

# Capturing carbon to fight climate change is dividing environmentalists

January 31 2019, by Olúfẹ́mi O. Táíwò And Holly Jean Buck

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Testing new ways to use this technology is underway in Japan. Credit: [Reuters/Aaron Sheldrick](#)

Environmental activists are teaming up with fresh faces in Congress to [advocate for a Green New Deal](#), a bundle of policies that would fight

climate change while creating new jobs and reducing inequality. Not all of the activists agree on what those policies ought to be.

[Some 626 environmental groups](#)

[, including Greenpeace, the Center for Biological Diversity and 350, recently laid out their vision in a letter they sent to U.S. lawmakers. They warned that they "vigorously oppose" several strategies, including the use of](#)

[carbon capture and storage](#) – a process that can trap excess carbon pollution that's already warming the Earth, and [lock it away](#).

In our view, as a [political philosopher](#) who studies global justice and an [environmental social scientist](#), this blanket opposition is an unfortunate mistake. Based on the [need to remove carbon from the atmosphere](#), and the risks in relying on land sinks like [forests](#) and [soils](#) alone to take up the excess carbon, we believe that [carbon capture](#) and storage could be a powerful tool for [making the climate safer](#) and even rectifying [historical climate injustices](#).

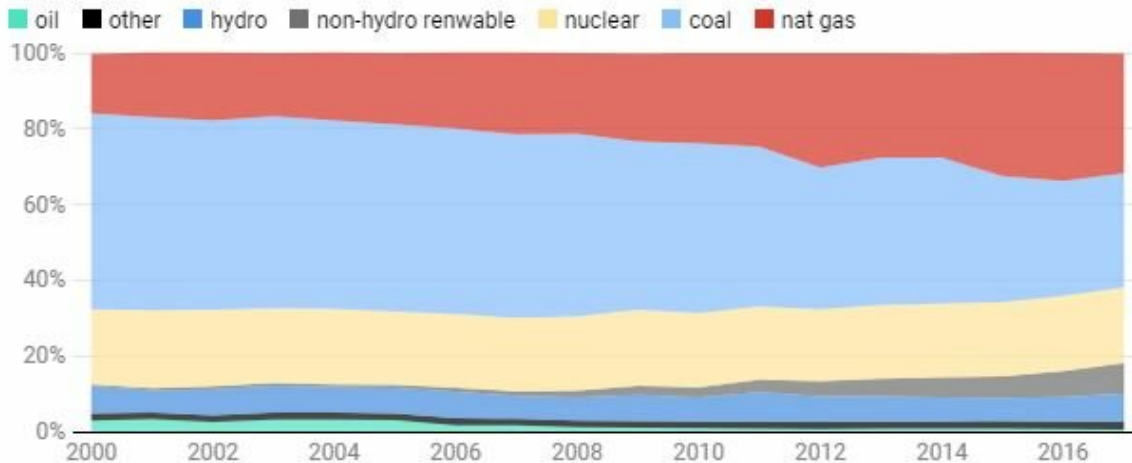
## Global inequality

We think the U.S. and other rich countries should accelerate negative emissions research for two reasons.

First, they can afford it. Second, they have a [historical responsibility](#) as they burned a disproportionate amount of the carbon causing climate change today. Global warming is poised to hit the least-developed countries, including dozens that were [colonized by these wealthier nations](#), the hardest.

## Top sources of electricity in the U.S.

The share of American electricity generated in coal-fired power plants has fallen since 2000 while natural gas and renewable energy sources other than hydropower have gained ground and nuclear power has remained flat.



The non-hydro renewable category encompasses wind, solar and geothermal energy. Credit: The Conversation

Consider this: The entire African continent [emits less carbon](#) than the U.S., Russia or Japan.

Yet Africa is likely to experience climate change impacts [sooner and more intensely than any other region](#). Some African regions are already experiencing warming increases at [more than twice the global rate](#). Coastal and island nations like Bangladesh, Madagascar and the Marshall Islands face [near or total destruction](#).

But the world's [richest nations have been slow to endorse and support](#) the necessary research, development and governance for negative emissions technologies.

## Bad track record with coal

What explains the objections from climate justice advocates?

The U.S. has heavily funded [experiments with carbon capture and storage](#) to drastically reduce greenhouse gas [emissions from new coal-fired power plants](#) since [George W. Bush's presidency](#).



Captured carbon has a variety of industrial uses, including oil extraction and fire extinguisher manufacturing. Credit: [U.S. Energy Department's National Energy Technology Laboratory](#)

Those efforts have not paid off, partly because of economics. [Natural gas and renewable energy have become cheaper](#) and [more popular](#) than

coal for generating electricity.

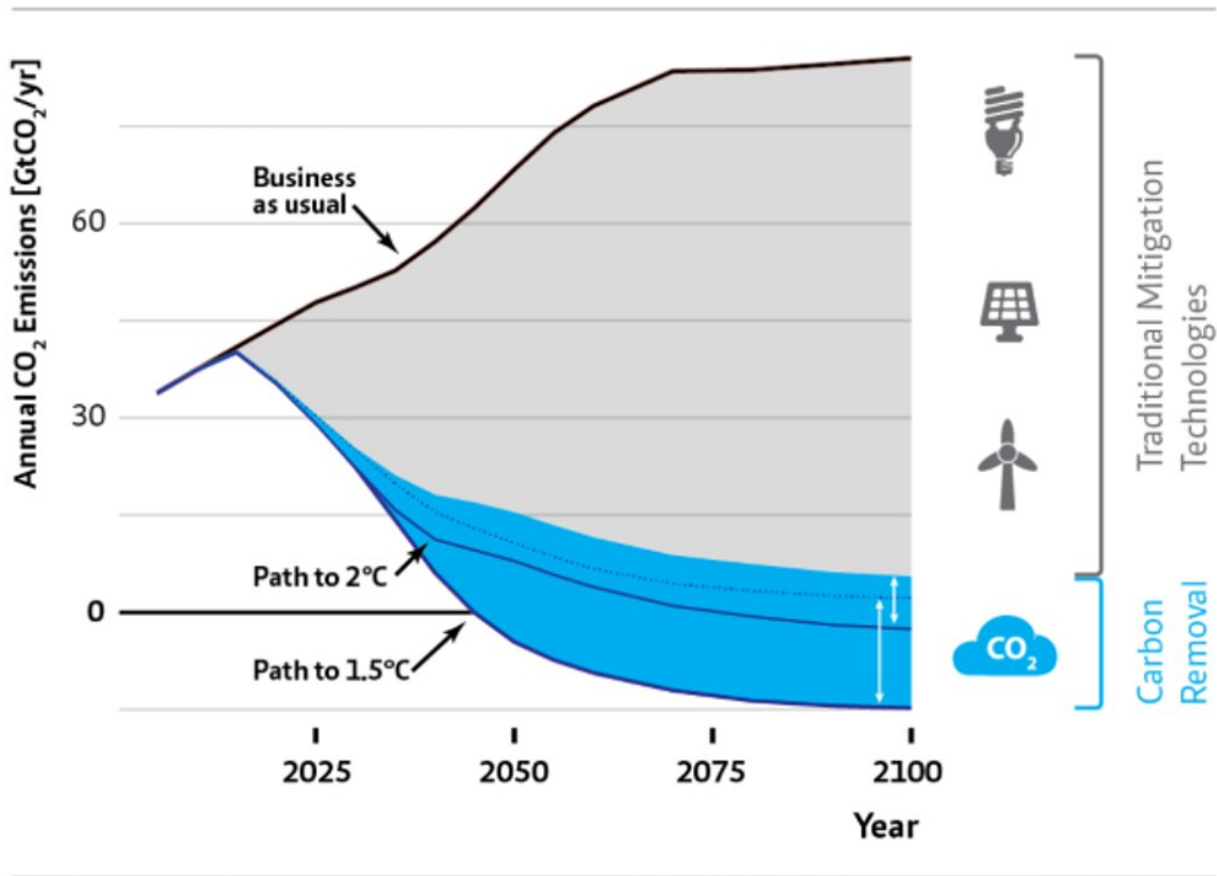
Only a handful of [coal-fired power plants are under construction](#) in the U.S., [where closures](#) are routine. The [industry is in trouble](#) everywhere, with few exceptions.

In addition, carbon capture with coal has a [bad track record](#). The [biggest U.S. experiment](#) is the [US\\$7.5 billion Kemper power plant in Mississippi](#). It ended in [failure in 2017](#) when state power authorities ordered the plant operator to give up on this technology and [rely on natural gas instead](#).

## Other uses

Carbon capture and storage, however, isn't just for fossil-fuel-burning power plants. It can work with [industrial carbon dioxide sources](#), such as steel, cement and chemical plants and [incinerators](#).

Then, one of two things can happen. The carbon can be turned into new products, such as [fuels](#), [cement](#), [soft drinks](#) or even [shoes](#).



Many experts agree that limiting global warming to 1.5 or 2 degrees Celsius will require reducing the volume of carbon emissions through energy efficiency and renewable-energy generation and CO<sub>2</sub> removal. Credit: MCC, CC BY-SA

Carbon can also be stored permanently if it is injected [underground](#), where geologists believe it can stay put for centuries.

Until now, a common use for captured carbon is [extracting oil out of old wells](#). Burning that petroleum, however, can make [climate change](#) worse.

## Going carbon negative

This technology may potentially also [remove more carbon than gets emitted](#) – as long as it's designed right.

One example is what's called [bioenergy with carbon capture and storage](#), where farm residues or crops like trees or grasses are grown to be burned to generate electricity. Carbon is separated out and stored at the [power plants](#) where this happens.

If the [supply chain is sustainable](#), with cultivation, harvesting and transport done in low-carbon or carbon-neutral ways, this process can produce what scientists call [negative emissions](#), with more carbon removed than released. Another possibility involves [directly capturing carbon](#) from the air.

## Negative emissions technologies

Technology or technique	Description	CO2 Removal Mechanism	CO2 Storage Medium
Afforestation/reforestation	The planting of trees to fix atmospheric carbon in biomass and soils	Biological	Soils/Vegetation
Biochar	Converting biomass to biochar and using the biochar as a soil amendment	Biological	Soils
Bioenergy with CO2 capture and storage	Removal the CO2 from the air by plants into biomass, combustion of the biomass to produce energy and CO2, which is captured	Biological	Deep Geologic Formations
Direct air capture	Removal of CO2 from ambient air by engineered systems	Physical/chemical	Deep Geologic Formations
Enhanced weathering (Mineral carbonation)	Enhancing the weathering of minerals, where CO2 in the atmosphere reacts with silicate minerals to form carbonate rocks	Geochemical	Rocks
Modified agricultural practices	Adopting agricultural practices like no-till farming to increase carbon storage in soils	Biological	Soils
Ocean (iron) fertilization	Fertilizing the ocean to increase biological activity to pull carbon from the atmosphere into the ocean	Biological	Ocean
Ocean alkalinity	Adding alkalinity to the oceans to pull carbon from the atmosphere via chemical reactions	Chemical	Ocean

Credit: The Conversation

Scientists point out that bioenergy with carbon capture and storage could



require [vast amounts of land](#) for growing biofuels to burn. And climate advocates are concerned that both approaches could pave the way for oil, gas and coal companies and big industries to simply [continue with business as usual](#) instead of phasing out fossil fuels.

## Natural solutions

Every pathway to limiting [global warming](#) to 1.5 degrees Celsius in the most recent U.N. [Intergovernmental Panel on Climate Change](#) report projected the use of carbon removal approaches.

Planting more trees, [composting and farming in ways that store carbon in soils](#) and [protecting wetlands](#) can also reduce atmospheric carbon. We believe the natural [solutions many environmentalists might prefer are crucial](#). But soaking up excess carbon through afforestation on a massive scale could [encroach on farmland](#).

To be sure, not all environmentalists are writing off carbon capture and storage.

The Sierra Club, Environmental Defense Fund and Natural Resources Defense Council, along with many other big green organizations, [did not sign the letter](#), which objected not just to carbon capture and storage but also to [nuclear power](#), emissions trading and [converting trash into energy through incineration](#).

Rather than leave carbon removal technologies out of the Green New Deal, we suggest that more environmentalists consider their potential for removing [carbon](#) that has already been emitted. We believe these approaches could potentially create jobs, foster economic development and reduce inequality on a global scale – as long as they are meaningfully accountable to people in the world's poorest nations.

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