

u3a Second Nature 013 (Mar 2024)

1 message

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Bulletin 013

Second Nature is sent by the Subject Adviser on Climate Change & Environment to subscribers in the u3a Climate Network. I think that it should be second nature to think about our impact on the environment when we take decisions, and as instinctively as we think about the impact on our finances.

My objectives in sending this are:

- *to remind members that I exist (and encourage feedback)*
- *to provide content that can promote discussion in u3a climate groups*
- *to give examples of best practice*
- *to entertain.*

The N-word

A couple of months ago I gave a talk to the Croydon group and in the Q&A session Jenny asked me "what do you think of nuclear power". I wasn't ready for that question - I think I waffled a bit, and in the end said that I would like to see a non-nuclear energy strategy but the numbers have to add up. David MacKay said, *I'm not pro-nuclear, I'm just pro-arithmetic*. It made me think though that I need to come up with a better answer.

The government's [Energy Security Strategy](#) describes nuclear as "the only form of reliable, low-carbon electricity generation which has been proven at scale and returns more than 100 times as much power as a solar site of the same size ... we can only secure a big enough baseload of reliable power for our island by drawing on nuclear ... our aim is that by 2050 up to a quarter of our power consumed in GB is from nuclear". That would take the nuclear baseload to around 24 GW - eight power stations - and implies that our total generating capacity will be somewhere north of 100 GW. By comparison, demand in 2021 averaged 30.8 GW and peaked at 47 GW. At the time I write this - a morning in March - we have a nuclear baseload of around 10%, 46% wind and solar, 19% gas and biomass. The 19% is dispatchable power - that is, generators that can ramp up and down quickly as the grid balances supply and demand. If we move to a generation mix of renewables plus nuclear I don't understand where the dispatchable power is, unless we have a lot of storage. We're probably going to need a lot of storage anyway to cope with the unpredictability

of wind and solar (see below).

These are some of the common responses when the nuclear issue comes up for discussion:

We don't know how to deal with the waste this is ironic I think, because we're in a climate emergency because we don't know how to deal with the waste from burning fossil fuels. Proponents of nuclear power say that, yes the waste is nasty but there isn't actually very much of it, and glassification of high-level waste plus storage in a [Geological Disposal Facility](#) (GDF) is an acceptable solution. I'm inclined to buy that argument. Government estimated in 2017 that around 650,000 cubic metres of material will be sent to a GDF. Most of this volume is intermediate and low-level waste. Our grand children may not thank us for this, but they might prefer it to an extra 500 gigatonnes of CO2 going into the atmosphere.

Nuclear waste lasts a long time this is undeniable, but we have already put into the environment poisons that last effectively forever, such as mercury, lead, and arsenic. (Tetraethyl lead for example is no longer legal in petrol but [can still be added to the fuel used by propellor-driven aircraft](#)).

I'd rather live next to a wind farm than a nuclear power station so would I, but this isn't comparing like-for-like. Hinkley Point C is designed to deliver 3200 MW - that's the equivalent of 100 or so wind farms on a windy day, say 200 if we assume a load factor of 50%. That's a wind farm on every hill in the West Country.

Nuclear stations are expensive you might reasonably expect that 68 years after the opening of Calder Hall we'd be able to build a nuclear station as easily as we can build a coal station or an oil refinery, but Hinkley Point C which is now under construction comes with [an estimated price tag of £35bn](#). This figure could reach £45bn when inflation is factored in. As a comparison, the cost of the London-Birmingham section of HS2 [may be as much as £66bn](#).

What about Chernobyl? Chernobyl was a human-made disaster on a scale comparable with natural disasters like the Japanese tsunami. Historian Serhii Plokhyy in his book 2018 *Chernobyl - History of a Tragedy* says "current estimates place [the ultimate mortality toll] between the 4,000 deaths estimated by UN agencies in 2005 and the 90,000 suggested by Greenpeace". Neither of these organisations can be considered impartial I think. Wikipedia provides a longer discussion on this.

The annual mortality of human-made air pollution in the UK alone is between 28,000 and 36,000 deaths every year. Most of this pollution comes from burning fossil fuels (and wood).

And Fukushima? This is George Monbiot, [writing in 2011 shortly after the disaster at Fukushima](#):

"I am no longer nuclear-neutral. I now support the technology.

A crappy old plant with inadequate safety features was hit by a monster earthquake and a vast tsunami. The electricity supply failed, knocking out the cooling system. The reactors began to explode and melt down. The disaster exposed a familiar legacy of poor design and corner-cutting. Yet, as far as we know, no one has yet received a lethal dose of radiation."

One worker exposed to radiation has since died from lung cancer. The official total for the number of those dead or listed as missing from the 2011 earthquake and tsunami is about 18,500.

avid MacKay [in his last interview before he died in 2016](#) abandoned his neutral position on energy strategy and opted for nuclear plus carbon capture and storage (CCS): the former presumably for baseload power and the latter for dispatchable, on-demand power. There isn't really a place for renewables in this strategy, although CCS is unlikely to be 100% effective and wind and solar will continue to be clean. I'm prepared to

go along with MacKay's strategy, although I'd be happy to be wrong.

Jenny, will that do?

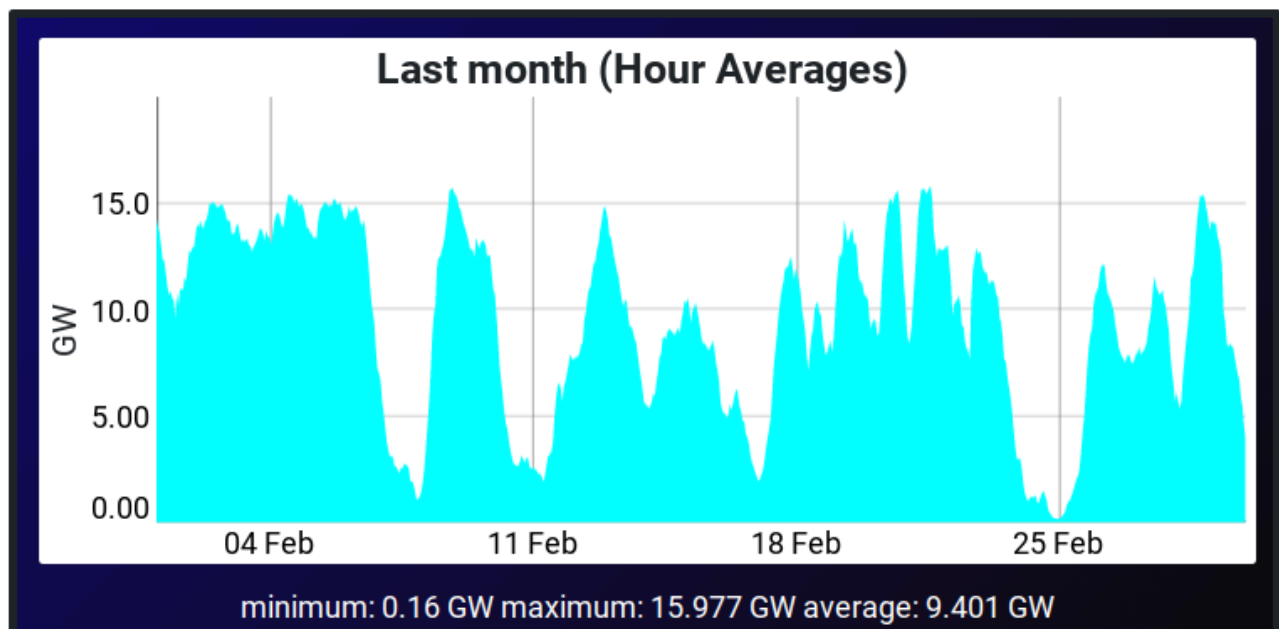
GB Electricity in February

[Wind provided 36.8% of GB electricity in February](#), with gas well behind at 26.6%. Just looking at the totals however can mislead, because the grid has to match supply and demand every second of the day. In Feb wind generation was as ever hugely intermittent, with the minimum amount of power from wind being around 1% of the maximum (see blue chart below).. Wind gives us 'as available' power and gas gives us 'on demand' power and in my view that they are fundamentally different things. What this means I think is that we can't decarbonise by replacing gas with wind until there is no gas generation left in the system: we need to replace gas with zero-carbon on-demand sources of power. I don't know what these might be - storage is an obvious technology to use, perhaps using vehicle-to-grid, but we will need so much of it: if you remember the table from Issue 012, we may have to plan for up to a week of very low wind speeds in winter.

TABLE 1

Extreme weather events.

Stress events	Description	Frequency
Summer wind drought – frequent	One full day of very low wind speed in summer.	One or two per year
Summer wind drought – infrequent	Up to four weeks of very low wind speed in summer.	Once every 10 years
Winter wind drought	Up to a week of very low wind speed in winter.	Every few years



In the Press

In Wales, [a TV weather presenter called Sabrina has vowed to buy no new clothes in 2024](#), only second-hand stuff. "There's pressure for me to look good because of my role and I know there's a lot of eyes on me",

she says. Fortunately u3a Subject Advisers do not have to work under this sort of pressure.

I sometimes while away the odd half hour reading trade papers such as [Resource](#), a publication for the waste management industry: if you're interested in waste or recycling, take notice of the people that do it for a living. Of course much of the content is based on press releases, so you have to read it carefully. Here are some snippets from February: click on the links to see the original articles.

[Disposable coffee cups](#) in the UK we use between 2.5 and 5 billion of them; only 0.25% are recycled; compared to 70.6% for paper and cardboard overall. (These cups are actually quite hard to recycle; most of them are probably fed to an Energy from Waste plant)

Is 5 billion a plausible estimate? (This is the way that we have to think when we read press releases). Well, if we assume that a regular coffee drinker uses 5 cups a week, that means we need around 20 million coffee drinkers to reach this total. I can believe that. The thing to do here surely is not to work in increasing the 0.25% but on reducing the 5 billion: the re-usable cups that I mentioned in Bulletin 010 will pay for themselves this year I think, because the high street coffee shops give a discount when we use them, or give extra points on my loyalty card. They avoid the use of disposable cups, plastic lids, and cardboard sleeves and cup holders.

[Packaging](#) 71% of respondents in a YouGov poll believe that supermarkets and retailers use too much packaging; 88% believe that packaging should only be made from recyclable material. The poll also found that:

- 85% of us think that companies should be required by Government to reduce the amount of packaging they use
- we are six times more likely to trust councils to run waste and recycling services (52%) than the Government (6%) or industry (8%)
- we are 12 times more likely to think packaging recycling costs should be met by producers (48%) rather than councils (4%).

The poll was conducted on behalf of the Local Government Association. It would be interested to see the questions.

[Recycling blister packs](#) Boots is to join other retailers in taking back the blister packs used to package medicines. It gives loyalty points for this, but there is a tedious process to go through and you have to spend at least £10 in store.

I'd like to be convinced that recycling blister packs is not just greenwash - the article *says the materials are separated using a specialised machine; aluminium foil is directly sent for reprocessing and, where possible, the plastic is separated by polymer type for reprocessing or turned into a composite material for construction and furniture.* I used to take my packs to Superdrug, just for fun: they had a big bin and you could lift the lid off and tip them in; now they have a bin like a tiny post box and you have to feed it one pack at a time, and my blister packs go into general waste.

[Tubeless kitchen foil](#) Tesco has removed the core tube from its aluminium foil to cut down on cardboard packaging. It estimates that this will save 330 tonnes of packaging a year. Tesco had 4673 stores last time I counted, so this innovation will save around 1.4 kg of cardboard per store per week: a drop in the packaging ocean.

[Reverse Vending](#) if you live in Glasgow your local Lidl now has Reverse Vending Machines (RVMs) that dispense vouchers in return for empty plastic and aluminium bottles and cans. The scheme offers a 5p reward per eligible item, redeemable against their shopping or donated to charity. Some years ago as I recall Tesco tried a similar scheme using Tomra RVMs: these were located outside the store and a suspiciously large number of them caught fire.

So what does a read through Resource tell us? It seems that companies are very keen to look like they are greening their business, and their PR departments are primed appropriately. They know that this is what consumers want. Tackling packaging and recycling a wee bit more is a lot easier than looking hard at the footprint of the business and trying to manage it down.

Sustainable Gardening

[A paper in Nature Cities](#) reports that fruits and vegetables grown in urban allotments and gardens have a carbon footprint that is, on average, six times greater than produce grown on conventional farms. I heard a Radio 4 interview with one of the researchers: he said that although urban gardens can be as efficient in carbon terms as farms are, the footprint of most gardens is dominated by 'infrastructure' - sheds, tools, raised beds, paths, compost bins, buckets. Farms achieve economies of scale.

I don't offer this as an argument against gardening - we don't garden because we are competing with Tesco to produce beetroot, there are many other benefits. It just means that we need to keep an eye on the 'stuff' that we use.

Feedback and Groups News

Emails that you send me in response to content in Second Nature may be used here, and edited in the interest of brevity (or occasionally levity). Please make it clear if you don't want me to do that. I keep your emails in a Gmail folder to which only I have access. I delete them when I don't need them any more.

Anne emails me to say *I hope you don't mind or will pursue copyright but I adapted some of [your] excellent verses for use in my home-made Valentine's Card. It went down very well!*

All great poets steal, Anne: you have my blessing.

In Sandhurst, Berkshire a Green Fayre is planned for 21st September: "biodiversity, energy saving, EVs and recycling to raise awareness to residents". The organisers would like local u3as to be represented: a stand costs £25. Alternatively groups can provide a speaker or a presentation. Contact [Hazel Hill](#) if you are interested,

I get questions from Group Leaders (GLs) about the practical aspects of running a climate group in u3a - goals, objectives, activities, talks, what works and what doesn't. I think these are best answered by group leads talking among themselves, so I have set up a Facebook group [u3a Climate Group Leaders](#). You don't have to be a GL to participate, just be willing to contribute your ideas. GLs from other groups such as Science and Gardening are also welcome. Note that this is not a group for general discussion of climate issues.

I plan to run with this group for a few months and dispose of it if it is not meeting its objectives.

Acknowledgements

Serhii Plokyh is a Professor of History at Harvard University. His book about Chernobyl was published by Allen Lane in 2018 and is still available. At the time of the Chernobyl explosion he lived less than 500 km downstream of the damaged reactor.

The chart showing February wind generation is from [gridwatch](#).

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See also the [u3a Climate Change & Environment website](#).

A note on sources: I am a Guardianista (and a Guardian Supporter) and I frequently forward links to content from that newspaper. This is for practical reasons, not political ones - unlike your favourite newspaper Guardian content is not behind a paywall (you may have to register, but you won't have to pay). I also link to content from The BBC, [The Conversation](#), [Ensia](#), Nature, and other sites that I like and feel are credible.

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