Technology for a Sustainable Future
A bimonthly roundup of news and views on renewable energy developments and policies

Produced by NATTA, the independent Network for Alternative Technology and Technology Assessment.

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   Offshore wind gets cheap, hydrogen looks up, The Science & Technology Select Committee want more of everything

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Renew adopts an independent critical approach. It should not be taken to necessarily reflect the views of the Open University

Renew was for many years produced by Prof. Dave Elliott and Tam Dougan, then based at the Open University, as a NATTA membership subscription journal, with, from issue 100 onwards, a free shorter web version, Renew on Line, also being produced. Now run by NATTA independently of the OU, the latter still continues, delivered as a free bimonthly Blog. It includes a Forum section for discussion - worth looking at. In parallel, the full PDF bimonthly version of Renew is now offered as this password protected on-line version, available on a contract basis to students and staff on relevant University courses. This full version of Renew draws on the News sections of Renew On Line, so there’s some duplication, but it also has additional Features, Reviews & commentary sections. For a full guide to NATTA’s various offerings, and access to our free annual end of year review, see: http://renewnatta.wordpress.com

Don’t forget our short Renew Extra blog, now posted monthly focusing on general energy issues, not related to renewables. It’s at: http://newrenewextra.blogspot.co.uk/
Contact: d.a.elliott@open.ac.uk

Recent Energy Books by Dave Elliott:

If urls open oddly, refresh or paste in your browser

1. UK Renewables

**Tidal turbine go ahead** A 2MW O2 version of Orbital’s floating tidal device has won £3.4m from the Saltire Tidal Challenge Fund, to be built in Scotland: www.bbc.co.uk/news/uk-scotland-north-east-orkney-shetland-4971881

**ITM booms** ITM Power, the UK energy storage and hydrogen fuel company, is to expand its manufacturing headquarters in Sheffield, so that it will have a **Power to Gas** electrolyser manufacturing capacity of up to 1 GW p.a., the largest in the world: Gigastack. www.proactievinvestors.co.uk/companies/news/224261/itm-power-inks-agreement-for-new-manufacturing-base-in-sheffield-224261.html

**Good overview of UK hydrogen tech options** www.theenergyst.com/green-hydrogen-how-to-get-there

**Offshore Wind** capacity factors above 50%: https://reneweconomy.com/55349/uk-offshore-wind-load-factors-to-exceed-50/

**New CfD round** strike prices under £40/MWh: www.newpower.info/2019/09/offshore-wind-hits-record-low-below-40mwh/


Another analysis: https://theenergyst.com/national-grid-blackouts-4cp-analysis/

On responses: www.desmog.co.uk/2019/08/14/comment-blackouts-are-used-attack-renewable-energy-because-some-media-just-can-t-let-go-their-anti-climate-action

Would more nuclear help? Not really – it’s too inflexible, see later.

Would the Faraday smart grid system have helped? www.faradaygrid.com/the-faraday-grid

Sadly, it’s gone bust! www.current-news.co.uk/news/faraday-grid-plunged-into-administration-after-funding-bids-fall-short

But this may help: www.theguardian.com/business/2019/aug/21/national-grid-says-new-style-stability-software-will-avoid-blackouts

So may more flexible backup/batteries: www.current-news.co.uk/blogs/batteries-and-black-outs-how-storage-helped-bring-the-uk-system-back-online-and-how-they-could-do-more

Though we are talking millisecond events - see ESO’s chart.

**Cow power** Ruminant animals are being blamed for large methane emissions

But it’s complex. If they eat grass & deposit dung on the land, they help with a natural cycle of sequestration. Though it takes time. If cows destined to be eaten are fed higher-nutrition fodder they fatten faster & spend less time belching methane. Then again, while methane is a worse climate warming GHG than CO2, it doesn’t stay in the atmosphere for as long. So some say cows are being unfairly targeted. Maybe, but we should eat less meat, given also the land-use issues - e.g. clearing rain forests to grow fodder for beef herds isn’t good in climate terms:


**NFU Plan** www.bbc.co.uk/news/science-environment-49645748


**District heating** via Tube: www.theguardian.com/environment/2019/aug/26/underground-line-to-heat-up-london-homes-during-winter

**Biomass pellet imports - at scale?** www.drax.com/technology/5-incredible-numbers-worlds-largest-biomass-port/ A bad idea?
Renewables power ahead

The UK has reached the point when it’s generating **more power from renewables** than from fossil fuel, 20% from wind, 12% from biomass and 6% from solar PV - see right: www.carbonbrief.org/analysis-uk-renewablesgenerate-more-electricity-than-fossil-fuels-for-first-time

It also became the first country to reach 10 GW of **offshore wind**. And the race to go further offshore into deeper water, with **floating wind turbines**, goes on: [www.blog.renewableuk.com/post/the-race-for-floating](http://www.blog.renewableuk.com/post/the-race-for-floating)

**Government moves**

Since legislating for net zero, the government has committed over £2 bn to support **decarbonisation** in sectors across the economy from industry to transport. However, these measures include plans to use new financing models to roll out more new nuclear plants, and up to £18 m for the UK’s first ‘mini nuclear reactor’ to be operational (it says!) in the early 2030s; & £222m for fusion reactor design. That’s decades away from being a possible power source! But some of it is more sensible, as its reply to CCC indicated: [www.gov.uk/government/publications/committee-on-climate-changes-2019-progress-reports-government-responses](http://www.gov.uk/government/publications/committee-on-climate-changes-2019-progress-reports-government-responses)

For example, BEIS has announced (though in a separate package) some **energy efficiency** measures for businesses (& private rentals) which it says could save them £1 bn p.a. in energy bills by 2030, and plans to accelerate decarbonisation of transport, including auto-motive, freight & rail, and stronger governance to drive further climate action across government.

**Geothermal** £17m for the Eden project - but mostly from the EU! [www.bbc.co.uk/news/uk-england-cornwall-50035453](http://www.bbc.co.uk/news/uk-england-cornwall-50035453)

**Government promises from the Queens speech:** ‘We will introduce a **landmark Environment Bill** to ensure that we protect and preserve this planet for generations to come. It will include measures to establish a new Office for Environmental Protection, increase local powers to tackle air pollution & introduce charges for specified single use plastic items.’


**Scotland** goes more on the offensive, backing a Scottish **Energy Development Agency**, an idea pushed by Commonweal amongst others: https://commonweal.scot/developing-energy

Less happily, the **Global Warming Policy Foundation** says renewables subsidies add about £130 p.a. to household electricity bills. But it says industrial, commercial & public sector energy users also pass on their share of the subsidy to households indirectly through the cost of goods and services & general taxation. So that adds another £200 p.a.


**More green power needed**

The UK’s legal obligation to hit net-zero carbon emissions by 2050 will require over 140GW of new wind & solar power, up from around 33GW today. **Aurora Energy Research** says. Variable wind & solar output means that deploying them at this scale will also need up to 30GW of short-duration energy storage in 2050 to help balance the grid and 20GW of longer duration back-up to cater for prolonged windless spell in winter. Aurora also looks to 20GW of new nuclear & 3GW of CCS: [https://renew.biz/55820/uk-net-zero-needs-100gw-extra-green-power/](https://renew.biz/55820/uk-net-zero-needs-100gw-extra-green-power/)

**All change- to low carbon lifestyle CCC**

We must move to less meat, dairy, gas heating, car use, flying, says Climate Change Committee: [www.bbc.co.uk/news/science-environment-49997755](http://www.bbc.co.uk/news/science-environment-49997755)

Gas fired central-heating boilers have to go, says **Policy Connect**: [www.bbc.co.uk/news/business-50041077](http://www.bbc.co.uk/news/business-50041077)

**Labour New plan**


**Energy saving stays marginal**

Tragically **public views** on the merits & urgency of **energy saving** seem to be muted. As Andrew Warren reported in Business Green (10/10/19), A Smart Energy GB study found just 3 in 10 people think being energy efficient would have the biggest impact on protecting the environment. This was backed up another a survey of 2,000 people undertaken by Opinium Research which found saving energy tends to come way down the list of possible practical response under consideration. The most popular response to the Opinium survey was to ‘avoid throwing away food’. This was followed by various moves to reduce plastic wastage - buying plastic-packed groceries, single-use plastic bottles, using plastic shopping bags. Only 22% of those questioned felt that ‘leaving lights on at home’ might be affecting the climate. Just 17% thought that ‘leaving the heating on too long’ might be detrimental. Only a handful mentioned better insulation or using more energy efficient goods. Whereas, around a quarter of people said they didn’t feel guilty about the impact they have on the environment at all. A way to go then - although the new BEIS plan is a start.


The governments’ decision to let DRAX build a 3GW gas plant will make it worse: [www.bbc.co.uk/news/business-49960817](http://www.bbc.co.uk/news/business-49960817)

**Local Council**

-help needed: [https://theenergyoutpost.com/we-need-to-talk-about-devon/](https://theenergyoutpost.com/we-need-to-talk-about-devon/)

**COP26 in Glasgow**

Government energy effort must expand

The UK legally binding target for ‘net-zero’ carbon emissions by 2050 is ‘undeliverable’ unless better ‘clean growth’ policies are introduced, says a report by the all-party Science & Technology Select Committee. Its chair, Norman Lamb MP, said ‘The rate of deployment of several key low-carbon technologies is significantly lower than what is required to meet the government’s ambitions, & various stakeholders expressed concern at the current & projected rate of progress of the UK’s decarbonisation. We heard of cut backs in various programmes & slow progress, which are incompatible with the UK’s two upcoming, legally binding, carbon budgets - this is unacceptable.’

It noted that the Committee on Climate Change had already warned the UK was ‘not even on course’ to meet its existing legally binding targets for 2023 to 2032 under the old plan, aiming for an 80% reduction by 2050 (now upgraded to 100%). The ‘feed-in tariff’ for low-carbon power generation had been closed, and offshore wind and large-scale solar power had been excluded from the CfD financial support mechanism while planning permission for offshore wind farms has also been made more difficult to obtain since 2015. Also the government’s new White Paper on ‘The future of the energy market’ was due to be published in ‘early’ 2019, but has not yet been published.

The Science & Technology committee recommends 10 steps to meet the net-zero target. It wants a strategy for decarbonising heat; an incentive scheme for energy efficiency home improvements; a plan for reducing vehicle emissions; support for onshore wind & solar; a review of the Smart Export Guarantee; plans to incentivise removal of greenhouse gases, with clear action on carbon capture usage & storage; clean growth regulation of the energy market; and support for local authorities to help get to the UK’s net-zero target. It also says that the government must make a decision on the future finance framework for new nuclear by the end of the year: ‘Subject to value for money, the government should seek to support new nuclear power generation so as to sustain, but not grow, the UK’s nuclear power industry’. So it’s staying with replacement, not expansion, and it added, the government ‘must anticipate any gap in future generation capacity such a policy would cause, & support sufficient renewable power alternatives to fill the gap’. See Nuclear News below for reactions. But the Committee did say, on new nuclear, that ‘the Government’s ambition for £2bn of domestic & international contracts to be won by 2030 suggests that the nuclear sector deal will not deliver significant proportions of the UK’s additional power needs. The Minister told us that “nuclear has a part to play in the (future energy) mix” but said that the Government has to “spend taxpayers’ money wisely”. It therefore seemed as though the Government planned to meet the bulk of the UK’s additional power generation needs through the 2020s by installing new offshore wind power.’ See below for its comments on funding & research. And also: https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1454/145402.htm

Power Recommendations

‘Although onshore wind power and large-scale solar power are low-cost and low-carbon, the deployment of new installations of these technologies has fallen drastically since 2015. The Government must ensure that there is strong policy support for new onshore wind power and large-scale solar power projects for which there is local support and projected cost-savings for consumers over the long-term. The Government should actively encourage and support local authorities to adopt planning practices that promote local support for such renewable energy projects. The Government must additionally develop mechanisms to promote community ownership and profit-sharing of low-carbon projects, such as joint ventures, split ownership or shared revenue. The delay between the end of the feed-in tariff scheme and the start of the Smart Export Guarantee scheme has caused unnecessary disruption to the smart energy and small-scale generation market. The Government must ensure that it reviews the functioning of the Smart Export Guarantee scheme by the end of 2020.’

It should also support re-powering older existing onshore wind projects with the most efficient technology.
CREDS pushes energy saving to the max

‘In recent decades, more than 90% of the progress in breaking the relationship between carbon emissions & economic growth globally has come from reducing the energy intensity of the economy. By comparison, reducing the carbon emissions per unit of energy has, to date, been a relatively minor effect. It is difficult to exaggerate the impact of the historical decoupling of energy demand from economic activity. It has contributed more to carbon emissions reduction than the combined effects of the UK’s programmes in nuclear, renewable & gas-fired power generation’ CREDS, ECI’s Centre for Research into Energy Demand Solutions, backing demand side action. Maybe a bit overdone. As it admits, some carbon savings have come from structural changes in the economy, including the shift of energy intensive industry overseas. But improving energy efficiency is vital in all sectors:

www.creds.ac.uk/wp-content/pdfs/CREDS-Shifting-the-focus-July2019.pdf

Select Committee on Funding expansion...

The Science and Technology Select Committee (see above) noted that, of the £2.5bn outlined in the Clean Growth Strategy, £1.14bn (44%) was for ‘basic and applied research’, £900m (35%) was for ‘technology development’ and £530m (21%) was for ‘technology demonstration’. The Government explained that it was often more active at earlier stages of innovation, through investment in research, education and skills. Later on, private firms play a bigger role, bringing new technologies to market. But the S&T committee noted that the Committee on Climate Change (CCC) has warned that the Government’s innovation programme was ‘generally focused at early-stage innovation: research, development and some demonstration’, and that in order ‘to drive commercialisation and cost reduction successfully, it must be supported by funding and policies to drive deployment and learning-by-doing’ i.e. later on.

Many expressed similar opinions to the S&T Select committee. The UK Energy Research Centre compared the time that it could take for new technologies to develop from early stage research through to commercialisation (typically three to four decades) with the time left for meeting the fourth and fifth carbon budgets (five to fifteen years), concluding similarly that near-market ‘policies to demonstrate, scale-up and commercialise existing technologies are perhaps more important (than fundamental research and development) if the UK is to successfully comply with carbon budgets in the 2020s and 2030s’.

On expansion prospects there seemed to be some disagreements. Prof. Keith Bell, co-Director of the UK Energy Research Centre, told the S&T Select Committee that it was ‘entirely credible’ that the UK could deploy the low-carbon power generation capacity it would need to fulfil its fourth and fifth carbon budgets, and indicated that it was already ‘well on the way’ to achieving this. However, the S&T Committee noted that the CCC had estimated that the announced Government investment in renewable power would only provide an additional 60TWh per year by 2030, and that the new nuclear reactor at Hinkley Point, if built, would provide 25TWh per year. This, it said, would leave a ‘gap’ of 50–60TWh by 2030. Dr Nina Skorupska, Chief Executive of the Renewable Energy Association, similarly told the S&T committee that the UK was ‘not on track’ to deploy the low-carbon power generation required for its fourth and fifth carbon budgets. Dr Rob Gross from Imperial College told the Committee that the Government’s aims were ‘perfectly achievable’, but said that, the focus on offshore wind power meant that the UK was ‘very largely putting all of its eggs in that basket’. The S&T committee noted that the CCC had warned that the Government’s power decarbonisation strategy wasn’t ‘credible’ because of the ‘significant risks associated with it’ and the lack of ‘multiple plausible pathways to achieve the necessary level of decarbonisation’. It had therefore recommended that the Government develop ‘robust contingency plans that allow for additional low-carbon generation to be brought forward in the event of delay or cancellation of planned projects, or imports of electricity below projected levels’. The S&T committee said that ‘this appears to be warranted, given the recent uncertainty surrounding nuclear power projects’.

*It said the government should consider supporting marine renewables via Innovation Power Purchase Agreements & creating special CfD slots for newly emerging technologies. https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/1454/145407.htm

Staggering inaction

The government plan to help the UK meet its 2050 net-zero target is 0.1% of what is required, say critics. BEIS was given £30m extra in the latest spending round to ‘accelerate progress’ on decarbonisation next year. FoE called it ‘a few financial crumbs’.

Labour MP Matthew Pennycook said: ‘The Committee on Climate Change has made clear that 2% of GDP needs to be directed towards decarbonisation if we are to meet our 2050 net-zero target. Yet the chancellor today only allocated £30m towards it. A staggering failure to act.’ But BEIS head Andrea Leadsom said the £30m means the UK continues to ‘lead the world in tackling this critical issue’. To be fair there is also more- in all, £17bn for various schemes. But, in line with the CCC, Greenpeace and Friends of the Earth have called for investment of at least £42bn, about 2% of GDP, to tackle climate issues - nearly double the £17bn:


Up a bit: £390m for Hydrogen (see later), but the smart meter delay, & £2bn cost rise, raised hackles: www.telegraph.co.uk/news/2018/09/17/smart-meter-outfit-should-revisited-say-mps-latest-delay/
BREXIT follies
UK links back with the EU
While the UK is decoupling politically from the EU, it is busily building power grid links. Some say we should build more (see our EU news), creating offshore wind hubs & network systems to help with balancing imports/export, e.g. the planned 1.4 GW HVDC Viking inter-connector between Denmark & Lincolnshire will pass through/near some big offshore wind farms:


National Grid have done comparative connection studies for the proposed 1.6 GW Eurolink to Netherlands and 1.5 GW Nautilus link to Belgium (compleation by around 2025 and 2027) with the proposed Sizewell C nuclear plant in mind area, but also local offshore wind projects:


Some say the UK should build offshore connection hubs, like the artificial island proposed for Dogger Bank nearly 100 km out from Hull: www.wired.co.uk/article/uk-electricity-wind-power-north-sea

Post Brexit Carbon Tax

Price hike fear www.current-news.co.uk/news/yellowhammer-report-rapid-sem-ship-could-trigger-significant-ireland-power-price-hike

Hydrogen get £390m backing for industrial applications, including steel production.

So at least there’s some movement! ITM Power has received £0.5m for a feasibility study with Orsted of low-cost 5 MW polymer electrolyte membrane (PEM) modules & a semi-automated manufacturing facility, aiming to make100 MW+ electrolyser packages for bulk, low-cost, green hydrogen generation:

www.thechemicalengineer.com/news/uk-government-pledges-390m-to-develop-hydrogen-technology-


And everywhere: https://realfeed-intariffs.blogspot.com/2019/09/how-renewable-energy-can-provide-its.html

Environmental controls to change?
The UK will have an ‘historical opportunity’ to strike a trade deal with Malaysia, the Asian country’s prime minister has suggested, provided it relaxes restrictions on imports of palm oil imposed by the EU because of the crop’s eco impact, according to the FT. Boris Johnson said that, post Brexit, he envisages the UK diverging from EU environmental rules, declaring that the ability to introduce regulations and laws that differ from the EU ‘is the point of our exit’. www.businessgreen.com/bg/news/3080843/thats-the-point-of-our-exit-johnson raises prospect of uk-environmental-rules-diverging-from-the-eu

The big picture

The full story so far - a useful policy history: https://interactive.carbonbrief.org/how-uk-transformed-electricity-supply-decade


But PV+EVs win: www.solarpowerportal.co.uk/news/solar_plus_ev_economics_to_trigger_a_relatless_and_irreversible_decline_f

And Northern Ireland fake claim rebuted: www.bbc.co.uk/news/uk-northern-ireland-49365369


We must cut resource consumption to cut waste/climate impacts: https://theconversation.com/focusing-on-cotting-editions-alone-woellt-halt-ecological-decline-we-must-consume-less-former-uk-chief-environmental-adviser-122778


Renewable transport fuel
Biofuels are still marginal (4%) but used cooking oil booms!


HGVs can’t go direct to EV www.energylivenews.com/2019/08/30/plug-in-hybrids-may-be-needed-on-the-road-to-decarbonising-hgvs

EVs not on www.theguardian.com/environment/2017/aug/13/electric-cars-are-not-the-solution-pollutionwatch www.bbc.co.uk/news/uk-48875361

Going very slowly: www.theguardian.com/uk-news/2019/sep/16/uk-road-transport-emissions-up-since-1990-despite-efficiency-drive

Renewable views
In a Populus survey 51% of energy consumers wanted the UK to invest in a sustainable energy, even if it meant bills increased. 45% said a clear commitment to the environment was one of their top 3 requirements in an energy supplier. But 44% didn’t mind where their energy came from, as long as it was cheap: www.populus.co.uk/insights/2019/08/the-changing-tides-and-currents-of-the-energy-market/

Offshore wind booms in the new CFD round

The latest Contacts for a Difference auction round went very well for offshore wind, with strike prices of £39.65-£41.61/MWh for projects delivered by 2025 - a significant drop from the previous round two years ago, when prices were £57.50-£74.75/MWh. At the time of the first auction, in 2015, with projects getting near £120/MWh £100/MWh by 2020 was seen a very ambitious. So they are now at about a third of that! Some remote Island sites in Scotland got in too, onshore wind, at low cost, plus some biomass conversion.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Developer</th>
<th>Technology Type</th>
<th>Capacity (MW)</th>
<th>Strike Price (£/MWh)</th>
<th>Delivery Year</th>
<th>Homes Powered</th>
<th>Region</th>
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<td>Remote Island Wind</td>
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<td>2023/24</td>
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<td>2024/25</td>
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<td>Ulisens Power Limited</td>
<td>Remote Island Wind</td>
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<td>39.650</td>
<td>2023/24</td>
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<td>2023/24</td>
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<td>England</td>
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</table>

The Energy & Climate Intelligence Unit said: ‘costs have now fallen so rapidly that it is a government-imposed cap that is limiting the amount of capacity installed’. It was set at 7 GW. However, the final outcome of the auction awaits the outcome of a judicial review over the claim by Banks Renewables that the auction discriminates in favour of offshore wind at the expense of onshore wind & other renewables, preventing consumers from benefiting from the lower energy prices that would result from their inclusion. But with the new low offshore wind prices, that may no longer be true: www.newpower.info/2019/09/offshore-wind-hits-record-low-below-40mwh/ 7 GW more may follow in further rounds as Crown Estate offers new sites: www.theguardian.com/environment/2019/sep/18/wind-power-crown-estate-opens-new-bids-for-sea-rid __________________________

Labour’s £83bn state wind farm plan

Labour says it would invest £6.2bn from its proposed £250bn national transformation fund in 37 new offshore windfarms (52 GW) along with a matching amount from the regional energy agencies which would replace the renationalised National Grid. The remaining £70bn would be sought from private sector investors: the new windfarms would be 51% owned by the public. A projected £600m to £1bn a year in profits would go to coastal communities for amenities such as harbour fronts, parks, leisure centres and libraries, with the remainder invested in improvements to the energy system and measures to combat global warming.


EVs too Labour would also take equity stakes in car producers in return for a £3bn capital investment in new electric models & production plants, plus £2.3 bn to build 3 battery plants to supply EVs - earmarked for South Wales, Stoke and Swindon (this maybe at the soon to close Honda site). It would also spend £3.6 bn on new EV charging infrastructure & introduce £2.5 m of interest free loans to spur EV take-up. See Green New Deal later

www.bbc.co.uk/news/uk-politics-49904455  
Next: A third of public support XR net zero by 2025 goal

A third of the British public think the UK should aim to hit net zero emissions by 2025 in line with the Extinction Rebellion demand, 25 years ahead of the government’s target. In a survey of just over 2,000 adults, 33% thought greenhouse gas emissions should be brought down to net zero by 2025, with a further 31% backing a net zero date between 2025 and 2030. Only 2% said net zero emissions should be reached after 2050, and just 7% said the targets should be dropped altogether. But half of respondents thought it was ‘unlikely’ the UK government will meet its 2050 emissions target, with only 4% believing it is ‘very likely’ to meet the goal.


Labour on Climate

The Momentum campaign group led calls for Labour to adopt a more ambitious Green New Deal timetable than the zero-net carbon by 2050 policy adopted by the government, with the aim of reaching zero by 2030 - see right for another push. Shadow business secretary Rebecca Long Bailey said she would support the more ambitious aim if there was a ‘credible plan with trade unions & industry’, & a ‘just transition’ that didn’t adversely affect workers. She told Radio 4’s Today: ‘Provided we have a plan, I am happy to work as quickly as possible. I know we have got to act faster & we’ve got to push people to do that.’


Mixed Ecologist review https://theecologist.org/2019/sep/30/battlegrounds-labours-green-new-deal It still leaves too much in private hands...

Workers plan Harland & Wolff workers want to diversify into renewables - wind & wave systems: www.independent.co.uk/voices/harland-and-wolff-belfast-occupation-nationalisation-labour-john-mcdonnell-a9071536.html… or should it be left to markets www.businessgreen.com/bg/news/3081658/british-conservation-alliance-new-green-group-to-push-free-market-environmentalism


BBC overview The BBC has produced an extensive review of energy/climate issues, focused on the UK. It is mostly quite reasonable, with good sections on hydrogen, which it says is 1.5x to twice as expensive/kWh as gas with current Steam Reforming technology and 3 times more with electrolysis - though that may fall. It’s positive on renewables, although it says that, given its ‘unpredictability & intermittency’, wind energy ‘must be stored until it is needed’ and ‘needs alternative energy sources to be available on a still day’. Well that’s where hydrogen comes in. But it also says ‘as the costs of renewables plunge, it is unclear whether nuclear generation will be a desirable option’ - and they may boom: see below.

Future electricity generation will involve more investment in renewables

Scotland 100% power soon- and zero C by 2045


Prof. Keith Barnham says the UK as whole could get to 100% power soon too:

While WNISR author Mycle Schneider says that extending the lives of the existing nuclear reactors is not climate effective- their operating costs exceed the costs of efficiency & new renewables!

https://worldnuclearreport.org/WNISR2019
Hun & Get set? SMRs £22bn and rising

UK nuclear snap shot

But NFLA

https://publications.parliament.uk/pa/cm2017

www.dieterhelm.co.uk/energy/energy/power

perhaps funded via the RAB mechanism, but he didn't come

it is not really about the theoretical possibilities: it is about

the only large low carbon base

zero

as the end date closes in, some of the power stations tend to go

stations by

all the conventional base

load?

In such circumstances, it might be considered appropriate to

make the renewables into firm power.

This may happen, but it is unclear what the time

frames will be.

Load would help much:

hard to see how having nuclear base

is no longer going to be a feature on the system.

Does the system actually need base-load? The answer is

unclear: the system could get by without any base-load, but it

would then need a lot of flexibility through storage, demand

side and so on. If there is to be no base-load, then the NSO &

RSOs [his planned National/Regional System Operators] will

need to really push on with increasing dramatically the

availability of ways to make the renewables into firm power.

This may happen, but it is unclear what the time-frames will be.

In such circumstances, it might be considered appropriate to

have the insurance of some base-load, just in case. However,

all the conventional base-load is carbon emitting, and with the

new net zero target, there is not much room for... large gas

stations by the latter part of the next decade. And if there is

going to be a gas power station cut-off (or the much higher

costs of applying CCS to existing gas) then this will be taken in

to account by the current owners of these plants. As with coal,

as the end date closes in, some of the power stations tend to go

earlier. This will be all the more so the case as the renewables' zero-marginal costs undermines their revenues.

It is in this context that the nuclear question raises its head, as

the only large low carbon base-load contender. Some claim that
decarbonisation cannot be done without nuclear. This is not

true as a matter of principle. It can be done without it. But

it is not really about the theoretical possibilities: it is about

practically getting net-zero at as low a cost as possible.

If we wanted nuclear, then he said it could be state funded or

perhaps funded via the RAB mechanism, but he didn’t come
too far off the fence on which option, though he did say action

was needed fast. We are still waiting for the White Paper!

www.dieterhelm.co.uk/energy/energy/power-cuts-and-how-to-avoid-them/

But the TUC’s backing of nuclear challenged: https://morningstaronline.co.uk/article/f/3/time-policy-change-nuclear-power

And RAB is not liked locally - consumers might end paying for duds: www.bbc.co.uk/uk/england/cumbria-49460227


2. Global Developments

Solar/storage market booms

It could ‘surpass annual installation rate of 3 GW by 2025’, says Global Market Insights. It notes that in 2018, the combined battery & solar energy market was worth over $170m:


1TW of storage by 2040 says BNEF:


Also see: www.lazard.com/media/438042/lazard-levelized-cost-of-storage-v20.pdf

Slow ahead He said: ‘Despite great efforts to reduce costs in renewables, electricity, zero-carbon technologies & advanced transportation - not to mention burgeoning support in governmental policies - it is not enough. Our analysis sees carbon emissions continuing to rise into the 2020s, with growth slowing only in the 2030s. As a result, our Energy Transition Outlook (3°C) & Carbon-Constrained Scenario (2.5°C) fall outside the 2°C or lower trajectories’.

As can be seen from their annual market charts left, solar demand levels off after 2020, wind dips, but recovers, though of course cumulative growth continues for both: www.woodmac.com/news/feature/can-the-energy-industry-rise-to-the-challenge-of-climate-change

Even so, Wood Mac says wind & PV will only supply 24% of global power by 2040: see later. www.woodmac.com/news/feature/can-the-energy-industry-rise-to-the-challenge-of-climate-change/

If that’s right, it will be tough- see next page. Charts from: www.greentechmedia.com/articles/read/the-energy-transition-in-charts

DNV-GL are much more optimistic: we can get 80% of power from renewables globally by 2050 www.greentechmedia.com/articles/read/dnv-gls-renewables-at-80-of-global-electricity-mix-by-2050

But it’s too slow- they want an 8-fold expansion:


Fossil issues Fracking impacts - CH4 leakage:

www.theguardian.com/environment/2019/aug/14/fracking-causing-rise-in-methane-emissions-study-finds That’s hardly surprising...


And it may get worse: www.climatechangenews.com/2019/08/13/australia-seeks-water-climate-declaration-pacific-summit/ with Trump also ducking out of the G7 climate session: https://grist.org/article/donald-trump-an-environmentalist-trump-skips-g7-climate-meeting


Global Energy transition - can we do it?

It will be hard..

CCCs chart left shows a relatively slow set of transition paths, with even the fastest decarb route only just getting us to net zero by 2045. See below for more, and if you can cope, see ‘Uninhabitable Earth’, on why we must try harder. Grim stuff:

www.theguardian.com/books/2019/feb/27/the-uninhabitable-earth-review-david-wallace-wells

They include scenarios for Australia, the EU, India, Iran, Japan, Pakistan, Saudi Arabia, the USA- and the whole world

Invest to save trillions


Here’s one way forward - floating offshore wind

Large hydro- opposition

While most greens back small hydro, large projects are seen as too invasive. There are campaigns to remove all river dam schemes.


...and Green Hydrogen too

IRENA says it will be soon be competitive:


While it is contentious, hydro provides 16% of global power. Though it’s been claimed solar can replace most of it in the US;


...but it is possible - say 42 studies

Abstracts of 42 peer-reviewed published journal articles from 12 independent research groups with 77 different authors supporting the result that energy for electricity, transportation, building heating/cooling, and industry can be supplied reliably with 100% or near-100% renewables at different locations worldwide:


Here’s one way forward - floating offshore wind

Great issue

Cut growth? Modify the planet?

Green growth rubbed


Technical fixes rubbed

We need a localized economy:


Geo-engineering rubbed

No fixing it

www.boell.de/en/2019/02/18/geoengineering-dangerous-distraction

Air Con Cooling makes it worse

Unless it uses green power*

www.theguardian.com/environment/2019/aug/20/the-air-conditioning-trap-how-cold-air-is-heating-the-world

Agro-solar farms: PV can supply ‘all energy’

https://environmentjournalonline/articles/solar-panels-on-farmland-could-meet-global-energy-demands

And www.pv-magazine.com/2019/09/12/the-cooling-effect-of-pv/ *540GW of air con capacity globally could be run on PV.

Current costs above. By 2030, PV LCOE will range from 14 €/MWh in Malaga to 24 €/MWh in Helsinki with 7% weighted average cost. This range will be 9-15 €/MWh by 2050, making PV the cheapest option:

Clean energy for all

The EU has been cranking out some good reports under the heading Clean energy for all Europeans. One says that ‘working towards a less carbon-intensive electricity sector is one of the key objectives of the Energy Union strategy. In order for the share of energy production from renewable sources to reach 27% by 2030, as is targeted by the European Union, the deployment of variable renewable energy generation technologies such as solar and wind power will have to continue growing at a steady pace. In particular, it is estimated that around 50% of the electricity will have to be generated by renewable energy sources (RES-e) by 2030, compared to around 30% nowadays.’

Also useful - Green gas defined: https://ec.europa.eu/info/sites/info/files/icct_-_gas_definitions_for_the_european_union.pdf

A helpful review of types, sources & impacts. It warns that ‘in the long-term, it is possible that policy tools may be necessary to ensure that CCU does not perpetuate the use of fossil fuels’.

Big wind A GSI-based study, taking socio-technical constraints into account, says there’s room for a massive 52.5 TW of onshore wind in Europe, in theory, sufficient (if its output could be distributed) to cover global all-sector energy demand by 2050. One author, Prof. Ben Sovacool, from Sussex University, said ‘Our study suggests that the horizon is bright for the onshore wind sector & that European aspirations for a 100% renewable energy grid are within our collective grasp technologically. Obviously, we are not saying that we should install turbines in all the identified sites, but the study does show the huge wind power potential right across Europe.’

Commentary: www.independent.co.uk/environment/europe-wind-turbines-power-world-renewable-energy-a9057251.html

Euro grid ENTSO-E, the European Network of Transmission System Operators for Electricity, has produced a study of EU grid issue up to 2040 updating its 2016 Ten Year Network Development Plan. It says that there will be a need for increased transmission capacity in some places to make the system work in 2040, largely due to the increasing levels and use of renewables to supply all areas of the European grid - up to 75% of the total demand of renewable energy will be reached by 2040, so that ‘European countries will more than ever need to rely on each other through cross-border exchanges’.

The overall benefits of the expanded network far outweigh the necessary efforts which will need to be mobilised for its realization: ‘A lack of new investments by 2040 would hinder the development of the integrated energy market (with and then with extra grids)

EU developments - a roundup

Germany Cars go up...but wind goes down

The expansion of wind power in the first half of this year fell to its lowest level since the introduction of the Renewable Energy Act (EEG) in 2000. All in all, just 35 wind turbines were built - 231 MW.

‘This corresponds to a decline of 82% compared to the already weak period of the previous year’, said the German Wind Energy Association. Relaying this news, GWPF claimed it was due to wildlife (bird/bat) concerns, this, along with forest impacts*, being current GWPF anti-renewable focus - economics too:

www.thegwpf.com/german-onshore-wind-power-collapses/ and www.thegwpf.com/no-more-electricity-for-germany/

Though GWPF won’t see it this way, it may also be due to the competitive auction system that has replaced the guaranteed FiT funding. The post-FiT slow down may take time to have a wider impact though: the EEG surcharge for green energy will actually rise in 2020 & peak in 2021, before falling as first-generation renewable plants’ 20-year contracts expire. But it’s worrying that the number of tenders and successful bids in the new wind auctions have been falling, with prices still inching up, as in the latest undersubscribed round:

www.windpowermonthly.com/article/1593487/german-tender-undersubscribed-again

Germany may need a funding rethink - and also to open extra lines of action. It’s been looking to hydrogen, which some see as an alternative to electrification. But, the best route to hydrogen, arguably, is surplus wind/PV power-to-gas conversion, so it’s still electricity based, though, once produced, it can be stored, and then piped to users:


So can heat - see Box above. And this 100% renewables plan is positive - it can be done:


Nordic energy action plan: www.nordicenergy.org/article/act-fast-and-nordic-while-paving-the-way-for-carbon-neutrality/

Portugal PV@ €14.8/MWh: www.euractiv.com/section/economy/news/portugals-solar-energy-auction-breaks-world-record

And three 8 MW floating offshore wind turbines, 20 km out on Principle’s semi-submersible


Dutch hydrogen push for storage: www.whatsorb.com/energy/hydrogen-energie-storage-revolution-netherlands


Denmark its biomass use is challenged: http://cphpost.dk/news/denmarks-max-new-energy-project-wisedealises

Europe can meet all power demand from renewables

Researchers at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany say regions across Europe could satisfy their electricity needs by using solar & wind power- the renewable electricity potential exceeds demand at continental & national levels, with the total potential at 15,000 TWh p.a., over four times current demand. But they warned that this would increase pressure on land-use around large cities & towns- some might have to trade locally or import power.

https://environmentjournal.online/articles/europe-can-meet-energy-demand-just-through-renewables-study-finds

Roof-top Solar PV resource

680TWh - 25% of EU power, cost competitively France the most in output terms, Portugal in percentage terms (over 40%), Italy/Greece next (30-40%). See right. www.renewableenergylworld.com/articles/2019/09/study-shows-rooftop-solar-could-power-25-percent-of-europe.html

Based on a hi-resolution geospatial assessment by the EU JRC Ispra/EIT Hungary, for 2050:

www.sciencedirect.com/science/article/pii/S1364032119305179

Three 2030 targets raised www.euractiv.com/section/climate-strategy-2050/news/three-eu-countries-bump-up-renewable-energy-goal-for-2030/
USA: 50% easy, 100% tough, but can be done

‘The transition to a 100% renewable US power grid will need investment of up to $4.5 trillion over the next 10 to 20 years, require the installation of 900 GW of energy storage as well as building 1,600 GW of new wind & solar capacity’, say Wood Mackenzie. However, the consultancy says that extending the time horizon to 2040-2050 would make it easier, allowing new technologies to develop and reach commercial scale. And having 20% of the power mix coming from existing natural gas-fired generation would reduce renewable costs by ~20%, and energy storage costs by at least 60%. Moreover, Wood Mac’s director of Americas Power Research, Wade Schauer, said: ‘Our analysis of the data suggests that reaching 50% of supply from intermittent renewables system wide is relatively straightforward in most of the US’. But he added ‘above 50%, integration challenges accelerate rapidly. Achieving full decarbonization will require long-duration energy storage, and the electric grid will need to roughly double its capability.’

Assessing the cost The cost of transitioning the USA to 80% clean energy by 2050 might add up around 1% of GNP, but that could be offset by the savings of not having to buy fossil fuels, even ignoring the savings from avoided pollution & climate damages. James Williams of the University of the San Francisco says ‘the energy economy in a low-carbon transition is one in which capital costs - basically the capital costs of low-carbon generation and the incremental cost of an electric vehicle or an improved boiler, something like that- those capital costs end up replacing fuel costs associated with fossil fuel purchases’. With renewables, you are investing in plant not fuel, so in effect you are buying a plants’ lifetimes-worth of energy up. With fossil plants much of the cost is spread over their lifetimes - in buying fuel. It may cost more initially with renewables, but not over their whole life:


Bernie Sanders’ Green New Deal Presidential hopeful 100% sustainable energy for electricity & transportation by no later than 2030, fully decarbonize the economy by 2050 at the latest, 20 million jobs.

‘We will spend $1.52 trillion on renewable energy & $852 bn to build energy storage capacity. We will spend $526 bn on a modern, high-volt, underground, renewable, direct current, smart, electric transmission & distribution grid (to) ensure our transition to 100% sustainable energy is safe & smooth. We will provide $2.18 trillion for sliding-scale grants for low- and moderate-income families & small businesses to invest in weatherizing & retrofitting their homes & businesses.. (which) will reduce residential energy consumption by 30%. To get to our goal of 100% sustainable energy, we will not rely on any false solutions like nuclear, geo-engineering, carbon capture & sequestration, or trash incinerators.’

On the transport side, there’s a federal grant & zero-emission vehicle programme to create a 100% renewable transportation sector. It would include $2.09 trillion in grants to low-moderate income families & small businesses to trade in their fossil fuel-dependent vehicles for new electric vehicles, & $85 bn for EV charging points, coupled with $407 bn in grants for states to help school districts & transit agencies replace all school & transit buses with electric buses, along with $216 bn to replace all diesel trucks with fast-charging & long-range electric trucks. There would also be a $300 bn to increase public transit ridership by 65% by 2030 and a $607 bn investment in regional high-speed rail, plus $150bn on decarbonizing aviation & shipping. https://berniesanders.com/issues/the-green-new-deal

It got a fair press, but Wood Mac worried about fast storage ramp ups - though it said it could be done: www.greenentechmedia.com/articles/read/bernies-sanders-proposes-renewables-buildout-and-public-electricity

The other candidates had less plans: https://grist.org/article/live-who-said-what-during-cnns-climate-crisis-town-hall/
China  The more the better: a new study says wind & PV are mutually supportive. And
to provide a balanced output, the more of both the merrier - with large widely dispersed
capacities, balancing improves. It looks to near 5 TW of onshore wind & 1 TW offshore as
being a credible maximum, along with a massive near 13 TW of PV.

PV Solar is now cheaper than grid electricity in cities across China - in 22% of them it was cheaper
than coal power:  www.independent.co.uk/environment/china-solar-power-grid-electricity-update-nature-energy-study-a9055996.html

Curtailment, uptake & efficiency checks A team of researchers will travel the country to ensure
local governments are putting renewable energy legislation in place that forces local grid firms to
prioritise green energy sources, as well as prioritising purchases from local renewable energy
providers. Cutting curtailment waste is a major priority, so they will seek to ensure local grid links are
up to scratch - local lapses have been found:  www.energyjobline.com/article/china-pushing-to-ensure-renewable-usage

It is shutting old inefficient plants, but building new ones, though s

Moreover, there are worries that the vast $12 trillion Belt and Road programme, involving
major foreign investment and major civil construction efforts to build trade routes West, will
lead to a big rise in emissions:  www.climatetechnews.com/2019/09/02/chinese-belt-road-plan-may-result-2-7c-warming/
It is shutting old inefficient plants, but building new ones, though some only run part time to cut emissions:
https://uk.reuters.com/article/uk-china-coal-power/china-aims-to-shut-8-7-gw-of-coal-power-by-year-end-regulator-idUKKB11WFOS0

Nevertheless there are hopes for an overall emission peak by 2022:  https://uk.reuters.com/article/us-china-carbon/china-co2-emissions-to-peak-in-2022-ahead-of-schedule-government-researcher-idUKKC1VQ1K0


India Investment in the energy sector grew 12% in 2015-18, with much of that being on renewables


Mexico halts its private contract auction process for renewables. Instead it wants
a larger role to be played by the state power company. The competitive ‘race to the
bottom’ had led to some very low-price PV bids getting through, @2c/kWh average.
Some may have been unrealistically low - and undeliverable. But market enthusiasts
hated the plan:  https://energyathaas.wordpress.com/2019/08/12/mexico-goes-backward-on-renewables/


Brazil 60 GW green power by 2030:  www.energylive.net/news/2019/07/01/brazils-clean-capacity-to-top-60gw-in-2030/


The global cost fall backdrop

Companies sign up  www.bbc.co.uk/news/business-49764957
Climate crisis *It's going to be tough...*

The chart left makes it look almost impossible, especially if, as some say, we only have a short time to act:

www.bbc.co.uk/news/science-environment-48964736

You can immerse yourself in the full horrors, or look to hopeful signs. UK emissions fell 2.4% last year:


But see the embedded emissions in imports chart below right. And the food/land crisis: see vertical Box below right. It’s not looking good. For the sea too (but see more below*):

www.nature.com/articles/d41586-019-02897-7

These techs however are no use!


Nuclear overheats www.reuters.com/article/us-france-electricity-heatwave/heatwave-to-affect-french-nuclear-power-generation-beyond-july-26-idUSKCN1JK0HR


https://theconversation.com/climate-explained-how-different-crops-or-trees-help-strip-carbon-dioxide-from-the-air-123590/

Sadly, not enough- and the climate crisis globally is getting quite grave:

Gloom from Wood Mackenzie

They say wind & PV may only supply 24% of global power by 2040- a very low estimate. But economic & population booms in developing countries may increase energy demand in all sectors by 25%. If so, they say, the likelihood of average global temperatures staying under 2°C above pre-Industrial levels is virtually nonexistent. Given the slow decarbonisation of heating/cooling buildings, ships, air travel & transport generally, 85% of energy will still come from fossil fuel by 2040:


Worse still to come (possibly)

Extinction Rebellion may be proved right!


Air Cons www.forbes.com/sites/davekeating/2019/08/05/as-europe-selters-illegal-refrigerants-are-emitting-four-million-cars-worth-of-co2

What next? COP 26 comes to the UK next year - can it get more action on all fronts? A global green new deal?


No to ‘net’ carbon targets, with Offsets/NETS: www.carbonbrief.org/guest-post-the-problem-with-net-zero-emissions-targets


Global Opinion Poll https://yougov.co.uk/topics/science/articles-reports/2019/09/15/international-poll-most-expect-feel-impact-climate
Nuclear ‘It never works’ https://climatenumbers.org/nuclear-power-somehow-always-makes-a-loss/
and www.power-technology.com/features/too-expensive-too-dangerous-the-accusations-tightening-the-noose-around-nuclear-power/
Will this Fast reactor be any better? www.energylivenews.com/2019/08/08/us-plans-to-build-nuclear-test-fast-reactor

Russia is likely to postpone its new BN-1200 fast reactor to 2036 (from 2027), due to a funding shortfall: http://world-nuclear-news.org/Articles/Rosatom-postpones-fast-reactor-project-report-say

Russian accident - this time a weapons test - some type of nuclear-powered missile. See right. Even so, the media made a link back to Chernobyl: https://taskandpurpose.com/russia-nuclear-accident-chernobyl
www.thesun.co.uk/news/9715988/chernobyl-a-weapons-test/
http://world-nuclear-news.org/Articles/Rosatom-postpones-fast-reactor-project-report-say

Nevertheless, it wasn’t trivial: Russia’s state-run weather agency said that just after the test-site explosion, radiation levels in Severodvinsk had spiked to up to 16 times the normal reading.

Russia’s other recent nuclear problems: www.sciencedaily.com/releases/2019/07/190729151844.htm
www.ndtv.com/world-news/mysterious-energy-mix-in-slow-roads-russia-to-2036-(from-2027),-due-to-a-funding-shortfall:

Russia has certainly had its fair share of accidents over the years: https://upnorth.eu/the-threat-of-a-new-chernobyl/


US nuclear phase out Bernie Sanders’ Green New Deal plan (see above) ‘will stop the building of new nuclear power plants and find a real solution to our existing nuclear waste problem. It will also enact a moratorium on nuclear power plant license renewals in the United States to protect surrounding communities’: https://berniesanders.com/issues/the-green-new-deal

Swiss stay with phase out The Swiss government has announced it will cut Swiss emissions to a net-zero level by 2050. About 60% of its power comes from renewables, mostly hydro. Nuclear contributes about 37.6% but in a 2017 referendum it backed renewables and energy conservation, and the revised Federal Energy Act prohibited the construction of new nuclear plants. The Energy Strategy 2050 initiative drawn up by the Federal Council calls for a gradual exit from nuclear: http://world-nuclear-news.org/Articles/Switzerland-commits-to-2050-climate-target

Japan to run out of room for storing radioactive water from the Fukushima plant by 2022: www.theguardian.com/environment/2019/sep/10/fukushima-japan-will-have-to-dump-radioactive-water-into-pacific-minister-says

Avoid this: www.theguardian.com/environment/2019/sep/16/fukushima-fishermen-fear-for-future-over-release-of-radioactive-water

But Tepco ducks www.theguardian.com/environment/2019/sep/19/fukushima-disaster-japanese-power-company-chiefs-rolled-of-negligence


EDF’s finances take another hit...


A damning nuclear critique: https://theecologist.org/2019/sep/10/advanced-nuclear-power-sector-dystopian
Whistling in the dark? www.world-nuclear-news.org/Articles/New-dawn-for-nuclear-if-issues-faceted-say-industry

WEC says ‘There is increasing & widespread recognition that nuclear energy will feature in the future global energy mix’: www.worldenergy.org/assets/downloads/Nuclear_Scenarios_Report_FINAL.pdf
Critique: https://groups.google.com/forum/#!searchasgroup=C-6txXjDiT9Z2dFpAQAJ

Safety Roundup

Cruise missile blast?

French SMR Nuward www.world-nuclear-news.org/Articles/French-SMR-Nuward

New edition www.worldenergy.org
3. Forum Odds and ends to chew on - comments welcome

Red and Green in the USA

Bernie Sanders’ Green New Deal plan for 100% renewables for power & transport by 2030 is pretty radical & breathtaking: see Global News. The $1.2 trillion power supply proposal includes HVDC supergrids underground. That will be costly: he says $526 bn. It could be much more, if its nation-wide. But its tiny compared to the $16.3 trillion in public investment he is proposing in all, as part of the aim to ‘reduce domestic emissions by at least 71% by 2030 and reduce emissions among less industrialized nations by 36% by 2030 - the total equivalent of reducing our domestic emissions by 161%’. He says ‘this plan will pay for itself over 15 years’, with the fossil fuel industry paying for their pollution, via ‘litigation, fees, and taxes, and eliminating federal fossil fuel subsidies’.

He envisages the expansion of the existing federal Power Marketing Administration system, and says that revenues from its wholesale power sales will be collected from 2023-35, but ‘after 2035 electricity will be virtually free, aside from operations & maintenance costs’. That takes some believing! Nuclear power would be out, and even more contentiously, shale-gas fracking would be banned, so would offshore drilling, along with the export & import of fossil fuel. A green dream!

The transport plan is also pretty audacious, with over $3.5 trillion earmarked to support EV take up, and new high-speed rail, along with ‘a $150 billion effort to fully decarbonize aviation and maritime shipping and transportation’. And there will be ‘a $500 bn effort to research technologies to fully decarbonize industry’. On jobs, in all 20 million will be created, with $1.3 trillion allocated ‘to ensure that workers in the fossil fuel and other carbon intensive industries receive strong benefits, a living wage, training, and job placement’. It says ‘We will guarantee five years of a worker’s current salary, housing assistance, job training, health care, pension support, and priority job placement for any displaced worker, as well as early retirement support for those who choose it or can no longer work’.

Can it all be done and paid for? Sanders says that, if no action is taken, the US will lose $34.5 trillion in economic activity by the end of the century. Whereas ‘by taking bold & decisive action, we will save $2.9 trillion over 10 years, $21 trillion over 30 years, and $70.4 trillion over 80 years’. Will he win through with that? [https://berniesanders.com/issues/the-green-new-deal]

US Presidential candidates’ views

10 of the Democrats are pro Green New Deal (including Sanders, Warren & Biden), 6 are against, as is Trump! Six Democrats are pro nuclear. 9 are anti (including Sanders & Warren) some are unsure. But Trump is pro. [https://grist.org/article/climate-candidate-2020-election-president-trump-biden-sanders-warren] Sanders is doing is well, but so is Biden. Trump: [https://nymag.com/2019/09/17/trump-says-green-new-deal-would-turn-us-into-hermit-nation/]

But there’s a way to go Nov 2020

Amazon ablaze - or not?

One of this year’s big stories: [www.climatexchange.com/2019/08/21/record-72000-forest-fires-detected-brazil-year-Satellite-image-in-Aug left]


Green and Red

The strategy underlying most green plans is to switch from centralised power production using fossil and nuclear fuels in large complex plants to smaller scale decentralised power using renewables. That can make local control and even ownership easier, weakening the power of the big energy companies.

To that extent it is also a red programme, although there are debates about how much local control as opposed to state control is viable/needed and over the role of markets and competition. There’s an even bigger debate over growth. Some greens think it must stop, some reds do not: [https://newleftreview.org/issues/II12/articles/robert-pollin-de-growth-vs-a-green-new-deal]

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Zed Life - living in the future now

Eco architect Bill Dunster says low-cost, zero-energy, zero-waste architecture is possible - and available now. He has certainly pioneered many radical ideas for low energy green buildings: www.solaripedia.com/files/641.pdf

And his recent RIBA book, Zed Life, provides more: www.ribabooks.com/item/zedlife-how-to-build-a-low-carbon-society-today/88001/

Visionary stuff: www.zedfactory.com/redlife

Though perhaps at times expecting too much of the technology - with building systems, the devil is often in the detail. But then we can learn from building visions. Even so, there may be limits to how much green energy can be produced inside cities.


Demand peak management...

‘Home Companion, Dec 11th 1948: thanks to Herbert Eppel

The UK as it might be - see map right

This is how the late Prof David Mackay envisaged a possible future, though he insisted on keeping nuclear and his estimates for the viability of renewables now look dated - they’ve done far better than he expected. https://twitter.com/aDissentient/status/1169247008370155525

Things to avoid....

Emission trends in the UK has been imbalanced


What to do?
Tech and lifestyle options

Or a very low tech future: https://lowtechinstitute.org/2019/03/07/green-new-deal-how-about-a-low-tech-new-deal/

But, whatever, not BECCS/ bio sequestration
**Solar energy balance**

‘The solar PV industry depends on fossil fuels.’ So says Thomas Troszak. He goes on ‘Although some silicon smelters are powered by a mix of electricity generation that includes up to 100% hydro power, the majority of polysilicon, ingot, cell, and module factories are running on grids powered by fossil fuels and uranium. More than 50% of all solar silicon is made in China, where the industrial grid is powered by fossil fuels, primarily low-grade coal.’ And he concludes ‘The continued production of solar PV requires a perpetual supply of non-renewable resources it is intended to replace. Therefore, claims of “sustainable” and “renewable” energy from solar PV are not consistent with the non-renewable reality of all global manufacturing supply chains.’

www.researchgate.net/publication/335083312_Why_do_we_burn_coal_and_trees_to_make_solar_panels_T_Troszak_2019-08-31_revision

It’s true that energy is needed to produce silicon and then solar cells, but, typically, you can get up to 25 times more energy out of cell operational lifetime than is required for their manufacture. As the share of renewables on the grid increases (it’s 26% globally now) the current PV and 30G€/KWh compared to 1000G€ for fossil power) falls. So we’re getting a reasonably positive carbon balance now and it will soon be even better. But it does need energy:

www.youtube.com/watch?v=D1ALNg3z2gk&feature=youtu.be&t=71

Making silicon also needs carbon. But there are non-silicon and non-carbon options emerging.

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**Some contrary views**

**EVs no go** To replace all UK-based vehicles with electric vehicles (LGVs & HGVs excluded), even using the most resource-frugal batteries, ‘would take 207,900 tonnes cobalt, 264,600 tonnes of lithium carbonate, at least 7,200 tonnes of neodymium and dysprosium, in addition to 2,362,500 tonnes copper. This represents, just under two times the total annual world cobalt production, nearly the entire world production of neodymium, three quarters the world’s lithium production and at least half of the world’s copper production during 2018.’ Letter from a group of materials scientists to the CCC.


**Recycling horror story** it’s not going away

www.facebook.com/BBCPolitics/videos/511788932901127/

www.youtube.com/watch?v=JYHX-

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**Frugal horrors** Opposing Labour’s Green New Deal

2030 zero carbon target, the GMB’s Neil Derrick said: ‘It would require the confiscation of all petrol-fuelled cars still on the road, the state-ratining of meat, limiting families to one foreign flight every five years, the closure of whole industries’

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**GWPF Quiz**

www.playbuzz.co

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**Green Nuclear**

A Greens for Nuclear review asserts that ‘the current global fleet of Generation III Nuclear reactors uses only about 2% of the energy in their uranium fuel. The remaining 98% remains in the spent fuel. But new Generation IV reactors can recover all that otherwise wasted energy by ‘burning it down’ to generate electricity simultaneously rendering it safe as background radiation in 300 years’.” It also makes some other contentious assertions: it’s cheap, safe and proliferation can be avoided. Whereas, with renewables ‘financial, social, and environmental costs spiral out of control as Wind Water Solar (WWS) penetrates into (models projecting the future make-up of) electricity grids above circa 75%’. However, it’s not suggesting that nuclear takes over it all: it sees nuclear as ‘the ‘least-worst’ choice for humans to make-up the remaining 25% in balanced modern low carbon grids’. Well it’s a view. Even if it means 1000 GW of new nuclear by 2050:


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**The market decides?**

Offshore wind was initially seen as one of the most expensive renewable options, with strike prices under the first CfD capacity auction system in 2015 reaching nearly £120/MWh. In the 2019 CfD round (see News), some had fallen to just under £40/MWh, around a third of the earlier figure. That makes them competitive with on shore wind/PV. So does that invalidate the claim that offshore wind/PV are cheaper and have been constrained unfairly? Not really. If they had been allowed in the CfD & not blocked by new planning rules, they may well have got even cheaper, as the market built. But offshore wind can go for very large units, with high capacity factors (50-60%). Too big for on land. And UK PV capacity factors are under 20%.

*Offshore wind is now at 8.5GW in the UK, 23GW globally, up to 150GW expected by 2030, maybe 500GW by 2050*