

25 08 2018

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1. There is **really exciting news on our tidal stream**. In July, it was announced that the **first commercial-scale trial was starting in Holyhead** and now more good news from Orkney. Trials of both standard **tidal stream (turbines anchored to the sea-bed) and floating tidal stream have functioned well over the last year** and are now ready for scaling up. Together they have weathered the winter storms and proved that mechanical bits can work in salty water.... This is **predictable renewable energy**, so potentially a really valuable source. But note there is still a plea for government support: while the up-front costs remain high, and **tidal is forced to compete with more advanced off-shore wind, its future in the UK is not guaranteed...** All projects have so far benefitted from European funding....

This isn't the end of good news in the marine sector. Welsh company **Marine Power Systems is going ahead with trials of sub-sea wave technology in Falmouth harbour**. It's installed - we wait results.... The hope is that wave power could produce around **10%** of our electricity..... Taking the energy from below the surface is, I gather, quite innovative.

2. The cut in government support for solar and onshore wind means that there is an **alarming drop in new renewables coming through the pipeline**, apart from off-shore wind. The question has been whether the drop in solar prices would allow companies to continue investing and make returns. There is good news this week in that **the first industrial scale solar park is going ahead without subsidy - 15MW.**

This is **not the first solar totally without subsidy**. Last year Anesco built a smaller 6MW array with batteries and this is **now part of another really exciting development**. Small, distributed generation will be used as a **virtual power plant to help balance the grid**, something only big power plants have done in the past. The company, Limejump, will use small wind and solar producers, batteries, and companies signed up to Demand Side Response, to react to demand fluctuations on the grid.

To encourage unsubsidised renewables further, the government is looking at **opening the capacity market** to them. This means that they will be **able to bid for contracts for 'stand by', to sit there and come online as needed - as with 'peaker plants'**. This is, again, a really exciting development but will need new

legislation.

3. Although **progress on renewables is truly welcome, it's not enough...** Electricity is only **20%** of our final energy demand - we need to get really **serious on heating and transport**. There's one other huge area of concern - **our 'stuff'**. If you watched the [Kevin Anderson \(climate scientist\) link](#) in the last email, you will have seen him deliver **three shocking truths** to his Danish audience. First, despite their heat networks and 40% renewable generation, **Denmark has not reduced its emissions at all**. Second, Denmark is **set to eat through its two degree budget in just three to nine years....** And third, if the **highest consuming 10% of the world brought their consumption down to average European levels, we could cut our greenhouse gases by 30%** immediately....

This made me look again at the subject of our **'embedded emissions'** since clearly Denmark's figures can be read across to the UK. The Office for National Statistics tells us that in 2016 the [UK exported £302 billion of goods and imported a massive £438 billions' worth](#). This trade deficit in goods (importing more than we export) is normal for the UK but it is key to understanding why our greenhouse gases are not going down as we are told. **No international shipping or aviation is included in any country's emissions calculations**, and energy used in resource extraction and manufacturing **counts only in the countries where that physically occurs**. This means that, on average, [European countries need to add 30% to their greenhouse gas totals](#) and alarmingly, the [south west of the UK has the worst embedded emission footprint](#) of any part of Europe.... As former government science adviser David MacKay calculates, [stuff and the transport of stuff is the biggest single item on our personal carbon bills](#)- bigger than transport, electricity or heating...

4. What can all this 'stuff' be? Most people I know are not gratuitously shopping... We don't change our gadgets, cars, furnishings often.. But most of us *do* buy clothes on a regular basis and according to the Statistics Portal, around [£23 billion of our imports are clothing](#), mainly from Asia. This comes with a high intensity of embedded carbon, as zips, buttons, dyes, packaging etc are moved around the world to cheap assembly plants.

The actual textile production also has a high footprint. Cotton may be 'natural' but alarmingly, [it uses 11% of all pesticides globally and 24% of insecticides...](#) Thousands of hectares of forest are taken down every year to grow cotton, causing more carbon loss. It's water intensive and that brings more emissions: it **can take 20,000 litres of water to grow one kilo of cotton, enough for just one t-shirt and one pair of jeans**. More clean water is required for [dyeing](#) and around 20% of that toxic material is lost immediately into local water courses.

Synthetic fabrics [use less water and less land, but are oil based and so come with an obvious carbon footprint](#). And as with cotton there are enormous toxicity issues: synthetics are a [major source of microfibres that don't degrade](#) and bind with harmful chemicals in our water, ending up in plankton and other key organisms. **Clothing is**

considered second only to the oil industry as a source of environmental pollutants.

There are now more [outlets](#) for [organic clothing](#) and we're all getting used to [clothing made from bamboo](#) and [other wood pulp](#). Here's a good ['Costing the Earth'](#), looking at potential, cleaner technologies. But as with food, going organic doesn't solve the problem if stuff is shipped around for thousands of miles. Given our [habit of buying clothes and leaving them in cupboards](#) the best option seems to be **'Reduce, Re-use and Re-cycle'**. There's the potential here for an 'easy win'...

5. There is much **good news from several Global South countries**. A new [83GW of solar is expected across Africa and the Middle East by 2023](#) and [another 30 GW of wind in Africa by 2027](#). We need Africa to not embed fossil fuel power, and move straight to renewables, so these figures are encouraging.

[Here's](#) a really good news story about an African entrepreneur using solar and batteries to displace Nigeria's 60 - 70 million (**can this be true?**) diesel generators. An even bigger challenge is how to displace the use of kerosene, wood, charcoal and straw from the large part of Africa that is still off-grid. The good news is that over [130 million people can now access off-grid electricity](#), a figure that has risen **six-fold** in just seven years. This is using both solar lamps and microgrids. However, still around **1.2 billion people live without electricity** which is pretty shocking in the 21st century... Interestingly, [SolarAid](#) is now pioneering school **light-lending libraries in order to reach the absolute poorest** who can't afford the payment systems for home solar - worth supporting for both development *and* environmental benefits.

6. **What's happening in Australia, land of wind and sunshine???** It seems that policies on energy and climate change are tearing apart the right-wing Liberal government and Prime Minister Malcolm Turnbull has been ousted after **proposing national emission targets in line with the Paris agreement...** Australia is the world's biggest coal exporter and along with the rest of the mining sector, the industry has great sway over government. The new government under Scott Morrison may actually **take Australia out of the Paris agreement**.

However, the public are [solidly behind renewables \(81%\), and so are key states](#). Victoria is aiming at **40% renewables by 2025** and Queensland at **50% by 2030**. The [boom in rooftop solar](#) shows no sign of slowing down. As [big investors have stated, even in Australia coal is no longer competitive against renewables...](#) Australia's Energy Security Board, which you can assume has national interests at its heart, has stated that the [transition to renewable energy 'cannot be reversed' because it is now market-driven](#), not dependent on government policy. Phew!

7. And more good news from the US... It's worth [reading this article twice](#) just to understand the figures... According to the government's Energy Information Agency, the **next three years will see a net loss of almost 16 GW of coal, less than a GW increase in nuclear, and an extraordinary 157 GW of new renewables, mainly wind and solar...** That's pretty extraordinary, particularly given federal policies... Even Wyoming, the biggest state producer of coal (by a very long way) is [set to become an exporter of wind power](#). And today I woke up to an [FT article telling me that even the US army is investing in solar! - for economic and](#)

[energy security reasons...](#) Go US army.... or maybe not...

8. **There is grim news from the Arctic.** As we all know, the amount of [sea ice is substantially below the summer and winter averages recorded in just the 1980s and '90s](#) and now it appears that even the [thickest, multi-year ice is breaking up](#). [This article](#) explains clearly why this matters: **losing the reflectivity of that ice and the slowing of jet streams and Atlantic currents are just some of the issues.**

But it seems **not everyone is unhappy.**

Last year we had the first crossing of the Northern Sea Route by ship with no accompanying ice-breaker, and last month Russian gas company **Novatek delivered Liquefied Natural Gas to China** along the route. Now [Maersk has a 3,600 container ship travelling from Vladivostock to St Petersburg](#), exploring the route's viability as an **alternative to the Suez canal**. Novatek states that it expects to be using the route 12 months a year soon, with special ice-breaking tankers, but Maersk states that they do not expect the route to be commercially viable for general cargoes for some while.

9. Bristol has now set its decarbonisation target - [carbon neutrality by 2050](#). The intention is that this **covers all sectors - residential, commercial, the service sector, transport, heating and power... That means none of us should be using fossil fuels by 2050, at home or at work.** In some ways this seems extremely ambitious, but knowing the climate change threat, it also seems a worryingly long way away.....

We just need to **exceed this target and that involves all of us.** The Council is now **looking for partners to form a 2050 road-map** and you can download the [City Leap](#) prospectus. 'Expressions of Interest' (ideas, not necessarily details) need to be in by the **end of August**. It seems to me that we will not achieve our goals without **much greater public awareness, motivating individuals and businesses to act independently.** [Manchester has a 'Carbon Literacy' project](#) and I would be interested in hearing ideas on how we could do similar in Bristol.

As promised in the last email, I **attach a short piece on how Carley's, a small business down in Cornwall, has gone energy positive** - a really inspiring read - and I also attach a **personal piece from Bob Langton of Low Carbon Gordano**, detailing some of the changes he and his wife have made. These are offered in the spirit of information exchange and encouragement.

10. Even if you are not contributing directly to the City Leap initiative, you can make a small contribution to the Council's target by **supporting the 20 mph zones around the city.** These are under review, and [feedback is requested by 31st August](#). For those who want evidence as to how **driving slower reduces our fuel consumption, air pollutants, congestion, journey times, accidents, noise and CO2**, here's an excellent ['Seven reasons why Einstein would support 20 mph'](#).

In the last email I mentioned that Chris Jones at [Woodland Valley Farm](#) near Truro is offering food and accommodation (dormitory style) to anyone who would like to plant some trees in November.

We're now set for the **16th-18th**, going down on the Friday night and back on Sunday evening. There's **no charge other than a requested donation to Chris's beaver fund** (there's a research project going on on the farm). Let me know if you are interested.

Other than that, I hope to see you at the [Green Picnic on the 29th August](#), and on the [8th September](#).

As ever, if you would like to come off the mailing list, just let me know.

All good wishes. Booking links to the Bedminster talks are below.

Nikki

Bedminster Talks

1. What is Climate Change? - 9th Oct - <https://www.eventbrite.com/e/talk-what-is-climate-change-tickets-49404768994>
2. Global Energy Trends - 16th Oct - <https://www.eventbrite.com/e/talk-global-energy-trends-tickets-49405083936>
3. UK Energy, Emissions and Targets - 23rd Oct - <https://www.eventbrite.com/e/talk-uk-energy-emissions-and-targets-tickets-49405409911>
4. Is Nuclear the Answer? - 30th Oct - <https://www.eventbrite.com/e/talk-is-nuclear-the-answer-tickets-49405655646>
5. Land Use and Climate Change - 20th Nov - <https://www.eventbrite.com/e/talk-landuse-and-climate-change-tickets-49406080918>
6. The Way Forward - 27th Nov - <https://www.eventbrite.com/e/talk-the-way-forward-tickets-49406255440>