GIVING GREEN.earth

How to Think Beyond Net Zero

A guide to higher impact climate strategies for visionary businesses both large and small.

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and lightly updated in March 2024.

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Executive Summary

For many companies, net zero is impossible—for now.

Pressure is mounting for companies to develop and implement meaningful climate strategies. However, conventional approaches to carbon neutrality have limitations: direct emissions reductions remain out of grasp for most businesses, and the efficacy of many carbon offset projects is highly uncertain.

In this white paper, we provide four evidence-backed, actionable climate strategies that go beyond immediate neutrality to maximize climate impact. We support the four strategies with case studies and recommendations tailored to reach businesses of all sizes.

Engage in policy

The private sector can substantially influence public policy, a key driver of the technological, market, and human behavior changes necessary to address climate change. We explore some of the key policy levers available to businesses, including donating to policy advocacy nonprofits.

Support technological innovation

Companies can support emerging climate technologies in sectors relevant to their own operations and/or in climate innovation more broadly. We identify carbon removal as one important emerging sector and recommend two catalytic funds for carbon removal.

Contribute to or create a climate action fund

Some companies and organizations have created funds that allocate resources across an array of climate mitigation initiatives. We introduce the Giving Green Fund, which curates deeply researched, carefully vetted, high-impact climate giving opportunities.

Improve conventional offsetting

For businesses that remain constrained to directly matching actions to tons emitted, we recommend three best practices.

Contents

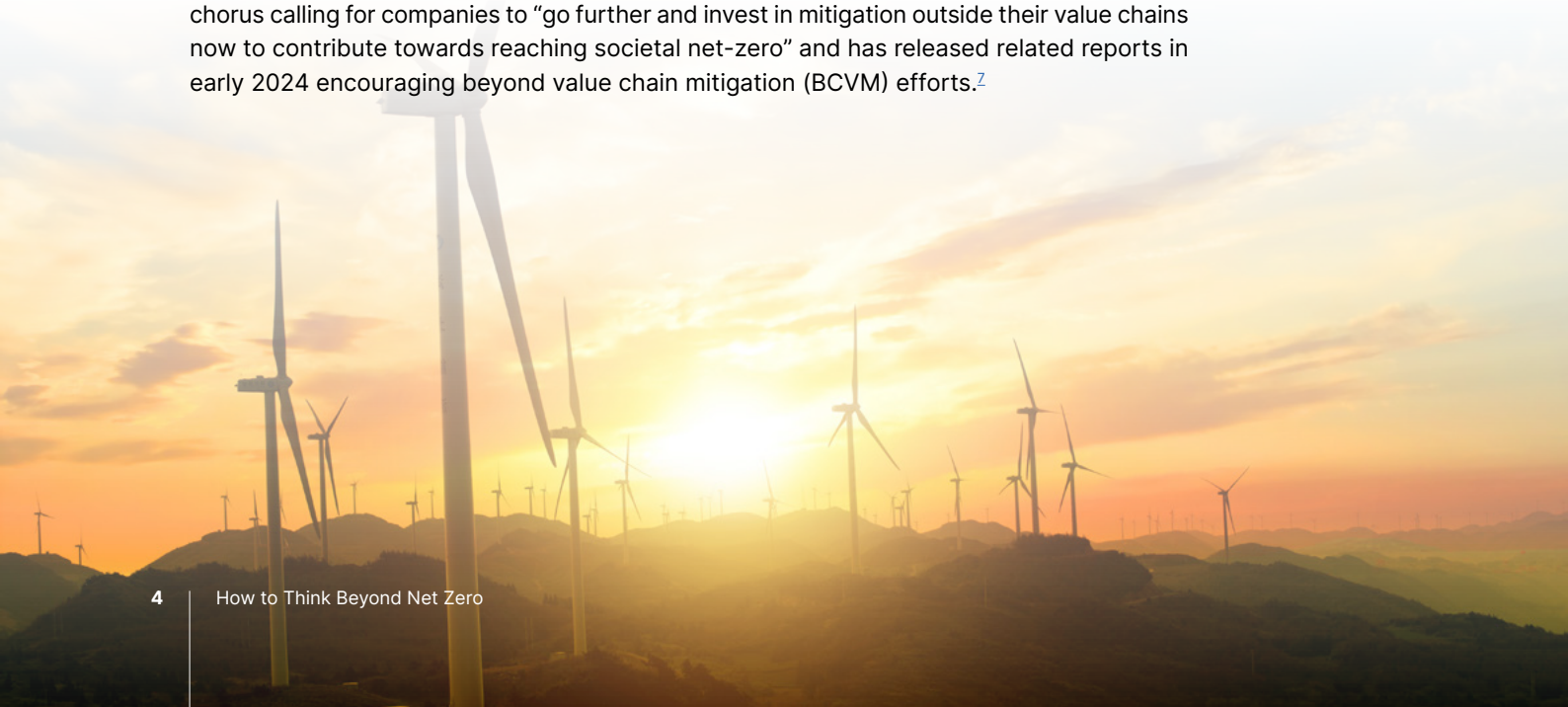
Introduction

Pressure is mounting for companies to develop and implement climate strategies. This call to action comes from a growing list of both internal and external stakeholders – employees, investors, customers, civil society, other companies, government, and more. And, increasingly, climate strategies are being scrutinized to ensure good faith, viability, and adherence to rigorous standards.[1] As a result of this scrutiny, more companies are looking to go beyond conventional approaches in order to elevate true impact over ineffectual claims.

Conventional climate strategies and their limitations

The conventional approach to carbon neutrality generally consists of a company performing an inventory of Scope 1, 2, and sometimes 3 emissions, identifying a subset of these emissions to reduce, and committing to the purchase of offsets to 'neutralize' remaining emissions.[2] 'Net-zero' frameworks build on the concept of carbon neutrality, but tend to require an ambitious target for emissions reductions and the purchase of carbon removal to compensate for any residual emissions.[3] While we think net-zero frameworks are generally more rigorous, in that they emphasize emissions reductions strategies and elevate carbon removal over avoided emissions offsets, it is our impression that **net-zero approaches are generally out of reach for most businesses at present.**

The Science Based Targets Initiative (SBTi), a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI), and the World Wide Fund for Nature (WWF), offers some of the most rigorous standards available for net-zero frameworks. It emphasizes emissions reductions across all scopes and is developing sector-specific guidance for 13 sectors including: aluminum; apparel and footwear; forest, land, and agriculture; and financial institutions.[4] SBTi requires most companies to aim for at least 90% emissions reductions by 2050; residual emissions must be balanced with an equivalent amount of high-quality, durable carbon removal.[5] Carbon credits from avoided emissions projects are "only considered to be an option for companies wanting to finance additional emission reductions beyond their science-based target (SBT) or net-zero target."[6] SBTi also encourages investment in external projects such as ecosystem restoration and protection. It has joined the growing chorus calling for companies to "go further and invest in mitigation outside their value chains now to contribute towards reaching societal net-zero" and has released related reports in early 2024 encouraging beyond value chain mitigation (BCVM) efforts.[7]



Emissions reductions

While strategies for direct emissions reductions fall outside of the scope of this white paper, there are many platforms available to help companies measure and track their emissions. A recent report reviews some of these platforms and evaluates which are best suited for small and medium-sized enterprises (SMEs), start-ups, larger enterprises, and VCs.[8] Watershed is one example of a platform that helps to measure a company's emissions across scopes and develops strategies for climate action. It offers rigorous accounting, tracking, and reporting of emissions across sectors in addition to guided strategies to reduce these emissions.

The reality is that many businesses, especially SMEs, are finding it difficult to reduce all or even much of their emissions at present—due to e.g., reliance on the grid, complex supply chain factors, or lack of resources for a dedicated team, hired consultants, or paid platforms. Consider, for example, a small company for which most emissions come from cloud computing and occasional air travel. Aside from reducing or eliminating travel, direct emissions reductions would be difficult without broader systemic change in the power and aviation sectors.

Carbon offsets

This inability to tackle emissions reductions, paired with a lack of broadly accessible guidance for higher impact climate strategies, may result in approaches that are over-reliant on carbon credits—a course of action that is drawing criticism for a variety of reasons. **Implicit in this strategy is the assumption that a ton emitted can be neutralized through an offset.** Especially given that many offset projects simply do not deliver the advertised emissions reductions, it is not clear that this accounting truly balances. In addition, since the quantity of purchased carbon credits is often linked to the quantity of emitted tons, companies may be inclined to choose credits based on price rather than quality.[9] As a result, these neutrality commitments often do not achieve what they claim, and, even worse, may contribute adversely to progress on climate change.[10]

The recent flurry of neutrality commitments in the past few years has fueled newfound interest in carbon markets. McKinsey estimates that the number of corporate net-zero commitments doubled between 2019 and 2020, and predicts that demand for carbon credits in the voluntary carbon market could increase by a factor of 15 by 2030, leading to a total carbon credit market value of more than $50 billion.[12] **However, there are widespread problems with the voluntary carbon market that indicate cause for caution; many of these problems lie in the lack of robust standards and tools to measure and monitor projects.**[13] This even applies to projects that are certified from recognized bodies such as Gold Standard, Verra, Climate Action Reserve, and the American Carbon Registry. While the standards for evaluating offsets continue to be improved, there remains much uncertainty regarding the efficacy of many offset projects.

Oxford University published a set of principles to help carbon credit buyers understand what types of offsets are acceptable and under what conditions they should be used. These principles encourage buyers to prioritize cutting emissions and, when using offsets from carbon credits, to shift over time to carbon removals with long-lived storage.[14] The transition is not immediately achievable given that carbon removal supply at present is both limited and expensive.[15] Given this, the Oxford principles attempt to stake a middle ground, recognizing a role for offsets while encouraging buyers to use offsets sparingly.

> "But the very nature of net-zero plans drives companies toward solutions that look quantifiable on paper. By embracing cheap offsets and other dubious tools, they can tally up a somewhat credible-seeming ton-for-ton decarbonization plan. It's time to stop that."
>
> **JAMES TEMPLE**
> MIT Technology Review[11]

While we think that there are valuable resources to guide certain companies toward net-zero goals, we have not found them to be universally cost-effective, actionable, or accessible—especially for small to medium sized enterprises (SMEs). What can and should businesses do in the interim while full emissions reductions and durable, affordable carbon removal remain out of grasp?

> While the world will need to reach net zero, those of us who can afford to move faster and go further should do so."
>
> **BRAD SMITH**
> Vice Chair and President, Microsoft[16]

Beyond Net-Zero: Maximizing Climate Impact

Central to devising a climate strategy is determining goals and framing. A convenience of neutrality or net-zero frameworks is that the objectives and methodologies are generally predetermined. However, there are downsides to this standardization. First, the need for careful accounting central to net-zero encourages investments that are easily quantifiable. This reduces the opportunity to fund less measurable but arguably more effective approaches such as engaging in policy. Second, a net-zero goal, by design, limits the climate responsibility of a given company to the size of their own emissions; some companies can achieve much greater impact.

Instead of assuming that conventional frameworks are optimal, we explore the following question: given a set of available resources, how can a business maximize its climate impact? This new framing allows for nuance, creativity, and the reality that in some instances carbon accounting may limit the impact of a company's strategy. While each company will inevitably face its own set of challenges and constraints when devising a climate plan, it will also have a unique set of opportunities.

> A new model for corporate climate action is needed for a number of reasons, but they can be boiled down to one key meta-problem—a mismatch between the current solution set available and the scale of the problems they are trying to solve."
>
> **WWF AND BCG**
> Beyond Science-Based Targets[17]

In a report released in December 2020, the World Wildlife Fund for Nature (WWF) and the Boston Consulting Group (BCG) describe a corporate climate mitigation blueprint consisting of four components: accounting and disclosing emissions, reducing these emissions, quantifying financial commitment, and investing for climate impact. We focus our discussion on the fourth component. In practice, how a business can best direct resources to maximize climate impact is an open question, but a growing number of companies are leveraging their resources innovatively to more deeply influence climate progress. While we encourage new and creative ways to approach high impact climate strategies, **we think it is useful to present a few options that are accessible to businesses of all sizes: policy engagement, catalytic investment in emerging climate technologies, funds that address climate action in a multi-faceted way, and more effective offsetting.** We have chosen to list these options separately for clarity, but we recognize that they are not necessarily disjoint. The rest of this report offers details on and examples of each strategy.

Strategy 1

Engaging in Policy

Public policy is a key driver of the technological, market, and human behavior changes necessary to address climate change. The private sector can substantially influence public policy through levers such as lending technical expertise, lobbying, contributing to political campaigns, and even supporting policy advocacy organizations.[18] **If a corporation wants to have serious climate goals, it must first align its policy actions with these goals.** A report released in November 2022 by Carbon Gap, analyzing the discrepancy between profits and resources allocated to climate initiatives, claims that "this corporate 'ambition gap' must be closed through a combination of policy change, voluntary guidance, and peer pressure to change norms within industry."[19]

Historically, the private sector has remained on the sidelines with respect to supporting regulation and policy to mitigate climate change. In fact, some evidence points to a prevalence of private sector contributions funneled toward climate policy obstruction, including via trade organizations.[20] In 2018, Mars, Unilever, and Nestlé left their common trade association to create a new one more aligned with their priorities, including proactive climate advocacy.[21] Calls to hold trade organizations accountable, and to make their spending transparent, are growing. In 2019, 11 prominent NGOs developed a AAA framework for businesses to follow: "advocate for smart policies based in science, align their trade associations with this position, and allocate political spending to advance these outcomes."[22] During a 2022 webinar hosted by Drawdown Labs, Evergreen Action, Rewiring America, and Climate Voice, US Senator Sheldon Whitehouse called for a "corporate carbon political footprint"

that would require companies to disclose if and how they are influencing policy.[24] A 2022 UN report states that "non-state actors cannot lobby to undermine ambitious government climate policies either directly or through trade associations or other bodies. Instead, they must align their advocacy, as well as their governance and business strategies with their climate commitments."[25]

We believe that companies stand to benefit from moving beyond obstruction or inaction toward proactively advocating for robust climate policy. For example, the bulk of the climate provisions in the Inflation Reduction Act of 2022 (IRA) take the form of tax credits, and corporations are eligible for around $216 billion of these credits.[26]

Companies are beginning to become more proactive in pushing for climate policy and are publicly reporting their advocacy initiatives. For example, Salesforce released a report[27] detailing its US political engagement activities, committed to adding climate to its public policy platform, and published its Nature Policy Priorities.[28] Patagonia expanded the possibilities of corporate social responsibility when it fully transferred voting stock to a Purpose Trust and non-voting stocks to a nonprofit supporting environmental issues and policy advocacy.[29]

Some businesses (especially smaller ones) may not have policy arms, and therefore have limited tools to influence policy directly. An indirect way to affect policy that is more accessible is to make donations to highly effective organizations working on climate policy advocacy. Giving Green has curated a list of recommendations for high-impact organizations that seek to influence policy, often in collaboration with the private sector. If your business is interested in effecting systemic change through policy, consider contributing to some or all of our top recommendations which we describe in more detail below, as part of the Giving Green Fund.

Leading By Example

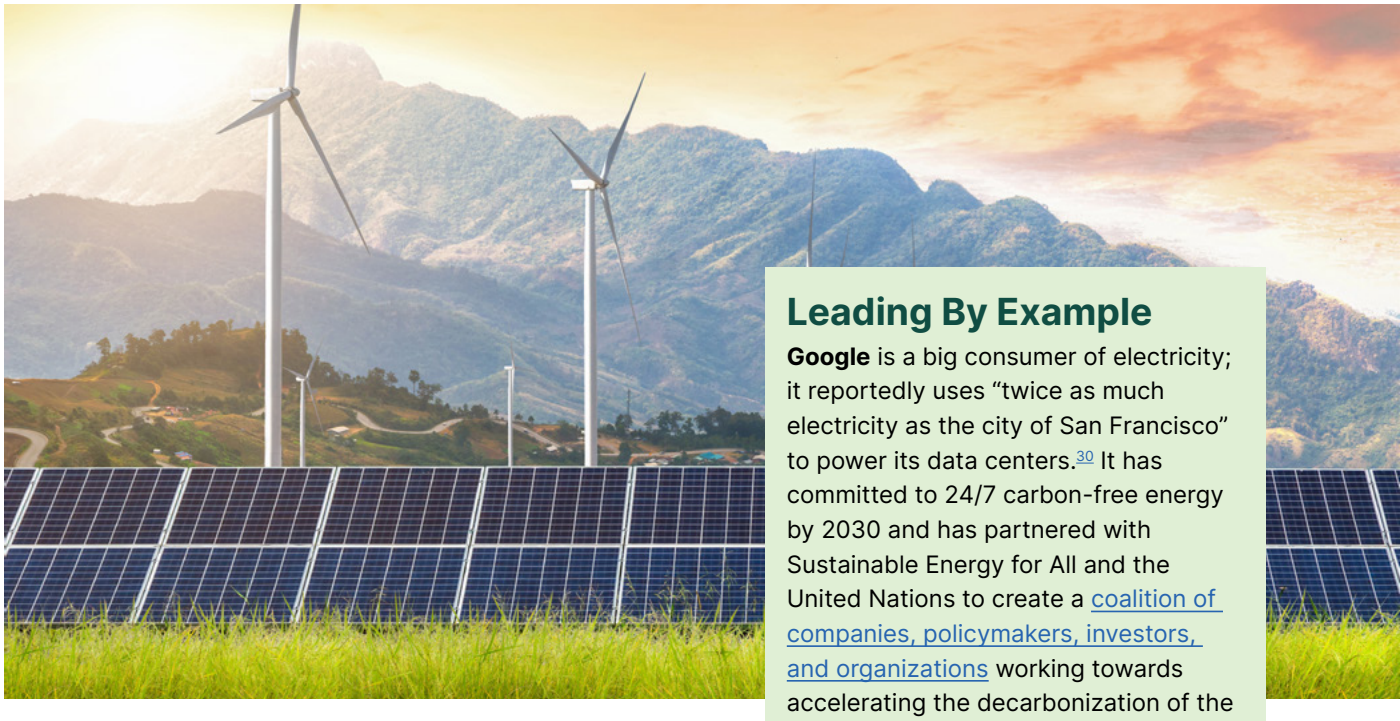
Drawdown Labs, a private sector-focused initiative of Project Drawdown, is developing a Drawdown-Aligned Business Framework that identifies a comprehensive set of leverage points including: climate policy advocacy; stakeholder engagement and collaboration; and products, partnerships, and procurement. The next phase will be to associate metrics to these and create standards and benchmarks for companies to follow.

"To be drawdown-aligned, companies must apply their social, political, financial, and employee power to scaling climate solutions we have in-hand today."[23]

Drawdown Labs has also released a series of Job Function Climate Action Guides to help employees influence their companies to take action and to align job functions with climate goals.

Strategy 2

Supporting Technological Innovation



Another avenue through which companies can influence broader change is by supporting emerging climate technologies. A company might support innovation in a particular sector relevant to its own operations, or it might support innovation related to broader net-zero ambitions—either way, the benefits of developing and deploying climate technologies can propagate widely.

Sector impact

Initiatives that leverage internal expertise or demand can create broad impact within a specific sector relevant to a company's own operations. For example, a cement company may decide to fund its own R&D to develop low-carbon or carbon-negative techniques or technologies to advance its product in a climate-friendly way. Its success could have a positive impact beyond its own operations and extend to the global cement industry. Likewise, an airline might direct funds toward initiatives developing sustainable aviation fuels in an effort to eventually

Leading By Example

Google is a big consumer of electricity; it reportedly uses "twice as much electricity as the city of San Francisco" to power its data centers.[30] It has committed to 24/7 carbon-free energy by 2030 and has partnered with Sustainable Energy for All and the United Nations to create a coalition of companies, policymakers, investors, and organizations working towards accelerating the decarbonization of the energy sector.[31] A study by Princeton's Zero Lab[32] found that, while initially more expensive, 24/7 carbon-free energy procurement has a higher impact on emissions reduction and power sector transformation than the more common approach of offsetting fossil energy consumption through renewable energy purchases—often through Renewable Energy Certificates (RECs).[33] "This practice [REC purchasing] de-links generation and consumption in both space and time, provides less revenue certainty for clean energy projects, and creates a more tenuous link between buyers and the clean energy they claim to consume."[34] 24/7 energy purchases provide more continuous demand for clean energy, and are often implemented on the same or a nearby grid as the power consumption itself.

reduce the emissions of its fleet and, as a consequence, of the airline industry at large. These investments may be costly in the short term, and they may also pose some risk as not all emerging technologies will successfully scale. But there is also great potential to profoundly impact and accelerate progress toward global net-zero.

Some businesses may be limited in their capacity to lead or participate directly in such initiatives. **An indirect and more accessible way to influence technological innovation within a business's own industry is through contributions to highly effective organizations working to promote climate-beneficial technologies.** For example, Industrious Labs is using a multi-faceted approach to drive the green transition in heavy industries such as steel and aluminum production.

Carbon removal investment

While emissions reductions are of utmost priority, it is unlikely that a company—or the world—can achieve net-zero unless

Leading By Example

First Movers Coalition is a global effort to unite companies to advance industrial decarbonization. Companies can choose to participate in various sub-sectors, including aluminum, aviation, carbon removal, shipping, steel, and trucking. "The First Movers Coalition's unique approach assembles ambitious corporate purchasing pledges across the heavy industry and long-distance transport sectors responsible for a third of global emissions."[35] Procurement has been widely identified as an important lever to catalyze industrial decarbonization, and the aggregation of private capital to directly invest in this could accelerate progress.[36]

unabated emissions (such as those from hard-to-abate sectors like aviation) are removed from the atmosphere and permanently stored. Most climate models confirm this, demonstrating a need for carbon removal to grow to the gigaton (billions of tons) scale by 2050 to limit warming to 2°C.[40]

The durable carbon removal sector is quite varied in terms of the types of pathways and in the technological readiness of each pathway. In this report, we consider carbon removal pathways that demonstrate medium to high durability (projects that store carbon for 100+ years at minimum) which correspond more closely to CO_2's atmospheric lifespan.[41] We do not include lower durability pathways such as forestry and soils. **At present, not much carbon removal supply is available, and that which is available is too expensive to create broad demand.**[42]

Regarding supply: The world has barely moved the needle toward gigaton-scale 2050 deployment goals, and only a small fraction of the durable carbon removal purchases ever made have been delivered.[43] Much of the sector remains in the R&D phase, and projects that have higher technological maturity are still navigating economic viability and logistics for deployment at scale.[44]

Regarding cost: prices vary across the sector. Highly durable technological carbon removal can cost upwards of $1500 per ton of CO_2 removed, a price far too high to be widely accessible.[46]

However, these prices are projected to decrease as technology is refined and more projects are deployed.[47]

In short, the current market is young, small, and relatively uncertain—but there is growing investment from both the public and private sector.[48] While this is a positive signal, investment still remains far from the size needed for carbon removal to become a successful and affordable climate mitigation tool.[49] **Supporting carbon removal through catalytic contributions—e.g., supporting R&D, funding a portfolio of projects in various stages of innovation, or entering into longer term purchasing commitments—is likely to be more impactful than one-time, direct purchases of tons from a single supplier.** Helping to advance the sector will enable companies to achieve their own climate commitments in the future and enable the world to achieve global net-zero goals.

Leading By Example

The Australian iron and ore company Fortescue Metals Group has embarked on a mission to produce "green steel" and reach net-zero by 2040.[37] Its plan includes developing alternative manufacturing technologies, pivoting resources to create renewable energy infrastructure to produce green hydrogen, and providing specialized training to the workforce in preparation for the transition.[38] Industry is generally considered one of the most difficult to abate sectors with respect to emissions reductions.[39]

Decarbonization pathways vary widely across the sector, and many of these pathways are still in the research and development (R&D) phase. (For more information see Giving Green's research on the industrial sector). Fortescue's investment in early-stage innovation could potentially be transformative for steel manufacturing worldwide.

Stripe, an Irish-American financial tech company, has led the charge in private sector carbon removal investment. In 2019 Stripe committed to investing in negative emissions technologies, and in 2020 it made its first purchases from what were then early-stage carbon removal companies.[45] In 2022, Stripe launched Frontier, a $925 million advance market commitment (AMC) for carbon removal funded in collaboration with Alphabet, Shopify, Meta, McKinsey & Company, and businesses using Stripe Climate. Frontier's mission is to create a strong demand signal to promote and accelerate the development and deployment of carbon removal.

Leading By Example

Swiss Re, an insurance provider, has developed its CO_2NetZero Programme with the slogan "do our best, remove the rest"—it plans to substantially cut emissions and use carbon removal to compensate for what remains. It has made investments to help grow the carbon removal market, including partnering with Climeworks to sign a ten-year purchase agreement for carbon removal.[50] Following suit, H&M announced in November 2022 that it signed a multi-year agreement with Climeworks to remove 10,000 tons of CO_2.[51] Climeworks, currently operates the world's largest direct air capture (DAC) plant.[52] One barrier to scaling carbon removal technologies like DAC is the lack of certainty regarding future demand. Longer-term purchase agreements like these establish market certainty, enabling development and financing of more projects.[53] One way in which companies are able to make such large financial commitments is by placing an internally determined tax[54] on their own emissions and using the revenue generated to fund their climate efforts. In 2021, Swiss Re increased its internal carbon tax to $100/ton and became "the first multi-national company with a triple-digit real internal carbon price on both its direct emissions and indirect operational greenhouse gas emissions".[55]

Giving Green recommends two initiatives that provide funding to portfolios of both early and commercial stage projects. **We believe that supporting carbon removal through advance market commitments or other catalytic funds presents an important pathway to support early-stage technologies like carbon removal for which there does not yet exist a well-developed market.** Both of our recommendations are accessible to any size of business and offer options to support carbon removal projects at various stages of innovation.

Giving Green's recommendations for investing in carbon removal

Frontier **Frontier is an advance market commitment (AMC) intended to support and accelerate the development and deployment of carbon removal technologies.** The fund is currently open to more buyers in an effort to build demand and encourage supply. Given that the carbon removal sector is both nascent and varied, initial allocations of the fund are directed to either early-stage sellers through prepurchases[56] or commercial-stage supplies through longer-term purchase agreements.[57] Based on factors such as urgency, efficacy, and relevance, we see Frontier's AMC model as potentially playing a valuable role in the growth of a robust and durable carbon removal market. See our Frontier recommendation here.

Milkywire **Milkywire is a platform that hosts and manages the Climate Transformation Fund, a fund for businesses that directs contributions to a variety of climate initiatives.** In particular, the fund supports carbon removal through a portfolio consisting of both early-stage and commercial-stage projects. Through this approach, Milkywire aims to catalyze the development of carbon removal projects and pathways and enable carbon removal to become cheaper so that it can be scaled effectively as a climate mitigation tool. See our recommendation for Milkywire's carbon removal portfolio here.

Strategy 3

Contributing to or Creating a Climate Action Fund

In an effort to effect change across a portfolio of different initiatives, including policy and technology, some companies and organizations have begun devising methods to leverage or allocate resources to address multiple facets of climate action. These efforts often come in the form of funds or portfolios that consist of an array of climate mitigation initiatives.

To make it easier to maximize the impact of your donations, Giving Green has created a fund which includes a portfolio of high-impact giving opportunities. We update the portfolio dynamically as new evidence emerges, and we recommend strategic grants from the fund based on organizations' funding needs and opportunities.

Leading By Example

Klarna, a Swedish financial technology company, has partnered with Milkywire to develop (and donate to) the Climate Transformation Fund. Described as an "impact-first approach," the fund's ambition is "to achieve the greatest long-term impact possible." The fund takes the form of a portfolio to reflect a global, holistic vision for climate action, supporting a variety of projects such as carbon removal, ecological restoration, and even policy advocacy. "With this approach, we are trying to create as much impact per dollar as possible, rather than buying only a set amount of carbon credits. This also opens up possibilities to support solutions such as policy change and new technologies."[58] To date, Klarna has contributed $2.7 million projects selected for the fund. Other companies that have contributed to the fund include SilverLake, Pangaia, Wastebox, and BioGaia.

Microsoft has pledged to be net-negative by 2030 and to remove all of its historical emissions by 2050.[59] It recognizes that these goals are not achievable at present and that targeted investments must be made to ensure its objectives are met. In service of these goals, it has established its Climate Innovation Fund to support a suite of climate projects including "direct carbon removal, digital optimization, advanced energy systems, industrial materials, circular economy, water technologies, sustainable agriculture, and business strategies for nature-based markets."[60]

Strategy 4

Improving Conventional Offsetting

We strongly encourage that avoided emissions projects—projects that would conventionally be viewed as offsets—be cast as pro-climate donations rather than as vehicles to neutralize emissions. A report released in November 2022 by the UN on high integrity net-zero commitments for non-state entities echoes this stance: "Non-state actors cannot buy cheap credits that often lack integrity instead of immediately cutting their own emissions across their value chain. As guidelines emerge for a high-integrity voluntary credit market, credits can be used above and beyond efforts to achieve 1.5°C aligned interim targets to increase financial flows into underinvested areas, including to help decarbonize developing countries."[61]

However, we recognize that some businesses may remain internally constrained to directly matching purchases to tons emitted, necessitating the purchase of carbon credits. We believe there are ways to broaden climate impact while incorporating carbon credit purchases.

First and foremost, we believe that businesses constrained to purchasing carbon credits should ensure that the projects from which they purchase credits are credible; we do not think that accreditation through recognized standards bodies necessarily ensures this. Further diligence may require becoming familiar with the characteristics of the specific offsets sector, carefully reviewing certification documents, and even directly communicating with project developers.

Leading By Example

Mapbox, a provider of custom online maps, went neutral and then some. Its carbon credit purchases were from high-quality offset projects such as refrigerant destruction through Tradewater; these purchases were then supplemented by investment in carbon removal and policy advocacy. "Going forward, Mapbox is…balancing more tried and true investments with ambitious endeavors that have higher impact potential."[62]

Second, if there is an obligation for expenditures to correspond to purchased tons, then we suggest purchasing durable carbon removals in addition to carbon credits from offset projects. Given the high price and limited supply of carbon removal, it is generally not yet possible to match all unabated emissions through removals. One possibility is allocating a specified amount of the budget to removals, and annually increasing the ratio of removals to offsets to the extent possible.

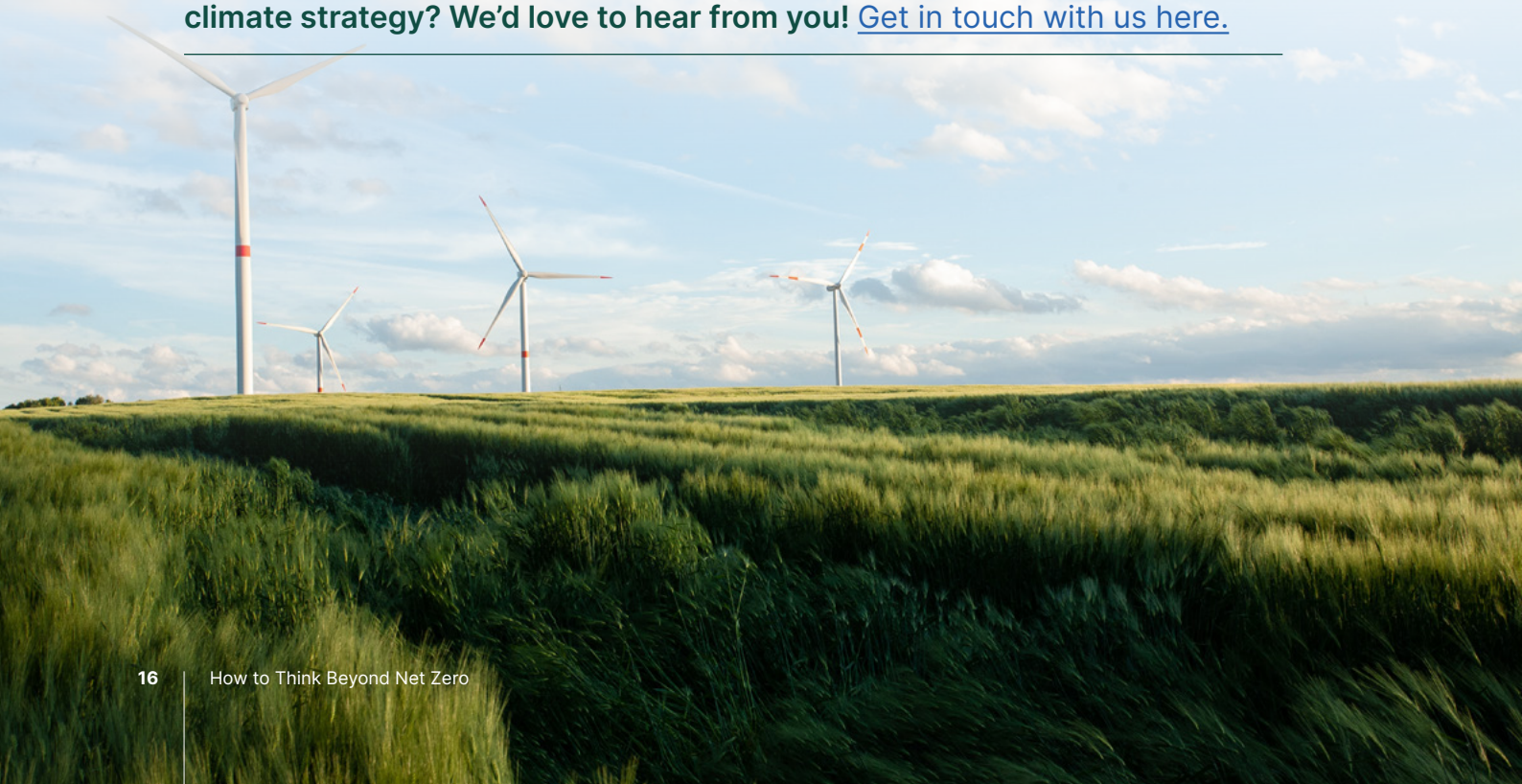
Third, in general, we think that the impact of net-net accounting schemes can be augmented by supplementing the purchase of carbon credits with contributions to initiatives influencing systematic change, as described in previous sections. If possible, we encourage businesses who purchase carbon credits to also consider supporting policy change and/or technological innovation.

Conclusion

The private sector has the resources, expertise, and influence to lead in implementing ambitious climate strategies. While net-zero goals are important, they are unachievable at present; we believe that supporting broader change to make global net-zero goals possible is among the most effective ways that companies can contribute directly to robust climate action. Through the examples and recommendations within this white paper, we hope to encourage businesses to think creatively, even beyond their own operations, to develop strategies that maximize climate impact.

> Engaging the private sector is essential for multiple reasons. It can mobilize financial resources and technical capabilities, leverage the efforts of governments, engage civil society and community efforts, and develop innovative climate services and adaptation technologies."
>
> **ALAN MILLER**
> Former Climate Change Specialist, International Finance Corporation[63]

Do you work for a company that is considering a "beyond net zero" climate strategy? We'd love to hear from you! Get in touch with us here.



Endnotes

1. For example: New Climate Institute. Corporate Climate Responsibility Monitor 2022.
2. Scope 1 emissions are from sources directly owned by a company, such as emissions from non-electric fleet vehicles. Scope 2 emissions are emissions associated with the production of energy purchased by the company. Scope 3 emissions are from a company's value chain from sources not owned or controlled by the company. For example, this could include the use of products sold by a company or employee travel. For more information, see the EPA's Scope 1 and Scope 2 Inventory Guidance.
3. "There's another aspect of carbon math that's also essential. This is the difference between being "carbon neutral" and being "net zero." While they sound similar, in fact they're different." Microsoft will be carbon negative by 2030.
4. "For some sectors / industries, separate sector-specific methodologies, frameworks and requirements have been developed. In addition, we have published tailored guidance documents for some other sectors to help you through the target-setting process." Sector Guidance.
5. "Most companies are required to have long-term targets with emission reductions of at least 90-95% by 2050. At that point, a company must use carbon removals to neutralize any limited emissions that cannot yet be eliminated." The Net-Zero Standard.
6. FAQs: Does SBTi accept all approaches to reducing emissions?
7. In February 2024, the SBTi published "Above and Beyond: An SBTi report on the design and implementation of beyond value chain mitigation (BVMC)" to support the BVMC recommendation included within the Corporate Net-Zero Standard...At the same time, the SBTi published "Raising the Bar: An SBTi report on accelerating corporate adoption of BVCM", which explores the incentives for BVCM over which the broader climate ecosystem has influence, including civil society, academia, policymakers, standard setters, advocacy organizations and multilateral organizations." SBTi 2024
8. Responsible Innovation Labs and Lucid Capitalism, 2022. Carbon Accounting Tools Report.
9. "A *Bloomberg Green* analysis of more than 215,000 offset transactions in public datasets over the past decade reveals for the first time that dozens of global brands have followed in the footsteps of Credit Suisse. Airlines, online retailers, industrial firms and energy producers now rely heavily on the cheapest and most suspect type of offset — those tied to renewable-energy projects...But experts consider these offsets largely bogus." Rathi, White, and Pogkas, 2022. Junk Carbon Offsets Are What Make These Big Companies 'Carbon Neutral'.
10. "Yet carbon offset projects have a long history of overpromising and underdelivering, threatening fragile progress on climate change. Some of the more established offset programs — like the United Nations' REDD+ program or the Kyoto Protocol's Clean Development Mechanism — have had a poor track record of meaningful reductions in emissions." Irfan, 2020. Can you really negate your carbon emissions? Carbon offsets, explained.
11. Temple, 2022. We must fundamentally rethink "net-zero" climate plans. Here are six ways.
12. "The Taskforce on Scaling Voluntary Carbon Markets (TSVCM), sponsored by the Institute of International Finance (IIF) with knowledge support from McKinsey, estimates that demand for carbon credits could increase by a factor of 15 or more by 2030 and by a factor of up to 100 by 2050. Overall, the market for carbon credits could be worth upward of $50 billion in 2030." Blaufelder, Levy, Mannion, and Pinner. A blueprint for scaling voluntary carbon markets to meet the climate challenge.
13. "By digitizing and analyzing comprehensive offset project records alongside detailed forest inventory data, we provide direct evidence that comparing projects against coarse regional carbon averages has led to systematic over-crediting of 30.0 million tCO_2e." Badgley et. al, 2021. Systematic over-crediting in California's carbon offsets program.
14. The Oxford Principles for Net Zero Aligned Carbon Offsetting.
15. "There is an extremely limited supply of reliable, permanent carbon removal available, and what exists is extremely expensive." Stein and Merchant, 2022. Racing to Net-Zero: A Captivating but Distant Ambition.
16. Official Microsoft Blog. https://blogs.microsoft.com/blog/2020/01/16/microsoft-will-be-carbon-negative-by-2030/
17. Beyond Science-Based Targets: A Blueprint for Corporate Action on Climate and Nature. https://wwfint.awsassets.panda.org/downloads/beyond_science_based_targets___a_blueprint_for_corporate_action_on_climate_and_nature.pdf
18. "The private sector influences public policy using three main avenues: (1) Knowledge Sharing; (2) Campaign Contributions; and (3) Lobbying Efforts." Strickland, 2018. The Influence of the Private Sector on Public Policy.
19. Bridging the Ambition Gap: A framework for scaling corporate funds for carbon removal and wider climate action. https://drive.google.com/file/d/1OnTFbhKuju8GGAggctzRVO-17slpChZI/view
20. Obstruction: "A lurking climate denial apparatus, funded with anonymous money, shifted into high gear.

Outside spending in 2010's congressional races increased by more than $200 million over the previous midterm elections…" Mueller and Whitehouse, 2022. The Scheme: How the Right Wing Used Dark Money to Capture the Supreme Court. Trade organizations: "The U.S. Chamber of Commerce has been fighting climate-change legislation and is now opposing federal efforts to regulate CO_2 emissions." Goho, 2010. The U.S. Chamber: A Record of Obstruction on Climate Action.

21. "Mars, Nestle, and Unilever all pulled out of the Grocery Manufacturers Association to form the Sustainable Food Policy Alliance (with Danone North America), citing climate as a key reason for the split." Moss and Meyer, 2019. Attention Businesses: Don't Let Trade Organizations Undermine You on Climate Action.
22. Climate Policy Leadership, 2019. An open letter to the CEOs of Corporate America.
23. The drawdown-aligned business framework.
24. Drawdown Aligned Climate Policy Advocacy. Evergreen Action is the 501(c)(4) arm of Evergreen Collaborative – one of Giving Green's top recommendations.
25. McKenna et al, 2022. Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities, and Regions.
26. "The majority of the $394 billion in energy and climate funding is in the form of tax credits. Corporations are the biggest recipient, with an estimated $216 billion worth of tax credits." Badlam et al, 2022. The Inflation Reduction Act: Here's What's In It.
27. US Political Engagement Report.
28. Report: US Political Engagement Report. Policy priorities: "Today, Salesforce is codifying that work by officially including climate as a part of the company public policy platform, joining priorities like equal rights, privacy and security, and others." DiBanca and Loeb, 2021. Climate Policy Platform.
29. Chouinard, 2022. Earth is now our only shareholder.
30. "Google's data centers around the world use about twice as much electricity as the city of San Francisco. In total, Google used 15.5 terawatt hours of electricity in 2020 and the majority of that goes to its data centers." Clifford, 2022. How Google plans to use 100% carbon-free energy in its data centers by 2030.
31. "…we intend to run on 24/7 carbon-free energy (CFE) – everywhere, at all times. And we aim to do it by 2030." 24/7 Carbon Free Energy by 2030.
32. "This study finds that 24/7 carbon-free electricity enables deeper emissions reductions and deeper transformation of the electricity sector than 100% annual matching by driving early deployment of advanced clean firm and long-duration energy storage technologies. But it does so at a potentially significant cost premium for early leaders…" Xu, Manocha, Patankar, and Jenkins, 2021. System-level Impacts of 24/7 Carbon-free Energy Procurement.
33. See EPA explainer on Renewable Energy Credits (RECs).
34. "Additionally, some buyers procure 'renewable energy certificates' or RECs, from locations far away from their consumption and 'unbundled' from long-term electricity purchases. This practice de-links generation and consumption in both space and time, provides less revenue certainty for clean energy projects, and creates a more tenuous link between buyers and the clean energy they claim to consume." Xu, Manocha, Patankar, and Jenkins, 2021. System-level Impacts of 24/7 Carbon-free Energy Procurement.
35. First Movers Coalition.
36. "The strongest deployment policies in the federal toolkit are direct contracting and investment. The government specifies industrial activity and pays for it directly, as it has done frequently in the area of defense procurement." Dell, 2020. Build Clean: Industrial Policy for Climate and Justice.
37. "In addition to the net zero scope-3 emissions target for 2040, Fortescue will aim to achieve a 50 per cent reduction in the emissions intensity of the shipping of the company's ores by 2030." Mazengarb, 2021. Iron ore giant Fortescue aims for green, coal-free steel by 2040 in new net zero target.
38. Cave, 2021. Can a Carbon-Emitting Iron Ore Tycoon Save the Planet?
39. "Steel, aluminum, and petrochemicals — some of the hardest-to-abate industries — together accounted for 14 percent of global GHG emissions in 2019, presenting an urgent need for decarbonization action to meet ambitious climate goals for the coming decade." Liu, Wright, Hughes, and Fallurin, 2022. Decarbonizing Hard-to-Abate Industries: The Importance of a New Accounting Method.
40. "Nearly all climate and energy models that reach net-zero indicate the need for a near-term focus on CDR development and deployment to achieve carbon neutrality by 2050. By midcentury, CDR will need to be deployed at the gigaton scale." Secretary Granholm Launches Carbon Negative Earthshots to Remove Gigatons of Carbon Pollution from the Air by 2050; IPCC Sixth Assessment Report, Chapter 3
41. "Once it's added to the atmosphere, it hangs around, for a *long* time: between 300 to 1,000 years. Thus, as humans change the atmosphere by emitting carbon dioxide, those changes will endure on the timescale of many human lives." NASA. 2019. The Atmosphere: Getting a Handle on Carbon Dioxide.
42. Supply: "There is an extremely limited supply of reliable, permanent carbon removal available, and what

exists is extremely expensive." Stein and Merchant, 2022. Racing to Net-Zero: A Captivating but Distant Ambition; Demand: "CDR technology still requires significant investments in research and development to create a cost-effective and economically viable technology that can be deployed at scale and in time to meet the urgent needs of the climate crisis." Secretary Granholm Launches Carbon Negative Earthshots to Remove Gigatons of Carbon Pollution from the Air by 2050.

43. As of November 15, 2022, see cdr.fyi for live updates.

44. "The market for durable carbon removal does not exist. Yet. What we have is a heterogenous space consisting of hundreds of companies with ideas on how to remove carbon." Höglund, 2022. The Carbon removal market doesn't exist.

45. 2019: "Starting this year, we're going a step further. In addition to our offset program, we are committing to pay, at any available price, for the direct removal of carbon dioxide from the atmosphere and its sequestration in secure, long-term storage." Decrement carbon: Stripe's negative emissions commitment; 2020: Stripe's first carbon removal purchases.

46. "Prices range between $500 and $1.8K per ton of carbon removed..." Frontier facilitates first carbon removal purchases.

47. "Currently, the primary limiting factor to DAC is its high cost, which will decrease as it is deployed." Carbon removal: technological solutions.

48. "The market for durable carbon removal does not exist. Yet. What we have is a heterogenous space consisting of hundreds of companies with ideas on how to remove carbon." Höglund, 2022. The Carbon removal market doesn't exist.

49. "The carbon-removal industry is tiny, with less than $5 million in revenue last year. That figure will need to reach about $1 trillion by midcentury, scientists say." Ramkumar and Ballard, 2022. Carbon-Removal Industry Draws Billions to Fight Climate Change.

50. Swiss Re and Climeworks launch partnership by signing world's first ten-year carbon removal purchase agreement.

51. "H&M Group signed a multi-year carbon removal agreement with Climeworks in 2022, which covers the removal of 10,000 tons of CO_2." H&M Group further invests in the decarbonisation of its value chain.

52. Climeworks begins operations of Orca, the world's largest direct air capture and CO_2 storage plant.

53. "Mammoth capitalizes on a very dynamic market demand – with several 10-year offtake agreements signed over the last months – and technology learnings from operating Orca." Climeworks takes another step on its road to building gigaton DAC capacity.

54. "A powerful way for companies to generate funds for climate projects is to implement an internal carbon fee, voluntarily taxing their emissions and using the money to support external climate projects." Milkywire. 2022. Guidance for setting an internal carbon fee.

55. "Swiss Re thus became the first multi-national company with a triple-digit real internal carbon price on both its direct emissions and indirect operational greenhouse gas emissions, ie on all Scope 1, all Scope 2 and a significant part of our upstream Scope 3 emissions (business travel, energy transmission/distribution, paper, water and waste) across all Business Units and countries of operation." Our CO_2NetZero Programme.

56. This track is widely accessible and flexible; contributions of any size can be made on a rolling basis and do not necessitate long-term contracts.

57. This track is suitable for organizations that are looking to commit to carbon removal on a multi-year basis and can contribute ~$1M/year through 2030.

58. Klarna Climate Report 2020/2021.

59. Microsoft will be carbon negative by 2030.

60. Climate Innovation Fund.

61. Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities, and Regions.

62. "To zero out our operational CO_2 emissions, Mapbox is making a $60K investment in a combination of carbon forestry initiatives using maps for monitoring and advocacy; carbon removal by sequestration in concrete, and destruction of other potent greenhouse gases; and supporting climate policy change efforts addressing systemic issues." Mapbox commitment to climate action.

63. Miller, 2014. Why we must engage the private sector in climate change adaptation efforts.

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