

Legitimate offsets must be AVID+

- **Additional:** Offsets must reduce emissions that would not otherwise be cut. Saving part of a forest isn't additional if other trees are cut down instead, or the protected trees would not have been cut; nor is a [Power Purchase Agreement](#) to invest in a solar farm that's already permitted and cheaper than a nearby coal plant.
- **Verifiable:** If you plant trees you must verify that they were actually planted and survive for decades to come. If you fund efficient, low-emission cook stoves for the rural poor in the developing world, you must verify that they are delivered, used, and maintained.
- **Immediate:** A dollar today is worth more than a dollar in 2050. In the same way, there's a time value of carbon: Your flight today dumps carbon dioxide into the atmosphere right now, worsening climate change from this day forth. Saplings planted today won't grow large enough to offset today's emissions for decades, nor will investments in speculative technologies like nuclear fusion or direct air capture, even if they eventually become viable.
- **Durable:** Carbon dioxide emissions stay in the atmosphere for more than a century, so you must offset an equivalent amount of emissions for at least that long.
- **+ (Plus):** Offsets meeting *all* of the above criteria should [multisolve](#) —advance other goals such as job creation, poverty reduction, health care, and social justice, in addition to their climate benefits.

Source: J. Sterman, 2022 <https://www.marketwatch.com/story/net-zero-pledges-can-amount-to-greenwashing-this-is-the-better-way-to-reduce-deadly-carbon-emissions-11642609889>,
<https://mitsloan.mit.edu/ideas-made-to-matter/how-to-choose-carbon-offsets-actually-cut-emissions>



How to choose carbon offsets that actually cut emissions

 by Betsy Vereckey | Nov 2, 2022

Why It Matters

MIT Sloan professor John Sterman unpacks the implications of companies' net zero emissions goals and offers a framework for real impact.

After decades of failed attempts at climate legislation, the U.S. just enacted the largest climate policy legislation in its history: a \$370 billion bill designed to reduce reliance on fossil fuels and spur investment in renewable energy.

“The Inflation Reduction Act is a solid step on our journey to zero emissions, but a lot of work remains to be done,” said John Sterman, a professor at MIT Sloan and faculty director of the MIT Climate Pathways Project.

To avoid the worst harm from climate change, global greenhouse gas emissions must fall by nearly half by 2030 and then drop to net zero by midcentury, according to the United Nations Climate Action initiative. Hundreds of organizations and countries have jumped on the net zero bandwagon: Apple 2030. Amazon 2040. US 2050. China 2060. That’s good news, Sterman said in an interview, but because the goals are net zero and not just plain zero, they allow or even require carbon offsets.

Offset logic goes like this: If it is cheaper for a company to buy an offset that cuts emissions somewhere else instead of in their own operations, then offsets are cost effective. However, many of the offsets being sold today are based on dubious assumptions and can make climate change worse, Sterman said. In a recent op-ed in MarketWatch, he described a simple framework that companies and consumers can use to ensure that any offset they buy actually cuts emissions.

Sterman calls his framework AVID+. To truly offset their emissions, companies must ensure any offsets they buy are Additional, Verifiable, Immediate, and Durable — and, if all four of these requirements are met, then firms should favor offsets that also help meet other societal goals such as creating good jobs, improving health, and fostering social justice (the “plus” of AVID+). Here are details.

Additional: Offsets must reduce emissions that would not otherwise be cut. Saving part of a forest, for example, isn’t additional if other trees are cut down instead, nor is using a [Power Purchase Agreement](#) to invest in a solar farm that’s already permitted and produces power cheaper than a nearby coal plant. Because it has such low costs and risk, the farm’s capacity would likely be sold to other parties, so the investment doesn’t reduce emissions below what they would be without your action.

Verifiable: You must be able to verify that emissions actually fall. If you're going to plant trees, you have to verify that they were actually planted and that they will survive for decades to come. If you fund efficient, low-emission cook stoves for the rural poor in the developing world, you have to verify that they are actually delivered, kept in working condition, and used.

Immediate: Every company and investor knows the time value of money: A dollar today is worth more than a dollar in 2050 because of the interest you can earn. In the same way, there's a time value of carbon: Your flight today dumps carbon dioxide into the atmosphere right now, worsening climate change from this day forth. Saplings planted today won't grow large enough to offset today's emissions for decades, nor will investments in speculative technologies like nuclear fusion or direct air capture, even if they eventually become viable.

Durable: Carbon dioxide emissions stay in the atmosphere for a century or more, so you must offset an equivalent amount of emissions for at least that long. Trees planted today are more likely to succumb to wildfire, disease, pests, or extreme weather as the world warms, and do not provide durable carbon storage.

+ (Plus): Offsets should multisolve — they should advance other goals such as job creation, poverty reduction, health care, and social justice, in addition to their climate benefits.

To truly cut emissions, carbon offsets must be AVID+:

Additional **V**erifiable **I**mmEDIATE **D**urable +

and help meet other societal goals (the “plus”).

Credit: John Sterman, MIT Sloan



The AVID+ criteria are simple, but satisfying them is not easy. All four must be met. Fail on any one, and a proposed offset won't actually reduce emissions much, if at all, Sterman said. Buying offsets that fail the AVID+ test wastes resources you could use to actually cut your emissions, making climate change worse. And buying offsets that aren't AVID+ exposes you to well-justified accusations of greenwashing, risking your reputation and potentially alienating customers, communities, and capital markets.

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The best way to reach net zero is still just to reach zero: cutting emissions in the first place.

John Sterman | Professor, MIT Sloan

Recognizing that there aren't perfect offsets, what might qualify? Deep energy retrofits and rooftop solar for low-income housing can be AVID+:

"Few low-income households can finance the work themselves, and since most renters pay their utility bills, their landlords lack the incentive," Sterman said. "Such retrofits are therefore **additional**. The energy savings are **verifiable** from utility bills. Projects take about a year, so emissions reductions are nearly **immediate**. Good retrofits can significantly extend building life, so benefits are **durable**. **Plus**, retrofits create jobs, reduce energy bills, and improve health."

Startups BlocPower and Midday Tech are good examples, he said.

Of course, planting trees, funding efficient cook stoves, and similar actions can generate other benefits, and some companies and individuals may choose to invest in them. But if an action fails any of the AVID criteria, you cannot legitimately claim that these investments offset your own emissions, according to Sterman.

Some companies are stepping up to the challenge. Walmart, for example, is the first U.S. retailer to make a zero emissions commitment that does not rely on carbon offsets, though its pledge does not (yet) apply to their supply chain, he said.

"The best way to reach net zero is still just to reach zero: Cutting emissions in the first place," Sterman said.

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Outside the Box

Opinion: 'Net zero' pledges can amount to greenwashing. This is the better way to reduce deadly carbon emissions

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By

John Sterman

Many offset programs are based on dubious assumptions and can actually worsen the climate problem. MIT Sloan's John Sterman outlines a more effective strategy.



Air-contactor assemblies remove carbon dioxide from the atmosphere. (Carbon Engineering via AP)

The numbers are in: After the pandemic cut U.S. greenhouse gas emissions in 2020, our rebounding economy caused a sharp increase in 2021.

That jump makes it harder to avoid the worst harms from climate change. In response, more governments and companies are promoting carbon offsets as a go-to tool to meet their emissions goals.

Nearly 700 companies have announced [net zero emissions goals](#), alongside hundreds of governments: [Apple 2030 AAPL, -1.89%](#). [Amazon 2040 AMZN, -3.57%](#). [U.S. 2050](#). [China 2060](#). Good news, but because the goals are “net” zero and not just plain “zero,” they allow or even require carbon offsets.

Why? Some industries, like aviation, cement, and steel, are “hard to decarbonize” (though innovation is making this *easier*). That’s where offsets come in. They finance projects that purport to cut emissions *elsewhere*. Offset the emissions you’re not yet cutting, and “voilà!” — your *net* emissions hit zero.

The global carbon offset market is *booming* and it’s not hard to see why. Flying from North America to Europe? *Tentree* will plant trees to offset your emissions for \$6.50. Using e-commerce? *Stripe* will direct a fraction of every purchase to develop carbon dioxide removal technologies. Going climate positive? *Ecologi* will get you there “for less than the cost of a cup of coffee per week.” These and other firms claim their offsets absorb the same amount of carbon dioxide your activity emits.

Or will they? Unfortunately, many offset programs are based on dubious assumptions and can actually make the climate problem worse. To truly cut emissions, offsets must be AVID+: Additional, Verifiable, Immediate, Durable — and help meet other societal goals (the “plus”).

Additional: Offsets must reduce emissions that would not otherwise be cut. Protecting a tract of forest is not additional if loggers simply cut nearby, unprotected trees. Funding renewable energy projects that are profitable today is not additional because, being profitable, they will be built anyway. Helping charities buy electric vehicles is not additional if their trade-ins depress used car prices, making old gas-guzzlers more affordable, thus cutting electric vehicle sales.

Verifiable: Can you verify that emissions actually fell? If you plant trees, you must verify that they survive. If you are capturing and storing carbon from power plants, you must verify that it remains underground. Monitoring is costly, but necessary. As President Reagan said, “Trust but verify.”

Immediate: Just as saving a dollar today is worth more than saving a dollar in 2050 because of the interest you earn, emissions cut today are worth more than the same cuts in 2050. Your flight dumps carbon dioxide into the atmosphere right now, worsening warming from this day forth. Saplings planted today won’t grow enough to offset today’s emissions for decades, nor will investments in speculative future technologies such as nuclear fusion or direct-air capture, even if they eventually become viable.

Durable: Carbon dioxide emissions stay in the atmosphere for a century or more. You must offset an equivalent amount of emissions for at least that long. Trees planted today may be poached or harvested, or succumb to wildfire, disease, drought, or extreme weather — all made more likely by climate change. Some carbon dioxide pumped underground could escape.

+ (Plus): Finally, offsets should *multisolve*. They should advance other worthy goals in addition to their climate benefits, such as job creation, poverty reduction, or improved health. Tree planting is commonly done by establishing monocultures of fast-growing species instead of mimicking the natural forests that spur recreation, hunting, fishing, and tourism or support traditional ways of life for Indigenous people.

Legitimate carbon offsets must ace the AVID+ test. Miss the mark on one and your claimed offset doesn’t help limit climate change. Companies often stress the parts of the test they get right, while ignoring the rest. At best, this is greenwashing. At worst, such offsets warm the planet faster by wasting resources that could have been used to actually cut emissions.

AVID+ in practice

So do AVID+ offsets exist? Yes. Here’s one example: energy efficiency *retrofits* for low-income housing. Few low-income households can finance the work themselves, and since most renters pay their utility bills, their landlords lack the incentive. Such retrofits are therefore *additional*. The energy savings are *verifiable* from utility bills. Projects take about a year so emissions reductions are nearly *immediate*. Good retrofits can significantly extend building life, so benefits are *durable*. *Plus*, retrofits *create jobs*, *reduce energy bills*, and *improve health*.

The best way to reach net zero is still just to reach zero: cutting emissions in the first place. Walmart **WMT**, - **0.12%** stands apart from the crowd as “the first U.S. retailer to make a zero emissions commitment that does not rely on carbon offsets,” though their goal applies to their operations and not their supply chain.

After 2021's emissions spike, we must cut *actual* emissions rapidly.

John Sterman is a professor at MIT's Sloan School of Management and faculty director of Sloan's Climate Pathways Project.

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