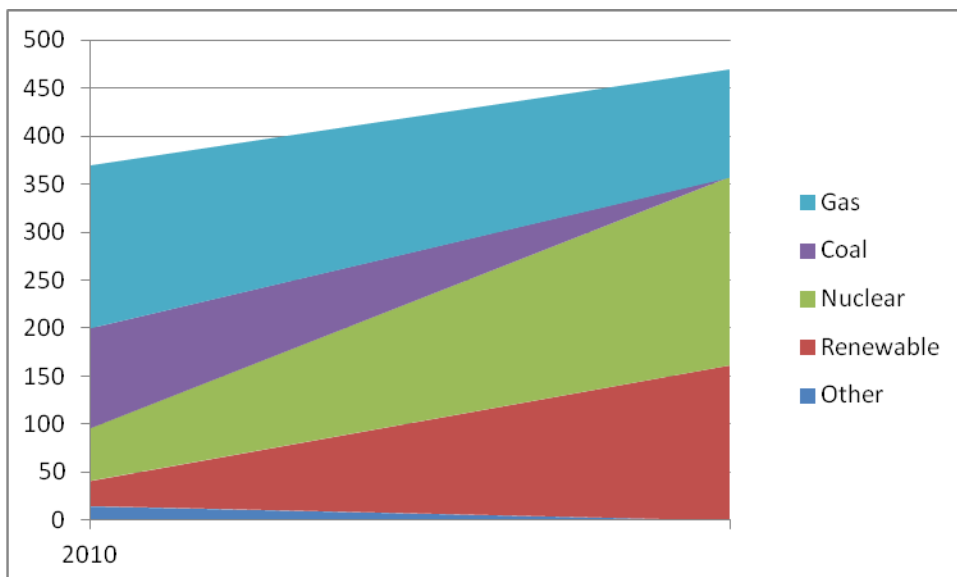


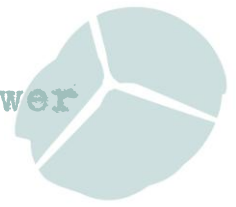
The new nuclear reactors currently proposed, including Bradwell B, might produce around 139TWh per year if they were able to operate at an unlikely 90% load factor. Sizewell B is also expected to be still operating until at least 2035 supplying perhaps another 9TWh bringing the total up to 148TWh per year. Andrea Leadsom, Minister of State for Energy and Climate Change, told the House of Commons that the Government hopes to be able to meet 35% of the UK’s electricity needs from nuclear by 2028. (14) This now looks extremely unlikely, but if the currently proposed reactors are completed by 2030 or 2035, nuclear could be providing 31% of the 470TWh of demand. Such a scenario might look like this:



A 75GW nuclear programme by 2050 looks like pure fantasy. It is part of a scenario where total installed capacity in the UK is around 160GW by 2050. (15) 75GW of nuclear capacity could generate perhaps as much as 585TWh or between 80% to more than 100% of demand. It would require an eye watering 30GW of new capacity to be built between 2030 and 2040 and another 30GW between 2040 and 2050, and newer fission technologies such as small modular reactors (SMRs) or Generation IV (mainly fast) reactors. Spent fuel reprocessing, fusion reactors and alternative fuel cycles (such as Thorium) might also be needed. (16) While to most commentators this would sound like a nuclear fantasy, unfortunately the Government does not appear to be looking seriously at alternative non-nuclear energy strategies. (17)

Neil Crumpton has suggested what looks like a much more realistic prospect. (18) By 2035 we could have all of the reactors in the table above, plus 7GW of Small Modular Reactors and Sizewell B could still be open. In all this 26GW could be generating around 196TWh/yr. (This could mean nuclear providing 36% to 42% of electricity demand – not that different to Leadsom’s 35% by 2028.) This might look like this:





Renewables provided 19.1% of electricity demand in 2014 or around 65TWh. In Friends of the Earth's scenario renewables grow to 348TWh by 2030. In our medium nuclear scenario renewables would be limited to 209TWh by 2030/5 – a drop of 139TWh. In the more extensive nuclear scenario renewables are further limited to only 161TWh, which means the renewable industry would miss out on supplying 187TWh.

We have previously reported assertions by Dr Dave Toke that spending on Hinkley Point C would obliterate spending on renewables, because of the way the Levy Control Framework is organised. (19) At the moment it looks as though the UK will miss its European target which requires us to produce around 30% of our electricity supplies from renewable resources – about 108TWh in 2020 rising to 141TWh in 2030. The current Government doesn't appear to have any ambition to go beyond this low level of renewable supply.

-
- (1) Overarching National Policy Statement for Energy, (EN1) DECC, July 2011 https://whitehall-admin.production.alpha.gov.co.uk/government/uploads/system/uploads/attachment_data/file/37046/1938-overarching-nps-for-energy-en1.pdf
 - (2) EN1 para 3.58
 - (3) Nuclear Industrial Strategy: The UK's Nuclear Future, Dept Business, Innovation & Skills, March 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/168048/bis-13-627-nuclear-industrial-strategy-the-uks-nuclear-future.pdf
 - (4) Liz Keenaghan-Clark of DECC to Westminster Energy Forum February 2025 <http://www.westminsterenergy.org/sites/default/files/WEF%20Nuclear%20slides%20Feb%202015.pdf>
 - (5) Ipswich Star 3rd Feb 2014 http://www.ipswichstar.co.uk/news/sizewell_c_construction_of_any_new_nuclear_plant_unlikely_before_2018_at_least_two_years_later_than_expected_1_3278275
 - (6) Liz Keenaghan-Clark of DECC to Westminster Energy Forum February 2025 <http://www.westminsterenergy.org/sites/default/files/WEF%20Nuclear%20slides%20Feb%202015.pdf>
 - (7) Horizon website <http://www.horizonnuclearpower.com/>
 - (8) Liz Keenaghan-Clark of DECC to Westminster Energy Forum February 2025 <http://www.westminsterenergy.org/sites/default/files/WEF%20Nuclear%20slides%20Feb%202015.pdf>
 - (9) World Nuclear News 2014 20th March 2014 <http://www.world-nuclear-news.org/C-Horizon-gears-up-for-expansion-2003144.html>
 - (10) NuGen website <http://www.nugeneration.com/>
 - (11) Liz Keenaghan-Clark of DECC to Westminster Energy Forum February 2025 <http://www.westminsterenergy.org/sites/default/files/WEF%20Nuclear%20slides%20Feb%202015.pdf>
 - (12) Nuclear Power: New Evidence, Together Against Sizewell C, 2015 <http://www.tasizewellc.org.uk/images/publications/reports/Nuclear-New-Evidence-final.pdf>
 - (13) A Plan for Clean British Energy, FoE, September 2012 https://www.foe.co.uk/sites/default/files/downloads/plan_cbe_report.pdf
 - (14) House of Commons Hansard 25 June 2015 <http://www.parliament.uk/business/publications/hansard/commons/todays-commons-debates/read/unknown/9/>
 - (15) Nuclear Industrial Strategy: The UK's Nuclear Future, Dept Business, Innovation & Skills, March 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/168048/bis-13-627-nuclear-industrial-strategy-the-uks-nuclear-future.pdf
 - (16) Nuclear Energy Research & Development Roadmap: Future Pathways, DECC, March 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/168043/bis-13-632-nuclear-energy-research-and-development-roadmap-future-pathway.pdf
 - (17) Guardian 26th March 2013 <http://www.guardian.co.uk/environment/2013/mar/26/nuclear-free-future-energy-strategy>
 - (18) See http://nuclearpolicy.info/docs/nuclearmonitor/NFLA_New_Nuclear_Monitor_No39.pdf
 - (19) Dave Toke 13th Oct 2014 <http://realfeed-intariffs.blogspot.co.uk/2014/10/hinkley-c-deal-likely-to-wipe-out-uk.html>



3. Germany 2016: Expanding renewables, stagnating decarbonisation.

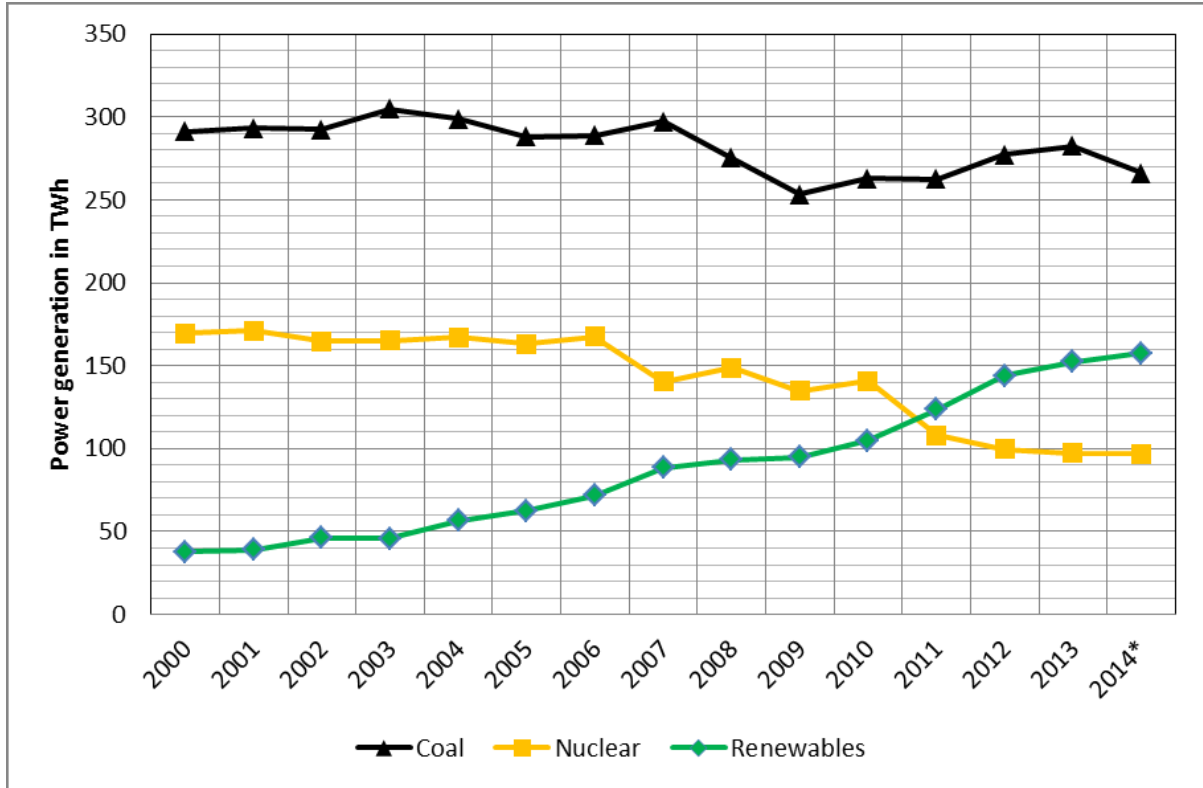
Former Tory Energy Minister Lord Howell told the Radio 4 Today Programme on 29th February that the UK shouldn't model itself on the German Energiewende because it's going really badly; it is a perfect example of unintended consequences – the reverse results from what you are trying to do; they are going to close down nuclear by 2022 and as a result of that they are burning more coal than ever – lignite brown coal which is the dirtiest of all; they are importing more Russian gas; they are importing French nuclear electricity; industry is in uproar because they are undermining their costs (although they are not quite as bad as us); it's a mess; so the decision to phase out nuclear in Germany was really a decision against low carbon.

But on Hinkley he said EDF is still wondering about how to raise the finance for it. The reason is because it is a gigantic dinosaur reactor-type. No other reactor of this type is working anywhere in the world – the one they built in Finland is years behind; it is probably the wrong design – it's an old fashioned system. We can look forward to nuclear development in the 2020s and 30s in this country which will be smaller, cheaper, safer and with less waste. He has been very doubtful all along about whether Hinkley C will take off; it is looking very iffy indeed.

Energy Post reported that The Energiewende has come in for a good share of mockery in the international media, especially in the Anglo-Saxon and French press. It was widely reported that CO₂ emissions in Germany, famous for its anti-nuclear stance and multibillion-euro renewable energy programme, increased in 2013 (and 2012). True enough, in 2013 German emissions – although still well below the levels of 1990 and 2000 – did rise by 1.5%. And the reason for this was the growth in Germany's coal-fired power generation. Most commentators swiftly linked this trend – increases in CO₂ emissions and coal-fired power generation – to Germany's energy transition.

But if we look at the figures we get quite a different picture. The yellow line in the Figure depicts how the amount of electricity from nuclear declined from 2000 to 2014. The green line shows the steady rise of renewable energy in the same period. In 2011, more electric energy was provided from renewable sources than from all nuclear facilities. In 2014, renewables achieved a share of approximately 29% in total electricity generation. So renewables have substituted the falling nuclear production in terms of total annual power generation and are very likely to continue doing so until 2022 when the last nuclear plant will be shut down.

But we know that coal generation did increase in 2012 and 2013. As renewables and coal increased, and nuclear dropped, overall power generation in Germany increased from 613 to 633 terrawatt-hours (TWh) from 2011 to 2013. Did Germans use that much more energy then? No! In fact, domestic power consumption declined during the same period! The German coal binge is related to the increase in overall power generation and exports, not to the Energiewende as such. It is primarily driven by developments in international fuel and carbon markets – and hardly, if at all, by Germany's energy transition. Most likely, it would have occurred in the same way if Germany had not phased out nuclear and promoted renewables.



Overall, Germany generated a record 647 TWh of power in 2015, up 3% on 2014, of which 60.9 TWh, or 10%, was exported abroad (up around 50% on 2014), primarily to Austria and the Netherlands. While renewables comprise the majority of Germany’s domestic power supply, increasing amounts of coal are being exported abroad. (3)

Despite some short-term market and industry disruptions, the Energiewende policy has been largely successful in achieving its stated goals, and public support remains strong. As reported in a January 2016 by Agora Energiewende, a Berlin-based energy think tank from 2012 to 2015, public sentiment in Germany has been strongly supportive of the *Energiewende*, with 90% saying it is important or very important.

Germany added more renewable energy than ever before in 2015 – 32TWh. While solar photovoltaic (PV) capacity is slowing (only about 1.5 GW were installed last year), wind experienced record growth of 50% year over year. The big growth by percentage was in offshore wind, where power generation jumped from just 1.4 TWh in 2014 to above 8.1 TWh in 2015 as the first of several large “windparks” came online. Throughout 2015 dozens of similar large windfarms were under construction in the North Sea, and even more capacity will come online throughout 2016. The current Government wants the renewable share to reach 40-45% by 2025 and between 55-60% by 2035.

Today renewables are on target to exceed the first milestone, so amendments to the renewable energy laws are being introduced which will rein in onshore wind and solar. As more offshore wind comes online in 2016, the entire energy sector is being re-evaluated. Unlike solar and onshore wind which is mostly owned by small companies and communities or co-operatives, offshore wind is being developed by large companies – probably the same fossil fuel companies

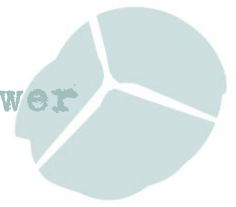


that originally bet against renewables – the same ones now exporting excess coal-fired electricity abroad.

This means the rate of renewable growth is likely to be cut by two-thirds over the next decade, and taking a leaf out of David Cameron's book, feed-in tariffs will be replaced by auctions next year. Merkel's Government seems to be hoping that a large chunk of the difference between today's 30% renewable share and the 2025 40-45% target will be met by large offshore wind farms – German citizens are being shut out of future growth.

Far from going really badly, as Lord Howell suggests, the transition to renewables in Germany has been going too well. The prospect of more and more communities declaring energy independence is too much for the big energy companies to endure. They are now moving to consolidate their influence on the future direction of the Energiewende. They will fight to stop a renewable target of 80% for 2050 being implemented and they will fight to be allowed to continue exporting coal-fired electricity despite German commitments to tackling climate change. (4)

-
1. Today Programme 29th February 2016 <http://www.bbc.co.uk/programmes/b071skp3> (Start 01.17.28)
 2. Energy Post 17th Feb 2015 <http://www.energypost.eu/energiewende-dark-side/>
 3. PV Magazine 11th Feb 2016 http://www.pv-magazine.com/news/details/beitrag/germany-2016--expanding-renewables--stagnating-decarbonisation--increasing-power-prices_100022722/
 4. Power Mag 3rd March 2016 <http://www.powermag.com/germanys-energiewende-new-turning-point/?pagenum=1>



4. Letter from Stop Hinkley Campaign to EDF Energy, 15th February 2016

Dear EDF Energy,

We are writing to you before another EDF Board Meeting at which it is rumoured a final investment decision on Hinkley Point C could be made to urge you to scrap this project altogether.

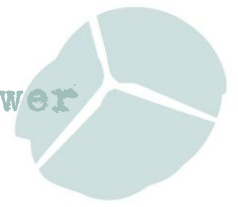
As has been widely reported, the managers' union CFE-CGC, which has a seat on EDF's board, has voiced its concern about the significant financial issues raised by investing in Hinkley Point C and says such a huge commitment could put the very future of EDF as a company in danger. The Association of Employee Shareholders (EAS) - has asked for the project to be halted. (1)

We understand that EDF's financial problems include:

- Debts of €37 billion (£28 billion) and its share price has fallen from €29 in April 2014 to €10.32 last week. Financing a massive project like Hinkley Point C will clearly place a significant strain on finances. (2) The union notes that the debt related to Hinkley Point C will need to be 100% fully consolidated into the EDF accounts – an amount which exceeds the market capitalization of the Group.
- EDF is now facing a €100m bill for upgrading its nuclear power stations in France according to a report by French Government auditor – the Cour des Comptes – rather than €55bn previously estimated. (3)
- EDF has also agreed to buy between 51 and 75% of the struggling French reactor builder Areva NP which is valued at €2.7bn. So will have to find at least €1.4bn for that.
- The French waste agency Andra has estimated that the cost of its deep geological disposal project could be as high as €30bn rather than the €20bn estimated by EDF. (4) French energy minister Ségolène Royal has signed a decree setting the 'reference cost' at €25 billion – still a jump of €5bn for EDF. (5)

The unions also mention the need for EDF to invest in renewable energy across the globe. In France the Parliament passed a law last year to reduce the share of electricity provided by nuclear power from 75% to 50%. The Cour des Comptes says this could lead to the closure of 17 to 20 reactors.

The union has also highlighted the construction problems at reactors similar to the Hinkley design at Flamanville in Normandy and Olkiluoto in Finland. Flamanville is currently 6 years late and around €7.2bn over budget. Olkiluoto is expected to be 10 years behind schedule and €5.5bn over budget. On top of all this the French nuclear regulator ASN now says it won't decide until the end of this year what to do about weak spots in steel of the pressure vessel at Flamanville. If ASN decides that Areva needs to replace the reactor vessel or lid because of the weak spots, the Flamanville project could face significant further delays and cost overruns. (6)



The Union wants to know how EDF can assume a 9-year construction time for Hinkley Point C when 10-15 years has been the norm so far, and why the company is considering embarking on the construction of two more EPR reactors when none have yet been completed anywhere in the world.

Like the unions we at Stop Hinkley believe the EDF Board would be foolhardy to commit to building two EPRs at Hinkley Point C when the Company is in such a precarious position. It is not difficult to see why EDF's employee shareholders fear that the project could sink the company altogether. The Company is in no fit state to finance such a massive new project. But as people who live in the vicinity of the proposed Hinkley Point C, our main concern is not the future of EDF as a Company. Our concern is about the future of our community.

Whatever EDF decides at its Board meeting on 16th February we find it very hard to believe that this project will ever come to fruition. We have lived with the threat of Hinkley Point C (in this incarnation), and all the disruptions that that entails, for a decade now, and yet all we have got to show for it is a big hole in the ground. If you make a positive final investment decision tomorrow the uncertainty and disruption created by this project will continue.

If you read the Energy Press, as we are sure you do, you will know by now that many commentators consider baseload power as a concept to be obsolete. A system powered 100% by renewables supported by a backbone of electricity storage, smart grid technology and demand management, energy efficiency, and 21st century technology is perfectly feasible now. In fact, not only is it feasible, but strong market and social forces mean that such a system is increasingly the only kind of system that makes any sense.

There are huge renewable resources available in the South-West which are capable of boosting our rural economy and ensuring our energy security. All that is holding us back from a renewable revolution is a failure of political will. Regen South West has pointed out that if the UK Government puts in place the policies needed to meet 15% of the South West's energy requirements (N.B. Energy, not just electricity, i.e. including heat and transport) this will deliver £10bn of investment and 24,000 jobs. The UK is committed, under EU rules, to meeting a 15% target for energy by 2020. (7)

The South-West region has the renewable energy resources to meet more than 100% of its total energy needs, including replacement of liquid fuels and electrifying railways. We should aim to do this by 2050. According to a recent report by The Resilience Centre the South-West has the potential to generate an estimated 68TWh of energy made up of 43TWh of electricity energy, and 25TWh of thermal energy. This equates to just over 100% of total future energy needs for the South-West assuming a 40% powering down due to energy efficiency measures by 2050. A programme to deliver a 100% renewable energy target would create 122,000 jobs. The capital cost of delivering such a programme would be £59,484m, including £8,784m on Smart Grid energy storage. This is 72% of equivalent nuclear costs for delivering the same amount of energy. (8)

When renewables become the dominant source of power, baseload power stations get in the way because they have to operate as close to full-time as possible and cannot power up or down quickly. These old-fashioned plants are not merely a problem, they become an obstruction. Instead, it is necessary to have power sources whose power can be adjusted up and down



quickly. According to UBS Bank, “Large-scale power generation ... will be the dinosaur of the future energy system: Too big, too inflexible, not even relevant for backup power in the long run.” (9) Large baseload power stations, such as nuclear and large coal-fired power stations are not flexible because they are hard to turn on and off. So building more baseload power stations would actually undermine moving towards a clean energy future. It would simply mean that during peak times when renewables are supplying lots of electricity, some of that power will go to waste. (10)

A large-scale experiment, called Kombikraftwerk, started in Germany on 1st January 2006. This is a computer model which uses actual real time power output from a number of wind, PV and biogas electricity generators. It has demonstrated the feasibility of operating a virtually 100% renewable electricity system. (11) Most utilities are now looking at how they can carve out a future for their companies in a world which is dominated by decentralised energy. For instance the Chief Executive of Engie UK Mr Petrie says he wants Engie to “... focus is on the demand side. The future is going to be much more about decentralized energy”. (12)

We urge you, as a Company, to ditch the Hinkley Point C proposals which threaten to trash our communities and the very future of EDF itself. Instead you should embrace the decentralised energy revolution and help us in South-West England to get on with planning our 100% renewable energy future.

-
1. Guardian 13th November 2015 <http://www.theguardian.com/environment/2015/nov/13/hinkley-point-nuclear-plan-puts-survival-edf-at-risk-say-employee-shareholders>
 2. Times 27th January 2016 http://www.thetimes.co.uk/tto/business/industries/industrials/article4675395.ece?CMP=OTH-gnws-standard-2016_01_27
 3. FT 10th February 2016 <http://www.ft.com/cms/s/581cb61a-d00d-11e5-92a1-c5e23ef99c77.html>
 4. Power Engineering International 13th Jan 2016 <http://www.powerengineeringint.com/articles/2016/01/edf-disputes-french-nuclear-waste-agency-estimates-on-costs.html>
 5. World Nuclear News 18th Jan 2016 <http://www.world-nuclear-news.org/WR-Minister-sets-benchmark-cost-for-French-repository-1801165.html>
 6. Reuters 20th Jan 2016 <http://www.reuters.com/article/edf-france-nuclear-idUSL8N1541PE>
 7. RegenSW Manifesto http://www.regensw.co.uk/wp-content/uploads/2015/04/Manifesto_2015.pdf
 8. The Power to Transform the South West, Resilience Centre and European Greens April 2015 http://mollymep.org.uk/wp-content/uploads/The-power-to-transform-the-South-West_FINAL1.pdf
 9. Will solar, batteries and electric cars re-shape the electricity system? UBS Global Research 20th August 2014 <http://knowledge.neri.org.nz/assets/uploads/files/270ac-d1V0t04LmKMZuB3.pdf>
 10. Clean Technica 4th Feb 2015 <http://cleantechnica.com/2015/02/04/big-expensive-power-plants-undermine-clean-energy-future/>
 11. See Barnham, K The Burning Answer: A User’s Guide to the Solar Revolution, Weidenfeld & Nicolson, 2014, pages 153-6 and Barnham, K et al Energy Policy 54 (2013) 385-390
 12. Times 2nd Jan 2016 <http://www.thetimes.co.uk/tto/business/industries/utilities/article4654409.ece>



5. The Green Gas Alternative

If the UK really wants 3.2GW of 'baseload' power in Somerset, then the Hinkley C nuclear power station is not the only way. Wind power with 'wind to gas' plant and CCGT gas power stations could do the same - faster, cheaper, more flexibly, and at much lower technical and financial risk, according to the Energy Brainpool, which has produced a study for Greenpeace Energy to submit to the European Court.

The group performed a simulation of electricity production during August 2025, which showed that surplus wind power above the 3.2GW equivalent to Hinkley Point C is used in windgas facilities first to produce hydrogen (H₂), then convert it to methane (CH₄). This is then fed into the conventional gas distribution system or stored in already existing gas storage facilities and later reconverted into electricity in combined-cycle gas turbine (CCGT) power plants when the need arises.

In a comparison using the figures from HPC's current subsidy programme and the present depression defined in Germany's Renewable Energies Act (EEG), wind power and windgas facilities can replace the Hinkley Point C nuclear power plant at a lower cost. The cost of the wind power and windgas alternative amounts to €101.4 billion; this figure is €7.2 billion lower than the subsidy cost of €108.6 billion that would accrue during the 35 years following the start of operations at Hinkley Point C in 2023. The cost calculation for the wind power and windgas alternative includes the construction and operation of all wind turbines as well as all electrolysers and CCGT (combined cycle) power plants.

Ecologist 17th Feb 2016

http://www.theecologist.org/essays/2987195/wind_power_with_windgas_is_cheaper_and_greener_than_hinkley_point_c_nuclear_plant.html

In the next issue of nuClear News we intend to review "Renewable Gas: The Transition to Low Carbon Energy Fuels by Jo Abbess, Palgrave Macmillan 2015.