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Google, Amazon and the problem with Big Tech's climate claims

How companies reach their emissions goals is more important than how fast.

By

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Last week, Amazon trumpeted that it had purchased enough clean electricity to cover the energy demands of all the offices, data centers, grocery stores, and warehouses across its global operations, seven years ahead of its sustainability target.

That news closely followed Google's acknowledgment that the soaring energy demands of its AI operations helped ratchet up its corporate emissions by 13% last year—and that it had backed away from claims that it was already carbon neutral.

If you were to take the announcements at face value, you'd be forgiven for believing that Google is stumbling while Amazon is speeding ahead in the race to clean up climate pollution.

But while both companies are coming up short in their own ways, Google's approach to driving down greenhouse-gas emissions is now arguably more defensible.

In fact, there's a growing consensus that *how* a company gets to net zero is more important than how fast it does so. And a new school of thought is emerging that moves beyond the net-zero model of corporate climate action, arguing that companies should focus on achieving broader climate impacts rather than trying to balance out every ton of carbon dioxide they emit.

But to understand why, let's first examine how the two tech giants' approaches stack up, and where company climate strategies often go wrong.

Perverse incentives

The core problem is that the costs and complexity of net-zero emissions plans, which require companies to cut or cancel out every ton of climate pollution across their supply chains, can create perverse incentives. Corporate sustainability officers often end up pursuing the quickest, cheapest ways of cleaning up a company's pollution *on paper*, rather than the most reliable ways of reducing its emissions in the real world.

That may mean buying inexpensive carbon credits to offset ongoing pollution from their direct operations or that of their suppliers, rather than undertaking the tougher task of slashing those emissions at the source. Those programs can involve paying other parties to plant trees, restore coastal ecosystems, or alter agriculture practices in ways that purport to reduce emissions or pull carbon dioxide out of the air. The snag

is, numerous studies and investigative stories have shown that such efforts often overstate the climate benefits, sometimes wildly.

Net-zero goals can also compel companies to buy what are known as renewable energy credits (RECs), which ostensibly support additional generation of renewable electricity but raise similar concerns that the climate gains are overstated.

The argument for RECs is that companies often can't purchase a pure stream of clean electricity to power their operations, since grid operators rely on a mix of natural gas, coal, solar, wind, and other sources. But if those businesses provide money or an indication of demand that spurs developers to build new renewables projects and generate more clean electricity than they would have otherwise, the companies can then claim this cancels out ongoing pollution from the electricity they use.

Experts, however, are less and less convinced of the value of RECs at this stage.

The claim that clean-energy projects wouldn't have been built without that added support is increasingly unconvincing in a world where those facilities can easily compete in the marketplace on their own, Emily Grubert, an associate professor at Notre Dame, previously told me. And if a company's purchase of such credits doesn't bring about changes that reduce the emissions in the atmosphere, it can't balance out the company's ongoing pollution.

'Creative accounting'

For its part, Amazon is relying on both carbon credits and RECs.

In its sustainability report, the company says that it reached its clean-electricity targets and drove down emissions by improving energy efficiency, buying more carbon-free power, building renewables projects at its facilities, and supporting such projects around the world. It did this in part by "purchasing additional environmental attributes (such as renewable energy credits) to signal our support for renewable energy in the grids where we operate, in line with the expected generation of the projects we have contracted."

But there's yet another issue that can arise when a company pays for clean power that it's not directly consuming, whether through RECs or through power purchase agreements made before a project is built: Merely paying for renewable electricity generation that occurred at some point, somewhere in the world, isn't the same as procuring the amount of electricity that the company consumed in the specific places and times that it did so. As you may have heard, the sun stops shining and the wind stops blowing, even as Amazon workers and operations keep grinding around the world and around the clock.

Paying a solar-farm operator some additional money for producing electricity it was already going to generate in the middle of the day doesn't in any meaningful way reverse the emissions that an Amazon fulfillment center or server farm produces by, say, drawing electricity from a natural-gas power plant two states away in the middle of the night.

"The reality on the ground is that its data centers are driving up demand for fossil fuels," argued a report last week from Amazon Employees for Climate Justice, a group of workers that has been pushing the company to take more aggressive action on climate change.

The organization said that a significant share of Amazon's RECs aren't driving development of new projects. It also stressed that those payments and projects often aren't generating electricity in the same areas and at the same times that Amazon is consuming power.

The employee group estimates that 78% of Amazon's US energy comes from nonrenewable sources and accuses the company of using "creative accounting" to claim it's reached its clean-electricity goals.

To its credit, Amazon is investing billions of dollars in renewables, electrifying its fleet of delivery vehicles, and otherwise making real strides in reducing its waste and emissions. In addition, it's lobbying US legislators to make it easier to permit electric transmission projects, funding more reliable forms of carbon removal, and working to diversify its mix of electricity sources. The company also insists it's being careful and selective about the types of carbon offsets it supports, investing only in "additional, quantifiable, real, permanent, and socially beneficial" projects.

"Amazon is focused on making the grid cleaner and more reliable for everyone," the company said in response to an inquiry from *MIT Technology Review*. "An emissions-first approach is the fastest, most cost-effective and scalable way to leverage corporate clean-energy procurement to help decarbonize global power grids. This includes procuring renewable energy in locations and countries that still rely heavily on fossil fuels to power their grids, and where energy projects can have the biggest impact on carbon reduction."

The company has adopted what's known as a "carbon matching" approach (which it lays out further here), stressing that it wants to be sure the emissions reduced through its investments in renewables equal or exceed the emissions it continues to produce.

But a recent study led by Princeton researchers found that carbon matching had a "minimal impact" on long-term power system emissions, because it rarely helps get projects built or clean energy generated where those things wouldn't have happened anyway.

"It's an offsetting scheme at its core," Wilson Ricks, an author of the study and an energy systems researcher at Princeton, said of the method, without commenting on Amazon specifically.

(Meta, Salesforce, and General Motors have also embraced this model, the study notes.)

The problem in asserting that a company is effectively running entirely on clean electricity, when it's not doing so directly and may not be doing so completely, is that it takes off any pressure to finish the job for real.

Backing off claims of carbon neutrality

Google has made its own questionable climate claims over the years as well, and it faces growing challenges as the energy it uses for artificial intelligence soars.

But it is striving to address its power consumption in arguably more defensible ways and now appears to be taking some notable course-correcting steps, according to its recent sustainability report.

Google says that it's no longer buying carbon credits that purport to prevent emissions. With this change, it has also backed away from the claim that it had already achieved carbon neutrality across its operations years ago.

"We're no longer procuring carbon avoidance credits year-over-year to compensate for our annual operational emissions," the company told *MIT Technology Review* in a statement. "We're instead focusing on accelerating an array of carbon solutions and partnerships that will help us work toward our net-zero goal, while simultaneously helping develop broader solutions to mitigate climate change."

Notably, that includes funding the development of more expensive but possibly more reliable ways of pulling greenhouse gas out of the atmosphere through direct air capture machines or other methods. The company pledged $200 million to Frontier, an effort to pay in advance for one billion tons of carbon dioxide that startups will eventually draw down and store.

Those commitments may not allow the company to make any assertions about its own emissions today, and some of the early-stage approaches it funds might not work at all. But the hope is that these sorts of investments could help stand up a carbon removal industry, which studies find may be essential for keeping warming in check over the coming decades.

Clean power around the clock

In addition, for several years now Google has worked to purchase or otherwise support generation of clean power in the areas where it operates and across every hour that it consumes electricity—an increasingly popular approach known as 24/7 carbon-free energy.

The idea is that this will stimulate greater development of what grid operators increasingly need: forms of carbon-free energy that can run at all hours of the day (commonly called "firm generation"), matching up with the actual hour-by-hour energy demands of corporations. That can include geothermal plants, nuclear reactors, hydroelectric plants, and more.

More than 150 organizations and governments have now signed the 24/7 Carbon-Free Energy Compact, a pledge to ensure that clean-electricity purchases match up hourly with their consumption. Those include Google, Microsoft, SAP, and Rivian.

The Princeton study notes that hourly matching is more expensive than other approaches but finds that it drives "significant reductions in system-level CO_2 emissions" while "incentivizing advanced clean firm generation and long-duration storage technologies that would not otherwise see market uptake."

In Google's case, pursuing 24/7 matching has steered the company to support more renewables projects in the areas where it operates and to invest in more energy storage projects. It has also entered into purchase agreements with power plants that can deliver carbon-free electricity around the clock. These include several deals with Fervo Energy, an enhanced-geothermal startup.

The company says its goal is to achieve net-zero emissions across its supply chains by 2030, with all its electricity use synced up, hour by hour, with clean sources across every grid it operates on.

Energy-hungry AI

Which brings us back to the growing problem of AI energy consumption.

Jonathan Koomey, an independent researcher studying the energy demands of computing, argues that the hue and cry over rising electricity use for AI is overblown. He notes that AI accounts for only a sliver of overall energy consumption from information technology, which produces about 1.4% of global emissions.

But major data center companies like Google, Amazon, and others will need to make significant changes to ensure that they stay ahead of rising AI-driven energy use while keeping on track with their climate goals.

They will have to improve overall energy efficiency, procure more clean energy, and use their clout as major employers to push utilities to increase carbon-free generation in the areas where they operate, he says. But the clear focus must be on directly cutting corporate climate pollution, not mucking around with RECs and offsets.

"Reduce your emissions; that's it," Koomey says. "We need actual, real, meaningful emissions reductions, not trading around credits that have, at best, an ambiguous effect."

Google says it's already making progress on its AI footprint, while stressing that it's leveraging artificial intelligence to find ways to drive down climate pollution across sectors. Those include efforts like Tapestry, a project within the company's X "moonshot factory" to create more efficient and reliable electricity grids, as well as a Google Research collaboration to determine airline flight paths that produce fewer heat-trapping cirrus clouds.

"AI holds immense promise to drive climate action," the company said in its report.

The contribution model

The contrasting approaches of Google and Amazon call to mind an instructive hypothetical that a team of carbon market researchers sketched out in a paper this January. They noted that one company could do the hard, expensive work of directly eliminating nearly every ton of its emissions, while another could simply buy cheap offsets to purportedly address all of its own. In that case the first company would have done more actual good for the climate, but only the latter would be able to say it had reached its net-zero target.

Given these challenges and the perverse incentives driving companies toward cheap offsets, the authors have begun arguing for a different approach, known as the "contribution model."

Like Koomey and others, they stress that companies should dedicate most of their money and energy to directly cutting their emissions as much as possible. But they assert that companies should adopt a new way of dealing with what's left over (either because that remaining pollution is occurring outside their direct operations or because there are not yet affordable, emissions-free alternatives).

Instead of trying to cancel out every ongoing ton of emissions, a company might pick a percentage of its revenue or set a defensible carbon price on those tons, and then dedicate all that money toward achieving the maximum climate benefit the money can buy, says Libby Blanchard, a research scholar at the University of Cambridge. (She coauthored the paper on the contribution model with Barbara Haya of the University of California, Berkeley, and Bill Anderegg at the University of Utah.)

That could mean funding well-managed forestry projects that help trap carbon dioxide, protect biodiversity, and improve air and water quality. It could mean supporting research and development on the technologies still needed to slow global warming and efforts to scale them up, as Google seems to be doing. Or it could even mean lobbying for stricter climate laws, since few things can drive change as quickly as public policy.

But the key difference is that the company won't be able to claim that those actions canceled out every ton of remaining emissions—only that it took real, responsible steps to "contribute" to addressing the problem of climate change.

The hope is that this approach frees companies to focus on the quality of the projects it funds, not the quantity of cheap offsets it buys, Blanchard says.

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It could "replace this race to the bottom with a race to the top," she says.

As with any approach put before profit-motivated companies that employ ranks of savvy accountants and attorneys, there will surely be ways to abuse this method in the absence of appropriate safeguards and oversight.

And plenty of companies may refuse to adopt it, since they won't be able to claim they've achieved net-zero emissions, which has become the de facto standard for corporate climate action.

But Blanchard says there's one obvious incentive for them to move away from that goal.

"There's way less risk that they'll be sued or accused of greenwashing," she says.