MILKEN INSTITUTE

Priorities for Strategic Climate and Environmental Philanthropy

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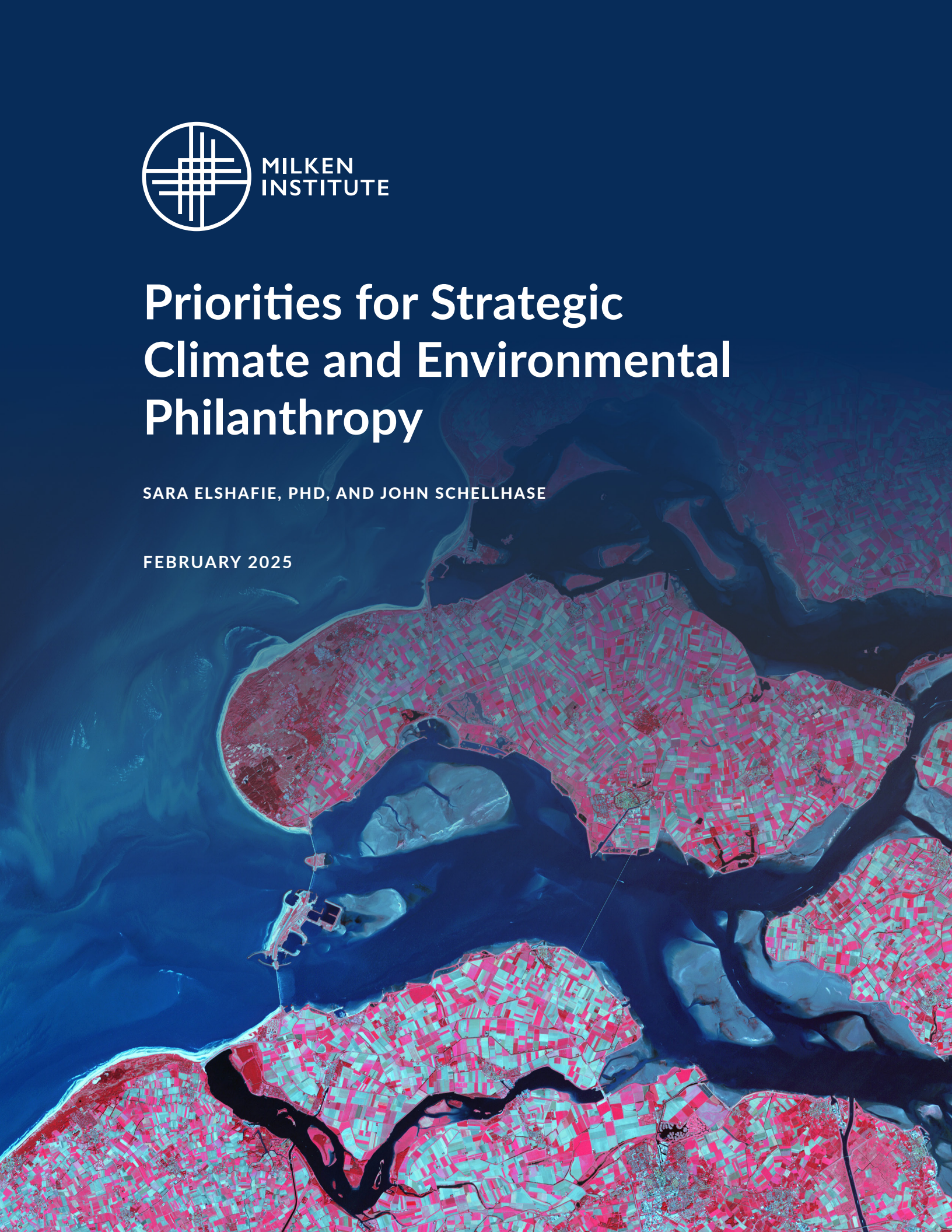

About Us

About the Milken Institute

The Milken Institute is a nonprofit, nonpartisan global think tank focused on accelerating measurable progress on the path to a meaningful life. With a focus on financial, physical, mental, and environmental health, we bring together the best ideas and innovative resourcing to develop blueprints for tackling some of our most critical global issues through the lens of what's pressing now and what's coming next.

About Milken Institute Strategic Philanthropy

Milken Institute Strategic Philanthropy advances the strategic deployment of philanthropic capital to create a better, more equitable world. This branch of the Milken Institute partners with individuals and foundations to develop strategies, implement giving programs, and foster collaboration so that philanthropists can use their resources to make a positive impact.

About the Milken Institute's Environmental Impact Work

The Milken Institute's programmatic pillars—finance, health, philanthropy, and international—are committed to confronting climate and environmental challenges from all angles to ensure that funding and financing from the public, private, and philanthropic sectors are effectively deployed to deliver meaningful climate action. For more on the Milken Institute's climate and environmental work, please visit **https://milkeninstitute.org/topics/environmental-impact**.

Acknowledgments

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Overview and Summary of Key Takeaways

This report investigates where philanthropy can catalyze outsized impact in addressing the effects of climate and environmental change on societies and natural ecosystems. The consequences of these changes have steadily worsened in the last few decades, and it is now widely recognized that they negatively impact every sector, region, and community worldwide. Coordinated efforts across governments, businesses, communities, and other stakeholders are needed to address climate and environmental challenges, and philanthropy can play a crucial role in these efforts.

The earth's climate has changed in the past, but overwhelming evidence indicates that current climate change stems from a steady rise in greenhouse gas (GHG) emissions, especially carbon dioxide and methane, over the last 150 years or more due to human activity. The level of carbon dioxide in the atmosphere is now the highest it has been in the last 14 million years (422 ppm),[1] leading to temperature increases unprecedented in recent history. 2024 was the hottest year on record, and the preceding decade was the hottest since 1850.[2] Elevated GHGs are also causing extended droughts, more frequent wildfires, and intensified storms and floods.

Experts and world leaders agree that the world must make every effort to limit warming to well below 2˚C, ideally no more than 1.5˚C, above preindustrial levels.[3] The negative effects of climate change are projected to worsen significantly once the 2˚C threshold is passed.[4] The system-wide changes needed to achieve these goals will require substantial capital. For example, approximately US$5 trillion in spending on low-emissions assets will be needed annually by 2030.[5]

Funding in the trillions far exceeds current philanthropic giving or the amount philanthropy alone could provide. Yet philanthropy has a unique and critical role to play. For example, many projects will not attract investment if investors must take on the full risk upfront, so philanthropists can provide initial funding to get a project going and decrease the financial risk for later investors. Likewise, existing data are sometimes not good enough to explain a problem or the potential impact of a solution, but philanthropists can provide funding to collect new data and make them available.

In general, philanthropic capital is flexible, patient, risk-tolerant, and mission-driven, and it can be deployed relatively quickly. These factors combined make philanthropy the right tool for catalyzing rapid change.

Unfortunately, only about 2 percent of philanthropic contributions globally go to climate mitigation.[6] Of the US$885 billion in total giving in 2023, only an estimated US$9.3 billion to $15.8 billion went to climate change mitigation.[7] This amount represented a 20 percent increase from the previous year—outpacing a 10 percent increase in giving overall—but it has not nearly reached the level needed to fund effective, scalable solutions, **according to ClimateWorks Global Intelligence**. Many individual philanthropists and foundations recognize the scale of the need and the urgency to act and are committed to doing more.[8]

In general, philanthropic capital is flexible, patient, risk-tolerant, and mission-driven, and it can be deployed relatively quickly. These factors combined make philanthropy the right tool for catalyzing rapid change.

This report is designed to inform those philanthropists who are looking to get started in climate and environmental philanthropy or to increase their climate-focused giving. The report presents a synthesis of key gaps, opportunities, and recommendations from more than 50 interviews and a roundtable that the Milken Institute conducted with key experts. Those interviewed included climate and environmental scientists, activists, leaders and program officers of private foundations, impact investors, corporate actors, and philanthropic advisors. The pool of experts interviewed was globally distributed and had gender parity. At least half of those interviewed worked in, or were originally from, the Global South. For the full list of institutions represented by the experts consulted, see Appendix 1.

During interviews, Milken Institute staff asked three main questions. First, on which climate and environmental issues do you think philanthropy can have the greatest impact? Second, what do you see happening too much in climate and environmental philanthropy? And third, what do you not see happening enough? There was a surprising degree of consensus across the interviews.[9]

Based on the interview findings, this report first presents 10 cross-cutting recommendations for philanthropists just starting their journey in funding green initiatives, as well as those looking to expand their climate and environmental giving. These recommendations include the following:

- **Break complex issues into addressable topics.** Focused projects with specific goals are more feasible to execute and easier to share with partners and stakeholders.
- **Prioritize long-term funding over short-term wins.** A project with prolonged funding is more likely to survive any initial setbacks and have a greater impact.
- **Combine and amplify philanthropic efforts whenever possible.** Rather than defaulting to isolated new projects, supporting existing initiatives and collaborating with other philanthropists can be more effective.

These recommendations, and seven more, are explained in the next section.

Second, the report details four broad giving areas that are receiving less attention or funding than other areas of climate and environmental initiatives:

- **Deforestation:** Preserving forests has significant immediate and long-term impacts, including carbon sequestration, land preservation, and biodiversity conservation.
- **Food Systems:** These systems include all activities from agriculture and food manufacturing to consumption and waste. While representing only 4 to 8 percent of global GDP, this sector accounts for about one-third of global GHG emissions, depending on the metric used.[10]
- **Oceans:** Some issues, such as plastic pollution, have already been the focus of much funding and innovation, but other areas, such as the sustainability of fisheries, lowering emissions associated with large cargo ships, and coastal habitat preservation and restoration, are critical impact areas that need more funding.
- **Communication and Outreach:** Engaging the public on climate and environmental issues through media and other outlets can be the most effective way to catalyze change from local to global scale.

Boxed texts throughout this report add important context that can help inform the giving landscape of climate and environmental philanthropy.

The need to advance a coherent and strategic climate and environmental philanthropy agenda is increasingly urgent. “For every year we wait to act, it’s 7 to 8 percent compounded progress lost,” Jonathan Foley, PhD, executive director of Project Drawdown, told the Milken Institute. Philanthropy can help prevent these losses, address past damages, and ensure that people thrive alongside healthy natural ecosystems.

Part One: 10 Recommendations for Climate and Environmental Philanthropists

Philanthropy is most effective when it is deliberate and shaped by lessons learned from others with crucial experience in the same or similar issues. Among the central motivations for compiling this report based on interviews was an understanding that there is already deep expertise across the climate and environmental philanthropy ecosystem. The interviews conducted for this report were aimed to learn from key actors about where to start, mistakes to avoid, and how to increase the likelihood of success.

Across the interviews, many consistent views emerged on best practices in climate and environmental philanthropy. The authors have synthesized the findings here as 10 key recommendations divided into the following three themes. Recommendations 1–5 focus on strategy design. Recommendations 6–7 are about tapping into and building a philanthropic ecosystem. Recommendations 8–10 capture insights on the theme of stakeholder engagement. While some recommendations may be geared more toward contributors entering climate and environmental philanthropy with limited experience, all 10 recommendations are likely to offer useful information to those already giving toward climate and environmental goals and thinking about expanding their green philanthropy.

Theme 1: Setting a Strategy

1. Break Complex Issues into Addressable Topics

Large umbrella topics, like "climate," are too broad and overwhelming to address. The experts interviewed agreed that it is better to focus on specific issues on a manageable scale. For example, decarbonizing food systems can be distilled into more tractable issues, such as providing grants to help smallholder farmers find markets for their sustainable products. (See the next section for a discussion of this topic.)

Multiple experts recommended setting clear benchmark goals when addressing climate issues. For instance, aiming to reduce emissions by a target percentage in a specific area by a certain year makes it easier to track progress and achieve measurable success. Others emphasized that focused, localized projects can serve as proof-of-concept models for scaled projects as well as policy recommendations.

2. Don't Try to Check Too Many Boxes

It is important that those engaged in philanthropy show both vision and focus. Philanthropists should be very clear about the main problem they are trying to address and not spread their focus or their resources too thin. For example, instead of a project that attempts to create jobs for young workers, achieve gender parity, and mitigate climate change impacts all at once, it is probably better to split the issues into several focused projects—which may still have overlapping benefits—or choose one to focus on exclusively.

Many philanthropists want to fund intersectional projects, but a proposal that tries to check every box may end up unfocused and unrealistic. Such efforts may be well intentioned, but they can sometimes lead organizations to take on too many issues at once or to mix strategies and ultimately be less effective. As several experts told the Milken Institute, trying to ally with every cause can hinder progress on any specific mandate.

This recommendation runs counter to some other published advice about climate philanthropy—advice proposing that almost every issue can be viewed through a climate lens. The implication is that philanthropists can largely keep to their current giving strategies but claim a climate impact. While climate change affects almost every issue in some way, giving intended for climate initiatives can maximize impact by focusing on key climate issues in need of more funding (such as those identified later in this report). That said, a proposal can focus on a tractable primary issue and still provide co-benefits in other areas: For example, preserving coastal mangrove habitats to sustain wildlife has the added benefits of carbon sequestration, supporting fisheries, and protecting coastal communities from storm surge.

3. Fund and Utilize Data

In the development of any philanthropic initiative, metrics and data should be used to validate any claims. "The philanthropic community has gravitated toward trying to change hearts and minds through campaigns and politics, without enough attention going toward logistical complications and information gaps," said Billy Pizer, PhD, CEO at Resources for the Future. "We need to spend more money on figuring out what can work and what can't." For example, Pizer suggested that thorough research on the impacts of the US government's 2022 Inflation Reduction Act is needed to hone recommendations for future government-funded climate solutions.[11]

Funding for data collection can also make a difference at the community level. Data on costs, benefits, resource usage, and potential impacts can help communities advocate for themselves and access new opportunities. For example, Sucafina, a coffee merchant that provides services to small farmers worldwide, is helping producers in emerging economies quantify socioeconomic and carbon outcomes of regenerative agricultural transitions beyond compliance with international sustainability standards.[12] An expert at Sucafina emphasized that training on the fundamentals of good farm management, record keeping, cost-benefit analysis, and regenerative farming practices can significantly increase profits for these producers.

Training on data collection using simple technology, such as tablets, provides the added benefit of employment opportunities for youth in those communities. Community-level data collection can also inform local and national policymaking. For instance, DataKind, a community supported by The Rockefeller Foundation, is working to integrate data from local communities into more mainstream decision-making on issues such as water and energy use.[13]

In interviews with the Milken Institute, experts emphasized that real-world data collection is an essential component of any climate-focused strategy. "Peer-reviewed research is a linear-based methodology that isolates variables and, therefore, that does not work as well in systems," said

Tim Crosby, principal of Thread Fund. "We need philanthropic capital funding systemic research methodologies that consider more than one variable at a time." Philanthropic projects that support field testing and the generation of new data offer one key way to do this.

Another important factor is housing data in a centralized, stable, and accessible platform. "In general, climate data are not very universally or uniformly gathered—they're scattered and often site-specific or short-term. They're not pulled together in a standardized way," said Lisa Barnett, director of development at the Smithsonian Tropical Research Institute. "This is a major problem throughout the world that limits our ability to develop accurate Earth-systems models capable of predicting future climate." Funding to create, maintain, and promote publicly available databases can help address the issue of data storage and accessibility.

4. Prioritize Long-Term Funding Over Short-Term Wins

Supporting climate and environmental initiatives with immediate impact can make a difference, but when a philanthropist can commit to long-term funding, the impact can be far greater and more transformative. It can be difficult to make a measurable difference over a short period because natural systems are complicated and highly integrated. Still, patient and risk-tolerant philanthropic capital can lead to significant impact in a decade or less, one corporate environmental sustainability professional said. This interviewee relayed an example in which long-term funding from their investments has made a big difference across multiple 10-year initiatives, with some of the programs reporting significant increases in habitat protection and meaningful repopulation of near-extinct species.

5. Consider the Full Range of Philanthropic Financial Models

There are several funding mechanisms for philanthropic giving. Broadly, they are grouped into those that do not bring a financial return on investment (ROI) and those that do. Each model serves a different purpose.

Gifts and grants are forms of direct giving without a financial ROI (Figure 1). Gifts—such as endowments, prizes, and awards—carry no stipulations and may or may not have reporting requirements. Grants come with stipulations about the use of the funds and often entail reporting requirements. When considering what is best to fund through a gift or grant, philanthropists are wise to think about where philanthropic capital can catalyze additional funding.

Another powerful approach is "trust-based philanthropy," which can include providing multiyear, unrestricted funding for deployment at the grantee's discretion. This practice often also includes models of philanthropy grounded in participatory decision-making, in which community leaders inform priorities and shape the project design. One such initiative, highlighted by Anna Lappé, executive director of the Global Alliance for the Future of Food, is the Agroecology Fund, in which dozens of donors contribute to a collective fund guided by a participatory governance model to support grassroots agroecology movements around the world.[14] By helping stakeholders use grants to catalyze additional funding, philanthropists can help to break dependence on philanthropy.

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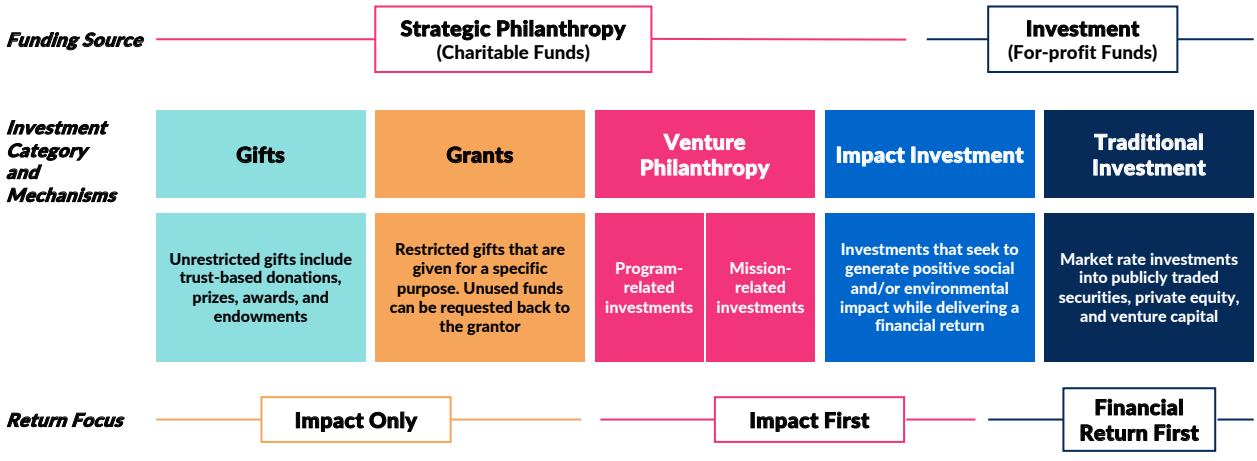
An increasingly common form of philanthropic funding that has a potential financial ROI is impact investing: "investments made with the intention to generate positive, measurable social and/or environmental impact alongside a financial return"[15] (Figure 1). In this model, philanthropic capital is used to create positive change through an investment. This can involve providing seed funding to a new business that will positively impact society or absorbing financial risk by accepting a lower ROI or complete loss if the business fails, allowing larger returns to go to private investors. Both approaches can attract additional funding from more risk-averse investors. (See **Box 1** for more details.)

Another form of philanthropy that brings a financial ROI is venture philanthropy, in which venture capitalists invest their capital in philanthropic initiatives. This can take forms such as equity investments or recoverable grants.[16] Venture philanthropists might be involved in the governance of an organization or business they fund through roles such as board membership or management.[17]

Finally, another important way philanthropists can have an impact is by divesting capital from projects that have a negative impact on the environment. Following the ancient admonition, "First, do no harm," there may be opportunities in their own portfolios to divest from activities such as deforestation, whether as individual investors or in their foundation endowments. For more information, see *Philanthropic Mechanisms: A Guidebook for Donors*.[18]

Figure 1. Impact and Financial Return Investment Continuum



Source: Milken Institute (2024)[19]

Box 1: **Impact Investing**

Impact investing refers to investing money with a financial return while prioritizing impact. An impact investor might provide a seed investment to a start-up company launching a new sustainable technology that may succeed or fail. The investor can help the company launch by accepting a lower ROI so that other private investors can get higher returns. For instance, the impact investor might accept returns of only 3 percent, whereas later investors might get a 9 percent ROI, said Alison Harwood, senior fellow in sustainable and innovative finance at the Milken Institute. This type of investment can mobilize additional funding to help the start-up succeed and scale.

One challenge for climate start-ups is that non-philanthropic money is conservative about going after new business models. Meanwhile, those start-ups need patient seed funding to survive while their new business model comes to fruition, which can take years.

Philanthropies can help by catalyzing investment and absorbing the risks for traditional investors. An impact investment strategy might involve a direct investment or a combination of funding from different sources—referred to as "blended finance"—to provide financial guarantees that satisfy the ROI requirements of institutional investors. For example, the Dutch entrepreneurial bank FMO provided a first-loss investment backed by a funding guarantee from the MacArthur Foundation to catalyze the SDG Loan Fund, dedicated to advancing the United Nations Sustainable Development Goals (SDGs), the set of 17 targets for global prosperity.[20] This blended finance structure elevated the fund's credit rating and attracted a 1:9 investment ratio from private investors, ultimately raising US$1.1 billion.

Blended finance models of impact investment can take other forms as well. In public-private philanthropic partnerships, investors might work with development banks and nonprofits to access government funds. Alternatively, the blended finance funding might be invested directly in technical assistance, research, or advocacy.

Theme 2: Operating in an Ecosystem

6. Combine and Amplify Philanthropic Efforts Whenever Possible

Philanthropists often work independently, which can limit their long-term impact. Working independently might lead to quicker funding distributions but can also produce a multitude of one-off projects that amount to little. At the same time, philanthropists also sometimes withdraw from climate and environmental giving entirely because it can be hard to narrow down an area for impact—or because they feel as if they are isolated in their efforts.

Offering funding to established organizations and initiatives with a proven track record can help avoid redundant efforts. Many foundations are also excited to join collaborative efforts, said Dan Stein, PhD, founder and executive director of Giving Green. "The work becomes easier if you are spreading it among multiple foundations. You may not even need your own staff or other resources," he said.

By working together, foundations can direct attention and funding toward solving bigger problems and scaling efforts. For example, the Zero Gap Fund, an impact investing collaboration among The Rockefeller Foundation, the John D. and Catherine T. MacArthur Foundation, and its Catalytic Capital Consortium has mobilized over US$800 million across a dozen investments focused on the UN SDGs.[21] Such funder collaboratives have been growing in recent years, and the number of groups with more than $1 million in assets under management has doubled since 2010.[22] Importantly, such initiatives also provide a shared sense of accomplishment and a community that can sustain long-term engagement in climate giving.

7. Share Learnings with Others

In addition to plugging into the wider community, several experts interviewed for this report highlighted the need to help advance the broader community of climate and environmental funders and nonprofits by sharing new learnings. Dan Stein at Giving Green encouraged philanthropists to consider the global impact potential of more localized projects: "For example, if you're working on a US Farm Bill policy that incentivizes a methane-reduction practice, is there a way for that idea or technology to translate to another place where it could make a difference?"

Shareable outcomes from a focused project in one area—such as findings, data, new tech, or logistical recommendations—will often help initiatives elsewhere become more strategic and impactful. For example, the Milken Institute and the Motsepe Foundation launched the Milken-Motsepe Innovation Prize Program in 2021 to harness Fourth Industrial Revolution technologies to advance progress towards the SDGs. The Milken Institute has published public reports on the design and outcome of each resulting competition and prize for the benefit of those interested in designing a similar program.[23] Other ways to share learnings can include open-source databases, sharing within funder collaboratives, and conference presentations.

Theme 3: Engaging Stakeholders

8. Don't Assume. Ask.

It is best not to assume the needs or wishes of people with a shared material interest in a particular issue or project. There is almost always a community somewhere that is already involved, and any interested philanthropist can start by searching for and reaching out to that community.

This is an especially important step to ensure that inequalities related to climate and environmental change are at the forefront of adapting to those changes, according to Paula Ellinger, director for social innovation at Fundación Avina, based in Argentina. Multiple experts told the Milken Institute that any philanthropist who wants to help stakeholders would do better to ask them directly what they need and consider their immediate situation. A philanthropist could even fund a project that translates local knowledge to traditional funders, suggested Ellinger. "This can help bridge the gap between local organizations and multilateral traditional climate funds to help funders better understand what it means to invest in climate," she said.

One way to deepen knowledge is to bring conversations about climate interventions to the front lines. Meetings on climate issues often fail to include enough people directly involved with or impacted by those issues. For instance, discussions on tropical deforestation frequently take place in the US or Europe. Instead, they should occur in the countries where deforestation is happening, according to Joko Arif, interim global climate initiative director at the David and Lucile Packard Foundation. "Stakeholders from these regions often face logistical or financial barriers to attending meetings abroad. Even when they attend, discussions held out of context may not resonate as they would if held in the affected region," he said. "While it may take more effort to bring these conversations to the impacted communities, it is a crucial step for fostering collaboration, developing effective solutions, and strengthening local capacity."

9. Cultivate Partnerships That Strengthen Capacity

Cultivating relationships and, especially, partnerships with stakeholders can be the best way to ensure the success, longevity, and impact of any initiative. For example, several experts working in Africa discussed the importance of approaching African entrepreneurs and stakeholders as critical partners in solving climate change rather than as victims of it. They emphasized the role that philanthropic capital can play in spurring green economic development in Africa in the near- and long-term. By catalyzing individual climate projects on the continent, impact investors can help to build new climate-positive and economically resilient markets, ultimately contributing to climate action, job creation, and innovation.

One of the most effective approaches a philanthropist can pursue is strengthening a project partner's capacity to leverage their existing knowledge base and carry out initiatives. Several experts shared that capacity can be the most limiting factor in climate and environmental work: in fact, available funds sometimes go unspent because of insufficient local infrastructure,

expertise, or personnel. For example, policy advocacy that results in better regulations will not make a difference if a government cannot enforce those regulations. A climate mitigation project may not work if the people involved do not have the training necessary to align with third-party verification standards. Sometimes, providing project partners with ongoing logistical support and training can be more valuable than a lump sum of funding. Philanthropists might consider funding training, providing budget support for additional hiring, or paying for upgrades in partners' systems and tools. Strengthening capacity can also help new climate-focused businesses succeed, perhaps by offering advice on managing risks and operations. This can also assure investors that business risks are reduced, and returns will increase.

10. Balance Perspectives

A related theme that emerged repeatedly in interviews was the importance of ensuring that the people involved in any climate initiative represent the perspectives and interests of the end stakeholders. For instance, in the US, 99.5 percent of climate philanthropic funds go to left-of-center organizations, whereas about half of state-level governance is right-of-center, as one clean energy expert emphasized. As such, philanthropic dollars invested in conservative organizations that can shift thinking among these communities may have a greater impact in the US in some cases because they may help to solve a stuck challenge that would otherwise not be addressed. Other experts echoed this strategy and pointed out that engaging conservative stakeholders in predominantly conservative areas can help these communities access available government funding for such needs as renewable energy and resilient infrastructure (see **Box 4** for further discussion) and help move the needle on climate and environmental policies at local, state, and federal levels. Taking a more balanced approach has the added benefit of including new allies in initiatives and learning the lessons they may have to offer.

Box 2: **Climate Philanthropic Endeavors in Asia**

Climate is a growing area of philanthropy in Asia. Funding is broadly needed to help build an ecosystem of climate organizations in Asia that can generate climate projects. One strategy is to connect climate as an issue intersecting with other major concerns in the region, such as education and health, suggested one expert at a climate foundation working in Asia. For example, she said that clean cooking fuel can be discussed as a health intervention, not just a climate intervention. Finding areas of overlap between climate concerns and other societal concerns can improve understanding of climate impacts and the co-benefits of climate solutions.

A group with a keen interest in climate philanthropy is Asian family-owned businesses, which play significant roles in Asian economies and societies. A great way to connect with this audience is to create opportunities to build community and exchange best practices. "Asian funders are deeply passionate about the causes they support," said Jamie Choi, CEO of the Singapore-based Tara Climate Foundation. They don't want to just write a check: "They want to connect with the communities and witness the tangible impact they are helping to create on the ground."

Sarah Tam, climate lead for Asia Philanthropy Circle (APC), said that APC has taken a similar approach, organizing excursions in which members can bond with and learn from one another. "In a few instances, members brought their own projects to the table to brainstorm and ended up co-funding a project with other members," she said. Low-risk, no-regret co-funding opportunities—such as research projects or funding commitments in the five- to six-figure range—help build trust and confidence in relationships, paving the way for collaboration on larger initiatives.

For any outside organization looking to partner with an Asian organization on a climate initiative, building trust is key. According to Tam, listening to Asia-based partners is important for understanding nuances and developing engagement strategies that allow Asian philanthropies to pave the way. It is also important to make sure that any initiatives align with a country's priorities: for example, an initiative to reduce deforestation in Indonesia could also work to ensure better opportunities for Indonesian products to be exported.

Experts also advised that any group interested in advocacy in Asia should be aware that this work is done in a very different way compared to Western lobbying. Asian companies carefully consider government agendas when seeking to influence policy changes.[24] Similarly, Asian philanthropists might encourage governments to take shifts or pivots in their policy but with care to avoid any perception of an ulterior motive on the part of the philanthropist. This work is done in closed circles, *alongside* the government, supported by evidence from trusted resources.

Part Two: Areas of Greatest Need for Climate and Environmental Philanthropy

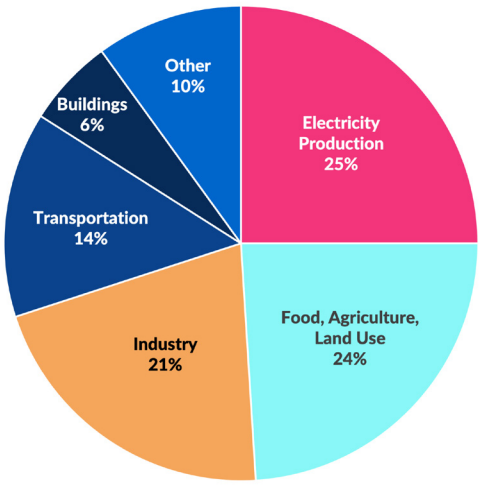
Four key areas emerged from more than 50 Milken Institute interviews as both urgent and clearly underfunded: deforestation, food systems, oceans, and communication and outreach. These areas also met the Milken Institute's criteria for new philanthropic projects: 1) promising evidence-based solutions, 2) infrastructure/market readiness, 3) anticipated influence of impact capital, and 4) potential for transformation. (For more details, see Appendix 3.) Encouragingly, three of these categories—deforestation, food systems, and public engagement—saw increased philanthropic giving over the last five years, according to ClimateWorks Global Intelligence. However, these giving areas still need much more funding.

Funding Needs versus Trends

Before diving into these four areas, it is helpful to broaden understanding of the main drivers of climate and environmental change and the current green philanthropy landscape. Among sources of GHG emissions, a few sectors stand out. Electricity production and food systems (including agriculture, land use, and food waste) each account for a quarter of global emissions (Figure 2A). Industry, including steel and cement production, contributes about a fifth of emissions. Proportional emissions cuts are needed in each category (Figure 2B), especially as demand for resources grows with population increase and widespread utilization of energy-intensive technology such as artificial intelligence, cryptocurrency, and data centers.[25]

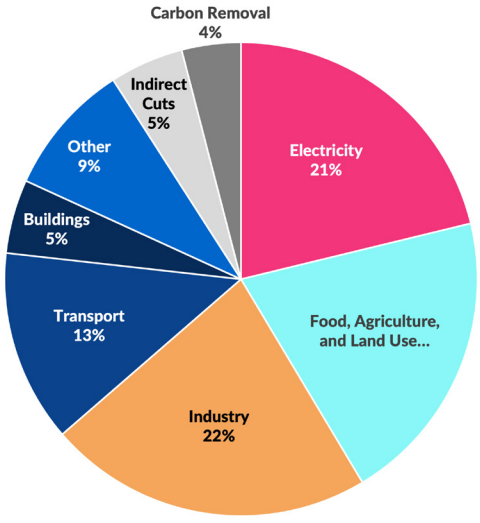
Figure 2: Emissions by Sector

Figure 2A: Sources of Greenhouse Gas Emissions by Sector



Source: Milken Institute (2025), modified from Climate Change 2022: Mitigation of Climate Change, Intergovernmental Panel on Climate Change

Figure 2B: Emissions Cuts Needed by Sector



Source: Milken Institute (2025), modified from Project Drawdown

However, current sources of funding for climate initiatives do not reflect these areas of need. Global venture capital (about US$87 billion per year in 2021) has been disproportionately invested in electrifying transportation, including electric vehicles (Figure 3A). Many government policies with funding allocated for climate initiatives have been focused on renewable energy. As one example, the Inflation Reduction Act passed in the US in 2022 represents one of the country's biggest government investments in addressing climate change (about $37 billion per year), with spending largely focused on generating electricity from green energy sources (Figure 3B).[26] Philanthropic funding pales in comparison: only about 2 percent of philanthropic contributions globally go to climate mitigation. Philanthropic giving from foundations and individuals worldwide, as noted above, totaled about US$885 billion in 2023, and only US$9.3 billion–$15.8 billion of that went to climate change mitigation, up from only US$6 billion–$8 billion in 2021 (Figure 3C).[27] Out of that comparatively small portion, much climate philanthropic funding went toward carbon capture (22 percent in 2021, Figure 3C), which accounts for only 4 percent of needed emissions cuts (Figure 2B). To be clear, no sector is overfunded—the need is everywhere and needed fast. But some areas are getting more attention and funding, and other areas are getting much less.

Philanthropists have a critical role to play in this funding landscape. Investors do not want to take on the full risk of a project upfront, but philanthropists can provide initial funding to get a project going and decrease the financial risk for other investors. Government funding can help to de-risk investment and attract additional capital, but philanthropists can move more quickly and take risks that governments cannot.

Philanthropists can also give beyond the timelines of government funding programs to extend their length and impact. Applying this model widely can help to make the annual US$5 trillion target more feasible or at least drive forward crucial improvements in key areas. This section considers how philanthropic capital, deployed according to the 10 recommendations outlined in the previous section, can be crucial for addressing climate and environmental issues for forests, food systems, and oceans through avenues that include strategic communication and outreach.

Figure 3: Only About 2 Percent of Philanthropic Contributions Globally Go to Climate Causes

Figure 3A: Global Venture Capital Investments in 2021 by Sector

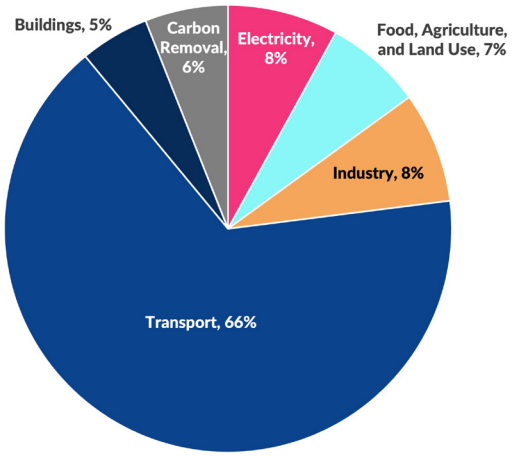


Figure 3B: Funding Allocations from the Inflation Reduction Act Passed by the US Congress in 2022 (an example of government funding designated to address climate change)

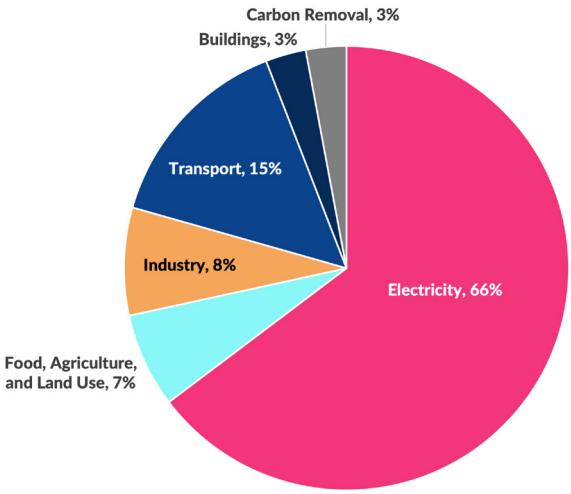
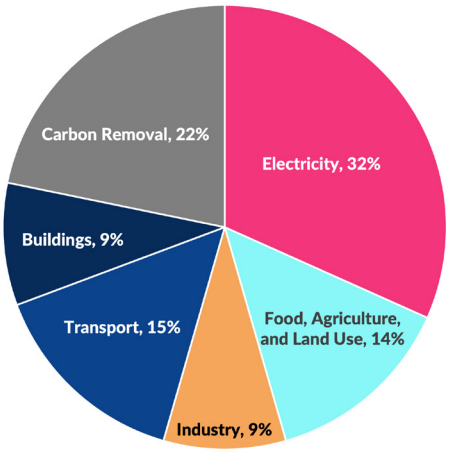


Figure 3C: Allocations of Global Climate Philanthropic Giving in 2021 by Sector



Source: Milken Institute (2025), modified from Project Drawdown

Box 3: **Status of Global Climate Goals**

The most concerted global commitment to reduce GHG emissions is the Paris Agreement. This legally binding international treaty was established in 2015 to keep global warming to no more than 2˚C—ideally no more than 1.5˚C—above pre-industrial levels by 2100.[28] Participating governments and stakeholders have since held annual "Conference of the Parties" (COP) meetings to check on progress toward the Paris Agreement goals.

But after almost a decade of this global initiative, the world is significantly behind on meeting the targets. The first "global stocktake" report, completed by COP in 2023, concluded that GHG emissions would need to dip worldwide by 2025 at the latest and decline 43 percent by 2030 to limit global warming to 1.5˚C[29]—an impossible goal at this point. Earth's average temperature has already risen about 1.1°C above pre-industrial levels. Under current policies, that number is likely to reach 2.7 ˚C by 2100.[30]

Despite this dire assessment, some progress has been made in recent COP meetings. At COP27 in Sharm al-Sheikh, Egypt, in 2022, a "Loss and Damage" fund was established to help economically developing nations deal with climate change impacts, and COP29 in Baku, Azerbaijan, saw increased climate financing commitments along those lines two years later.[31] Meanwhile, a comprehensive agreement was reached at COP28 in Dubai, UAE, to transition away from fossil fuels and aim for net-zero emissions worldwide by 2050.[32] Reaching these goals will require concerted international efforts to reduce emissions across industries.

Deforestation

Deforestation accounts for about 11 percent of the world's GHG emissions. Most deforestation occurs for cattle pasture, palm oil agriculture, and to grow soybeans as animal feed.[33] Deforestation has cascading negative impacts. Loss of forest habitat leads to loss of biodiversity. Both can lead pathogens to adapt to new host species, such as humans or domesticated animals, sparking outbreaks of new diseases. In addition, deforestation weakens an ecosystem's ability to absorb excess stormwater, causing floods and landslides, or to store groundwater, increasing the severity of droughts.

> "Deforestation is the number one environmental issue on the planet. Stopping deforestation is the best 'emergency brake' we can use, with enormous co-benefits, but it doesn't get nearly enough attention."
>
> *—Jonathan Foley, Executive Director, Project Drawdown*

Stopping deforestation is a prime underfunded area for climate investment considering its huge immediate, as well as long-term, impact. Giving opportunities include nature-based solutions such as land preservation, carbon sequestration, and biodiversity conservation.[34] Although many organizations are working to draw attention to deforestation, more help is needed. Philanthropists can lean into this issue in several ways:

1. **Provide philanthropic capital to catalyze investments in forest preservation.** For example, the Forests, People, Climate initiative, hosted by the Climate and Land Use Alliance and other grantmakers, is a collaborative of philanthropists, civil society, and community-based organizations working to get US$2 billion invested in stopping deforestation while fostering sustainable development and community stewardship.[35]

2. **Fund programs that quantify the ecosystem benefits of forest preservation.** One such program, GEO-TREES, is a philanthropically funded, multi-network, global collaboration to substantiate satellite observations of forest growth with on-the-ground measurements of tree growth.[36] By validating measurements of a forest's growth—a measure of its ability to store carbon—forest preservation can be translated into carbon credits for reliable and stable carbon offset markets. The data collected will be housed in an open-access online platform coordinated by the Smithsonian Tropical Research Institute.[37]

3. **Support development of technologies to restore degraded forests using diverse mixtures of native trees adapted to the local landscapes.** Governments, international institutions, industry, and landowners need information grounded in science on how to manage forest landscapes to sustain the ecosystem benefits they provide that help maintain a robust economy and a healthy populace. Research demonstrates that regrowing native forests quickly generates the carbon uptake, watershed protection, soil restoration, biodiversity, and other ecosystem services that old-growth forests provide, and can meet some of the economic needs of people in the region, including timber.

4. **Build momentum for policies that subsidize or create markets for sustainably and ethically sourced goods that do not cause deforestation.** For example, in the European Union, the Regulation on Deforestation Free Products (EUDR) now requires that companies do due diligence to certify that no deforestation was involved in the manufacturing and distribution of any product sold in the EU.[38] Such policies can have the added benefit of supporting domestic farmers who comply with those sustainability standards.

Food Systems

The need to make global food systems more sustainable and resilient was frequently highlighted by experts interviewed for this report as an underfunded area of climate and environmental action. This area encompasses a range of related issues, including agricultural practices, livestock, and food waste. These issues collectively account for about one-third of emissions worldwide, depending on the metrics used, and at least 15 percent of all fossil fuel use.[39] In the US, food systems are the only sector that has consistently increased emissions over the last two decades due to a growing population and increasing demand for animal products, while other sectors made progress on cutting emissions.[40] Primary sources of emissions include monocrop agriculture, which requires vast amounts of synthetic inputs and reduces soil health; overuse of nitrogen fertilizers, which release the GHG nitrous oxide and require natural gas to produce; resource-intensive production of ultra-processed foods, as well as industrial meat and seafood; and long-distance shipping.

Much as food systems contribute to climate change, they also suffer from its effects. The global food system is highly vulnerable to climate disasters such as drought, which can ruin harvests, and storms, which can damage crops and disrupt supply chains.[41]

Transforming food systems to be more nutritious, equitable, sustainable, and resilient will be costly but not as costly as inaction. This transformation would cost around US$200 billion to $500 billion per year, depending on how measures to ensure affordable food costs for vulnerable populations are considered.[42] These figures, though, are small compared to the combined economic, environmental, and health costs of our global industrial food system, which are currently estimated to exceed $12 trillion per year, or 10 percent of global GDP.[43] Relative to current investments of about $44 billion in sustainable agriculture, a 10-fold increase in funding could help at least half of all food systems activities transition to sustainable approaches by 2040, with the entire system transitioning by 2050.[44] This transition would have cascading benefits, including higher crop yields and increased income for food producers, better nutrition and food security, and enhanced environmental and biodiversity conservation.[45]

These amounts are beyond the capacity of philanthropy alone, but philanthropy can help to catalyze and mobilize additional funding to meet this demand while policy and public capital catch up. Philanthropists who are new to this area of giving can maximize their impact by connecting with existing networks, such as the Global Alliance for the Future of Food and Sustainable Agriculture and Food Systems Funders. With these recommendations in mind, the following section offers specific examples of challenges and ways in which philanthropists can help to build more resilient and sustainable food systems, from production to consumption. Priority areas, as explored here, include reducing GHG emissions from livestock, promoting regenerative agriculture, and addressing food waste.

Livestock

Farm animals now outnumber humans almost two to one worldwide.[46] The explosion in livestock numbers has become a large source of GHGs, especially methane, which traps 35 times more heat

than carbon dioxide and accounts for one-third of current warming.[47] Most methane emissions from livestock come from ruminants—including sheep, goats, buffalo, and especially cows—which burp methane as a byproduct of their digestive processes. Cows produce the most methane by far, about eight times what buffalo produce.[48]

The silver lining is that methane does not linger in the atmosphere for very long compared to other GHGs: It dissipates after about seven to 12 years. Livestock produce about one-third of total methane emissions worldwide, an amount comparable to all methane emissions from fossil fuel extraction.[49] Therefore, reducing livestock rearing and consumption can contribute significantly to rapid GHG reduction.

Overdependence on livestock also makes the global food system less efficient: about 36 percent of food grown globally goes to feeding livestock, and only a fraction of that caloric value ends up in meat and dairy products.[50] Meat and dairy are important features in many cuisines worldwide, and their complete elimination may never be viable. However, it is estimated that reducing meat consumption in high-income economies could reduce annual agricultural emissions by about two-thirds for those populations, making this a potentially very effective strategy for reducing global emissions.[51]

Philanthropy can play a role in reducing GHG emissions from livestock in two main ways:

1. **Sponsor research and initiatives that bring new methods and technologies to market that can help reduce methane emissions from livestock.** For example, new research indicates that incorporating seaweed into livestock feed can reduce methane emissions from livestock by up to 90 percent. Experts and regulatory panels recommend further investigation before the widespread adoption of seaweed-based feed.[52] Funding that helps amplify these kinds of findings would also have an impact.
2. **Help to protect areas that have yet to be cleared for livestock pasture.** These areas, such as parts of the Amazon, are often places where Indigenous people cultivate foods. Protecting those areas preserves land—thus addressing the deforestation concerns described above—and stores carbon while protecting people and traditional agricultural practices. Amazon Frontlines is one international organization working to protect the Amazon by supporting and collaborating with Indigenous peoples living there.[53]

> "We don't need more food calories—we need more nutrition."
>
> *—Tim Crosby, Principal, Thread Fund*

Regenerative Agriculture

Modifying agricultural fields with fertilizers and pesticides uses a large amount of energy and often diminishes the quality of the crops grown in those soils. Research shows that with less interference from excessive fertilizers and pesticides, soils can form and retain more organic matter.[54] These healthier soils can store more carbon and yield crops with higher nutritional value, ultimately improving consumer health as well.

Efforts to make food systems more sustainable should be focused especially on supporting small and midsized farms in their transition to regenerative agriculture and their participation in global markets. These producers are crucial members of the global food system and supply chain, but they often do not receive adequate support from government systems or subsidies. Furthermore, transitioning to regenerative farming methods can take at least three years before bringing farms an ROI, and farmers can be understandably wary of transitioning their farming practices.[55] But recent research shows that farmers are more likely to adopt sustainable farming practices if there is a perceived near-term ROI.[56]

> "Rather than building systems that feed people, we need to build systems where people can feed themselves."
>
> *—Ertharin Cousin, Founder and CEO, Food Systems for the Future*

Philanthropy can help farmers transition to regenerative agricultural practices in three ways:

1. **Close the gap between the initial investment and the ROI by providing immediate grants or low-cost loans to farmers who are adopting regenerative practices during their first several years of the transition process.** Otherwise, a delayed reimbursement for an upfront cost can be a huge setback because farmers must adhere to tight schedules to optimize their planting and harvest seasons, often operating within thin financial margins. With upfront costs covered, transitioning to regenerative agriculture can increase operational efficiency and become profitable within a few years. Studies show that the transition can increase profits within a decade, and sometimes in only three years.[57]
2. **Work at the intersection of markets and policy to support farmers transitioning to regenerative agriculture.** For example, a producer currently using regenerative agriculture cannot get the same market loans and crop insurance rates as a standard producer because regenerative agricultural methods are not yet included in the standards covered by existing policies.[58] Philanthropists can help by underwriting loans and insurance premiums for farmers using regenerative agriculture. Doing so can then serve as a case study to help advocate the inclusion of regenerative practices in agriculture loans and insurance policies.
3. **Invest grant funding in institutions and partners that help small and midsized farmers find markets for their products.** This work may entail finding markets for surplus crop yields to avoid deflation on the crop price or helping producers participate in international markets for sustainable products. For example, the Foundation for Food & Agriculture Research awarded US$2 million to establish the Open Market Consortium, a multi-organization

collaboration developing an open-source blockchain system that connects small and midsized farmers to institutional buyers.[59] Sucafina, a leading sustainable farm-to-roaster coffee company, is providing farming communities with training on data collection and other practices to help them meet the criteria for selling their products in international sustainability markets and thus become more bankable counterparts.[60]

Food Waste

Among all the food that spoils in transit, expires on shelves in grocery stores, is prepared in eateries but not consumed, or goes from unfinished plates to trashcans, one-fifth of all food produced for human consumption globally is lost or wasted. This is the equivalent of one billion meals per day.[61] To make matters worse, food thrown in the garbage very often ends up in a landfill, where it releases methane because it cannot decompose properly. The solutions to this problem are straightforward, and philanthropic capital can help to make them possible:

1. **Support efforts that reduce waste in food systems.** For instance, grants to install off-grid refrigeration facilities for producers in rural areas can both reduce spoilage and increase profits. The runner-up recipient of the Milken-Motsepe Prize in Green Energy, OMNIVAT, did this by creating a containerized electricity generation and storage system for remote communities.[62] On the other end of the supply chain, philanthropic capital can support start-ups working to create markets for imperfect produce or that upcycle discarded parts of food items. The grand prize winner of the Milken-Motsepe Prize in AgriTech, a biotech company based in Tanzania called NovFeed, developed a way to upcycle organic waste into nutritious, sustainable, and traceable plant-based protein ingredients and concentrated natural biofertilizer.[63]

2. **Fund efforts to encourage wider adoption of composting.** Composting allows food to decompose naturally, releasing a small amount of carbon dioxide instead of methane and converting food waste into soil. Small-scale composting can be set up in backyards with relatively minimal maintenance, and philanthropists can support awareness and adoption efforts. On a larger scale, industrial composting has been introduced in some cities, with the potential to reduce emissions from food waste by more than 50 percent.[64] This figure increases if compost is used on soil as a fertilizer, capturing carbon and reducing the need for nitrogen fertilizers.

   Composting facilities cost less to construct than to operate. Grantmaking to support municipal pilot programs or community organizations willing to take on these kinds of solutions can help offset costs. For example, a US$4.77 million grant from CalRecycle will help the University of California, Davis to upgrade an experimental facility that converts food waste into biogas, which generates electricity used to power buses.[65] Even more ambitious solutions are possible as well: for example, South Korea introduced a comprehensive mandatory food-waste recycling program in 2013 that incentivizes people to waste less food and separate food waste from other garbage so it can be recycled into compost or animal feed.[66]

Box 4: Renewable Energy and Resilient Infrastructure

Renewable energy and resilient infrastructure are two critical needs that frequently come up in conversations about pressing climate and environmental issues. Both are central to reducing GHG emissions and helping societies mitigate and adapt to climate change. Much government funding and venture capital have already been directed toward these issues in many regions, especially in the US, but more is required to meet the energy and infrastructure goals needed to curtail climate change.

Because renewable energy and resilient infrastructure already receive more attention and funding overall compared to other needs, and because these issues have already been the subject of other extensive research and reports,[67] this report does not highlight these issues as underserved funding areas. But that is not to diminish the importance or urgency of either topic, or the critical role that increased, strategic philanthropic capital can play in advancing renewable energy and resilient infrastructure goals worldwide. Here are a few suggestions that arose in discussions with experts who highlighted examples from the US:

1. **Reach out to communities to help them access resources and understand the opportunities that renewable energy and resilient infrastructure can bring.** Government funding is essential for systemic solutions that address climate and environmental change, but it leaves gaps that require philanthropy to step in and help ensure the funding reaches the communities that need it most. Even short-term funding can make a big difference in these efforts, according to Kristi Kimball, executive director of the Clean Energy Communities Fund, which uses philanthropic capital to set up staff positions that help underserved US communities access government funding for climate mitigation. "There is often a gap between federal government funding and reaching local governments, especially in rural areas," she said, "but these communities can make a lot of progress toward decarbonization and climate mitigation with as little as US$100,000 per year for just two years."

   Economic development organizations can have a big impact on such initiatives, even with shorter-term programs. For example, RMI, an economics think tank focused on renewable energy, created a virtual boot camp series to help local governments and communities in the US understand and access funds from new government programs such as the Empowering Rural America Program, which was part of the US Inflation Reduction Act passed in 2022. "We can facilitate this connection because we understand both the policy and the stakeholders, the economic developers," said Aaron Brickman, senior principal, economic development, at RMI. Similarly, the Milken Institute recently launched the 10,000 Communities Initiative to help underserved communities in the US access funding, training, expertise, and partnerships to advance resilient infrastructure projects.[68]

Philanthropic capital can help to build, scale, and sustain such needed programs in the long term.

2. **Support and facilitate climate- and environment-related workforce development.** Renewable energy is a growing job sector in the US. A recent Department of Energy report shows that in 2023, clean energy jobs grew at more than twice the rate of overall US employment.[69] Almost 40 percent of the energy industry workforce in the US (more than 3.1 million workers) worked more than half their time in green jobs that aligned with US climate goals from 2021 to 2022.[70]

   However, many people going into green jobs were not previously in carbon-intensive jobs. According to a 2023 report by the National Bureau of Economic Research, fewer than 1 percent of US workers who leave carbon-intensive jobs transition into non-carbon-intensive jobs.[71] In some US states, over half of workers who leave a carbon-intensive job transition into another job with similar emissions. Philanthropic capital can support programs that help energy workers transition from carbon-intensive jobs to jobs in renewable energy.

3. **Support efforts to expedite new regulations that facilitate renewable energy and resilient infrastructure projects.** Philanthropically supported policy engagement can play a big role in renewable energy and resilient infrastructure development, especially in the US. For example, ClearPath, a conservative organization focused on clean energy and climate policy, advocates electing local leaders and federal policymakers who support bipartisan clean energy initiatives and reduced project timelines.[72]

Box 5: **Making the Apparel Industry More Sustainable**

Philanthropy can also fulfill a catalytic role in making profitable industries more sustainable. Sustainability is often not prioritized in the private sector unless it is part of a company's value proposition or environmental, social, and governance (ESG) commitment. This not only perpetuates climate and environmental problems but also leaves potential economic value on the table. Companies big and small can ultimately profit from prioritizing sustainability, but they often need the right boost or pressure to get there.

The apparel industry is a prime candidate for this type of partnership. This industry has unfortunately become a significant source of waste, pollution, and carbon emissions in recent years due to the rise of "fast fashion"—inexpensive clothing that is quickly and cheaply produced. Clothing production doubled from 2000 to 2014,[73] and most clothing purchases now end up in landfills or burned. By one estimate, a garbage truck of clothes is discarded or destroyed every second, and the annual value of clothing discarded prematurely is estimated to be more than US$400 billion.[74]

The methods used to produce clothing consume and pollute natural resources: for example, the lifecycle of making a single cotton shirt requires 2,700 liters of water, and every load of laundry containing polyester fabrics releases microplastics into waterways. From production to distribution to landfill, the sector is estimated to be the source of 2 to 4 percent of GHG emissions worldwide. One report found that addressing climate, environmental, and social problems created by the apparel industry would provide a US$192 billion overall benefit to the global economy by 2030.[75]

Here are three ways that philanthropists can help catalyze sustainable change in the apparel industry:

1. **Support innovative solutions and new businesses.** Some start-up companies are developing biologically sourced and biodegradable textiles from materials such as seashells, mushrooms, and lionfish skin.[76] Others are experimenting with production methods that reclaim and recycle materials such as old T-shirts and plastic waste. But such ventures must make it through the R&D stage, plus the costs sunk in the first few batches of a new product or first rounds of implementing a new method. Providing seed capital as well as guaranteed payments to manufacturers while testing and refining new materials and methods can make a difference.
2. **Support organizations working to help the apparel industry quantify and implement sustainability goals.** For example, the Apparel Impact Institute assesses solutions that can help apparel and footwear companies decrease their carbon footprint.[77]

3. **Fund convenings that bring apparel industry stakeholders together to discuss sustainability solutions.** These convenings arguably work best when they include stakeholders from across the supply chain, such as innovators who are developing sustainable textiles, designs, and production methods; manufacturers who are using them across established and emerging markets; corporate leadership from luxury fashion to department store brands; and heads of apparel philanthropic foundations who are spearheading net positive practices with their parent companies.[78] Sponsoring such convenings can foster new collaborations and partnerships, new public commitments, and scalable changes in company policies and processes.

Oceans

Climate change and human activity threaten ocean environments on multiple fronts. Many fishing practices result in environmental degradation and bycatch—the unintentional catching and killing of other wildlife. Maritime shipping contributes diesel fuel and noise pollution to ocean waters. Many coastal habitats have been degraded or destroyed from dredging, construction, and boat damage, or because of ocean warming and acidification. Plastic pollution in oceans presents a double threat of killing wildlife and degrading into tiny particles that are ingested by marine life and end up in human food chains as well.

Despite these pressing issues, oceans are often sidelined in philanthropic portfolios because most ocean areas are international waters. This means that, unlike on dry land, there is no governing body to enforce regulations or conservation measures in most ocean territory. It is also often unclear how to invest in ocean-related projects in ways that will generate returns to mobilize private capital.

The good news is that philanthropic capital can still provide crucial support for ocean conservation efforts, and these efforts are gaining more attention. Funding for ocean conservation has increased considerably in the last decade-plus, rising from US$430 million in 2010 to $1 billion in 2022.[79] Every ocean issue broadly could use more funding, but a few areas stand out as priorities for philanthropic intervention.

Fisheries

Sustainable fisheries are challenging markets to build. One reason is that new fishing technology can be difficult to develop due to the harsh marine conditions the physical equipment must endure. Another reason is that when a new fishing technology successfully comes to market, investors must anticipate that the payout of such companies may not be the most lucrative. According to Jake Hanft, program manager at Schmidt Marine Technology Partners, a program of the Schmidt Family Foundation, "You might become a US$50 million company, but probably not a US$100 million company," much less a $1 billion company.

"We are coming through the first 'seafood cycle,' so investors and start-ups are learning a lot about how much fishers are willing to pay for conservation-related technologies," according to Matt Mulrennan, director of investments at Sustainable Ocean Alliance. "For start-ups to scale their products, they need to show clear economic benefits to the customers, plus sustainability outcomes." However, some fisheries markets have become quite profitable. "People didn't believe that aquaculture would succeed, and now it's huge," Mulrennan said. He gave the example of Aqua Spark, an investment firm focused on aquaculture, which now has a US$500 million valuation.[80]

Given these factors, there are three key ways that philanthropists and, particularly, impact investors can help fisheries become more sustainable:

1. **Invest in sustainable new fishing tech companies.** Some fishing technology is over a century old and urgently needs a sustainable upgrade. For example, old trawling nets tear

up the seafloor and use high levels of fuel, releasing carbon dioxide, destroying habitat, and killing wildlife as bycatch.

One company, Katchi, has created an automated fishing system that targets schools of fish while avoiding contact with the seafloor.[81] This technology saves habitat, wildlife, fuel, and money. Providing seed capital to such endeavors can help start-ups attract more investors and bring new technology to market.

2. **Support collaborations among researchers, innovators, investors, and fishers.** The most effective investment ventures in fishing technology are the ones that utilize data and stakeholder field testing in their R&D process, according to Hanft. "There's a breakdown in the system when investors and tech innovators don't talk to fishermen, and fishermen don't trust the tech people as a result," he said. "Building the tech is half the battle; getting fishermen to use it is the other half." Funding organizations or individual projects that build such collaborations can determine whether well-meant solutions result in real-world change.

Maritime Shipping

Shipping accounts for 3 percent of global GHG emissions, ranking it the sixth- or seventh-worst emitter compared to countries, depending on the metrics used. About 90 percent of all trade is transported on ships at some point in any supply chain, so this issue affects almost every sector.[82]

Despite these challenges, the shipping industry has some advantages that can help with its decarbonization efforts. Maritime shipping regulations are solely determined by the International Maritime Organization, which adopted a revised strategy in 2023 that set ambitious targets for reducing shipping emissions. Shipping also lends itself well to technological innovation. Some electric and even hydrogen-powered boats already exist, with prototypes in San Francisco Bay and elsewhere.[83]

Philanthropists can support efforts to decarbonize maritime shipping by funding initiatives that help corporations collaborate on net-zero efforts. For example, Cargo Owners for Zero Emission Vessels, facilitated by the Aspen Institute, is building business consortia that buy zero-carbon fuels, outfit port hubs to host zero-emission ships, and support shipping decarbonization policies.[84] Other organizations, such as Opportunity Green and Clean Air Task Force, are advocating regulation, corporate action, and technological innovation to decarbonize maritime shipping.[85] Philanthropic support can help sustain such initiatives and scale them globally.

Coastal Habitat Conservation and Restoration

Coastal habitats, such as coral reefs, seagrass beds, kelp forests, peatlands, salt marshes, and mangrove forests, have suffered extensive degradation from climate change and human activities. Pollution, physical damage, overfishing, ocean acidification, and—in the case of corals—bleaching have all taken a toll. Losing these habitats would be devastating for wildlife, livelihoods, and infrastructure.

All these habitats buffer storm surge, a crucial defense against damage from hurricanes and typhoons, which are becoming more frequent and more intense because of climate change. They also provide critical habitat for wildlife, including fisheries species. Coral reefs and kelp forests are integral to ecotourism economies. Peatlands, salt marshes, seagrass beds, and mangroves filter water flowing from rivers and streams into the ocean. Crucially, these latter habitats also sequester carbon, offering a nature-based solution to reducing GHGs.

Current funding pales in comparison to the need for protecting and restoring each of these habitats. Philanthropic support for interventions to protect specific habitats can have a multiplying effect due to the many co-benefits and ecosystem services these habitats provide.

Projects in this giving area especially benefit from long-term funding, data collection, and capacity strengthening. For instance, the Pew Charitable Trusts (Pew) has longitudinal partnerships with local stakeholders working to protect coastal ecosystems (seagrasses, mangroves, peatlands, and salt marshes) in several countries.[86] This involves training, resources, and facilitation for scientists who map ecosystem extent, organizations that manage the data, and governments that incorporate the results into their nationally determined contributions[87] to the Paris Agreement. In this type of work, it is essential to support or partner with local scientists and build relationships with governments to establish trust. "Conservation outcomes are much more durable when projects engage with governments and recognize in-country expertise through partnerships with local scientists, particularly when collecting data within a country's borders," according to Stacy Baez, PhD, senior officer for the Advancing Coastal Wetlands Conservation Project at Pew. "We have to move away from the mindset that institutions in emerging economies do not already have expertise."

"Conservation outcomes are much more durable when projects engage with governments and recognize in-country expertise through partnerships with local scientists."

—Stacy Baez, Senior Officer for Advancing Coastal Wetlands Conservation, The Pew Charitable Trusts

Box 6: Successes in Addressing Plastic Pollution

Compared to many other ocean conservation challenges, significant progress has been made in efforts to reduce plastic pollution and replace single-use plastics. Plastic pollution in oceans and waterways has become a critical problem. Large plastics not only pollute water but also break down into tiny particles, called microplastics, that accumulate in the bodies of wildlife. Microplastics are even making their way into human bodies through water and food consumption. The health consequences of this are not yet fully understood.[88] A major source of this pollution is single-use plastics, such as plastic packaging for many food and beverage products. Single-use plastics represent a large and growing global market, offering a huge opportunity for innovation.[89]

Due to its enormous market potential, bioplastic technology has received significant investments and may soon compete with petroleum-based plastics in profits. Many innovators are also coming up with creative ways to remove plastic pollution from waterways. A few examples of start-ups in this space include:

- **Sway:** Plastic alternatives made from seaweed.[90]
- **Cruz Foam:** Packing foam made from seashells.[91]
- **The Great Bubble Barrier:** A net of bubbles in rivers that catches plastics, even microplastics, before they enter the ocean while allowing safe passage for wildlife and boats.[92]
- **Guppyfriend:** Laundry products that catch microplastics from synthetic textiles so they do not enter waterways through laundry loads.[93]
- **rePurpose:** Provides companies with circular economy training to help them establish better systems for reusing plastics.[94]
- **PCX Markets:** Market participants can offset their plastic footprint by sponsoring a fully accredited plastic waste collection and processing project through a credit marketplace.[95]

Ocean plastic pollution may be comparatively well funded as an issue area, but it could certainly use more support. Rather than investing in bioplastic technology, which already receives much attention, experts interviewed by the Milken Institute encouraged support for other, related initiatives. One example is funding community efforts to remove plastic from local waterways and beaches. Spreading awareness about plastic pollution and encouraging consumer behaviors like reducing and reusing, recycling, preventing litter, and buying products with less plastic packaging can also make a difference.

Communication and Outreach

Climate and environmental action cannot happen across sectors without informing, listening to, or collaborating with people who can influence decisions or may be affected by those decisions. Philanthropists can support communication and outreach in climate and environmental initiatives in the following four areas.

Audience Research and Effective Messaging

Effective messaging requires detailed understanding of audience concerns. Philanthropists can help by supporting research on audience views of climate and environmental issues, the results of which can be crucial to effective climate and environmental initiatives. For example, ongoing studies by the Yale Program on Climate Change Communication and George Mason University's Center for Communicating Climate Change (4C) about attitudes toward climate change across the US reveal interesting trends: only 53 percent or fewer of respondents across all 50 states said they had personally experienced the effects of global warming (national average 44 percent as of 2023).[96] However, the study also found the following:

- Most respondents agreed that global warming is happening (national average, 72 percent).
- More than 70 percent of respondents in every state supported funding of research on renewable energy sources.
- More than 65 percent in every state supported tax rebates for energy-efficient vehicles or solar panels.
- More than half of respondents in every state agreed that fossil fuel companies should be required to pay a carbon tax.

These data illustrate that climate perceptions and attitudes are complex, but most Americans are aware of and at least open to many climate solutions. The same study indicates that almost three-fourths of Americans are concerned about climate change to some degree (28 percent "alarmed," 29 percent "concerned," 15 percent "cautious").[97] Only 28 percent are "disengaged," "doubtful," or "dismissive."

> "Speak in practicalities: Talk about 'opportunity,' not 'duty' or 'altruism.'"
>
> *—Aaron Brickman, Senior Principal, Economic Development, RMI*

These findings indicate that messaging focused on climate action may be most effective with audiences who are already "concerned" or "alarmed" about climate change, whereas messaging focused on economic development through opportunities like renewable energy might appeal to "disengaged" or "doubtful" audiences. "You're not going to convince anyone who isn't already on board with climate action by talking about climate change," said Aaron Brickman of RMI. "Speak in practicalities: Talk about 'opportunity,' not 'duty' or 'altruism.'"

This approach can be especially effective with skeptical audiences. As Edward Maibach, PhD, director of George Mason University's Center for Climate Change Communication, emphasized, "Many climate skeptics are interested in climate solutions, especially when they present as economic and/or health opportunities."

Community Engagement

Although effective messaging is important, its impact in any community may be limited without community engagement—defined here as any collaboration among groups of people to address issues affecting mutual well-being. One reason this area is underfunded is that anything that requires human interaction is considered hard to quantify, one nonprofit leader remarked. For example, it is easier to measure the number of solar panels installed somewhere than spending time and resources on connecting with people to help them understand climate in a way that they did not understand before. But the real way to make a difference is to build a world that is climate-smart. The same expert emphasized that such efforts are often treated as a campaign to change hearts and minds, with some perceived end goal, when efforts really demand an ongoing process.

Significant philanthropic investment in areas such as food systems and environmental cleanup can have a much longer-term impact if the focus includes ongoing community engagement. For example, philanthropists can support initiatives that empower people with knowledge and resources to connect with policymakers. When that happens, according to expert interviewees, policymakers tend to adopt policies that are more community-oriented. At the federal level, experts suggested, philanthropic support can take the form of a convening or lobbying. At the local level, it can involve appealing to county commissioners, campaigns to sway public opinion, and on-the-ground advocacy.

According to experts interviewed, some of the most important leaders in climate and environmental action are trusted local leaders such as doctors, teachers, public health workers, law enforcement, and religious leaders. Outreach that engages local leaders who are trusted by their communities can be especially effective. This is particularly true in communities that are more conservative or that may be skeptical about green initiatives.

Media Engagement

Amid pervasive misinformation and disinformation about climate and environmental issues,[98] several experts stressed the importance of bringing trusted messengers with diverse perspectives to discussions of these topics. "We need credible messengers with an authentic message," said Jeremy Harrell, CEO of ClearPath, a conservative organization focused on clean energy and climate policy. Experts also emphasized the need to elevate discussions of climate and environmental issues across diverse media outlets because many people do not encounter those topics frequently enough. For example, the Yale Program on Climate Change Communication found that as of 2023, fewer than half of respondents across all 50 US states had heard about global warming in the media at least once a week (national average 32 percent).[99] That number could be much higher with long-term programming sustained by philanthropic capital.

> "We need credible messengers with an authentic message."
>
> *—Jeremy Harrell, CEO, ClearPath*

Some experts also advocated for more investment in culture and arts to engage lay audiences with climate topics. "There needs to be more climate awareness infused into pop

culture—more investment in art, culture, books, music, film, and television," said Nicole Rom, deputy director for Clean Energy Communities Fund and a strategy consultant for climate nonprofits. Investing in mainstream entertainment would help to meet audiences where they are, and illustrate climate change as an all-encompassing issue rather than a matter siloed for policymakers and economists to address.

Overall, many experts emphasized the need for effective storytelling in any communications strategy focused on climate and environmental issues. Storytelling helps to connect technical, abstract, unfamiliar, or uncomfortable topics to audiences' own frames of reference and lived experiences.[100] Studies also show that storytelling improves absorption, processing, and recollection of new information.[101] Furthermore, having a communication strategy that includes stakeholder research and impact orientation as well as a clear narrative can help to elevate a message amid the massive volume of content in the current media landscape, and to overcome challenges such as skepticism and politicization around climate issues.[102]

K-12 Education

Experts also emphasized that reaching the next generation early in their education is a key part of building a world that is climate-smart. "Children are the least skeptical group on climate," said Anisa Heming, director of the Center for Green Schools at the US Green Building Council. "They don't come in with preconceived value statements on climate."

Even so, developing effective K-12 curricula on climate change is not an easy task. Heming noted that it is important to make sure children do not become demoralized and, instead, that they learn about people working to solve environmental problems. Similarly, Lisa White, PhD, director of education and outreach at the University of California Museum of Paleontology (UCMP), said, "Climate change is one of the more complex subjects to teach students at the pre-college level in a way they can really grasp and be motivated to make a change." But there are ways to tackle this challenge. Heming explained that teaching young children how the natural world works—concepts like the water cycle, for example—can prepare them to understand how climate change is disrupting natural processes and how those disruptions affect people.

When teaching climate change, a thoughtful curriculum that breaks down complexity and makes it relevant to lived experiences can help students connect with the concepts, according to White. For example, the UCMP developed an interactive module, "Understanding Global Change," that allows students to explore how natural and human-made factors interact to keep natural systems in balance or tip.[103] The module can be tailored to reflect environments local to any classroom and connect with the experiences of those students. This resource is an example of philanthropic impact, as it was made possible in part by ongoing support from the Gordon and Betty Moore Foundation.

Many other organizations have developed publicly available K-12 educational materials on climate and environmental topics, as well as training programs for K-12 educators, with philanthropic funding.[104] Philanthropists can have an immediate impact here by supporting

specific programs or existing foundations focused on educational development.[105] Corporations have also supported K-12 environmental education through related product lines: for example, Prada's Re-Nylon collection, products made from recycled plastics, donates proceeds to the Sea Beyond program, a partnership between Prada Group and UNESCO to advance ocean education.[106]

Conclusion

Philanthropic support for effective climate and environmental efforts ultimately benefits everyone. Almost every significant climate initiative requires funding that prioritizes impact over profit or politics, especially in early stages. For this reason, philanthropy can make a significant contribution to climate and environmental action by providing funding that is flexible, patient, risk-tolerant, and dedicated to benefiting people and the planet. The recommendations gathered in this report from experts and leaders in climate and environmental initiatives can help any philanthropist develop an effective strategy for focusing, sustaining, and scaling the impact of their giving.

Finally, it is important to remember that supporting climate and environmental initiatives almost always has a multiplying effect when it comes to improving individual lives and communities. For example, programs that support small farmers through their transition to regenerative agriculture can reduce carbon emissions, increase profits for small businesses, and boost the nutritional value of food produced for consumers. All climate and environmental initiatives can use more philanthropic funding, but the areas highlighted in this report present critical gaps and, as such, major opportunities for impact. Overall, it is increasingly clear that philanthropists can play a crucial role in reducing the barriers to addressing these challenges, scaling known solutions, and creating new opportunities in the process.

Appendices

Appendix 1: Institutions Consulted

This list includes institutions represented in the pool of 70 experts consulted for this report. The research process included 55 interviews and a roundtable discussion. Only those institutions that consented to be listed are shown here. The synthesis presented in this report does not necessarily reflect the views of every individual consulted.

Corporations

- CDPQ
- Weber Shandwick

Impact Investment Firms

- Africa Climate Ventures
- Bay Bridge Ventures
- Open World Alliance
- Sustainable Ocean Alliance
- Thread Fund

Nonprofits

- Aspen Institute Energy & Environment Program
- California Academy of Sciences
- Center for Communicating Climate Change, George Mason University
- Clean Energy Communities Fund
- ClearPath
- Climate Action Platform for Africa
- ClimateWorks Foundation
- Ezemvelo KZN Wildlife
- Food Systems for the Future
- Fundación Avina
- Giving Green

- Global Alliance for the Future of Food
- Institute for Climate and Sustainable Cities
- ISEAL Alliance
- Milken Institute
- National Geographic
- Project Drawdown
- Resources for the Future
- RMI
- Science Communication Lab
- Smithsonian National Museum of Natural History
- Smithsonian Tropical Research Institute
- Sucafina
- University of California Museum of Paleontology
- US Green Building Council

Philanthropic Foundations

- The African Climate Foundation
- Asia Philanthropy Circle
- Iemlem Foundation
- The David and Lucile Packard Foundation
- The Pew Charitable Trusts
- Schmidt Marine Technology Partners
- Tara Climate Foundation
- VoLo Foundation

Small Businesses

- Creekbound Farms
- Mercantilia Consulting

Appendix 2: Milken Institute Workstreams on Environmental Impact

In addition to providing philanthropic advisory services and action-oriented reports to interested philanthropists and foundations, the Milken Institute provides direct technical assistance, holds strategic convenings, and mobilizes public and private capital for climate and environmental initiatives. Current workstreams include transforming food systems, promoting access to affordable power and clear water, and advancing public-private partnerships as well as financial instruments and policies that encourage resiliency, adaptation, and climate equity. These efforts are guided by working groups that are supporting the Institute's 2025-2035 Decade of Deployment Strategy[107] and through special initiatives funded by partners. Following are a few examples.

- **Milken-Motsepe Innovation Prize Program:** In 2021, the Milken Institute, in partnership with the Motsepe Foundation, launched the Milken-Motsepe Innovation Prize Program.[108] The program is a series of multiyear, multimillion-dollar innovation competitions and awards harnessing Fourth Industrial Revolution technologies to advance technological solutions toward the UN SDGs in Africa. The first two prizes in the series advanced innovations in agritech and green energy.
- **Food Systems Transformation:** The Milken Institute Feeding Change team activates social and financial capital, engages policymakers and industry leaders, and convenes key stakeholders to catalyze a more nutritious, sustainable, resilient, and equitable food system.[109] Positioned at the intersection of issues impacting finance and health, Feeding Change is uniquely positioned to transform food systems and achieve better health outcomes.
- **Antimicrobial Resistance:** The Milken Institute FasterCures' work on antimicrobial resistance focuses on sustainable financing of antibiotic development, creating a pathway for private-sector investment and engagement in antibiotic innovation, and pandemic prevention through global coordination of biosurveillance networks.[110]
- **10,000 Communities Initiative:** The Milken Institute released research showing that predevelopment funding critically helps underserved communities in the US to access federal and state funding for building community-led climate projects.[111] Philanthropic support for the Milken Institute's follow-up efforts to advocate for predevelopment capital and capacity under its 10,000 Communities Initiative was then critical in moving US$11 billion in new federal funding in 2022 and 2023.[112]
- **Climate and Adaptation Finance—Road to Brazil Project:** The impacts of climate change are already visible around the globe, accelerating the occurrence of extreme weather events and natural disasters affecting vulnerable frontline communities. Yet currently, less than 10 percent of global climate finance is directed to adaptation and resilience investment. The Milken Institute's Finance and International teams are collaborating on the Road to Brazil initiative, which seeks to shift public and private funding toward co-investment strategies to link mitigation and resilience, support frontline communities

internationally, and scale up investment in resilience and adaptation to avoid trillions of dollars in losses and the necessity of choosing among resilience, adaptation, and mitigation in the future.

- **Climate Capital Deployment—The Decade Ahead (2025-2035):** We face an inflection point for effective climate and adaptation finance. How can we ensure enough capital is available to invest in mitigation tech, scale carbon markets, and build bottom-up financing structures that support sustainable and resilient communities across the globe? To accelerate capital deployment, Milken Institute Finance has released a 10-year plan for recalibrating effective progress on climate, resilience, and transition from 2025 to 2035. Active work groups will publish recommendations for action in key gap areas in 2025.

Appendix 3: Milken Institute Strategic Philanthropy Rubric for Prioritizing Philanthropic Opportunities and Interventions

	Below Expectations (1)	Meets Expectations (2)	Exceeds Expectations (3)
Presence of Promising Evidence-Based Interventions	Area of field is developing and/or missing definitive direction on the most promising change-making approaches	Area of the field has some data indicating promising change-making approaches but may not be definitive in what is needed to scale	Area of the field has clear data indicating promising change-making approaches to scale
Infrastructure/ Market Readiness	Area of the field and its relevant stakeholders are not well positioned to absorb influx of impact capital to generate change	Area of the field and its relevant stakeholders may be able to absorb capital but may not be able to effect change sufficiently	Area of the field and its relevant stakeholders are positioned well to utilize capital and catalyze change
Anticipated Influence of Impact Capital	Area of the field is saturated with capital, and additional resources may not prompt material progress	Area of the field is somewhat resource-rich, but additional impact capital would be influential in generating progress	Area of the field is at an inflection point, and impact capital from a single source could generate powerful outcomes
Potential for Transformation	Incremental progress (within existing systems) is possible within this area of the field	Material progress for select populations or geographies is possible, though not at scale, within this area of the field	Sustained system-change is possible within this area of the field

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