AEC Was Left Out of a Key Decarbonization Pilot. What's Next?

Science-based targets for the building sector no longer apply to design firms and most construction companies, but AEC must continue leading the industry toward net zero, experts say.

by Elizabeth Waters and P.J. Melton

It's 2024. Global emissions—and temperatures—are rising instead of falling, and some scientists believe this will be the year we cross a dangerous climate threshold, the 1.5°C Paris Agreement goal, long before we (hopefully) achieve net-zero emissions in 2050.

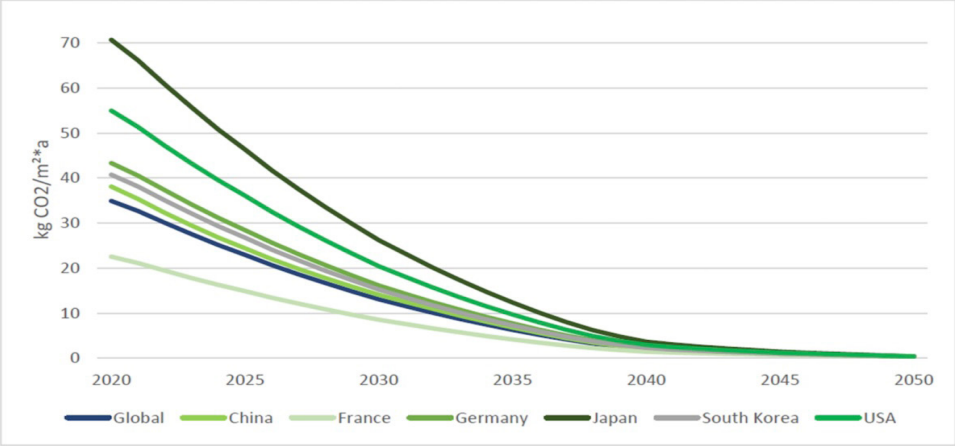

Image: Carbon Risk Real Estate Monitor (CRREM)/Science Based Targets initiative

SBTi partnered with the Carbon Risk Real Estate Monitor (CRREM) to establish a set of pathways for in-use actual (not modeled) operational emissions that reflect differences in building typologies and geographies, some of which are shown here.

Meanwhile, new guidance being piloted through the Science Based Targets initiative (SBTi) has removed architecture, engineering, and most construction companies (AEC) as formal participants in building-sector decarbonization, in contrast with the first draft of the guidance. Although the reasons for removing these companies were sound—and SBTi may still develop detailed guidance for the industry in the future, according to the group's public feedback summary—AEC's sudden absence brings up questions about the leverage and influence of building practitioners as champions of a just transition away from fossil fuels.

Still, AEC firms need to pay attention, for two reasons:

- First, architecture and engineering firms have new obligations when using the general-purpose "cross-sector" guidance.
- And second, AEC clients may be eyeing the SBTi guidance to help them decarbonize in sync with their peers.

The guidance is meant to choreograph a coordinated phaseout of greenhouse gas (GHG) emissions from the building and real estate value chains by 2050.

What will it take for that to work?

A Voluntary Effort Requiring Broad Global Adoption

SBTi offers voluntary guidance (not regulations) so first, large swaths of the building sector all around the world—especially real estate owners, developers, managers, large tenants, and investors—will have to accept the targets and methodology as credible, feasible, and sufficiently ambitious. All those companies will then need to commit to the targets and, of course, follow through on their commitments.

Ideally, since climate policy continues to fall short in virtually every nation, the guidance would also be widely applicable and accessible to all—particularly stakeholders in lower-income countries and real estate owners around the world

with large existing building portfolios. As SBTi wrote in its introduction to the pilot guidance, the International Energy Association (IEA) predicts that most of the new building development between now and 2030 (which it says will be greater than North America's current total built floor area) will occur in "developing and emerging economies."

And the majority of buildings in 2050 globally have already been built today, so we must prioritize the decarbonization of existing buildings everywhere, SBTi reminds us. Amid this complexity, some in the building industry are skeptical that science-based targets alone can drive the industry to decarbonize in time. In particular, although many groups have attempted to define what needs to happen, none has successfully demonstrated how to make it happen. Process fixes have been slow to arise within the building sector—a uniquely fragmented market where conflicting incentives abound and legal structures actively discourage collaboration.

We took a look at what the SBTi pilot guidance as currently written would mean for the AEC industry, and we spoke to experts about the likelihood of broad adoption and implementation.

Where did this guidance come from?

SBTi is a coalition of four nonprofits that formed after nearly 200 nations signed the 2015 Paris Agreement. The intent of the Paris Agreement was to keep the average global temperature "well below 2°C above pre-industrial levels," and it specifies 1.5°C as the desired goal.

A target that is science based (sometimes called Paris aligned or 1.5 aligned) establishes a pathway for reducing the global economy's GHG emissions each year between now and 2050 such that average temperatures don't exceed 1.5°C.

But SBTi divides the economy into industry sectors—some of which have steeper downward curves than others. As discussed in BuildingGreen's coverage of SBTi's first draft for the building sector, our industry is expected to decarbonize rapidly because technologies and best practices are already widely available. This helps make up for industries (like oil and gas) that don't have ready-made, off-the-shelf decarbonization options.

According to a webinar during which SBTi released the pilot draft, the organization has three objectives for supporting building-sector decarbonization:

1. Offer 1.5°C pathways for in-use operations of buildings that take into account variations in geography and building typology.
2. Offer the first 1.5°C pathway for buildings' upfront embodied emissions—that is, the emissions associated with building materials and construction, but only "upfront" because the guidance does not include maintenance or replacement cycles over buildings' life cycles.
3. Develop guidance on emission accounting, reporting, target setting, and validation.

SBTi requires that companies that count as intended users must use the building-sector guidance instead of the traditional cross-sector guidance. This is because the sector-specific pathway is more stringent.

Between the first draft of the guidance and the current pilot version, SBTi made some significant changes in response to stakeholder feedback.

For example, the pilot guidance improves its approach to refrigerants and eases up on the timeline for full electrification. The requirement to install no new fossil fuel-burning equipment was initially set for 2025, but now companies have till 2030 or five years after they submit their targets—whichever comes sooner.

But the most significant change, per-

The science behind sector-specific guidance

The Building Sector Science-Based Target-Setting guidance builds on SBTi's 2021 Pathway to Net Zero: SBTi Technical Summary, in which it established an "absolute" GHG-reduction pathway across all industry sectors. As of 2022, this cross-sector reduction rate is set at a minimum of 4.2% annually.

But SBTi, working with building industry stakeholders, decided that the sector warranted an approach customized for its complicated value chain. So in partnership with four technical-advisory organizations, and with input from 33 more organizations whose representatives made up the Expert Advisory Group (EAG), SBTi developed the Building Sector SBT pilot guidance and target-setting tool. SBTi used the building sector's "carbon budget" allocation—the total amount of GHGs the industry may still emit between now and 2050, as set out in SBTi's Pathway to Zero report—to develop realistic pathways to phase out operational carbon and upfront embodied carbon by 2050.

To ensure success, each company's decarbonization pathway will need to converge with the entire sector's average by 2050.

haps, is SBTi's removal of AEC companies from the list of intended users.

Who is the guidance for—and what's new for the AEC industry?

real-estate portfolio or a significant portion of their GHG emissions must be from their buildings.

These entities must also meet at least one of the following criteria in their selected base year:

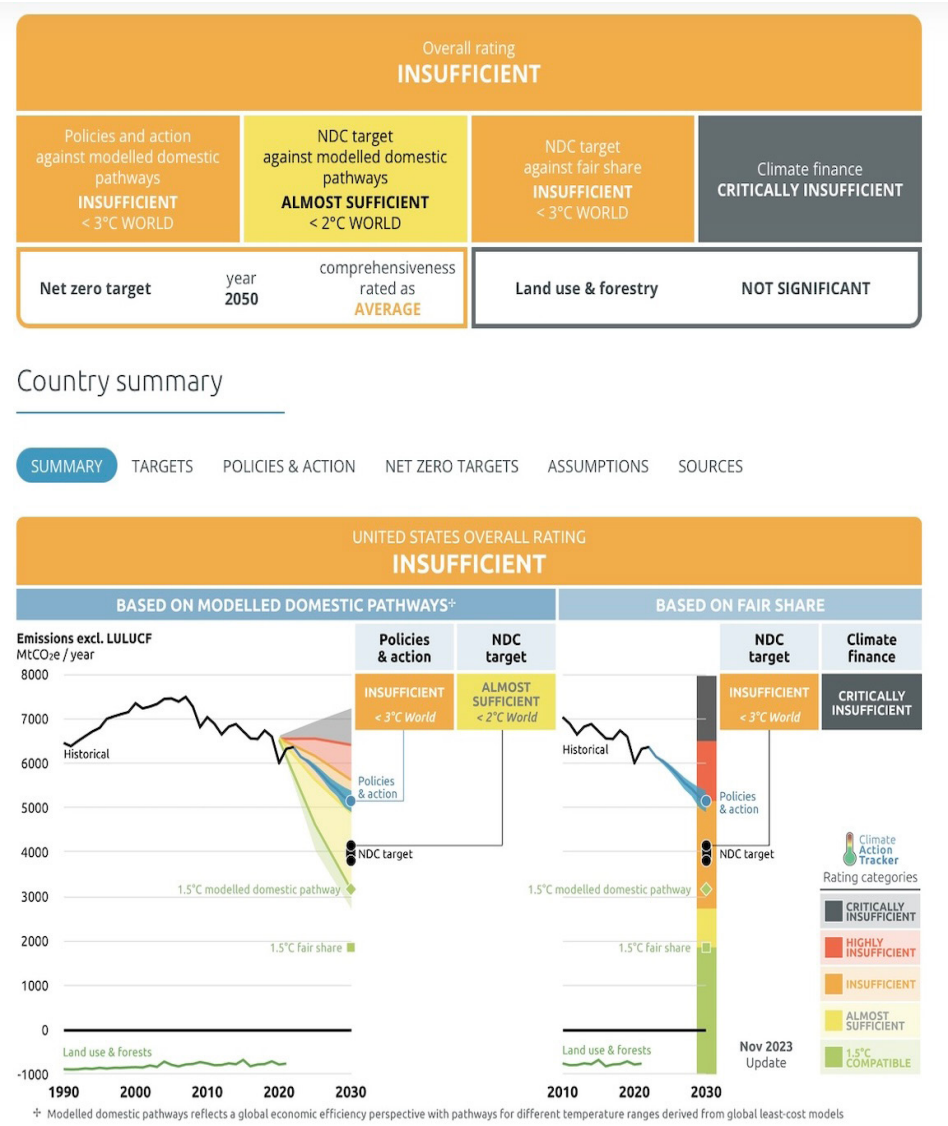

Image: Climate Action Tracker

According to Climate Action Tracker, current U.S. climate targets, climate action and—particularly—climate finance are not ambitious enough to meet our climate goals. The organization warns that in the absence of more drastic emission-reduction measures, the U.S. will not align with the 1.5°C trajectory.

This leaves building developers, owners, property managers, tenants, and (provided they also function as one of those four user types) financial institutions as the intended users. To be included in this group, these users must have a large

- 20% or more of the user's total scope 1, 2, and 3 emissions are related to buildings.
- Across the user's three scopes, at least 25,000 tons of carbon dioxide

equivalent (CO_2e) are related to buildings.

- The total floor area of the user's real estate portfolio (owned, leased, managed, and developed buildings) is greater than 100,000 square meters.

SBTi guidance is meant for users to apply at the company or portfolio level. It is not intended for individual buildings, though adoption by clients would impact every design, construction, or retrofit project in their purview.

SBTi, according to the pilot draft, removed A/E and most construction companies from the building-sector guidance because all three company types face significant hurdles to aligning with the sector-specific method. Instead, SBTi now states that A/E and most construction companies, instead of using the building-sector guidance, should continue using the general-purpose cross-sector guidance.

That's because, after the public comment period, SBTi recognized that AEC firms would have significant difficulty getting enough data about their projects. Further, because design firms often experience a long lag time between the design and the completion of a building, SBTi concluded that it's more appropriate for A/E to use the absolute cross-sector emissions-reduction pathway (4.2% per year) instead of the sector-specific method.

The first draft also required construction companies to reduce embodied emissions for the buildings they construct. But like design work, building construction is often completed by multiple companies, making it difficult to break out one's portion of emissions.

That said, the guidance advises that there may be instances in which a general contractor that is responsible for the majority of a project's construction could feasibly use the same guidance as developers to set targets and track upfront embodied emissions.

What's still required of AEC?

SBTi doesn't let AEC firms completely off the hook. The pilot guidance includes one new requirement for A/E and a few new recommendations for AEC firms. As SBTi explains in the pilot draft, guidance requirements have to be met (and validated) for users to meet the criteria, while guidance recommendations do not. The organization encourages users to meet the recommendations as a best practice and to improve transparency.

Architecture and engineering

Though SBTi isn't offering design firms any new target-setting methods, these firms will now be required, when using the cross-sector guidance, to track and disclose the estimated in-use operational emissions—with the option of including embodied emissions as well—of buildings they design under scope 3. (As a quick refresher—scope 1 emissions are direct emissions from assets a company owns or controls, like emissions from gas for heating. Scope 2 emissions are from purchased energy, most commonly electricity. And scope 3 emissions are all the other indirect emissions up and down a company's value chain. While a company might have influence over scope 3 emissions, they are not under the company's direct control.)

Specifically, their projects are listed as "sold products" under scope 3, the logic being that—much like a company that designs and sells cars, for example—architects and engineers have considerable influence over the efficiency of the buildings they design.

Additionally, SBTi recommends A/E firms measure and publicly disclose whole-life carbon for all the buildings they design, even if they only worked on part of the project. This disclosure, which would include embodied emissions in addition to the required oper-

ational emissions, would not fall within a company's GHG inventory but instead would be reported separately.

A/E firms are also now allowed to use customer engagement metrics, rather than direct emission-reduction targets, to set near-term scope 3 targets. This means that companies would pledge to encourage their clients or suppliers to set SBTs for their own scope 1 and 2 emissions

Construction

Like A/E firms, most construction companies do not have new target-setting methods available to them—though, as mentioned, general contractors may choose to follow the new SDA method for upfront embodied carbon.

SBTi did not give construction companies (unlike A/E firms) any new disclosure or target-setting requirements, but it did provide them with new recommendations for both.

In the new pilot guidance, SBTi encourages construction companies, when setting their scope 3 target boundary, to include both the in-use operational and the end-of-life embodied emissions of their projects. It also strongly encourages them to measure, report, and reduce the whole-life carbon impact of their projects—regardless of the company's role in the project.

Construction firms can also use customer—and supplier—engagement metrics to set scope 3 near-term targets.

"A major constraint"

Could SBTi's exclusion of AEC undermine the intent and effectiveness of the building-sector-specific guidance?

Eric Bill, chief economist at Autocase, thinks it might. AEC "is a critical piece of the value chain that's missing from this process," he told BuildingGreen, adding that leaving building practitioners out creates "a major constraint in what expertise is being brought to the table to an owner." He explained that when companies set SBTs, they're positioning themselves to become market leaders. For AEC firms to successfully sell their services to such clients, he continued, they need to be driving and supporting ambitious sustainability goals.

Exempting AEC firms from having to comply with the sector guidance could undermine SBTi's goal to catalyze industry-wide change, he argued, so it will be up to these companies to broadcast their decarbonization ambitions and skills. They're not officially part of the "peer pressure" (to use Bill's phrase) that will be required for the scoping system and the voluntary SBTs to work.

What's in the Guidance that AEC Firms Should Know?

Even though AEC companies are no longer intended users of the building-sector guidance, their role as advisors and implementers is critical, argued Bill. That's because AEC professionals need to understand what's required and be able to support clients in achieving their emission goals as part of clients' environmental, social, and governance (ESG) programs and reporting. The guidance covers scope 1, 2, and 3 emissions. This comprehensive accounting is designed to highlight overlapping influence and responsibility—hopefully creating a network effect and spurring broader collaboration.

Operational emissions

The guidance is most applicable to companies with large real estate portfolios, explained Chris Pyke, Ph.D., chief innovation officer at GRESB.

And the guidance takes a "whole-building approach," which means everyone's tracking and reporting must include a building's total energy consumption—

White House intervenes in a fragmented industry

The U.S. Department of Energy (DOE) recently released a draft of the forthcoming National Definition for a Zero-Emissions Building. With the document, DOE also put out a request for information to solicit public feedback. (Disclosure: BuildingGreen CEO Nadav Malin participated in predraft stakeholder engagement.)

In addition to alignment within the AEC industry, this definition—which includes only operational emissions for now but will ultimately fold in embodied carbon as well as "fugitive emissions" from refrigerant leakage—aims to support investors.

"The building sector has 130 million buildings," said Heather Clark, director for building emissions in the White House Climate Policy Office. And the Biden-Harris administration, she said, is aiming to "creat[e] alignment and a clear market signal" along with "a clear target that's simple, understandable, and verifiable" in order to reach all of them—not just a few high achievers.

But the goal is not to replace certifications, which typically only apply to a small percentage of buildings. Instead, "we anticipate other certifications will go higher and be more aggressive" while also referencing the definition as a baseline, Clark suggested. Clark added that the definition will bring clarity to "the finance community to help drive investment in projects that are meeting the definition."

Clark also anticipates international alignment, telling BuildingGreen that at COP28 (the 28th Conference of the Parties, held in Dubai in 2023), "we announced that the U.S. has joined the UN's Buildings Breakthrough. If you dig into it, the first effort that plays into that is having a clear definition for zero-emission buildings."

regardless of who directly controls each space. For example, an owner–lessor must include (scope 3) emissions from tenant-controlled spaces, and vice versa. Companies must also include refrigerant leakage in their accounting of operational emissions.

Upfront embodied emissions

A subset of the intended user group—owners and developers— must also set a scope 3 upfront (not whole-life-cycle) embodied-emission target if they are the first owner of a new building and their upfront embodied emissions from new development or acquisitions make up more than 20% of their total scope 1, 2, and 3 emissions in any one year within the previous three.

How Much Can "the Market" Really Accomplish?

Both Chris Pyke and Eric Bill expressed concerns about who might—and might not—use the SBTi guidance once it's finalized, and wondered whether it would incentivize the urgent action required to eliminate emissions by 2050.

"A big, fat question mark"

Pyke suggested, for example, that owners of relatively high-performing portfolios might feel pretty good about their data already and thus decide there's little urgency to act. Meanwhile, those with more mixed portfolios might just sell off their "brown" assets to owners that haven't committed to voluntary decarbonization. These sales would appear as a reduction in emissions for a "decarbonizing" company, but in reality, the brown real estate would just disappear from the map—not from the planet.

"I want the people with the capital and skills to own the crappy buildings to make them better," said Pyke. "Is SBTi going to encourage capital, or is it going to encourage people to divest?"

And how will the new guidance encourage underperforming companies to set SBTs when, under the new guidance, their targets will be steepest? "Who is this for? What is the theory of change?" asked Pyke. "Will it get enough scale to matter in any material way? I find myself with a big, fat question mark."

Can we fix the process?

Pyke has a diagnosis for the building industry's chronic misalignment and buck-passing: "We have confused a performance problem with a process problem," he told BuildingGreen.

Building owners need to track outcomes to see where their portfolios are headed and, in some cases, to secure investment—like proving to investors through ESG reporting that they're managing climate risks through decarbonization and resilience. But those metrics are a lagging indicator, Pyke explained. So how can we actually ensure—ahead of time—that the numbers will go down quickly enough? "Someone's got to be in charge, monitoring, sustaining over time, every single day, indefinitely." Science-based targets—and even policy and regulation, he argued—can't do that alone.

Rather, fixing the process requires people—people who collaborate and hold one another accountable. Pyke lamented that when LEED and other building certifications were in their nascent phases, they did not put enough emphasis on the integrative process, which would have encouraged interdisciplinary collaboration rather than replicating or reinforcing the AEC industry's entrenched siloes.

Moving beyond the building scale, Pyke added, people and organizations must collaborate around the most basic standards—for example, what does "net-zero carbon" even mean in the building industry? It depends who's writing the definition. Referring to alignment to-

ward decarbonization, Pyke added, "I feel like it needs more of a come-to-Jesus that the current constellation of organizations aren't capable of doing."

The building industry's lack of alignment leads in turn to the inability of investors to determine whether portfolios meet their criteria, he added. This means that market forces—namely, investors' ability to hold corporations accountable for their GHG emissions—can't work. Because what would investors be holding the companies accountable to?

Fortunately, a forthcoming definition from the White House, currently in draft form, is designed to solve that exact problem (see sidebar).

Hope lies with the AEC sub-sector

As efforts to align continue, both Bill and Pyke believe that, despite their exclusion from the SBTi building-sector guidance, AEC firms have a crucial role to play in sector decarbonization.

But AEC must rise to the occasion.

"The role of AEC [is] essentially a middle man in the conversation," said Pyke. "One of the larger barriers is … AEC firms that either say—or create the perception that—high performance is infeasible, too costly." Bill sees things differently, noting that client values and levels of sustainability sophistication can vary widely, and maintaining, "AEC are leaders in the industry."

So it's up to trusted AEC advisors, Bill continued, to advocate for social and environmental sustainability and to ultimately provide clients with projects that have the lowest carbon intensity, best occupant health outcomes, and highest community benefit they can—either with or without science-based targets to back them up.

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