Microsoft

Building Markets for Sustainable Growth

Learnings from the Microsoft Climate Innovation Fund

SEPTEMBER 2025

ADVANCE SUSTAINABILITY

CONTENTS

Foreword

Achieving sustainable business growth and advancing the global transition in energy, waste, and water requires market solutions that can scale. Many of the solutions the world needs exist today or are emerging, and they require the right conditions and capital to succeed.

Over the past five years, Microsoft's Climate Innovation Fund (CIF) has demonstrated the power of catalytic investment and partnership to move markets. We've committed over $800 million[1] to a portfolio of 67 investees, who have attracted billions of dollars in follow-on capital for solutions like low-carbon materials, sustainable fuels and power, and carbon removal.

When we set our Microsoft Sustainability commitments in 2020, we knew no single organization could achieve a sustainable future alone. Progress happens when companies, investors, and innovators work together to build the markets and solutions we all need. That's why we've sought partnerships along the way, and why we're publishing this mid-decade review of our lessons learned—to share our takeaways on scaling breakthrough technologies by activating a market development flywheel. We share five key lessons from our journey since 2020:

- **Push the frontier** by validating emerging technology pathways, acting as an early buyer, and mobilizing financing.
- **Bridge to mainstream capital** by helping early projects scale to attract broader investment.
- **Deliver catalytic impact** by prioritizing the potential for systemic change.
- **Partner to amplify** by collaborating to close ecosystem gaps and build talent.
- **Accelerate with AI** by leveraging advanced technology to drive innovation and impact.

The opportunity before us is vast, and only achievable if we work together. We invite you to join us in shaping a more sustainable future where bold ambition leads to lasting impact.

Melanie Nakagawa
Chief Sustainability Officer, Microsoft

Introduction

In 2020, Microsoft set groundbreaking sustainability goals to become a carbon negative, water positive, and zero waste company by 2030 and to protect land and ecosystems. We paired this with the launch of the $1 billion CIF to help accelerate the development and deployment of emerging climate innovations through equity and debt capital. Both efforts reflect a core belief that Microsoft's business thrives when the world thrives.

With CIF, we take a portfolio approach by focusing on sectors as well as companies to help progress entire markets. All investments are in entities independent of Microsoft, and are assessed for financial return potential and alignment to:

Impact principles

- **Sustainability impact**
- **Alignment to Microsoft and our customers**
- **Underfunded markets**
- **Consideration of community impact**

As the global context has evolved, we've refined CIF's mandate and investment approach. We've honed a market development strategy to help accelerate supply, stimulate demand, and strengthen the enabling conditions essential for scaling a global supply chain of sustainable solutions. We're investing to build these markets because there's no time for a "wait and see" approach to realizing these strategic and innovative solutions.

This paper shares what we've learned over the past five years regarding which strategies matter most for building markets. Our goal is to help other corporate and private investors refine their investment approaches to unlock more catalytic capital and activate the market development flywheel.

Activating the market development flywheel

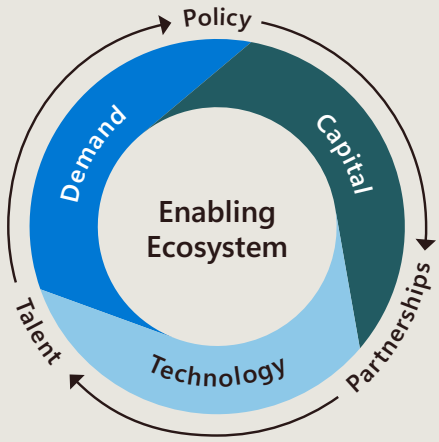
Building markets is complex, and no single company can do it alone. When establishing CIF, Microsoft assessed the unique role of corporate venture capital (CVC) investment in addressing market gaps and accelerating sustainability outcomes.

While research grants, institutional capital, and philanthropic capital each have vital roles in developing and scaling emerging solutions, we have seen a differentiated role for corporate investment during early commercialization.

Between 2013 and 2023, CVC-backed companies across sectors saw half the failure rate between fundraising rounds of companies without CVC backing.[2] This underscores the potential of corporate investment to de-risk early commercialization. If even a portion of CVCs were to focus on building markets for sustainable solutions, the resulting impact could be transformative. CIF's investment strategies were intentionally designed to harness this potential, using corporate capital to activate the market development flywheel.

At Microsoft, we pull all these levers to help drive systemic change.

Corporate investment is uniquely positioned to combine technology, demand, and capital due to parent company engagement:



Technology: We use our product and supply chain expertise to assess and select technical solutions for investment. As needed, we also deploy our own technology to support investee and CIF objectives.

Demand: By serving as an early customer, we help emerging climate technologies scale and become cost competitive.

Capital: Through catalytic investments, we support breakthrough companies and infrastructure projects.

Corporate investors can further accelerate the flywheel through policy engagement and partnering within and across sectors to build talent and an enabling ecosystem for efficient execution.

Our lessons learned

In the past five years, we've gained meaningful insights, often through trial, iteration, and collaboration. In a spirit of mutual learning, we're sharing our journey and hoping others will do the same.

Our five key learnings are:

1 Push the frontier

Corporations can help expand the market for emerging solutions by prioritizing target technologies based on the most critical and addressable market gaps with relevance to our business. We can validate emerging technology pathways, act as an early buyer, and mobilize financing to help pull these solutions into the market.

2 Bridge to mainstream capital

Catalytic investors are essential to launching early projects, and their deeper value lies in creating bankable, scalable ventures. This enables follow-on investment from mainstream financiers—unlocking lower-cost capital, reducing risk, and accelerating scale.

3 Deliver catalytic impact

Transforming markets requires prioritizing investments that can drive system-wide change across value chains and industries. This calls for an investment approach, team structure, and governance model that considers both financial and non-financial outcomes.

4 Partner to amplify

When early-stage innovations fall outside the reach of our CVC investment model, we extend our impact through strategic partnerships. This includes collaborating with nonprofits, accelerators, other corporations, and policymakers to close critical gaps, as well as engaging across Microsoft's product, research, and commercial teams.

5 Accelerate with AI

AI is an accelerant for bringing climate solutions online by advancing innovation, product development, and delivery. The advent of widespread AI availability and adoption offers game-changing abilities to (a) measure, predict, and optimize complex systems; (b) accelerate the development of sustainability solutions; and (c) empower the sustainability workforce. AI is integrated into CIF's overall investment strategy given its role as an innovation amplifier.

Together, these actions can help bring the supply of emerging technology solutions to market and fill gaps in capital requirements to build that supply, while providing wrap-around support to investees that is specific to the corporate investor.

The following sections illustrate how we've applied these strategies through investments and partnerships to build sustainability markets worldwide, highlighting the outcomes and impact from each lesson.

Lesson 1: Push the frontier

The rapid cost declines in wind and solar over the past decades[3] offered us a clear precedent on the potential for the market development flywheel to create fundamental change and has inspired our market building efforts.

Corporate procurement of renewable energy through long-term power purchase agreements helped catalyze the growth of wind and solar markets. In particular, advance procurement and long-term demand signals unlocked economies of scale and de-risked financing for project developers.

Microsoft is applying key elements from these strategies and taking a first-mover approach to establish global, high-quality markets for low-carbon materials, sustainable fuels, carbon removal, and more.

Low-carbon materials

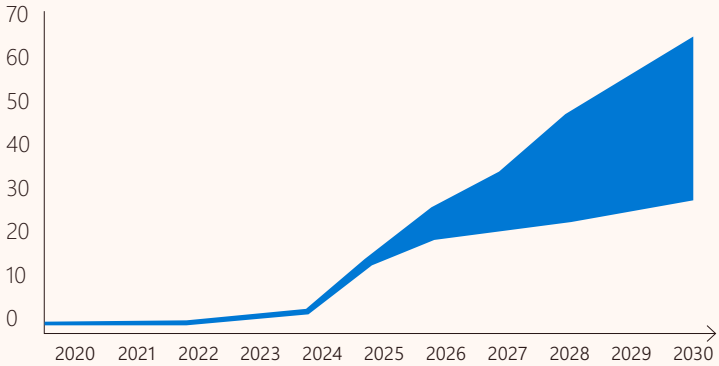
Together, the production of steel and cement accounts for approximately 15% of global greenhouse gas (GHG) emissions.[4,5]

In 2020 when we announced our sustainability commitments, supplies of low-carbon steel and cement were nearly nonexistent. Microsoft depends on cement and steel to construct our datacenters around the world. Other companies also seek low-emissions steel and cement, and policymakers increasingly prioritize low-carbon materials for public infrastructure projects or factor carbon considerations into trade policy.

Figure 1

Global low-emissions steel production capacity

Million metric tons of low-emissions production capacity



Source: Rhodium Group. Steel excludes "hydrogen-ready" DRI facilities that lack a firm commitment to use clean hydrogen as well as scrap-based electric arc furnaces. Steel projects only include those capable of delivering a 50%+ reduction in CO_2 emissions. Lower bound of projections only includes production from those projects operating or under construction as of the end of 2024. Higher bound of projections includes announced projects that had yet to break ground as of the end of 2024.

In response to this market gap, Microsoft has been activating the market development flywheel to build the markets for low-emissions building materials. For example, CIF invested in Stegra (Box 1), which is building the world's first commercial-scale near-zero emission steel plant. This investment is paired with a multi-year agreement for Microsoft's suppliers to purchase Stegra steel for use in datacenter equipment and structural steel. Such a commitment can signal long-term demand and has catalyzed project financing and additional offtake agreements to bring this supply (and subsequent facilities) online. What sets this initiative apart is the use of end customer contracting for an upstream commodity, a novel mechanism in this sector.

BOX 1

Low-carbon materials investment highlights

Stegra is developing the world's first commercial-scale, near-zero emission steel plant, located in Boden, Sweden. The fully integrated, digitalized, and circular facility will produce steel with green hydrogen-based direct reduced iron (DRI) technology, enabling up to 95% emissions reduction compared to traditional coal-reliant blast furnaces. The plant will house Europe's largest electrolyzer, powered by 10 TWh of renewable electricity sourced through long-term agreements with, among others, Stratkraft, Fortum, Uniper, and Axpo.

CIF's equity investment in Stegra's Series B raise was part of a co-investment alongside Just Climate, Temasek, and other partners, enabling Stegra to secure its full project financing. The investment has led to access for Microsoft offtake of low-emissions steel, addressing a portion of our steel needs through 2033.

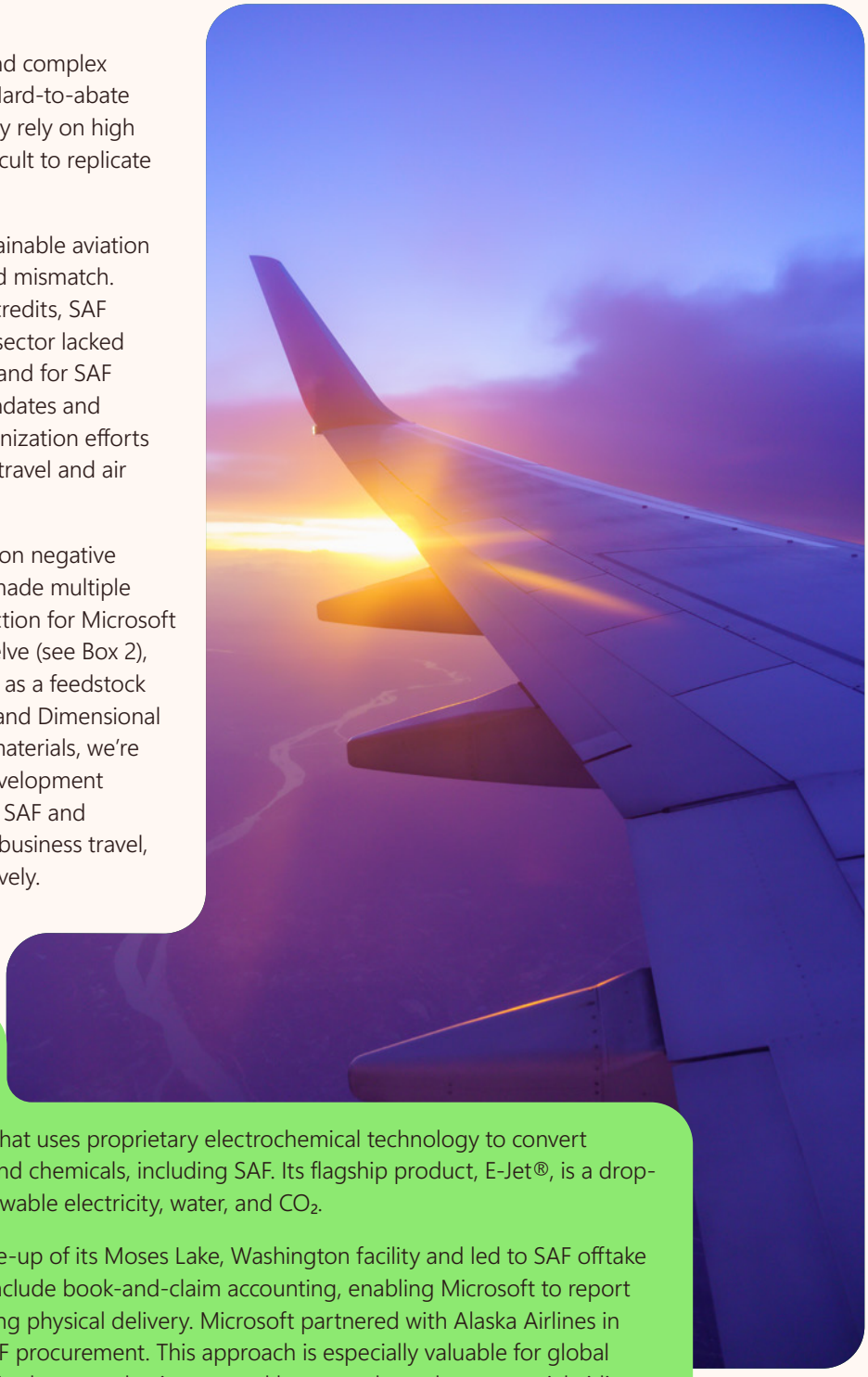
With over €6.5 billion in funding, Stegra is on track to begin operations in 2026 and aims to reduce global steel emissions by over 7 million tons annually.

Sustainable fuels

Decarbonizing fuels is one of the most critical and complex challenges in the global transition to net zero.[6] Hard-to-abate sectors like aviation, shipping, and heavy industry rely on high energy density liquid fuels that currently are difficult to replicate through electricity.

When we started our sustainability journey, sustainable aviation fuel (SAF) presented a significant supply-demand mismatch. In late 2019, when Microsoft began buying SAF credits, SAF was less than 1% of jet fuel production[7] and the sector lacked market mechanisms to support scaling. Yet demand for SAF was growing, driven both by national policy mandates and voluntary commitments by airlines, and decarbonization efforts by companies like Microsoft with large business travel and air freight needs.

With sustainable fuels essential to our 2030 carbon negative commitment and 2050 net zero target, CIF has made multiple investments to advance sustainable fuels production for Microsoft and the market. For example, we invested in Twelve (see Box 2), a carbon transformation company that uses CO_2 as a feedstock for sustainable aviation fuel, as well as LanzaJet and Dimensional Energy. As with our investments in low-carbon materials, we're accelerating deployment through the market development flywheel with early procurement agreements for SAF and renewable diesel to help decarbonize Microsoft business travel, logistics and datacenter back up power, respectively.



BOX 2

Sustainable fuels investment highlights

Twelve is a carbon transformation company that uses proprietary electrochemical technology to convert captured CO_2 and water into synthetic fuels and chemicals, including SAF. Its flagship product, E-Jet®, is a drop-in Power-to-Liquid (PtL) SAF made using renewable electricity, water, and CO_2.

CIF's investment in Twelve supported the scale-up of its Moses Lake, Washington facility and led to SAF offtake for Microsoft. The offtake was structured to include book-and-claim accounting, enabling Microsoft to report lower emissions from SAF use without requiring physical delivery. Microsoft partnered with Alaska Airlines in pioneering this book-and-claim model for SAF procurement. This approach is especially valuable for global business travel, where direct SAF access is limited as most business travel happens through commercial airlines, instead of company-owned aircraft. Microsoft's early participation in the first SAF book-and-claim pilot helped establish a scalable framework that accelerates corporate demand and market growth.

Following CIF's investment, Twelve raised $645 million in follow-on funding, representing one of the largest financing rounds in the e-fuels space to date.

Carbon removal

The Intergovernmental Panel on Climate Change finds the deployment of carbon dioxide removal (CDR) technologies as necessary to counterbalance hard-to-abate residual emissions and meet global climate targets. Even with deep decarbonization, some emissions will remain too costly or technically complex to eliminate. For these residual sources—as well as the legacy emissions already contributing to warming—carbon removal offers a path forward.

Microsoft helped catalyze the market for CDR technologies in 2020 when we announced our goals to be carbon negative by 2030 and to remove the amount of carbon equivalent to all our historical operational emissions by 2050.

There are a wide range of CDR approaches, each with different methods for quantification, carbon sequestration longevity, and operational challenges to scale. Microsoft buys CDR credits across the spectrum of these approaches:

Nature-based solutions store carbon over critical near-term timescales (e.g., for the next 30+ years) while offering many climate and ecosystem co-benefits.

Engineered solutions offer carbon sequestration for hundreds to thousands of years, typically via geologic storage a mile underground.

We make our standards clear through publication of criteria for high-quality carbon removal, developed in collaboration with Carbon Direct. It is available as a reference for project developers, carbon registries, and other stakeholder groups.

The Frontier coalition of Stripe, Alphabet, Shopify, McKinsey and others added early momentum to the market with their CDR advanced market commitment (AMC) mechanism in 2022, focusing on engineered CDR. Then in 2024, we helped to launch the Symbiosis Coalition, a corporate buyers alliance including Google, Meta, and Salesforce that aims to use financial commitments, shared standards, and streamlined procurement to build the supply, demand, and enabling infrastructure required for a scalable, credible nature-based carbon removal market. Combined, the projects proposed to Symbiosis have the potential to remove over 180 million tons of CO_2 by 2055.[8]

CIF's role in building the CDR market has complemented these buying efforts by accelerating the development and demonstration of emerging CDR technologies, especially underfunded pathways.

When Microsoft announced its carbon removal commitment, the market for engineered solutions was simply a handful of companies with alternatives to forestry or bio/soil-based solutions.[9] Since 2020, announced contracts for engineered CDR have increased from near zero to nearly 38 million tons.[10]

Microsoft has played a pivotal role in building the engineered CDR market through a combination of strategic investments, long-term offtake agreements, and ecosystem-building efforts. For example, Microsoft's 10-year offtake agreement with Climeworks for 10,000 tons of CO_2 in 2022 was one of the largest long-term direct air capture (DAC) contracts signed at the time.[11] Through CIF, Microsoft also provided First-of-a-Kind (FOAK) project financing for Climeworks' Orca plant, the world's first commercial DAC facility.[12]

Since then, the DAC ecosystem has expanded significantly, with dozens of new entrants and diverse technological approaches emerging. Alongside sorbent-based systems like Climeworks, novel methods such as hybrid DAC-mineralization are also gaining traction. For example, a CIF investee Heirloom amplifies limestone's natural properties by reducing absorption time from years to a few days,[13] and has entered into CDR purchase agreements with Microsoft, United Airlines, and the Frontier Climate Coalition.[14,15,16]

We continue to invest in emerging, underfunded engineered CDR technology pathways, like enhanced rock weathering (see Lesson 5: Accelerating with AI). This investment strategy also extends to nature-based solutions.

Waste and water

With an estimated 62 billion kilograms of e-waste generated globally each year, waste is an environmental burden as well as a missed economic opportunity to recapture valuable inputs essential to the global clean energy and digital transitions.

Building circularity into critical mineral supply chains is a priority, particularly for rare earth elements (REEs), which are vital to datacenter technologies. To address this, CIF invested in Cyclic Materials, a company pioneering advanced recycling of REEs from end-of-life products.

At Microsoft, we have deployed six regional Circular Centers where we process our decommissioned cloud hardware from nearby datacenters to optimize reuse and recycling.[17] As part of this process, we send datacenter hard disk drive material to companies like Cyclic which is piloting extraction of rare earth elements. For the recovered REEs, we are also piloting material reuse programs to enable circularity within Microsoft's supply chains. This is a strategic step toward reducing Scope 3 emissions and building a closed-loop supply chain for critical materials used in Microsoft hardware and infrastructure.

As climate change intensifies, advancing nascent approaches to water management is essential to meeting our water positive goal and protecting freshwater resources for the communities and ecosystems that depend on them.

Our anchor investment in Emerald Technology Ventures' Global Water Impact Fund is expanding the supply of high-impact water technologies. This includes FIDO Tech and Aganova, pioneers in AI-powered leak detection, now delivering replenishment projects for Microsoft and the communities where we operate across Spain, England, Ireland, Mexico, and the US. Emerald has also been instrumental in scaling Kilimo, a precision irrigation company, building on an initial Microsoft project in Chile and expanding their water replenishment business globally. These three companies alone are estimated to save over 3 million cubic meters of freshwater annually in water-stressed basins across these countries.[1,18]

Lesson 2: Bridge to mainstream capital

When we launched CIF, we recognized that achieving the scale and impact required for Microsoft's sustainability goals and the world's needs would require more than our capital alone. Our approach centers on strategically deploying capital to help companies cross the bridge to mainstream financing and overcome the climate tech valley of death (as discussed below), particularly for First-Of-A-Kind (FOAK) projects.

Reaching our goals requires the scaled adoption of a wide swath of emerging climate technologies. The fundamental challenge to widespread adoption is a circular one: cost parity with incumbent technologies is necessary to incentivize widespread adoption, but cost parity is difficult to achieve without scaled production. And scaled production is difficult to achieve without technical de-risking, demonstrated demand for the product, and capital to build the technology.

FOAK projects are the early commercial building blocks for scaling these climate technologies in their respective categories. Despite their critical role, FOAK projects face significant challenges in securing financing. The capital requirements often exceed the typical check sizes of venture capital firms and instead align more closely with the scale of investment provided by mainstream financial institutions, such as banks and infrastructure investors.

However, these projects can also carry elevated risks—ranging from project development and economic viability to operational execution—that can fall outside the comfort zone of traditional financiers. As a result, FOAK projects often struggle to attract the capital needed to move from demonstration to deployment. As Elemental Impact and Boston Consulting Group highlight in Traversing the Climate Technology Scale Gap, this gap funding is estimated at $100-180 million.[19]

CVCs can play a unique role in closing this gap through FOAK project financing. This is due to their ability to provide both project financing and offtake: beyond just showing demand for the product, they're putting dollars to work to create the supply and moreover, spur market development of these nascent products.

This "invest-to-procure" strategy has a couple key benefits. First, as described above, it allows CVCs to play an active role in accelerating the supply of products needed for their company's sustainability transition. By providing project finance, CVCs create a template that larger, more risk-averse capital providers can use to scale these technologies, effectively bridging the gap to bankability. Second, this provides a strong signal to other investors needed to fill the capital stack: potential customers are serious about their demand. This line of sight to a robust end market is critical to unlocking mainstream financing needed for the scale-up of climate technologies.

Since its inception, CIF has committed over $100 million in FOAK financing across a diverse portfolio of projects. In every case, our focus is on structuring investments that unlock follow-on capital, mitigate risk, and accelerate market scale. We ask: how can we help de-risk early investments, stimulate demand, and pave the way to bankability?

Our goal is to catalyze broader participation from commercial financiers by creating clear handoff strategies that enable lower-cost capital and long-term growth of the market. We focus on four core areas to land the bridge to bankability:

- Aligning offtake with investment to help to ensure revenue certainty and investor confidence.
- Optimizing blended capital structures to balance risk and attract diverse sources of funding.
- Focusing on creating bankable structures and templates that can be replicated and scaled by mainstream investors.
- Ensuring project sponsors have deep project development expertise as a core strength.

Two examples are our investments with LanzaJet, a pioneer in Alcohol-to-Jet (AtJ) technology, and Konexa, an integrated power company that develops, invests in, and operates energy assets and infrastructure. CIF supported LanzaJet's development of the world's first commercial-scale AtJ facility[20] in Georgia through project finance and equity in the parent company. We also backed Konexa's first project in Nigeria, providing construction finance for a trading platform and distribution infrastructure linking a major power consumer and Microsoft customer, Heineken, to renewable energy. As of September 2025, that project has been commissioned, a significant milestone for the renewable power sector in Nigeria.

In both cases, our goal was to create replicable, de-risked models that built investor confidence. These projects have attracted diverse sources of funding and offtake agreements.[21]

CIF also seeks to attract follow-on capital directly into companies, projects, funds, and their portfolios. On average, our direct company investments have attracted 12x follow-on capital, while our overall commitments (including fund managers) have catalyzed 15x from a variety of external organizations.[1,22]

CIF co-anchored investments with the California State Teachers' Retirement System in Just Climate's Industrial Climate Solutions and Natural Climate Solutions strategies. These investment platforms, focused on mobilizing institutional capital for the highest-impact climate solutions, have collectively raised over 15x[1,23] Microsoft's initial capital contributions, including from other pension funds like Public Sector Pension Investments.

In 2021, CIF was the first private sector investor in the Southeast Asia Clean Energy Facility (SEACEF), which provides catalytic funding to accelerate early-stage clean energy projects across Southeast Asia, aiming to shift the region away from coal dependency. Since then, SEACEF has mobilized $230 million in private sector debt and equity—over 100x Microsoft's initial contribution—including an exit to Actis, a global sustainable infrastructure investor. They have also raised a second fund, with a corpus that is nearly eight times the committed capital as SEACEF I, to extend its strategy.

Lesson 3: Deliver catalytic impact

To transform markets and integrate breakthrough solutions at scale, we must look beyond narrow product impacts and prioritize investments that drive system-wide change across value chains and industries. This requires an investment approach that prioritizes both financial and non-financial outcomes, such as "catalytic" emissions reductions (as explained further below) and shared benefits with communities.

We assess the potential for these non-financial outcomes through our impact principles of sustainability impact, strategic alignment to Microsoft, underfunded markets, and community impact. Success for those criteria means (a) sustainability impact in terms of emissions, water, or waste; (b) opportunities for future supply chain engagement; (c) catalyzed emissions reductions from reducing green premium costs; and (d) favorable social outcomes for communities.

Our team structure and governance were designed to integrate both our financial and non-financial priorities. The CIF program is a collaborative effort between Microsoft's Energy, Connectivity, and Sustainability (ECS) and Finance teams. Each investment has a lead from each team, reflecting our transformative impact and financial risk considerations and expertise. Market development efforts span both teams as well.

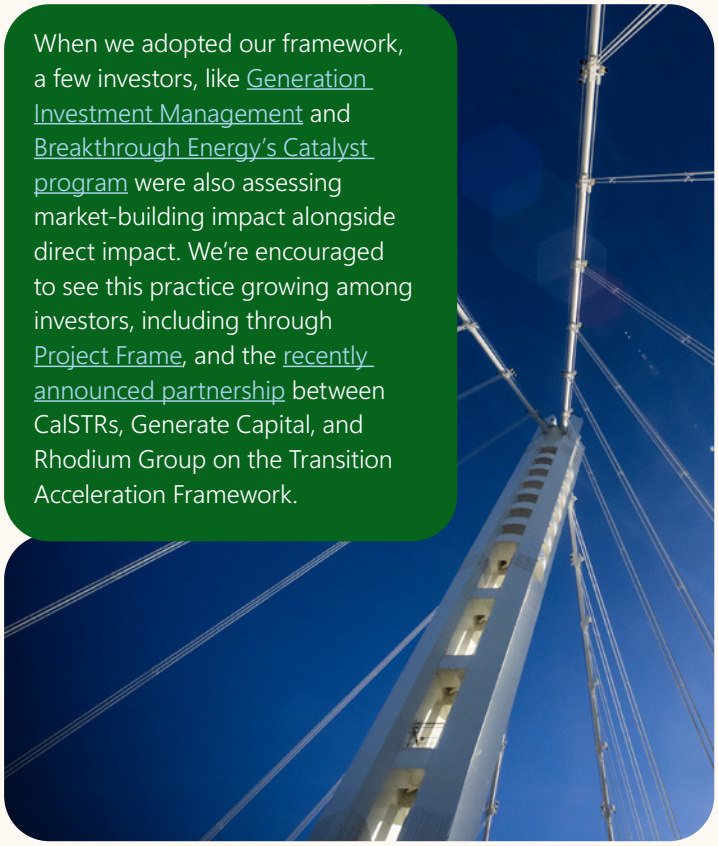
Here we share how our impact measurement approach accounts for how we're building markets and how we include social benefits, particularly in emerging markets and underserved communities, as an investment priority.

Prioritizing transformative impact

A key measure of success for building markets is whether Microsoft and others can buy—at a comparable price—low-carbon, water, and waste solutions on the scale we need to meet our sustainability commitments by 2030 and beyond.

To ensure we were allocating capital to advance markets, we partnered with Rhodium Group to develop and implement a measurement framework that we integrated into investment decision-making. This framework contained two components: direct and catalyzed emissions reductions.

When we adopted our framework, a few investors, like Generation Investment Management and Breakthrough Energy's Catalyst program were also assessing market-building impact alongside direct impact. We're encouraged to see this practice growing among investors, including through Project Frame, and the recently announced partnership between CalSTRs, Generate Capital, and Rhodium Group on the Transition Acceleration Framework.



Direct emission reductions

For each investment we assessed the potential emission reductions resulting from sale of a company's products (for company-level investments) or completion of an individual project or group of projects (for project-level investments). Emission reductions were measured against a dynamic baseline provided by Rhodium Group to ensure consistency across investments. We discounted longer-term emission reductions relative to shorter-term emission reductions to reflect their differential impact on the global climate. Finally, we translated this range of discounted projected emission reductions into a tons abated per dollar invested metric that allowed for comparison across investments.

Catalyzed emission reductions

The direct emission reductions from a project or product are a limited measure of its potential climate impact. This is particularly true for emerging climate technologies (ECT) like low-carbon steel and cement, clean hydrogen, CDR, clean firm power generation, and SAF. Compared to more mature and thus lower cost climate technologies like solar, wind, and electric vehicles, ECTs currently require more investment per direct ton reduced. If a direct emission reduction measure is all that investors use to evaluate impact, they will inevitably overinvest in already mature technologies and underinvest in the solutions where innovation and scale is most needed to reduce the "green premium" and accelerate global decarbonization.

As a result, we complemented our direct emission reduction estimates with an estimate of how much an investment in each product or project would accelerate future deployment by reducing the green premium for that technology or solution. To do this, we employed the Emerging Climate Technology Framework (ECTF) (Figure 2) developed jointly by Rhodium Group and Breakthrough Energy.[24]

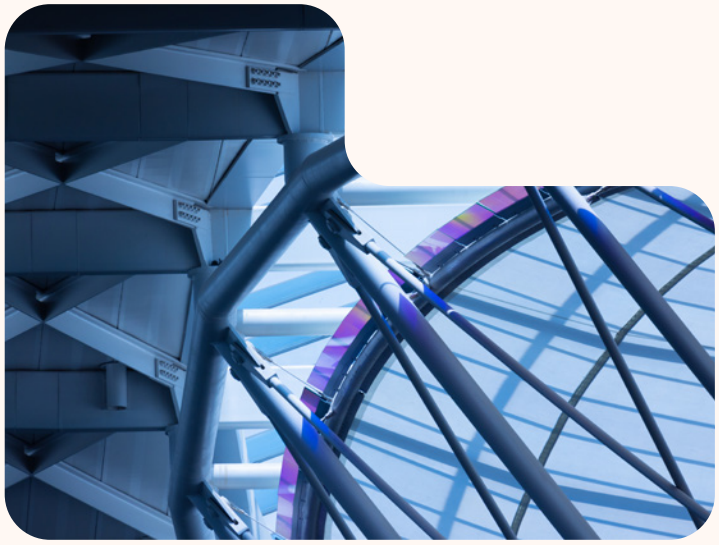
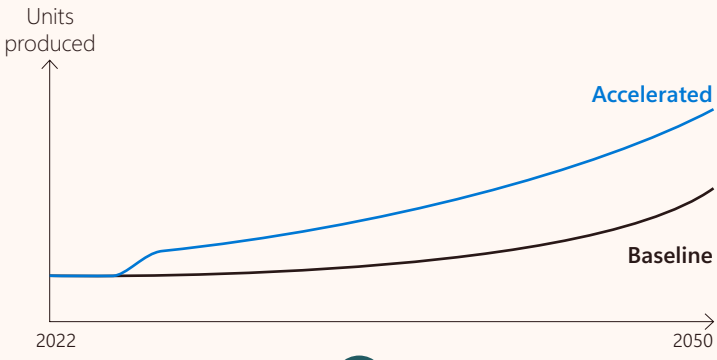


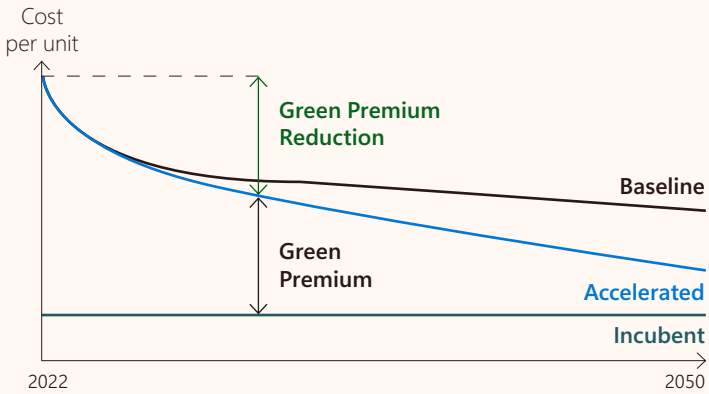
Figure 2

The ECTF's logic model

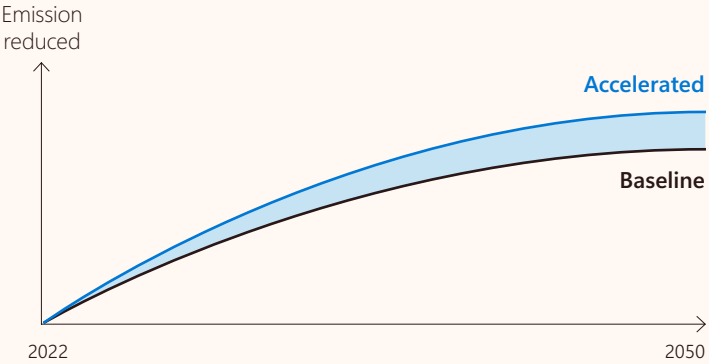
Catalytic investment accelerates deployment and market uptake by increasing production capacity and de-risking market



Increased adoption and economies of scale reduce costs and open new capital pools



Cycle of cost reduction and accelerated market uptake increases emissions reduction potential



Source: Rhodium Group. ECTF projections reflected in these graphics are speculative and do not guarantee the projected emissions reductions. For more detail, including dependencies and assumptions, please see the Emerging Climate Technology Framework.[24]

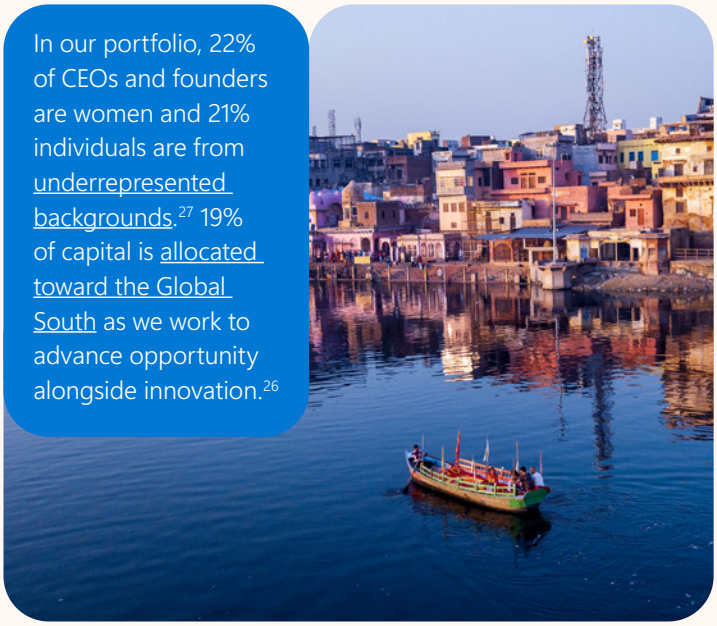
Measurement in action

This market-based approach to impact assessment is yielding important insights. By including catalyzed emission reductions in our analysis, we help ensure CIF investments focus on companies and technologies that have clear potential to transform markets. For example, because of the higher capital costs associated with emerging climate technologies, our investments in Stegra (near zero emission steel), LanzaJet (SAF) and Climeworks (CDR) yielded smaller direct emission reductions per dollar invested than our investments in more mature technologies. But these ECT investments could catalyze much larger emission reductions in the future by derisking technologies, reducing capital costs, and building nascent markets.

For these three projects, some ECTF methodology predictions indicate that catalyzed emission reductions from our investments could be demonstrably larger than the direct emission reductions achieved from the projects themselves.[25]

Considering developing economies and community impact

Microsoft's mission is to empower every person and organization on the planet to achieve more. We recognize that all communities deserve the opportunity to benefit from a global transition. Therefore CIF invests in developing markets and underserved communities globally. This is also a business necessity for building a more resilient and innovative global sustainability supply chain, as 75% of emissions come from developing markets.[26]



In our portfolio, 22% of CEOs and founders are women and 21% individuals are from underrepresented backgrounds.[27] 19% of capital is allocated toward the Global South as we work to advance opportunity alongside innovation.[26]

Below we share how CIF is priming the market development flywheel for developing economies and underserved communities globally and supporting progress towards Microsoft's sustainability and community commitments.

The share of the global population without electricity access has improved from 13% in 2010 to below 9% in 2023, yet approximately 666 million people continue to lack access, and even more experience "energy poverty," where energy is either unavailable or unaffordable.[28] Expanding access to affordable clean energy in underserved communities—across both developed and developing markets—is essential for Microsoft's sustainability goals, market growth, and commitment to inclusive digital access and skilling. Clean energy enables reliable infrastructure for digital expansion and helps bridge the energy gap that limits access to cloud and AI services. It also reinforces Microsoft's role in advancing climate resilience and inclusion.

CIF has invested in several entities to help expand access to affordable clean energy. For example, CrossBoundary Access (CBA) finances and scales mini-grids and adjacent energy access infrastructure across Africa (see Box 3).

Solstice connects households and businesses to clean energy, pioneers inclusive financing models, and aggregates community investments through corporate renewables procurement, delivering RECs that financially support under-resourced communities and the organizations that serve them.

KOKO Networks provides clean bioethanol cooking fuel through a smart distribution network, reducing reliance on charcoal and polluting fuels.

NewSunRoad powers renewable microgrids in underserved communities globally using its AI- and IoT-enabled platform. As part of Microsoft's global connectivity program, NewSunRoad's technology also supports digital access.

The UN estimates that 2.2 billion people lack access to clean drinking water, including 115 million people who depend on surface water for drinking. Relatedly, 3.5 billion people lack access to sanitation, which is highly dependent on clean water access.[29] To help address these issues, we invested in WaterEquity's Water and Climate Resilience Fund, which is financing municipal-scale water and sanitation infrastructure across South and Southeast Asia, Sub-Saharan Africa, and Latin America. These projects not only have the potential to generate volumetric water benefits that contribute to Microsoft's water positive commitment, they also expand access to clean water for underserved communities—in line with our target, achieved in 2023, to provide more than 1.5 million people with clean water and sanitation solutions.

In the US Pacific Northwest region, CIF's investment in EFM's Fund IV was made with consideration of the potential impact on an entire ecosystem. EFM's climate-smart forestry strategy generates best-in-class improved forest management (IFM) carbon removal credits, improving the integrity of this carbon removal pathway (see Box 3). EFM leverages improved forestry practices in partnership with Indigenous Peoples and communities to manage forests for long-term health and carbon value. Additionally, their approach considers the full value of a forest—timber, conservation, carbon, biodiversity, water, rural livelihoods, and recreational access.

BOX 3

Catalytic impact investment highlights

CBA knows mini-grids have demonstrated strong technical and operational viability, delivering real impact in underserved communities. However, despite their potential, mini-grid deployment has remained fragmented and not at the pace or volume needed to transform energy access. Financing mini-grids presents significant challenges, which CBA's platform seeks to address by isolating project risks and structuring capital effectively.

This approach allows for a blended capital stack—combining equity, mezzanine debt, and senior debt—to provide long-term infrastructure financing. In addition to private capital, CBA has funding from multilateral institutions and philanthropic partners, with the goal of establishing mini-grids as a new, financeable asset class that can scale energy access in emerging markets.

EFM is a leading US-based forest investment and management firm focused on climate-smart forestry. Through its fourth fund, EFM Fund IV, the company is aiming to acquire and transition forestland in the Western US to Improved Forest Management (IFM) practices that enhance carbon sequestration, biodiversity, and community resilience.

CIF's investment in EFM Fund IV—its first US forestry investment—secured Microsoft access to up to 3 million tons of high-quality, nature-based carbon removal credits through 2035.

This access led to a long-term offtake agreement for up to 700,000 tons from a flagship property on Washington's Olympic Peninsula, with a ROFO on an additional 2.3 million tons from future projects. CIF's capital enabled the fund's first close and catalyzed broader investor confidence.

Lesson 4: Partner to amplify

There are market dynamics that supply and demand alone cannot address, as well as early stages of innovation that fall outside the reach of our CVC investment model. To extend our impact, we collaborate with nonprofits, accelerators, corporates, and policymakers to strengthen ecosystems and build talent. These efforts help spur innovation before solutions reach investable maturity and support talent development to close workforce and skills gaps essential for scaling sustainability markets.

We prioritize partnerships that align with Microsoft's sustainability roadmap, accelerate skilling, advance technology maturity, and increase capital deployment. In our partnerships we identify where Microsoft brings unique value to the relationship, which can be in the form of strategic advisory, technology validation, procurement relationships, technology value-creation, or financial support.

Since 2020, we have engaged in over 20 strategic climate partnerships. In calendar year 2024 alone, we showed an impact of:[1]

1,300+	**individuals skilled in relevant sustainability expertise**
30+	**innovations progressed in Technology Readiness Levels (TRL)**
8	**Microsoft procurement relationships advanced**
$30M	**in additional investor capital entering climate markets**

Recent initiatives include targeted product innovation calls, such as the Build Better Innovation Challenge with Elemental Impact, and access to early-stage, inclusive capital through Greentown Labs and Browning the Green Space's ACCEL program (see Box 4). Additionally, our partnerships address unique product and regional needs. For example, in Africa, our sponsorship of Kinjani's accelerator has supported 29 founders, 55% of whom are women, advancing solutions in food systems, materials, urbanization, and minerals.[30]

Corporate investment is uniquely positioned to combine capital with the expertise and reach of its parent company. Beyond capital, we provide portfolio companies with opportunities to engage across Microsoft's products, research, and commercial pathways—leveraging Microsoft's cloud, AI, engineering, sales, and storytelling capabilities to accelerate scale. For example, through Microsoft for Startups, CIF investees can access up to $350,000 in Azure cloud credits and harness advanced AI capabilities such as the GPT-5 model in Azure AI Foundry.

We continue to deepen collaboration across internal business groups to extend these benefits to our portfolio. Microsoft Research, Energy & Resources, Microsoft Elevate, Microsoft for Startups, Digital Natives, and industry marketing teams play a crucial role in enabling technology adoption, expanding customer access, and raising awareness of portfolio innovations solving real-world climate challenges.

Microsoft is advancing SAF adoption through strategic policy engagement. In the United States, we supported the creation of the first federal SAF tax credit and advocated for a state-level incentive in Washington, home to and critical for scaling production of Twelve's pioneering e-SAF facility. In Europe, Microsoft and International Airlines Group (IAG) launched a five-year partnership to scale SAF use, which the EU's ReFuelEU Aviation Regulation promotes.[31] These efforts underscore the critical role of policy in accelerating SAF production and deployment worldwide.

BOX 4

Partnership highlights

BBIC: An initiative to accelerate the market for low-carbon materials was the 2024 Build Better Innovation Challenge, launched by Microsoft in collaboration with ElementalImpact, Capgemini, and Bouygues. The challenge aimed to identify and support breakthrough solutions that reduce Scope 3 emissions and embodied carbon. From a pool of 78 applicants, nine finalists pitched their solutions to a panel of judges, and six winners were selected for innovations such as cement free concrete and carbon-sequestering aggregates. Winners had the opportunity to engage on pilot and investment proposals with Microsoft and Bouygues teams. One finalist—Giatec—is using Azure IoT, Edge and AI workloads to monitor and optimize concrete mixes, and lower embodied carbon.

This initiative created a bridge for early-stage innovators into the broader market ecosystem, positioning them for integration into the market development flywheel by catalyzing product innovation at its earliest stages.

ACCEL (Advancing Climatetech and Clean Energy Leaders): CIF, in partnership with Microsoft's Engineering Offices in Houston and Boston, sponsored the 2024 cohort of Greentown Labs' ACCEL program, an accelerator dedicated to supporting climate tech startups led by underrepresented founders. Greentown Labs is the world's largest climatetech and energy incubator, and its mission is to accelerate climatetech innovation through entrepreneurship and collaboration. Through this partnership, Microsoft also contributed pro bono expertise as mentors to entrepreneurs and as part of the selection committee for the upcoming 2025 cohort. The program supported startups innovating in long-duration energy storage, advanced battery technology, clean ammonia production, and plastic-to-fuel conversion.

This initiative reflects a broader strategy to scale inclusive climate solutions by expanding access to early-stage capital and closing skills gaps, which are core measures of partnership success. Including previous Microsoft sponsorships, the partnership with ACCEL has contributed to startup stipends, the success of 100+ individuals in the climate tech workforce, 37 market applications of climate solutions, and over $19 million of early-stage capital mobilized into sustainability markets.[1]

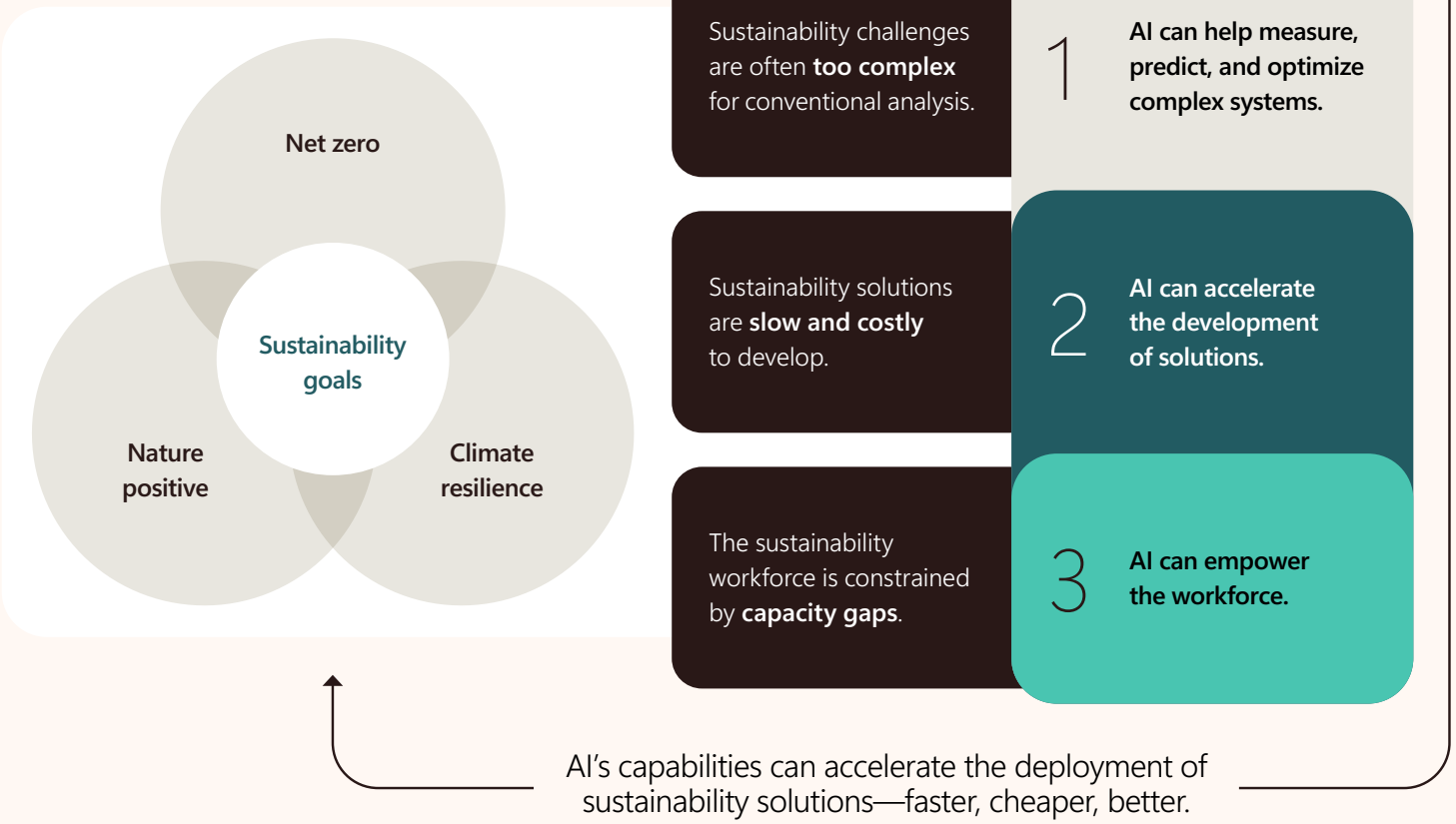
Lesson 5: Accelerate with AI

The pace of AI development has accelerated dramatically since 2020. Advances in AI have unlocked game-changing capabilities (see Figure 3), enabling us to tackle complex challenges with unprecedented speed and precision.

Figure 3

AI's game-changing abilities

From Accelerating Sustainability with AI: A Playbook



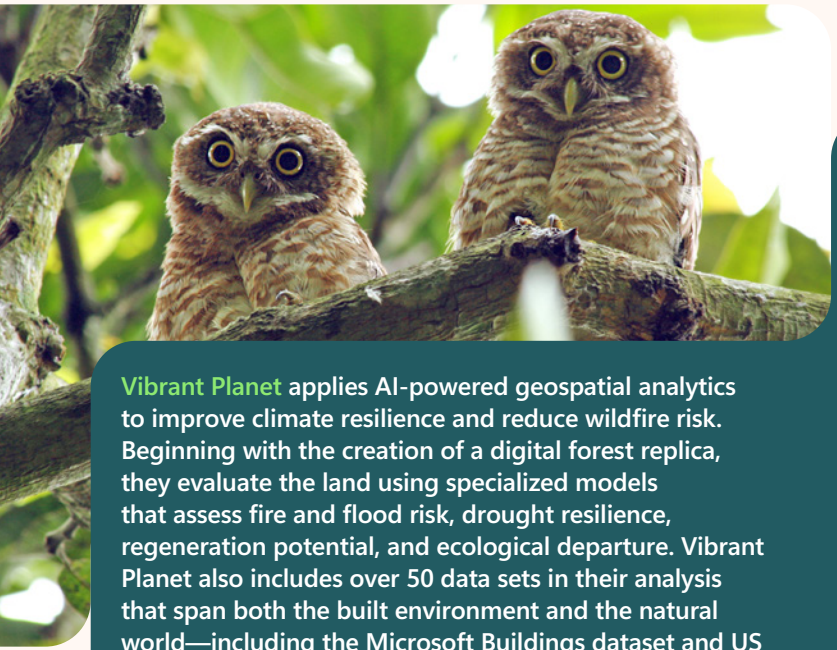
Machine learning (ML), deep learning (DL), and generative AI are interconnected fields, each representing a step-change in capability. In essence, while ML and DL are foundational, generative AI is a far more advanced application, capable of synthesizing information and solutions at a scale and complexity that prior methods could not achieve. Simply put, innovators and researchers finally have a tool that matches the complexity of the challenges wrought by a changing climate.

Alongside this exponential growth in capability comes a growth in innovation and funding. In 2024 alone, AI startups attracted over $110B in VC funding, accounting for approximately one-third of global VC investments[32] (and a 4x jump from the $26.6B invested in 2019[33]). During that time, we evolved our own investing approach accordingly, from investing in AI-first companies to including AI as a core focus in every investment, given its role as an innovation amplifier. We recognize AI as both a core business and environmental imperative that will accelerate the deployment of climate solutions across every industry.

Complementing our early investments in AI-first Buoyant Ventures, Raptor Maps, Utilidata and LineVision, we have more recently invested in companies who are using AI to enable a paradigm shift, like Vibrant Planet, Terradot, Farmland LP, AMP, and Eavor.

These five companies are in very different industries—from agriculture to energy to waste and recycling—but this underscores the point that AI is now a crucial horizontal technology with applicability in every industry. This breadth of impact highlights why our strategy must be equally comprehensive. We actively leverage the market development flywheel, combining our capital with technology development, cloud services, and procurement, so we can give our portfolio companies, and the broader AI x Sustainability ecosystem, a head start in the innovation race.

As we stand at the intersection of climate and technology, we see AI as a transformative force that can accelerate solution development across every industry. CIF's investments in AI-driven companies show how data, automation, and advanced analytics can open emerging pathways for decarbonization, resilience, and market growth. Yet the pace of progress must increase. This is a moment for corporate leaders, investors, and innovators to thoughtfully integrate AI into their strategies, harnessing its potential to drive meaningful change and support the transition to a net zero future.



Vibrant Planet applies AI-powered geospatial analytics to improve climate resilience and reduce wildfire risk. Beginning with the creation of a digital forest replica, they evaluate the land using specialized models that assess fire and flood risk, drought resilience, regeneration potential, and ecological departure. Vibrant Planet also includes over 50 data sets in their analysis that span both the built environment and the natural world—including the Microsoft Buildings dataset and US Spotted Owl habitat. Their platform helps land managers and communities prioritize community risk mitigation and ecosystem restoration treatments, optimize forest management, and enhance carbon sequestration, water reliability, and biodiversity, enabling data-driven decisions that protect natural resources and accelerate climate adaptation.

Terradot pairs cutting edge science with AI, proximal, and remote sensing technologies to optimize, quantify, and scale enhanced rock weathering for carbon removal. Their systems process and analyze extensive ground truth data collected across Brazil, enabling the safe and effective deployment of this nascent carbon removal pathway.

Farmland LP incorporates technology throughout their regenerative agriculture farmland portfolio, including IoT data capture, remote monitoring, autonomous equipment, and geospatial data analysis over their 19,000-acre operation.

AMP is using cutting edge computer vision technology with robotic automation to offer a complete line of AI-powered automation solutions for materials recovery facilities in the waste and recycling industry.

Eavor, an advanced, closed-loop geothermal company, is helping to bring clean, firm baseload power online in Europe and North America, utilizing Microsoft's cloud solutions to accelerate project deployment and operational efficiency.

The next five years

CIF is evolving to meet the market challenges of today. We are leveraging our understanding of the innovation landscape and coordinating across the market development flywheel to address persistent market gaps and scale promising climate solutions. We are targeting our investment activities in sectors where we can play a differentiated role in pushing the frontier, bridging to mainstream capital, and catalyzing market impact, while partnering to amplify our impact and accelerating outcomes with AI tools.

From a **technology** solutions perspective, CIF is focused on advancing clean, firm energy sources; low-carbon steel, cement, copper, and aluminum; sustainable fuel pathways; and underfunded carbon removal pathways. We plan to continue supporting innovation and first-of-a-kind deployments, and we are equally focused on getting the second, third, and subsequent projects built, so that viable technologies can mature and scale globally.

Microsoft continues to pioneer innovative contracting models and market **demand** mechanisms that help to accelerate the deployment of climate solutions. This includes advancing the use of environmental attribute certificates and developing book-and-claim systems that expand market access for emerging solutions. Through long-term agreements, advanced market commitments, and performance-based contracts, Microsoft sends strong demand signals that can pull forward emerging technologies, attract and leverage private capital including CIF, and create replicable frameworks to drive global decarbonization.

Scaling requires a step-change in **capital** and more deliberate financing structures. We will need to crowd in more mainstream investors and stay laser-focused on high-impact technologies for Microsoft and for global progress. The CIF team expects to continue supporting broader market-shaping interventions: accelerating the testing and validation of emerging solutions, contributing to the design and funding of mechanisms that can rapidly scale production capacity, and building innovative financing platforms to fill market gaps in key sectors and geographies. Our strategy is to do this in deep collaboration across our value chain and with industry peers.

In 2020, we set ambitious climate goals because we believed bold action and collaboration could transform markets and accelerate progress. Five years on, meeting those goals will take even greater urgency and collective effort. The strategies we share here are an invitation: to partner with us, to adapt these approaches, and to help shape resilient, sustainable markets, together.

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Appendix

Forward-looking statements

This white paper includes estimates, projections, and other "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, section 27A of the Securities Act of 1933, and section 21E of the Securities Exchange Act of 1934. These forward-looking statements generally are identified by the words "believe," "project," "expect," "anticipate," "estimate," "intend," "strategy," "future," "target," "efforts," "goal," "tactic," "roadmap," "commitment," "opportunity," "plan," "may," "should," "will," "would," "will be," "will continue," "will likely result," and similar expressions.

Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties that may not be anticipated and/or which may cause actual results to differ significantly. We describe risks and uncertainties that could cause actual results and events to differ materially in our reports filed with the Securities and Exchange Commission. We undertake no obligation to update or revise publicly any forward-looking statements, whether because of new information, future events, or otherwise.

Many of our environmental, social, and governance (ESG) goals may depend on the adoption of certain behaviors and/or activities by third parties, including our customers and partners. If those parties do not adopt certain behaviors or activities, or invest in certain evolving technologies, we may not be able to meet some goals. Additionally, we are engaged in certain projects, solutions, and technologies that, should they not perform as we expect, could negatively affect our ability to meet some ESG goals on time or at all. Finally, we make certain claims regarding our products and projects, including through our funding of certain projects, and the ability of those products, projects, and funding efforts to affect third parties' sustainability efforts; however, there can be no guarantee that our products, projects, or funding efforts will have the effects we anticipate or intend.

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