

CLIMATE CRISIS NEWSLETTER

A fortnightly newsletter brought to you by XR Gairloch

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Editorial

A government unfit to govern

Liz Truss's energy plans show the UK has effectively abandoned net-zero targets just three years after its world-leading commitment to cutting emissions, the government's former chief scientific adviser has said.

A major new fossil fuels campaign, including lifting the ban on fracking and expanding drilling for oil and gas in the North Sea, has already been announced by the new prime minister's administration

The energy package for business announced on the 21st September also has no detail on the anticipated costs of discounting wholesale power prices for companies, charities and public sector organisations, including schools.

The whole package was announced via a press release from the department and a video posted on Twitter by the business secretary, Jacob Rees-Mogg.

There will be no statement in the House of Commons where Rees-Mogg can be questioned. Parliament only had a chance to debate the proposals on the 30th September, the last day before another parliament recess,

Five ways Liz Truss has already ripped up the rulebook as Tory PM. [Read article.](#)

The Tories spent a decade putting fossil fuel profits first. Now we're all paying the price. [Read article.](#)

UK must insulate homes or face a worse energy crisis in 2023, say experts. [Read article.](#)

UK government needs to back up words with actions

Nearly half of the UK offshore wind projects needed to reach 2030 net zero targets are only at the concept stage, according to new research.

Research from trade body Offshore Energies UK (OEUK) shows the UK currently produces 12 GW of energy from offshore wind and is at risk of missing government targets of 50 GW by 2030.

Meeting offshore renewable energy targets by 2030 are "potentially achievable" if the rate of wind turbine installation is doubled or tripled, industry experts have warned.

The UK Government has set a four-fold increase target, however, "significant improvements" will be needed for this to be possible, according to a new study from Offshore Energies UK (OEUK).



Research found that almost half of the offshore wind projected needed to reach the target are only at the concept stage and it typically takes more than 13 years to move to the operation stage due to planning and approval delays.



As a result, the UK is at risk of missing net zero targets, according to the report.

This scale of installation is very ambitious and will require significant improvements to the regulatory and permitting progress

The OEUK's new economic report will take a detailed look at the nation's energy security landscape, including gas, oil and offshore wind in an effort to highlight the strengths and vulnerabilities to Government ministers.

UK ministers have been urged to adopt a range of recommendations, including cutting planning consent times from four years to one and developing a fast-track planning process for non-controversial projects.

The Government strategy aims to increase the offshore wind capacity to 50 gigawatts (GW) by 2030. It currently has the second largest, at around 12 GW.

But around 3,200 newer and larger wind turbines will be required to achieve this which had led to Ross Dornan, lead author of the OEUK's report, to call for the project to be accelerated.

He said: "As of late August, OEUK knew of around 40 projects planned through to 2030 at various stages of the development cycle.

"Based on this pipeline, the energy security strategy target is potentially achievable but it is important to understand the associated project uncertainties and risks.

"This scale of installation is very ambitious and will require significant improvements to the regulatory and permitting progress.

Energy is a precious resource which must be properly managed, in the short and long term

"Of the potential capacity additions before 2030, 46% (almost 19.5 GW) is only at concept stage.

"History shows that it takes around 13 years to progress from concept to application stage through to operations. This means that the UK's 50 GW ambitions will only be achieved if this can be sped up."

Progress made in January has saw Crown Estate Scotland announce almost 25 GW of capacity across 17 projects.

And in August, three new offshore wind projects were announced following from Crown Estate Scotland's clearing process.

With these projects taking into account, it adds up to 27.6 GW of capacity from Scotwind, with over 60% of the awarded capacity allocated to floating solutions.

Mr Dornan added that the vital sector is driving low emissions in the North Sea through the start-up of power generation at the Seagreen offshore project and the beginning of the Dogger Bank project - two of the largest offshore wind farms in the world.

He added: "As we have learned over the last year, energy is a precious resource which must be properly managed, in the short and long term.

"Our sector has many of the answers and through constructive work with governments and regulators, we can boost the UK economy, cut emissions, secure jobs and most important, heat and power homes and industries with energy produced here, for decades to come."

Internal Documents Show Big Oil PR Messages Still 'Mislead' Public on Climate....

Despite claims of transitioning to cleaner energy, internal emails and documents obtained by a congressional investigation show oil companies trying to protect their fossil fuel investments through public narratives that conflict with private communications

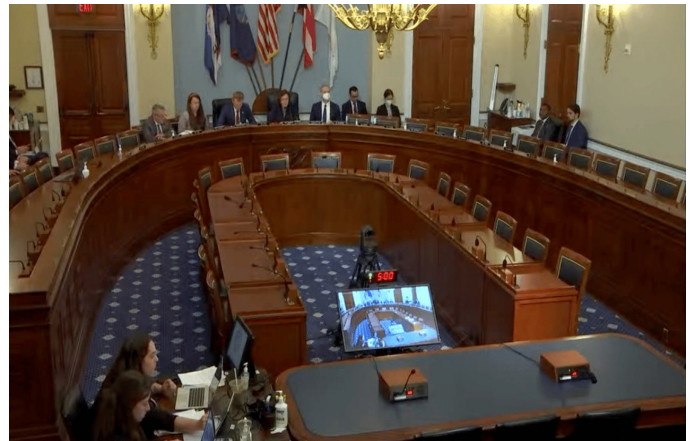
On September 14 2022 a congressional committee probed the history that PR firms have played in creating and spreading climate disinformation in order to block climate policy and promote fossil fuel interests.

The hearing, held by the U.S. House Natural Resources Committee, Subcommittee Oversight & Investigations, invited several firms, including Singer Associates, Story Partners, and Pac/West Communications. None of them showed up.

House Committee Investigates the Role of PR Firms in Spreading Climate Disinformation. [Read article.](#)

Criticism intensifies after big oil admits 'gaslighting' public over green aims. [Read article.](#)

Big Oil's Real Agenda on Climate Change 2022. [Read article.](#)



The law needs to change to ensure these people are charged with crimes against the environment and humanity. If there is no deterrent this will keep happening as it has been doing for the last 40 years. But I'm afraid that our current UK government is more concerned with promoting fossil fuel companies rather than taking them to task for lying to the public and knowingly destroying the planet for profit.

'A powerful solution': activists push to make ecocide an international crime. [Read article.](#)

The Global Climate Backtrack Begins.....

Last week was Climate Week, and the UN is mostly consumed with other problems

Between floods that ravaged Pakistan and droughts that parched Europe and China, and innumerable heat waves, the global impact of climate change has become tangible lately. Yet climate hasn't been at the top of the agenda at the United Nations General Assembly, taking place this week in New York City.

World leaders have largely focused their remarks on Russia's war in Ukraine and soaring energy prices, among other issues. US President Joe Biden began his speech on Wednesday with a harsh condemnation of the Russian invasion before briefly touching on climate change. He touted his administration's new climate law as a "global game changer," then he moved on.

In a rare moment when climate came to the fore instead of war or scarcity, it was hard to avoid a sense of dented optimism. After hosting informal climate talks, Secretary-General Guterres called for more: "The fossil fuel industry is killing us, and leaders are out of step with their people who are crying out for urgent climate action." It could be a foreboding sign with less than two months before leaders and climate diplomats convene at the Egyptian resort of Sharm el-Sheikh for COP27 — and the hosts are already wary of backtracking.



Only 19 out of the 193 countries that vowed to put forward more ambitious targets to cut greenhouse gas emissions at the UN-sponsored climate talks in Glasgow last November had done so by 23 September, the deadline set by the UN Framework Convention on Climate Change. Of these, only Australia's plan will lead to more emissions cuts, while Indonesia's reflects a slight increase in ambition.

"Seeking commitment on ambition is looking at just one side of the coin," Evans said. "We can't expect every country every year to come up with new targets — what's the point of setting a target if you can't deliver on it?"

Still, these developments don't mask the fact that world leaders have more urgent worries right now. Nationally Determined Contributions or NDCs, as countries' climate plans are known, are clearly not their top priority.

Under the Glasgow accord, countries that had not updated their climate plans were obligated to do so "as soon as possible" and all nations committed to "revisit and strengthen" their 2030 targets by the end of 2022. That means new documents could still be submitted, but they won't be incorporated in the UNFCCC's synthesis report, a calculation of future emissions and warming set to be published just before COP27.

Taking into account emissions targets set for 2030, the world would warm by 2.4°C by 2100, according to a June analysis by Climate Action Tracker, or CAT, which analyzes and

ranks climate plans. Global leaders agreed to keep the level of warming well below 2°C when they signed the Paris Agreement in 2015. The nonprofit is planning to release an updated outlook ahead of COP27 in November.

Here's a look at the countries that did send in their revised NDC's — and the ones that didn't.

Australia

Of the 18 new climate plans submitted after COP26, only Australia's will lead to more emissions cuts. The country updated its climate target in June after the Labor Party and a number of pro-climate action independents won big in last May's elections. The government led by Prime Minister Tony Albanese is now targeting a 43% cut in greenhouse gas emissions by the end of this decade, compared with 2005 levels.

The target still lags behind those set by the US, the EU and the UK, and is rated "insufficient" by CAT. "Australia is still supporting new coal mines and expansions, as well as massive liquified natural gas developments," said Bill Hare, chief executive officer at Climate Analytics, one of the organizations behind CAT.

Brazil

South America's largest nation put forward a target that's actually weaker than the one it presented in 2016. The document has been submitted as deforestation in the Brazilian Amazon reached a record high.

"Under [Brazil president Jair] Bolsonaro, these NDCs have been essentially greenwashing," Evans said. "They've changed baselines and come up with ways to do creative accounting, to weaken targets and, at the same time, not pursue policies at home that could lead to achieving these targets in the first place."

The upcoming presidential election could change it all, with former president and candidate Luiz Inacio Lula da Silva vowing to reverse Bolsonaro's climate-skeptic policies. The latest polls show he's nearing the simple majority needed to win on the first round on Oct. 2.

Egypt

Africa's second-largest natural gas producer, and responsible for a third of the continent's consumption, did not set an overall target to cut emissions and made its goals conditional on international support. CAT ranked it as "highly insufficient," a worrying sign for the country hosting this year's climate talks.

India

India, the world's third-largest emitter, has committed to making renewable power meet 50% of the country's electricity needs by 2030. By the same year, it also sets out to lower its emissions per unit of Gross Domestic Product by 45%, compared with 2005. However, this will not necessarily reduce its overall carbon footprint.



Indonesia

In a last-minute submission on Friday, Indonesia boosted its 2030 target to "unconditionally" reduce emissions below business-as-usual levels from 29% to 31.89%. Although Indonesia's baseline, business-as-usual scenario has been criticized as being inflated, the more ambitious targets reflect modestly greater ambition, according to an informal, early assessment by environmentalists.

The country also said its next target will be in line with its 2060 net-zero goal — language that suggests that this pledge may fall short, but Indonesia is seeking to keep on track.

UK

Britain will keep its headline pledge to cut emissions by 68% by 2030, compared with 1990 levels, unchanged. Its new plan simply added more clarification on how it will get there and broadened the goal to incorporate overseas territories and crown dependencies.

While the UK's climate minister Graham Stuart was keen to tout that its emissions reduction target is the most ambitious of any major economy, there is concern among environmentalists and green investors that the country may backslide under new Prime Minister Liz Truss. She has pushed to boost fossil fuel production to help weather the energy crisis.

"After a summer of heatwaves, droughts and catastrophic floods across the world, the UK's update is little more than an emissions accounting exercise," said Rebecca Newsom, head of politics from Greenpeace UK. "The UK target may be better than many, but still fails to rise to what's needed to head off a climate catastrophe."

UK reaffirms carbon budgets, but Truss's fossil fuel pledges 'raise obvious concerns.
[Read article.](#)

Countries who didn't submit revised NDC plans

A large number of big emitters with outdated climate plans have not submitted new targets in time for the UNFCCC to include them in this year's estimate of future warming, which will be released just before COP27. Documents by Mexico and Turkey were nowhere to be seen, even if both had indicated earlier this year they would enhance their targets before the summit. Vietnam, Iran, Russia, Turkey, South Africa or South Korea haven't submitted new documents either.

"The gist of what Glasgow said was we're not yet on track," said David Waskow, director of the World Resources Institute's International Climate Initiative. While there's been "modest movement," he said, "there were missed opportunities, and clearly we need to galvanize much stronger action."

Cost of Energy shouldn't cost the Earth.....

Cost to taxpayer of Truss's £100bn energy package has escaped scrutiny. [Read article.](#)

Centrica and EDF are at the table - now UK ministers must strike a fair electricity price. [Read article.](#)

The Government could use profits from nationalized energy firms to cut bills and insulate homes.



If the UK had a state-backed energy generation company akin to France's EDF, EnBW in Germany or Sweden's Vattenfall, it would receive between £63bn and £122bn in revenues over the next two years. That is equivalent to between £2,250 and £4,400 a household.

Nationalised energy could save UK households up to £4,400, TUC says. [Read article.](#)

Electric vehicles (EV) will wipe out internal combustion engine (ICE) vehicles within the next 5 years.....

It's hard to believe but the first electric car was commercially on sale in 1899 but unfortunately there was always 3 main technical stumbling blocks holding their development back:

- Charging time
- Range anxiety
- And battery life



The 4th a non technical stumbling block ,and probably the worst one was Fossil Fuel companies.

But now things have changed drastically and the research and development being carried out on batteries in general are ground breaking and happening at an alarming rate wit China moving forward with EV's at an electrifying pace.

Testing The World's FASTEST Electric Car Charger!! [See video.](#)

An EV With 600 Miles of Range Is Tantalizingly Close. [Read article.](#)

Stop the Rosebank Oil and Gas field going ahead.....

New UK Prime Minister Liz Truss, is hell-bent on approving a bunch of oil and gas fields. The first approval is likely to be the Rosebank oil and gas field - the biggest undeveloped field in the North Sea which is almost three times the size of Cambo - the oil field that we successfully stopped last year.

Rosebank is a huge climate justice issue: the CO₂ from burning the fossil fuels in just this ONE SINGLE oil and gas field in the Global North would be equal to the annual emissions of 28 countries in the Global South combined. The UK government needs to take its fair share of responsibility for the climate crisis and use its wealth to support a fair and fast transition away from fossil fuels at home and abroad. The first step is to stop Rosebank and all new oil and gas extraction.

Rosebank won't do anything to lower our energy bills, or make our energy supply safer, but it will make millions for oil & gas companies. The government and fossil fuel industry want you to think more oil and gas is needed for lowering our energy bills and increasing our energy security, when it's all about them making more money for them. Approving new fields like Rosebank only makes us more dependent on expensive, polluting oil and gas for longer, when we can and should be rapidly switching to clean affordable energy.

We've seen the effects of 1.1C degrees of global heating. We can't let it get hotter - with devastating floods across Asia, rivers drying up across Europe, and scorching heat across the world in the last few months alone. Rosebank will only pour more fuel on the fire.



The UK government is gearing up to approve a huge climate-wrecking oil field - We must Stop Rosebank. [Read article.](#)

Greenwash, misinformation, hypocrisy and deceit

Learn how the 230+ agencies that work with Fossil Fuels are hurting their business, and the planet. [Read article.](#)

Big Oil 'Exaggerates' Jobs to Stall Climate Action, New Report Alleges. [Read article.](#)

Biomass Lobby Makes 'False' Claims to Sway EU Law-makers. [Read article.](#)

Scientists urge top publisher to withdraw faulty climate study. [Read article.](#)



UK Government accused of letting aviation sector sway climate strategy through donations. [Read article.](#)

Gas Companies Accused of Using Hydrogen to 'Greenwash' Boilers. [Read article.](#)

Corrupt Politicians and Climate Criminals.....

One of Liz's "The Untrustables"

Jacob Rees Mogg, MP for North East Somerset and recently been promoted to Secretary of State for Business, Energy and Industrial Strategy by Liz Truss.

Since his appointment he has lifted the ban on fracking for shale gas and detailed plans to issue more than 100 licences to explore for oil and gas in a bid to boost the UK's energy security. As oil and gas projects normally take on average 26 years from exploration to going on stream giving new licences will not help the UK's energy security.

Jacob Rees-Mogg told staff that Britain "must get every cubic inch of gas out of the North Sea", a leaked video shows. Critics have accused the business secretary of "putting his ideology before the climate" and "greenwashing fossil fuels" by prioritising gas over renewables

Jacob Rees-Mogg dismisses 'hysteria' over fracking as ban ends. [Read article.](#)

Rees-Mogg: 'Britain must get every cubic inch of gas out of North Sea'. [See video.](#)



Events/Actions/Education and Information

Mass Mobilisation event

Last weeks mini budget from this new, unelected government amounts to a declaration of war on life itself. And like many, we're angry.

Make no mistake, **the decisions announced yesterday are a deliberate power grab**. Major tax cuts for the rich while the vast majority of us are given almost no relief from the cost of living scandal. A planned increase to corporation tax thrown out and the UK opened up to fracking, with the HM Treasury announcing plans to tear up fundamental legal protections for our precious wildlife: now nowhere in England is safe from being bulldozed.



This much is clear: The UK Government does not care about us. Our political system has no intention of saving us. **The only option left is for a mass mobilisation of people to resist the ongoing injustice.**

We're working to bring **100,000 people onto the streets of London on 21 April 2023 to stop the harm**. We will stay until the government stops enabling new oil and gas projects and agrees to a citizen-led transition away from the fossil fuel economy. Let's do this together.

On the 24th September the RSPB, Europe's largest environmental organisation called for a mass mobilisation of its members. Major charities are waking up to the reality of the emergency, and recognising that polite methods of protest like petitions and letter writing won't work.

Change is inevitable, the question is whether we will seize this moment and make it the beginning of the turn towards a fairer, kinder world.

[Sign up now](#) to be one of 100,000 people who turn things around.

#ScotClimateWeek

[North Highlands & Islands Climate Hub](#) - Tuesday 4th October, 7.30pm - 8:30pm

[Responsible Consumption with Zero Waste Scotland](#) - Wednesday 5th October, 7.30pm - 8.30pm

Please email manager@ecocongregationscotland.org for the link to attend any of these meetings.

Events/Actions/Education and Information (continued)

“The Change is Now Tour”

Climate Day Event— 8th October, 11.00 am to 4.00 pm at Fisherman's Car Park/Bught Park, Inverness.

Meet the XR Bus on “The Change is Now Tour” of the UK. Activities include: Welcome and information, Block printing, Free trees/make a seed bombs, Climate talks and videos, Pink Table outreach/discussion, Cakes and refreshments.

For more information email xrinverness@protonmail.com

COP 27 in Egypt (UN Climate Summit - 6 to 18 November 2022)

Damilola Ogunbiyi: COP27 cannot be a 'talk shop' - we need action on clean, equitable energy access. [Read article.](#)

IEA and IRENA: 'radical and immediate action' on clean energy needed at COP27. [Read article.](#)

Gap to 1.5C yawns, as most governments miss UN deadline to improve climate plans. [Read article.](#)



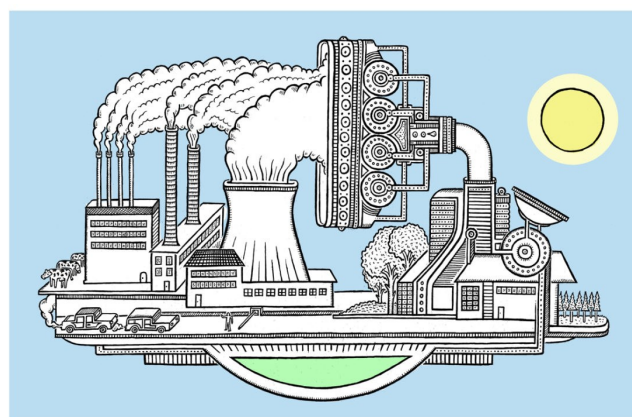
COP27
SHARM EL-SHEIKH
EGYPT 2022

Technological Advances

Contra-rotating floating turbines promise unprecedented scale and power. [Read article.](#)

Algae could help reduce concrete's enormous carbon emissions. [Read article.](#)

'Game-changing' new battery charges in 3 minutes and lasts 20 years. [Read article.](#)



Sustainable Farming/Food

Why we're in a critical period in the development of regenerative agriculture. [Read article.](#)

Bring on the parasitic wasps and hoverflies: Riverford embraces regenerative farming. [Read article.](#)

German Farmer Grows Fruit under Solar Power Equipment. [Read article.](#)



The Scales of Justice

UK climate activists held in jail for up to six months before trial. [Read article.](#)

EU agrees on new measures for anti-deforestation laws. [Read article.](#)

UK environment laws under threat in 'deregulatory free-for-all'. [Read article.](#)

RSBP:UK Government launches 'all-out assault' on environment. [Read article.](#)

Vanuatu becomes first country to call for global treaty to phase out fossil fuels at UNGA. [See video.](#)



Eco'omic Recovery—Building Back Better (Mostly Not)

Investors managing \$7.1trn boost long-term net-zero goals with 2025 climate targets. [Read article.](#)

Growth Plan: Tories set to weaken environmental requirements for developers. [Read article](#)

'Missed opportunities' on energy efficiency and cleantech: UK's green economy reacts to mini-Budget. [Read article](#)



The Fight Against Fossil Fuels

UK Government Announces Ban On Peat Sales. [Read article.](#)

EU expects to raise €140bn from windfall tax on energy firms. [Read article.](#)

Burning world's fossil fuel reserves could emit 3.5tn tons of greenhouse gas. [Read article.](#)

Emissions from Australia's oil and gas industry rose 20% in first five years of safeguard mechanism. [Read article.](#)

Solar and Wind Power Now Deliver 'More than Double' the Net Energy Produced by Oil. [Read article.](#)



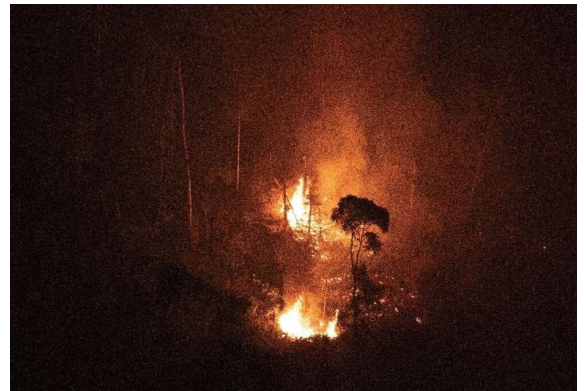
The Amazon Rainforest Is Still Burning

Brazil reports more Amazon fires so far this year than all of 2021. [Read article.](#)

What the death of a lone Indigenous man in Brazil can tell us about our global future. [Read article.](#)

Climate change: Spike in Amazon emissions linked to law enforcement. [Read article.](#)

Tell Vanguard to Stop Financing Human Rights Abuses Through Oil Company Petroperú!. [Read article.](#)



The Circular Economy

Devolved tax will support Scotland's circular economy, Scottish government says. [Read article.](#)

TerraCycle launch UK-first recycling programme for "hard-to-recycle" plastics. [Read article.](#)

How behavioural science can support a circular economy. [Read article.](#)



Except for what works

By Robin McAlpine

When it comes to climate change and Scotland, why is it that everything is on the table other than the approach which might work? Is this political? Constitutional? Is it a question of knowledge or expertise? I honestly am not entirely sure, but it means our chance of meeting our net zero targets is very low indeed.



So what works? This is one of those debates you can have for a very long time. Lots of people have their favourite climate change mitigation technique and weighing up all of these different possibilities can absorb a lot of time. So here I don't really mean the specific details of what goes where, I mean the bigger question of how we get the things there.

It can be air source heat pumps, district heating, electric radiators, biomass boilers, even hydrogen if you're feeling flush. But whatever it is there is a key question - how are we going to actually get it done? Who's going to do this stuff?

There is a not too complicated answer to this, which is 'this is a massive public works programme'. By 'works' I mean that this needs to be done en masse, not individually one at a time. By 'public' I mean that it needs to be paid for collectively. By 'programme' I mean that this has to be very carefully planned and managed.

This is an enormous task. It is a generational challenge, one of those things humans rise to every so often when they build great things.

But not only is this not happening in Scotland, it isn't even on the table. It isn't even a scenario worth modelling. That is the only conclusion that can be drawn from a recent piece of work by the ClimateXChange. Commissioned by the Scottish Government it looks at three scenarios for how Scotland might meet its net zero commitments. It is informative.

Option one is probably best titled 'magic'. Here the heavy lifting is being done by unproved technologies or technologies which have been proved not to work. So you could also call this the 'let the oil industry off the hook' scenario.

It relies heavily on Carbon Capture and Storage. It appears that there is no amount of evidence that humanity can produce which will put this nonsense to bed. No large scale CCS plant has ever worked. This isn't anecdote, it is both the measurable reality and the conclusion of a major academic review recently published.

CCS is a trick to persuade us that we can just keep burning oil and gas. But if CCS is magical, DACCS is total fantasy stuff. This stands for Direct Air Carbon Capture and Storage - literally sucking carbon dioxide out the air and stashing it somewhere.

CCS is a trick to persuade us that we can just keep burning oil and gas. But if CCS is magical, DACCS is total fantasy stuff. This stands for Direct Air Carbon Capture and Storage - literally sucking carbon dioxide out the air and stashing it somewhere.

How does it work? Well, the best method is to suck air through sodium hydroxide, dissolving the CO₂, producing carbonates. Fish those out and mix with Calcium hydroxide in a precipitator to create calcium carbonate. Then take that and send it to a calciner fed by an air separation unit producing pure oxygen and then heat the lot to 800°C to produce pure CO₂ and calcium oxide. Then you take the CO₂ and pipe it miles into an available empty oil well. Simple.

Plus it's a snip at about £700 a ton (same reference). Just to give you a picture of what's going on here, that means the cost of removing the CO₂ produced by the gas boiler of a single house in one year is about £1,500. And this looney-tunes nonsense is one of Scotland's bets on decarbonisation.

So let's move on rapidly to scenario two. This one is, well, different - I'm going to call it 'punishment'. Basically we all go vegan, accept colder houses and stop travelling. I would love to tell you there is actually a lot more to it than that, but nope, there really isn't.

Which takes us to scenario three (tension building, fingers crossed, eh?) That is... Do 50 per cent of the magical one and 50 per cent of the punishment one. That's it.

All of this takes us to the far extent of the wit and wisdom of Scotland, and (unless I've missed it in the footnotes) it does so without insulating a single house. The possibility of a public works programme isn't even floated here. So the reality is that none of this is going to happen.

If we were going to have large-scale working CCS in place for 2030 like we say we will, we'd be building it just now - and we're not even at the basic planning stage. If we were going to be doing DACCS we'd be working out how to make it work at this stage, and we're not. So it's not going to happen and everyone but everyone knows it.

Meanwhile let us assume that meat eating isn't going to become illegal in Scotland soon and nor is it going to be taxed off the shelves. Likewise there aren't going to be heating inspectors checking that you've got your central heating down below 20°C. So you tell me, are we going to achieve this through mass personal sacrifice?

I can't work out what is going on here. The ClimateXChange is wholly government funded (it's basically a spin-out of the civil service). Is it doing government's bidding with this? Is it deliberately setting up an unpalatable dichotomy to push us towards the oil industry's 'drill baby drill - but with added magic' position? Or is it just modelling government policy? trying to tell us government policy is woefully insufficient? Since it's given us zero workable solutions, I don't really understand.

And above all why is it not looking at any large-scale solutions that actually would work - insulate houses, mass installation of clean heating (you're still going to wish it was district heating, no matter how much hard-sell air source heat pumps get), rapidly invest in electric vehicle infrastructure?

If you want to infer an answer you could probably do worse than to look at the position being taken on electric car charging. Here the government (through the privatisation-obsessed Scottish Future's Trust) explicitly wants to get public charging out of the way of the glorious free market so that the private sector can deliver. So is all of this just right

wing dogma?

There is one more explanation, and I'd love to tell you that I think this is the correct one. That explanation is that massive public works programmes are hard to pull off if you've only got the powers of devolution. A substantial start can be made, but in the end if you try to do this inside the UK as it is you will eventually hit a brick wall.

I'd like to say that is the reason we're only modelling magic and punishment, but there are reasons why that doesn't seem to be right. First, how often is the Scottish Government blocked from doing something by lack of powers and we don't hear specifically that said? And second, this is a wonderful, wonderful case for Scottish independence. Again, if this was the real reason, wouldn't it be worth saying that out loud?

So I don't know. I fear this is the result of setting targets for appearances sake, not knowing how to meet the targets so just letting the vacuum be filled by the most powerful lobbyists, which in this case are undoubtedly the big energy companies.

Two things seem certain though. First, we're going to miss these targets by a long way if we don't change path, existential targets we don't get two shots at meeting. And second, unless some kind of enormous pressure is brought to bear on the Scottish Government, it is not going

Why we should forget about the 1.5C global heating target

By Bill McGuir

The goal of 1.5C by 2030 is arbitrary and now unachievable - yet working to prevent every 0.1C rise can still give us hope

Keeping the global average temperature rise (since pre-industrial times) below 1.5C is widely regarded as critical if we are to sidestep dangerous, all-pervasive climate change.

This idea of a 1.5C temperature threshold is in the news again because just-published research has revealed that several catastrophic climate tipping points are in danger of being crossed at around this level of warming, including collapse of the Greenland and west Antarctic ice sheets, which would lock in about 12 metres of sea-level rise.



'The 33 million people displaced from their homes in Pakistan might justifiably say climate change has already become dangerous.'

To have a fair chance of keeping this side of 1.5C, emissions have to fall by 45% in little more than 90 months, and I am on record as saying that this is practically impossible. But it's worse than that. It is perfectly feasible that we will crash through the 1.5C guardrail even earlier.

The UK Met Office, for one, forecast in 2021 that there was at least a 40% chance that 1.5C would be breached temporarily at least once in the following five years. This means the average temperature would be above 1.5C one year, but likely return below it the next - and we will fluctuate around that number before crossing it permanently some time in the future.

In both 2016 and 2020, the Earth was 1.36C hotter than during pre-industrial times, so we are already getting disturbingly close. The development of El Niño conditions in the Pacific Ocean in the next year or two, which typically ramps up the level of global heat, could well provide the final push that breaches the threshold.

The idea of breaching "temporarily" opens a whole can of worms. Does one year of 1.5C mean we have breached the barrier or not? How many years of 1.5C or more of heating does there need to be before we have officially crashed through the guardrail? And how critical would this really be, anyway, in terms of real-world consequences??

Maybe we are too fixated with this precise temperature rise. The fact is, while not exactly picked out of a hat, the 1.5C figure is an arbitrary one. The exact level of temperature rise at which climate change becomes dangerous is simply not known. Indeed, the 33 million people displaced from their homes in Pakistan might justifiably say we have reached it already. As for tipping points, any or all of those flagged in the new research could happen at some point below 1.5C, so we may have crossed one or more already - only time will tell. Just as easily, we might need a 1.6C, 1.7C or even higher rise before the first runaway impacts of global heating are encountered.

The key point, then, is not the precise value of the global average temperature rise, but the simple fact that it is continuing to rise.

The climate system is so sensitive to additional heating that every fraction of a degree rise counts, so that every 0.1C rise is just as important as every other. Global heating is now translating into extreme weather rapidly: there has been a huge hike in these events over the last few years, during which time the global average temperature climbed by one - or two-tenths of a degree at most.

The bottom line is that 1.5C is not sacred. Whether we crash through it or - by some miracle - stay below it, we cannot be certain what the consequences will be. The number has been a useful metric in the global heating story, marking a somewhat concrete focal point. But we mustn't become obsessed with a single target figure. On the contrary, we need to knuckle down as much as we can to prevent every 0.1C rise, both below this figure and above, in order to rein in climate breakdown as best we can. You never know, we might just get lucky.

Bill McGuire is professor emeritus of geophysical and climate hazards at UCL, and the author of Hothouse Earth: an Inhabitant's Guide.

The promise of electric aircraft to decarbonise flying.

By Jack Marley

Aircraft engines were burning 1 billion litres of jet fuel a day on the eve of the pandemic. Flight numbers have not quite returned to their pre-COVID peak, but research published last year suggests the aviation sector could still consume enough fuel to add 0.1°C to global warming by 2050.



What if flying didn't involve burning fossil fuels? What if, like the electric cars replacing internal combustion engines on the ground, aeroplanes were powered by batteries?

Aviation has contributed 2.5% to the global CO₂ burden driving climate change. This figure doesn't fully reflect the sector's role in heating Earth, however. Kieran Tait, a PhD candidate in aerospace engineering at the University of Bristol, explains:

"Carbon is only responsible for a third of aviation's full climate impact. Non-CO₂ emissions (mainly nitrogen oxide gases and ice trails made from aircraft water vapour) make up the remaining two-thirds. "Taking all aircraft emissions into account, flying is responsible for around 5% of human-induced climate change. Given that 89% of the population has never flown, passenger demand is doubling every 20 years, and other sectors are decarbonising much faster, this number is predicted to skyrocket."

There is the two-seater Velis Electros flying in Europe and electric sea planes which are being tested in British Columbia. Air Canada announced last week that it expects to have a 30-seat electric-hybrid aircraft (more on that later) in service by 2028. Only short-haul flights carrying few passengers have gone electric so far. And that's because the biggest obstacle to flying without fossil fuels is gravity. "If you tried to fully electrify a 737 with today's batteries, you would have to take out all the passengers and cargo and fill that space with batteries just to fly for under an hour," says aerospace engineer and assistant professor at Michigan University in the US, Gökçin Çınar.

"Jet fuel can hold about 50 times more energy compared to batteries per unit mass. So, you can have one pound of jet fuel or 50 pounds of batteries. To close that gap, we need to either make lithium-ion batteries lighter or develop new batteries that hold more energy. New batteries are being developed, but they aren't yet ready for aircraft."

Hybrid-electric aircraft which (like hybrid-electric cars) use a combination of fuel and battery power are being tested and are expected to be deployed in coming years on short routes. "The less fuel burned during flight, the fewer greenhouse gas emissions," Çınar says.

"Using batteries as a power assist during take off and climb are very promising options. Taxiing to the runway using just electric power could also save a significant amount of fuel and reduce the local emissions at airports," she adds.

"There is a sweet spot between the added weight of the battery and how much electricity you can use to get net fuel benefits. This optimisation problem is at the centre of my research." Çınar estimates that hybridisation could offset emissions from larger jets in the middle of the next decade. "For 2030 to 2035, we're focused on hybrid turboprops, typically regional aircraft with 50-80 passengers or used for freight. These hybrids could cut fuel use by about 10%," she says.

Electrifying aircraft isn't the only way to cut fuel emissions. Çınar says that fuels made from corn and algae can slash the CO₂ emissions of each flight, but their supply is limited. Synthetic fuels derived from capturing CO₂ from the air offer another option, but producing them is complex and costly. Clean-burning hydrogen fuel, generated by splitting water using renewable electricity, can power a plane but the gas takes up a lot of space and the storage tank is heavy.

"Airbus is doing a lot of research on hydrogen combustion using modified gas turbine engines with an A380 platform, and is aiming to have mature technology by 2025. Australia's Rex airline expects to start testing a 34-seat, hydrogen-electric aeroplane for short hops in the next few years," Çınar says.

Researchers are considering a range of options for making flights less polluting. These include using recycled plastics to make lighter wiring, reducing the craft's overall mass and ensuring it burns less fuel. Then there are possible changes to way aircraft fly, like avoiding humid regions of the atmosphere where heat-trapping contrails are likely to form. Tait explains that:

"Research shows for a small increase in flight distance (usually no more than 1-2% of the journey), the net climate impact of a flight can be reduced by around 20%.

"Flight operators can also reduce the impact of their aircraft by flying in formation, with one aircraft flying 1-2 km behind the other. The follower aircraft 'surfs' the lead aircraft's wake, leading to a 5% reduction in both CO₂ and other harmful emissions."

Despite all these efforts, Çınar doubts even the industry target of halving emissions by mid-century will be met. Milan Klöwer, a postdoctoral researcher in weather and climate modelling at the University of Oxford, says that progressively lowering the number of flights taken each year will be necessary to avert catastrophic warming.

"While a large share of a flight's CO₂ emissions remain in the atmosphere for many thousands of years, the non-CO₂ effects (contrails, nitrogen oxide emissions) diminish over time, vanishing within about ten years," Klöwer says. "The non-CO₂ effects of flights on the atmosphere will slowly disappear if fewer and fewer flights are taken, so that aviation's contribution to warming eventually levels off." Klöwer forecasts that a yearly fall in jet fuel consumption of 2.5% would prevent aviation's climate impact growing further.

"Sustainable aviation fuels, and hydrogen or electric planes, are being developed, but none of these technologies are currently available at the necessary scale," he says. "At the moment, there is little chance of the aviation industry meeting any climate targets if it aims for a return to its pre-pandemic rate of growth."

Why the aviation industry must look beyond carbon to get serious about climate change.

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