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# Demystifying Carbon Dioxide Removal

## August roundup

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Dear all,

There's only one place to start this month and that's the headline-grabbing Inflation Reduction Act (IRA), which commits USD 370 billion to action on climate and energy. There are wins for carbon removal companies, but also support for oil firms and power generation facilities.

We also take a look at a new report that raises questions about the verification and quantification of coastal carbon removal. And finally we consider calls for increased regulation of CDR, and what new research suggests we can learn from the experience of the UK fracking industry.

As always, please feel free to share this newsletter with anyone who may be interested. [Sign up here](#) and [click here](#) to see an archive of previous editions. And feel free to get in touch at any time with suggestions or feedback - it's always great to hear from you.

Till next time,

Victoria

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Stat of the month:

# USD 180

The amount of money US companies could receive per tonne of CO<sub>2</sub> removed and stored via DAC

*Image: Climeworks*

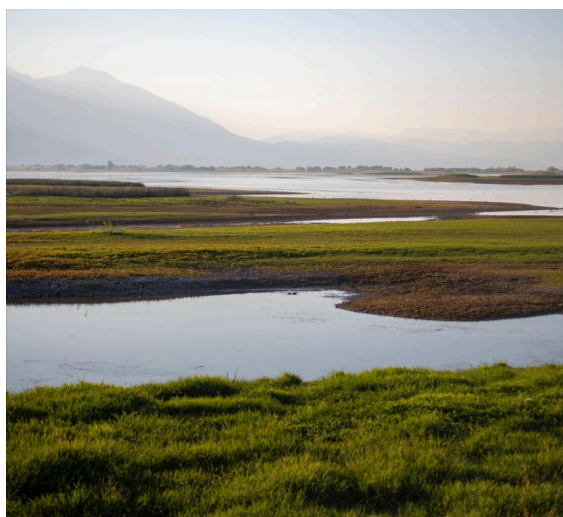


# What does the IRA mean for CDR?

The US made history on 18 August by signing the Inflation Reduction Act (IRA), which authorises nearly USD 370 billion in climate spending, the [single largest US government investment](#) to address the climate crisis to date. Analysis by Princeton's REPEAT project estimates the IRA will [reduce the US's CO2 emissions by 42% below 2005 levels](#) by 2030, equivalent to [0.8 - 1 billion tonnes of additional carbon emission reductions](#) in 2030. This, alongside the CHIPS and Science Act, passed on 9 August and which commits USD 1 billion in funding for carbon removal R&D over a four year period, "[galvanises carbon removal not only through direct federal support, but also by signalling the strength of the market to the private sector](#)," according to Carbon Business Council executive director Ben Rubin.

So what does the IRA really mean for CDR? First, it [strengthens tax incentives for carbon capture, utilisation or storage \(via what are called 45Q incentives\)](#). Companies can now receive USD 180, up from USD 50, per tonne of CO2 captured via direct air capture (DAC) and stored, and USD 130 per tonne of CO2 utilised. Industrial and power generation facilities will also be eligible to receive USD 85 for carbon capture and storage (CCS), and USD 60 for enhanced oil recovery (EOR). To be clear, CCS is not carbon removal (although some define it as such). Projects must commence physical work by 1 January 2033 to qualify for the credit.

Additionally, the IRA broadens the definition of qualified facilities. For DAC, it decreases the CO2 capture requirements from [100,000 to 1,000 tonnes a year](#), which greatly increases support for the fledgling industry as small-scale DAC companies are eligible to benefit from the tax credit. "[It's going to make it easy for us to raise the capital to build the project earlier and to build it faster](#)," said Adrian Corless, CEO of DAC startup CarbonCapture. The qualifications for eligible power generation and industrial facilities have also been reduced. The DAC Coalition also mentions that a USD 2.15 billion investment in low-carbon buildings and use of low-carbon materials is a [big win for CO2 utilisation companies](#), such as CarbonCure and Carbon Built.



**"It is critical that large corporate buyers of carbon removal credits thoroughly research the claims of CDR companies"**

Overall, the IRA is forecast to [increase the use of carbon capture 13-fold by 2030 relative to current policy](#), however the majority of this is projected to come from CCS from gas, coal and industrial plants, with only a tiny fraction from DAC, meaning that only a small portion could be truly termed as carbon removals. Hence Food & Water Watch policy director Jim Walsh describing the act as a "[dangerous bet](#)" that delivers billions to fossil fuel corporations based on the notion that their climate pollution can be somehow captured".

There are also logistical challenges to overcome, such as the [length of pipeline that could be required to transport CO2 to storage sites](#), which have already seen opposition from landowners and environmental groups. It has been projected that the US would have to [construct 65,000 miles of CO2 pipelines](#) to achieve net-zero emissions in 2050, equivalent to 13 times the current capacity.

On balance, though, the IRA is seen as a step in the right direction. Professor Katharine Hayhoe [recognised the US's historical emissions and the country's global policy influence](#), but also the wide-ranging support it offers, saying: “I particularly applaud the inclusive nature of the solutions... Of course, there's [clean energy, renewable and battery manufacturing, and tax credits], but there's also funds to support climate-smart regenerative agriculture, to support restoring and conserving forest ecosystems and coastal habitats — and to support low-income communities who bear a disproportionate impact from climate change.”



## Can we trust ocean-based CDR?

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The credibility of ocean-based CDR is often questioned, but [new research](#) has really put a dampener on hopes of banking on the technology. Researchers Phil Williamson and Jean-Pierre Gattuso assessed the feasibility of achieving quantified and secure carbon removal through the restoration of coastal vegetation, highlighting their concerns that the climate benefits from restoring coastal ecosystems have been “[massively oversold](#)”.

A major problem is the wide variability of the estimated carbon removal rate across scientific studies. For example, there is a 600-fold difference between the highest and lowest estimates for carbon burial in salt marshes, and with such a high level of variability it is not possible to use average values in estimations. Furthermore, carbon removal rates differ with depth and over distances of even just a few kilometres. Even if we could accurately estimate sequestration happening currently, it is likely that future climatic conditions will change this.

Moving to the deep ocean, some of the biggest advocates for seaweed in carbon removal have joined together to write an article concluding that “urgency to find solutions that help stem climate change [does not justify the deliberate sinking of seaweed in the deep ocean without properly assessing the consequences](#).” Initial priorities need to focus on advancing the scientific understanding of sinking seaweed as a CDR strategy and creating sustainability and ethical standards for large-scale natural or farmed seaweed sinking, they say.



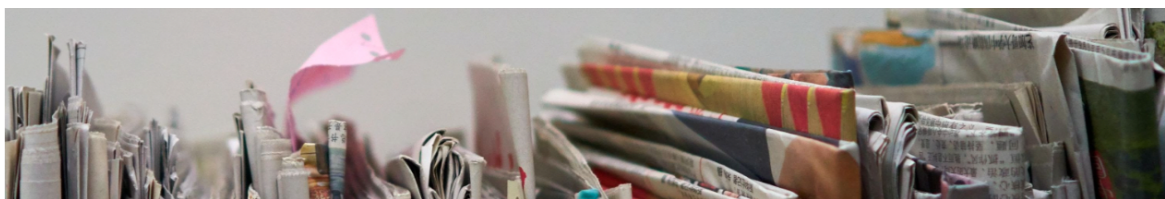
## Growing calls for regulation

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The need for regulation in the voluntary carbon market was thrust into the limelight after John Oliver's [segment on HBO's Last Week Tonight ridiculing carbon offsets](#), which has already had more than three million views on YouTube. MIT Technology Review lays out a path forward for overcoming some of these regulatory concerns and [improving corporate climate plans](#) with six key steps.

An article in Protocol also highlights the [need for a code of conduct](#) to address ethical issues, including impacts to local communities, before the CDR “industry gold rush” goes too far. Some elements of the CDR community are starting to develop their own codes of conduct, including the Carbon Business Council and ocean CDR start-up Planetary, but like corporate net-zero pledges, these codes don't have anything holding pledge makers accountable. This is why a more robust regulatory framework is needed. In the meantime, it is critical that large corporate buyers of carbon removal credits thoroughly research the claims of CDR companies.

A [new study](#) provides recommendations to support this call for CDR regulation, by sharing insights and lessons learned in the regulation of fracking in the UK. It suggests that to enable large scale CDR, governance frameworks need to deploy “anticipatory regulation” to enhance the legitimacy of CDR in its early stages. This involves developing effective means of addressing issues of social legitimacy, for example through promoting communication, engagement and participatory management among key stakeholders and local communities.



## Useful resources this month

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**A reporting platform:** The open platform [cdr.fyi](#) is a community effort to bring transparency and accountability to the carbon removal market by reporting high-durability CDR purchases and deliveries.

**A conference:** On 27/28 September, the Second Annual Carbon Dioxide Removal Law & Policy Conference will be taking place virtually, hosted by Northwestern University.

**A long read:** Energy Monitor explores the race to scale up the DAC industry.

**A thought piece:** Counteract website highlights why we can't afford to overlook soil carbon sequestration in spite of current scepticism.

**A study:** We mentioned last month that wildfires in Spain were threatening carbon offsets - this month a study found that wildfires in California have depleted at least 95% of the programme-wide contribution intended to manage all fire risks for 100 years.

**A paper:** New research presents a vision of the transition towards a net-negative emissions economy that can limit warming to 1.5°C, based on a 100% renewable energy-industry-CDR system.

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Each month the demystifying carbon dioxide removal newsletter digs into the world of CDR to bring you the latest stories on everything from carbon credits and net-zero plans to nature-based solutions (NbS) and new technologies. Feel free to forward this email to your colleagues!

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