HARVARD MANAGEMENT COMPANY

Climate Report

FEBRUARY 2022

As part of Harvard University's commitment to set the endowment on a path to achieve net-zero greenhouse gas (GHG) emissions by 2050, Harvard Management Company (HMC) reports annually on progress toward the goal. Previous Climate Reports are available on the HMC website.

Executive Summary

HMC continues to dedicate substantial resources toward implementing Harvard's net-zero goal. Since our last report, we have made active and urgent progress on several initiatives, including:

- **Achieving Carbon Neutral Operations —** As a stand-alone investment office with physical operations apart from the University, HMC's facilities and operations will be carbon neutral for fiscal year 2022 — a first among U.S. higher education endowment offices. HMC's efforts complement the University's own emissions reductions plans for the Harvard campus that began in 2006. HMC continuously seeks opportunities to reduce emissions from our own operations and will purchase high-quality, durable carbon removal for emissions we cannot abate.
- **Investing in Climate Transition —** HMC is building a portfolio of assets via dedicated externally managed funds and direct investments that support the transition to a green economy.[1] As of the end of HMC's most recent fiscal year (June 30, 2021), HMC's growing exposure to climate solutions was approaching 1% of the endowment. We expect this trend to continue and accelerate going forward.
- **Collaborative Engagements —** Since our last report, a growing number of new net-zero commitments have been made by other university endowments, asset owners, companies, and municipalities. HMC remains committed to collaborating with like-minded investors to encourage their implementation of a strong governance framework for addressing climate change, reducing GHG emissions, and improving corporate disclosure in line with the recommendations of Task Force on Climate-Related Financial Disclosures (TCFD). HMC's ongoing collaborations are detailed in the Appendices.
- **Fossil Fuel Exposure—** HMC avoids direct exposure to fossil fuel holdings and new investments in private equity funds focused on exploration and development in the fossil fuel industry. HMC's remaining fossil fuel exposure is held through legacy, dedicated externally managed funds. As of the end of HMC's most recent fiscal year (June 30, 2021), this exposure represented less than 2% of the endowment.[2] These legacy investments are in runoff mode and will end as the partnerships are liquidated.
- **Improving Data Access —** When investing with external managers, HMC generally has limited information about the specific holdings in these investments. HMC actively engages with its external managers to gain access to the data needed to estimate GHG emissions associated with these investments. HMC continually assesses new approaches for arriving at emissions calculations, including working with third-party aggregators and developing comprehensive methodologies for estimating portfolio-level emissions.

[1] *See President Bacow's recent Climate Update.*

[2] *HMC is contractually obligated to make additional capital contributions to these investments during the life of the fund. The value of these investments will change over time due to these capital contributions, changing commodity prices, and the performance of the energy sector relative to other assets in the endowment.*

Commented [DK1]: This continues to be a pretty thin, data-light, report. The general statements are useful, but not sufficient, to evaluate progress on what is a very challenging long-term goal. Is HMC producing something more that the Harvard Board is not yet ready to share with the public? Or is the lack of data indicative of the approach HMC plans to use of presenting generalities and asking that the public just trust them on the details?

Commented [DK2]: Their offices alone? Including staff travel? Any info on how they are actually doing this? The Crimson said HMC partnered with Carbon Direct to measure emissions and identify ways to reduce emissions, and that partnership is mentioned in this Climate Report as well. But as with all of these important areas of progress, to be believable HMC will need to provide actual details on what it has done and is planning to do.

Commented [DK3]: They should be publishing high level data on what solutions they are invested in and the stage of development (e.g., operating company with real products vs. public company with potential future products vs. early stage venture). These investments can sometimes be a bit greenwashy, so visibility by topic is needed to discipline the process. Similarly, if investments they make in climate transition turn out to be in sectors that do really well, or do worse than other investments, that is important to be able to see.

Commented [DK4]: "Detailed" or simply listed? There's very little meat in the Appendices of this report.

Commented [DK5]: They probably have pivoted to some degree here, but really need to come clean on what they are holding in non-dedicated funds (for upstream) and also what they hold for all types of exposure in other parts of the ff supply chain.

Commented [DK6]: As noted in earlier commentary, Harvard could sell positions in the secondary market if they wanted to. This is likely part of the way they moved away from farmland so quickly a few years back (from 9% of the portfolio in late 2016 to only 2.6% by mid-2020). While secondaries seem to have cooled along with the dislocations that financial markets are experiencing right now, continued high prices for oil and gas as well as significant M&A activity in the sector both suggest that sales in these areas could be possible at attractive prices. HMC may not want to accelerate sales for portfolio diversification reasons, but if so, should be clear about what is driving their behavior.

Commented [DK7]: HMC may have less information than needed to benchmark carbon emissions. However, in all asset classes aside from (maybe) hedge, they know at least the company name and key business activities. And they should be making that public.

- **Developing Appropriate Methodologies —** Developing an industry-wide consensus on the appropriate methodologies for calculating GHG emissions is an essential step before HMC can have a precise view of emissions across its portfolio. While no consensus exists today, HMC continues to engage with industry participants (asset owners, asset managers, industry trade associations, data providers, and standards-focused NGOs) to drive progress on carbon accounting methodologies for alternative investment strategies. Additionally, HMC has actively contributed to the public discourse on accounting methodologies for the attributed emissions of the short positions of long/short equity portfolios. Members of HMC's sustainable investing team have also contributed to a number of industry working groups focused on climate-related reporting.

Introduction

The science is clear: to achieve the goal of limiting global warming to below 2 degrees Celsius the world must reach net-zero greenhouse gas (GHG) emissions by 2050.

With the latest Intergovernmental Panel on Climate Change (IPCC) report, we understand that the habitable condition of our planet will only become more dire without concerted action to stabilize global temperatures. As anthropogenic GHG emissions in the atmosphere increase, the planet will experience rising temperatures, rising sea levels, seasonal changes, and more frequent droughts and extreme weather events. The resulting permafrost thaw, loss of seasonal snow cover, and disappearing sea ice will only amplify the problem.

WATCH: OUR COMMITMENT

In April 2020, the President and Fellows of Harvard College instructed HMC to set the Harvard endowment on a path to achieve net-zero GHG emissions by 2050. This commitment was a natural extension of Harvard's ongoing efforts — through its teaching, research, and operations — to prepare for and accelerate the necessary transition to a fossil fuel-free economy.

Achieving the endowment's net-zero commitment is not without challenges. Nevertheless, HMC continues to dedicate substantial resources toward implementing Harvard's net-zero goal. In addition to this report, HMC made a series of short videos for the Harvard community discussing the net-zero commitment, our early efforts, and reaching our goal.

Progress Towards the Commitment

Achieving Carbon Neutral Operations

As a stand-alone investment office with physical operations apart from the University, HMC's facilities and operations will be carbon neutral for fiscal year 2022 — a first among U.S. higher education endowment offices. HMC's effort builds off of Harvard University's plan to reduce campus emissions that began in 2006. HMC is including Scope 1, 2, and 3 emissions in our operational commitment.[3] By making our operations carbon neutral, HMC aims to combat climate change and develop a deeper understanding of carbon footprinting and carbon removal projects.

[3] *This does not include "downstream" emissions associated with financing Harvard University's annual operating budget.*

Commented [DK8]: While a "precise view of emissions" would require some degree of consensus to be broadly credible, the continued framing of this as a prerequisite for material progress is problematic. HMC needs to be putting forth rough estimates now, even while acknowledging the uncertainties. The ice caps will be gone before there is a full "industry-wide consensus on the appropriate methodologies for calculating GHG emissions…"

Commented [DK9]: Links please. Where is this available? How old is it? HMC should be including links to all relevant approaches (i.e., ones HMC plans to use) to track emissions across asset classes on its website, especially analysis produced by HMC staff.

Commented [DK10]: If HMC really is achieving carbon neutrality on Scope 3 emissions, it would be a wonderful case study for many other financial firms. This would be useful even if they are just looking at the emissions of upstream suppliers (based on footnote 3, the firms they invest in seem to be excluded).

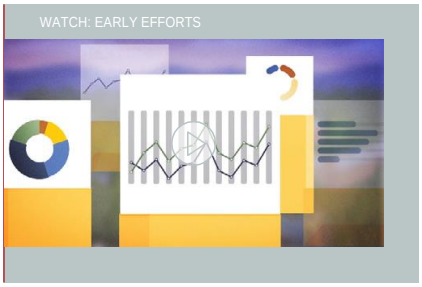
To achieve carbon neutral operations, HMC partnered with a third party, Carbon Direct, to estimate the CO_2e[4] emissions for our operations, develop plans to reduce emissions, and build a portfolio of high-quality, long-term carbon removal projects. To meet HMC's criteria, projects must be durable, show additionality, provide quality carbon accounting and monitoring, and not result in harm to surrounding ecosystems and communities.

HMC is working with Carbon Direct and other experts to develop a management plan for offsets to ensure monitoring and permanent removal. HMC will continuously seek ways to reduce emissions where we can and will purchase removals for emissions-producing activities we cannot abate.

Investing in Climate Transition

According to a recent report issued by the Glasgow Financial Alliance for Net Zero (GFANZ), an estimated $100 trillion is needed over the next 30 years to fund the transition to a net-zero economy.

Since announcing our net-zero commitment, HMC has developed our approach to making new investments aligned with our climate transition strategy. HMC is building a portfolio of dedicated externally managed funds and direct investments that support the transition to a green economy by seeking to accelerate the decarbonization required to limit global warming by investing in climate solutions.



HMC has primarily sought opportunities in the venture capital and growth equity space. We believe these investments provide the greatest opportunity to provide catalytic capital to bridge potentially transformational technologies from early commercialization to at-scale deployment to maximize impact. These climate transition investments seek to accelerate the changes required to reduce carbon emissions in the real economy while positively impacting our portfolio-wide net-zero goals. Importantly, HMC sees these investments as capable of achieving outsized financial returns in line with other outstanding opportunities in these asset classes. One of the more encouraging emerging sources of investment opportunity in the landscape has been the expansion of existing high-quality managers into climate-related activity as part of their regular investment efforts. Such activity validates the opportunity in climate transition investing in these areas.

In fiscal year 2021, HMC more than doubled the amount of capital deployed to climate solutions from the previous year. As of the end of fiscal year 2021, HMC's growing exposure to climate solutions is approaching 1% of the endowment. We expect this trend to continue and accelerate going forward.

These figures relating to HMC's exposure to climate solutions reflect the exposure that we can determine through available data. More robust data in the future may result in more precise reporting.

Fossil Fuel Exposure

To meet Harvard University's net-zero target and contribute to the decarbonization of the economy, HMC must reduce its exposure to the highest emitting sectors, such as fossil fuels. Consequently, HMC avoids both (i) direct exposure to fossil fuel holdings, and (ii) new investments in private equity funds focused on exploration and development in the fossil fuel industry.

As of the end of HMC's most recent fiscal year (June 30, 2021), HMC had no direct exposure to companies that explore for or develop further reserves of fossil fuels.

[4] *Harvard's pledge to make the endowment net-zero of GHG emissions by 2050 encompasses all GHGs contributing to climate change, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. We expect to use carbon dioxide equivalent (CO_2e) to measure emissions.*

Commented [DK11]: HMC has historically presented investment by making a high-level general statement of engagement with a partner followed by a brief summary sentence or two on the hoped-for benefits of these engagements. But they provide zero, or close to zero, in terms of specific, verifiable data on what the partnerships are actually accomplishing.

Offsets remain a challenging area, which Carbon Direct is aware of. No matter how good HMC believes their purchased offsets are, basic information on what was purchased must be made public. External vetting will quickly confirm the quality of the offsets being used or force improvement.

Commented [DK12]: I see this as a positive step. HMC, particularly if working with other institutions, can have substantial leverage in structuring the disclosure and reporting of new venture, real estate, private equity, and maybe hedge investments -- particularly if part of a group of LPs. While harder to establish for existing investments, pooled efforts may generate options that both the LPs and existing managers find useful.

Given that this is the second climate report, HMC should have included any improvements in disclosure requirements for new investments, or confirmed there have been none.

Commented [DK13]: This is theoretically great, but as we've seen with critiques of many of the ESG screens and associated reporting, there is a great deal of wiggle room in what sounds like a climate-positive investment and what actually is. Verification remains critical here, and HMC's staff was very small. So who are they relying on for vetting and verification?

Commented [DK14]: With an endowment value of $53.2b in June 2021, 1% is a significant half-billion dollars. This can make a big difference to some promising new ideas. But data are important: what portion of the investment is in areas that a cynical evaluator wouldn't classify as a substantial climate solution? Have there been performance issues that would signal a pullback from this sector in the near-term? Is HMC co-investing on deals with other large players that could increase its leverage?

Commented [DK15]: Directly held public equity is a small % of the portfolio, and there have been no direct holdings of upstream fossil fuel producers for quite a few years. However, HMC does seem to continue to hold mutual funds and ETFs that have fossil fuel components, even though there are an increasing number of low-cost screened replacements that exclude the same upstream companies they will no longer purchase directly.

Commented [DK16]: Alas, HMC continues to use this slippery phrase, filled with many strategic omissions. My review of HMC's last climate report included this on the omissions:

They adopt this framing even while acknowledging on page 2 that this narrow definition is not aligned with what President Bacow committed the university to doing ("choosing a path of decarbonizing 'the investment portfolio as a whole, rather than simply targeting the suppliers and producers of fossil fuels'").

So, what does this narrow definition leave as an allowable investment, untouched and unreported? Apparently:

-These exact types of firms, if held in commingled portfolios such as mutual funds, ETFs, or more diversified private equity, venture, or hedge funds (i.e., investments not "held through dedicated externally managed funds").
-Other portions of the fuel cycle, such as pipelines, storage, refineries, compression stations, export terminals, or LNG or oil tankers.
-Fossil-intensive industries, including not just energy-intensive industries like cement, but also natural-gas and coal-fired power plants.

And it even seems to leave in firms that are working their existing *reserves of fossil fuels, so long as they are not developing new ones.*

These details matter, and being clear on what is still left in the portfolio, rather than spinning what is being excluded, is critical to building trust.

HMC's remaining exposure to fossil fuels is held through legacy, dedicated externally managed funds. As of the end of HMC's most recent fiscal year (June 30, 2021), this exposure represented less than 2% of the endowment.[5] These legacy investments are in runoff mode and will end as the partnerships are liquidated.

These figures relating to HMC's exposure to fossil fuel companies reflect the exposure that we can determine through available data. More robust data in the future may result in more precise reporting.

Systemic Challenges

Two challenges highlighted in last year's Climate Report — improving data access and developing consensus regarding appropriate methodologies for calculating portfolio GHG emissions — remain key areas of focus. While both challenges require systemic solutions not wholly within our control, HMC made meaningful contributions to these issues over the past year by actively embracing these challenges and aggressively pursuing solutions as discussed below.

IMPROVING DATA ACCESS

Improving data access across private assets, listed equity, and hedge fund strategies is a key area of focus. HMC continues to engage with external managers across these asset classes on the critical importance of collecting and disseminating climate-related data.

Private assets make up a significant portion of HMC's investment portfolio. While external managers of private assets (private equity, private real estate, etc.) provide basic portfolio holdings information, most do not provide data relating to the carbon emissions of their investments. HMC continues to engage with external managers on the critical importance of collecting and disseminating this data.

Listed equity and hedge fund strategies present a different set of challenges. Most public markets investors closely guard their holdings information. In rare cases HMC has limited visibility into these holdings. In most cases we have none. HMC continues to engage with external managers to (i) gain greater access to information regarding the underlying holdings, or (ii) receive aggregated reporting on our portion of the GHG emissions attributable to these managers' portfolios. Managers that invest primarily outside of the major developed markets or hold more esoteric securities and instruments find this reporting even more challenging.

The challenge of improving data access is not unique to HMC. As more asset owners and asset managers make net-zero commitments,[6] we expect that climate-related disclosures will improve. The TCFD released its initial recommendations in 2017. As of October 2021, the TCFD had over 2,600 supporters globally, including 1,069 financial institutions, responsible for assets of $194 trillion.

HMC contributed to several initiatives organized by the Principles for Responsible Investment (PRI), Initiative Climate International (iCI), and Ceres that focused on improving environmental, social, and governance (ESG) reporting, including on GHG emissions, by private equity general partners.

Lacking direct GHG emissions reporting from managers, HMC must rely on modeled estimates to calculate the carbon footprint of the endowment's private investments. Several data vendors are developing service offerings to help limited partners like HMC fill in these gaps. HMC has partnered with one major ESG data vendor to assist with our ongoing analysis and continues to evaluate the service offerings of others as they extend their data sets to cover a larger portion of HMC's private portfolio.

[5] *The value of these investments may change overtime due to contractual capital commitments, changing commodity prices, and the performance of the energy sector relative to other assets in the endowment.*

[6] *Since Harvard's announcement, a growing number of new net-zero commitments have been made by other asset owners including: University of Oxford (April 2020), University of Manchester (May 2020), Stanford University. (June 2020), David Rockefeller Fund (August 2020), University of Cambridge (October 2020), World Resources Institute (October 2020), Arizona State University (February 2021), Trinity College Cambridge (February 2021), University of Michigan (March 2021), University of Pennsylvania (April 2021), Princeton University (May 2021), University of Waterloo (June 2021), University of Sydney (June 2021), University of Toronto (October 2021), and the McKnight Foundation (October 2021).*

Commented [DK17]: This statement is misleading. They have continuing exposure through publicly-traded ETFs and mutual funds, likely through energy-related allocations in mixed alt investment funds, other stages of the fossil fuel supply chain via investments of any type, and who knows what within their external hedge fund managers.

Plus, there are other ghg-intensive sectors that are barely mentioned in this report, though it is a *climate* report, not a *fossil fuel holdings* report.

Commented [DK18]: This is also a misleading statement. Data are easily available on index-matching mutual funds and ETFs, along with screened substitutes. Data are also easily available on alt investment portfolio companies that are already tracked fairly well by Preqin and PitchBook. HMC can say they don't have the staff to fill in that information (clearly it's not as easy to track as dedicated private equity funds in the energy space); but don't claim the data aren't available.

Commented [DK19]: One should not pre-define a solution in such a manner that it eliminates useful interim steps. These funds know their portfolio companies and what industries they are in. And if you know the industries and the products or services, one can quickly make some pretty helpful groupings on their climate impact – such as ghg-reducing, ghg-intensive, or unknown. Pretty simple; you don't need a master methodology and you can do it now. Keep working on the master methodology, but incrementally boost reporting in a more qualitative way immediately.

Commented [DK20]: If this refers to an active stock fund, holdings should be disclosed quarterly. If HMC is instead referring to non-traded funds investing in listed equity, I'd be interested in any institutional investor who has made more progress on tracking than Harvard has. Maybe they have lessons that would apply here. Requiring sector-level disclosure, including the scale and duration of exposure, might be one way to track broad trends without interfering with managers' closely guarded secrets.

Commented [DK21]: Footnote 6 frames Harvard as an early mover in this space by listing only institutions that made commitments after Harvard did. It's not my impression that Harvard was an early mover. Regardless of the timing of its commitment, however, the University can be a very important innovator in decarbonizing a portfolio and identifying promising investments in emerging cleaner industries. Obviously, not all of the commitments listed here are identical in terms of what they are disclosing and the associated oversight and accountability on investment holdings and net zero evaluation. These other attributes likely matter more than when a commitment was made.

Commented [DK22]: The presentation is kind of fluffy here. What specifically has HMC done, and when? HMC's annual climate report shouldn't continue to call out papers or meetings its staff attended five years ago, but rather highlight the changes and improvements during the most recent period. This type of very general statement is close to useless, and in addition to a more specific description of what HMC did, they ought to be releasing publicly their claimed contributions.

Commented [DK23]: There are clearly economies of scale in this area. An early service HMC could provide while testing vendors is to report on substantial observed differences in reporting across the vendors, along with any insights as to the major drivers. That type of comparison would help both vendors and customers refine the data. Highlighting the key areas of variance is useful even if the vendors are not named individually.

DEVELOPING GHG ACCOUNTING METHODOLOGIES

A significant portion of HMC's portfolio is invested in hedge funds that pursue strategies uncorrelated to the broader markets. These strategies include long/short equity, systematic trading, the use of complex derivatives, and the short selling of securities. Currently, no industry consensus exists regarding the best way to calculate the emissions of investments by these uncorrelated hedge fund strategies and the GHG accounting protocols developed so far do not address these questions.

HMC continues to engage with industry participants (asset owners, asset managers, data providers, and standards-focused NGOs) on carbon accounting methodologies for alternative investment strategies. HMC also continues to study the underlying logic of protocols in development and will likely adapt these protocols for the purpose of HMC's unique reporting needs.

For example, HMC believes that the intellectually rigorous way to account for the emissions attributable to short sales is to net the emissions of short positions against those of long positions. At the investor level, the act of shorting large carbon emitters can reduce portfolio climate risk and so should be reflected in the portfolio's carbon emissions. To the same degree that buying shares helps finance a company's operations and gives the owner a carbon footprint, holding a short position hinders a company's finances and gives the holder a negative carbon footprint. At the market level, if emissions from short positions are not netted, there would be double counting for any shares that are borrowed and resold. Generally, we believe that rigorous carbon accounting principles should not favor certain types of investment strategies over others.

Netting short positions also allows market neutral investors to reduce their market exposure through hedging, which can enable them to engage with high carbon emitters to improve their environmental standards while still managing their portfolio's carbon footprint.[7]

As HMC continues to engage on carbon accounting standards in alternative asset classes, we are confident that these issues will be addressed in due course as we work toward our net-zero objective.[8]

THE WORK AHEAD

HMC will continue to work actively with our external managers and relevant third parties over the coming years to make meaningful progress on the challenges of data access and developing an industry-wide, consensus methodology for calculating GHG emissions.

With respect to data access, HMC is confident that external managers of both public and private markets will evolve their climate reporting practices over time. Collaboration with institutional investors will be critical to establishing industry standards for GHG reporting. The broader voice of the institutional investment community will ensure the clearest success in the timeliest manner.

With respect to developing industry-wide consensus on the appropriate methodologies for calculating GHG emissions, HMC is actively engaged with industry participants to address this concern. Such methodologies will be a gating item for any institutional investor, such as HMC, to obtain a robust view of the emissions across its portfolio.

[7] *HMC's CIO, Richard Slocum, discussed these views in an interview with Bloomberg News.*

[8] *As noted above, HMC is an active participant in many industry working groups and initiatives focused on developing a carbon accounting methodology for hedge fund strategies, including initiatives led by the PRI, Standards Board for Alternative Investments (SBAI), Science Based Targets Initiative (SBTi), and Climate Action's Sustainable Investment Forum.*

Commented [DK24]: Less-correlated, not uncorrelated. And asset class correlation may rise during periods of high market volatility, reducing its diversification value.

Commented [DK25]: It would be very useful if Harvard and similar institutions identified the main approaches being proposed and their strengths and weaknesses. A key source of leverage for the university is its ability to convene discussion and evaluation of core issues it deems important to work on. Since there could be five more years of climate reports stating that HMC is "working" on this challenging issue, a reasonable source of accountability is for them to disclose more clearly what they are working on, the main areas of progress, recurring impediments, and their strategy to overcome them.

Commented [DK26]: What are the possible counter-arguments to this position? One clear one is the ability to introduce short-positions timed around reporting windows on climate to game the reported footprint. Thus, some type of "flow" metric over the full reporting period would be needed to ensure this doesn't happen.

Another issue might be the continued engagement in fossil fuels, using hedging to manage financial risk such that is allows fund managers to continue to invest in problematic sectors.

Specifically, this could occur from the generic netting of short and long -- basically a metric ton of carbon is equivalent no matter where it comes from. This simple comparison would make sense based on a net zero calculation, but might create some other problems. For example, could an investor offset some of the risks associated with high-risk, high-carbon O&G (e.g., tar sands, Arctic reserves) activities via hedging of more conventional O&G investments? This could be neutral from a climate or fuel exposure perspective, but still allow the more troublesome parts of the O&G market to move forward. Given HMC's commitments not to invest in upstream O&G, maybe this is not so much of an issue for Harvard. However, these types of pitfalls and potential "work-arounds" do need to be considered in evaluating methodological recommendations for particular asset classes, as Harvard's approach will likely be copied broadly.

Commented [DK27]: Interesting point, and one that seems to raise a similar issue for asset managers who lend securities held in client portfolios.

Commented [DK28]: Theoretically true, though real disclosure of engagement and what was achieved from that engagement is needed across the endowment world. HMC's past summaries highlight very few successes in this area after many years of effort.

Commented [DK29]: Important they continue to work with external managers and third parties to improve data access. For their first climate report the type of generic statement included here was tolerable. But for this second one, they should have provided specifics on exactly what they are doing and why they believe it will work.

Commented [DK30]: If there is a need or expectation to achieve consensus on this, it could be a long time coming. Lower barriers to success might be possible if they adopt a phased approach, doing easy things quickly while they work through the more challenging ones.

Next Steps

Harvard University and HMC have set the endowment on a pathway to reach net-zero GHG emission by 2050, but we cannot wait. Investment decisions made today will have an impact on future endowment emissions.

While we work through next steps, improving data access and establishing appropriate GHG accounting methodologies are foundational. HMC needs a precise calculation of the emissions of the investments in our portfolio before we can establish a baseline and measure performance against the net-zero targets. Data access and appropriate methodologies will enable us to set short- and medium-term targets as well.

Numerous methodologies are being developed to assess asset managers and asset owners against net-zero targets. These methods include the sectoral decarbonization approach (SDA), portfolio temperature rating, and portfolio coverage approaches being developed by SBTi. HMC continually monitors these efforts and will select the approach or approaches that best address our portfolio.

WATCH: REACHING OUR GOAL

The most material long-term reductions in portfolio emissions will likely come from changes in the real economy. Technological improvements, innovation, and regulation will determine the emissions trajectories of many companies. Regulations that further limit emissions in hard-to-abate sectors would advance mitigation and drive down the highest emitting economic activities. Innovations in materials science and machine learning can help decrease GHG emissions in product manufacturing, agriculture, and services.

It's unlikely that the endowment's pathway to net-zero will be linear, at least not in the short term. As a long term investor, HMC considers the endowment's future impact on global emissions and climate change. We will weigh investments' short-term emissions against their potential to reduce emissions over the long term.

In the coming years, HMC will focus on the methods and metrics necessary to measure emissions from the endowment's investments, set targets, and reach a state where it has a net-zero impact on climate from GHG emissions. We are studying different target-setting methodologies and intend to set targets that are science-based and best account for all factors that are needed to meet global climate goals. This will take extensive study, thoughtful deliberation, and cooperation with and by a wide range of parties.

We welcome the challenge.

Commented [DK31]: Again, this may be necessary to calculate whether Harvard is net zero or not in 2050, but it is not necessary to make first and second order estimates that facilitate a great deal of forward progress. I want to see a broader set of milestones in their climate report, including explicit interim deadlines.

Further, I am skeptical that emissions estimates will ever be perfect; financial metrics that have been measured for much longer (standardized financial reporting began in the US in the 1930s) still aren't perfect -- despite in many ways being easier to evaluate than climate impacts.

In addition, the endowment is investing in a large number of new companies with no products yet, meaning that prospective, rather than actual, emissions will need to be incorporated into investment decisions.

Commented [DK32]: A portfolio-wide metric is useful for measuring porfolio-wide net zero. However, much more granular data on the upper and lower tails is needed to assess how well the evaluative system is screening the positive and negative holdings in the portfolio. It is the tails that will drive learning by HMC managers and highlight areas of new investment or divestment.

Commented [DK33]: This entire paragraph says basically: "we are trying to do a really hard thing; doing that really hard thing will take really hard work; but we are going to work really hard to do that hard thing and over the coming years we will study what we need to do and rise to the challenge." This is a first-report fluff statement. It'd be okay in year 2 (which is really many more years after HMC started talking about climate) only if it was followed by charts and tables of their specific actions and what was working or not working. Unfortunately, the year 2 report is just restating the fluff.

Appendix 1

Task Force on Climate-related Financial Disclosures (TCFD)

In this Appendix, we provide an assessment of climate-related risk in the HMC portfolio according to the TCFD's recommended climate-related financial disclosure framework. HMC has been a supporter of the TCFD since April 2020.

Governance

Board Oversight

The Harvard Corporation, also known as the President and Fellows of Harvard College, exercises ultimate fiduciary responsibility with regard to the University's financial resources and overall well-being. In April 2020, following deliberation by the Corporation Committee on Shareholder Responsibility (or CCSR), the Harvard Corporation instructed HMC to set the Harvard endowment on a path to net-zero, establishing the objective of HMC's climate policy. In September 2021, in consultation with the CCSR, President Bacow issued a statement on climate change that, among other things, addressed related matters of investment strategy.

Role of Management

HMC is led by its Chief Executive Officer, Narv Narvekar, who joined HMC in December 2016. Together with HMC's Chief Investment Officer, Rick Slocum, they manage the Generalist investment team responsible for managing all aspects of HMC's investment portfolio, including climate-related risks.

The responsible investment activities are integrated into the Compliance group at HMC. They are led by Kate Murtagh, who helps set the ESG goals and objectives for the organization, develops ESG policies and procedures, and implements ESG integration plans across the portfolio. Each quarter she provides an update on HMC's sustainable investment activities to the HMC Board of Directors. She is assisted by a Managing Director who dedicates a portion of his time to responsible investment initiatives and an Associate Director of Sustainable Investing.

Commented [DK34]: How much latitude does HMC have on its own to publicly announce challenges it is facing or to set and release interim milestones?

Strategy

HMC's strategy for addressing climate-related risks and opportunities is to:

1. Manage the endowment towards the net-zero by 2050 target
2. Engage with external managers to encourage better disclosure and practices to improve data availability and with industry groups to establish standard GHG accounting methodologies for alternative investment strategies to enable HMC to better assess the climate-related performance and risks of investments in our portfolio
3. Identify and act upon appropriate investment opportunities that support the transition to a green economy
4. Be carbon neutral in our own operations

HMC's progress towards these goals is described in the main body of this report.

Commented [DK35]: I don't think it really was described in the main body. Very little concrete data on progress was presented.

Risk Management

As a global institutional investor with a focus on the long term, we recognize that climate change presents a material and existential risk to society and the economy. We consider material climate-related factors alongside other factors through the entire investment lifecycle. We do that based on an analysis of the sector(s) and geographies in which our managers operate. Ultimately, we rely on our external managers to understand and manage the climate-related risks relevant to their investments.

Many of our investments are long-lived assets with ownership horizons of many years. It is important for us to take both a short- and long-term view when assessing risk and opportunity. An example of this is the increased risk of wildfires in the regions of California susceptible to drought. We rely on our external managers to identify and manage these identifiable physical climate risks. The range of transition risks and opportunities will depend on which decarbonization path the world takes, and how quickly. Nonetheless, we know with reasonable confidence that climate-related risks and opportunities will accelerate and will not be distributed evenly. Policies designed to limit climate change are likely to impact some sectors more than others as governments implement their nationally determined commitments to reduce emissions. For example, the energy sector is likely to be among the sectors most impacted by new regulation and changes in consumer demand. We believe the decision to stop making new commitments to private equity funds with holdings in the fossil fuel industry will reduce HMC's exposure to these risks.

Climate Change presents:

- **Physical risks —** Risks that arise from the physical impacts of a changing climate. Examples include damage to property caused by flooding as a result of rising sea levels, and damage caused by hurricanes and wildfire. Physical climate risk may often present itself as supply-chain risk, such as disruptions to agricultural commodities, workability in certain regions, or destruction of natural capital.
- **Transition risks —** Risks that arise from the transition to a low-carbon economy, such as from changes in government policies, consumer sentiment, liability risks, and technological innovation. The high-emitting sectors likely to be subject to these risks include oil & gas, utilities/power generation, transportation, aluminum, steel, and cement.
- **Systemic risks —** Risks to the productive capacity of the economy and the financial system, such as disorderly price adjustments in various asset classes, with possible spillovers into different parts of the financial system, as well as potential disruption of the proper functioning of financial markets.

Engagement

HMC seeks to join with other likeminded asset managers and asset owners on collaborative engagements to encourage companies to improve their business practices around climate. Engagement is perhaps the most powerful tool we have to achieve real world impact.

Through our engagement efforts we seek to improve climate transparency and governance, promote real economy emissions reduction, and support a just transition.

- **Climate transparency and governance—**Engage with companies to report in line with TCFD guidance. This allows investors to understand companies' climate strategies and make informed investment decisions. Establish accountability and oversight of climate change risk at the board level.
- **Real economy emission reduction —** Engage with companies to support net-zero commitments, science-based targets, creditable climate strategies, and Paris-aligned capital expenditure.
- **Just Transition —** Engage with companies to consider impacts to employees and communities in their transition strategies. Request companies engage with impacted communities, retrain workers, or report on effects of relocating facilities or operations as they relate to energy transition or physical risks of climate change.

Commented [DK36]: Though the process of getting them to address this area reliability is still nascent, right?

Over the past year, HMC has engaged with companies on the topic of methane emission-reducing practices and encouraged company support for well-constructed methane regulation. As a collaborating investor in Climate Action 100+, we participated in company engagements with energy and utility companies to discuss their net-zero plans. HMC joined the 2021 CDP Non-Disclosure Campaign which directly engaged with high impact companies to improve reporting related to climate change, forests, and water security. This year's campaign saw its highest number of first-time disclosures. We also participated in the CDP Science-Based Targets campaign and SASB investor-company dialogues.

HMC submitted a letter in response to the Security and Exchange Commission's (SEC) request for public comment on climate disclosures encouraging the SEC to adopt a principles-based approach to climate change-related disclosures that recognizes existing third-party standards like SASB and the TCFD. Without governments and corporations following through on their own Paris-aligned commitments, there will be real limits for the endowment and the global economy to reduce GHG emissions to net-zero.

Proxy Voting

Climate change remains a top concern for many shareholders. There were at least 84 shareholder proposals relating to climate change submitted during the 2021 proxy season, up from 53 in 2020.

Harvard is committed to responsibly voting shareholder proxies. Each year, the University publishes a report describing and explaining its votes on proxies. With most of Harvard's holdings in the U.S. public equity markets now held through pooled investments and commingled funds managed by outside management firms, rather than through individual stocks directly owned in the University's name, Harvard currently votes on a much smaller number of shareholder resolutions than in past years. However, Harvard continues to exercise its influence on proxy votes through a series of guidelines on shareholder resolutions, including on issues related to climate change, developed by Harvard University's Advisory Committee on Shareholder Responsibility (ACSR) and CCSR. HMC shares these proxy voting guidelines with its external managers in the hope that they provide a helpful perspective. The guidelines are not intended to be prescriptive, and HMC recognizes that external managers may not necessarily share Harvard's view on every issue. Nonetheless, HMC expects its external managers to have a robust approach to stewardship and to make informed voting decisions. As one of a number of relevant considerations in assessing overall performance, HMC will evaluate an external manager's stewardship practices in light of these guidelines. The University also makes the guidelines publicly available so that other interested investors can make use of them as they see fit.

Metrics and Targets

Portfolio CO2e emissions can be measured using different metrics. While we generally plan to follow the TCFD framework for calculating the portfolio emissions of HMC's portfolio, for the reasons discussed in the first part of this report, we are approaching the process carefully and expect to ultimately adopt an approach and methodology tailored to HMC's investment program. We expect to eventually calculate and disclose year-over-year portfolio carbon emissions using the following indicators.

- **Carbon emissions —** A normalized measure (by $M invested) of the portfolio's contribution to GHG emissions.
- **Total carbon emissions —** Measures the carbon footprint of the portfolio (in tons of CO2e). This metric has limited use for comparison to other portfolios because it is not normalized by portfolio size. It is calculated using an ownership methodology.
- **Carbon intensity —** Expresses the carbon efficiency of the portfolio. Because this measure adjusts for company size, it is a more accurate measurement of efficiency than a portfolio's absolute footprint. It is calculated using an ownership methodology.

Commented [DK37]: These are all good processes to be involved with, but the verbs used ("engage," "participate," "request") are all process-oriented words. What actions resulted? What changes in business practices, investment practices, and emissions came out of all of this engagement? And if you aren't measuring it, how can you evaluate this strategy versus more active engagement such as stipulating acceptable rules on disclosure for all of your new alternative investments?

Commented [DK38]: It is good that Harvard acknowledges proxy voting as being less and less relevant to its portfolio. Since the vast majority of Harvard's endowment holdings are not in public markets at all, this recognition should have been earlier.

Proxy votes for shares held within funds or ETFs appear to be commonly exercised by fund managers. Thus, it would seem possible for Harvard, in conjunction with other endowment managers with a similar perspective, to take action voting on relevant climate proxies. At present, Harvard's Advisory Committee on Shareholder Responsibility recommends votes within the University only "when such resolutions are presented to the relatively few public companies in which Harvard directly owns shares." All other positions are addressed only through recommended approaches to guide external managers.

There are also increasing options to replace ETFs with screened versions with similar risk and broad sector exposures if HMC wanted to cull that exposure from its public securities portfolio.

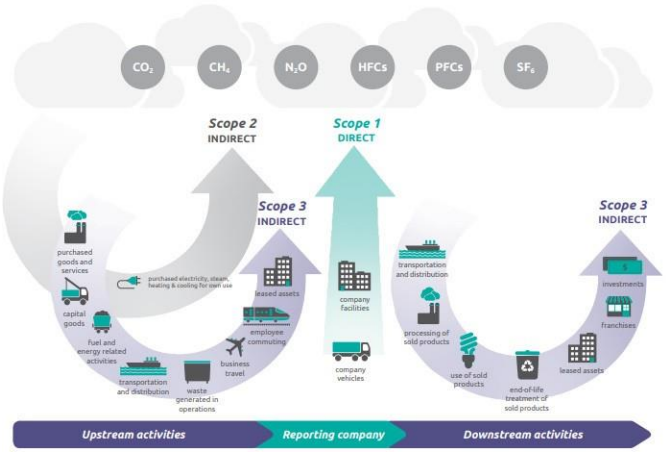
Commented [DK39]: Since the report says that an acceptable method to measure CO2e in their portfolio is still far off, shouldn't they have metrics that may be less perfect -- but able to be implemented now -- as well?

- **Weighted-average carbon intensity (WACI) —** Measures a portfolio's exposure to carbon-intensive companies and indicates the potential climate change-related risks relative to other portfolios or a benchmark. It is useful for comparing portfolios across asset classes.

The carbon intensity and WACI metrics use revenue or sales to normalize emissions. While useful in certain contexts, this can result in misleading results for companies with little or no revenue, such as early-stage biotech companies. HMC believes that metrics that use enterprise value to normalize emissions present a more accurate picture of a company's contribution to portfolio emissions.

Defining Emissions Scope

Firms generate a variety of GHG emissions, some of which they are responsible for directly, but others only indirectly. It is important to consider the full range of a company's activities to determine the scope of its emissions. Following standard GHG accounting practices, Scope 1 refers to direct GHG emissions from an organization's owned and controlled sources. Scope 2 refers to indirect emissions from the generation of purchased energy. And Scope 3 emissions refers to all of a company's other indirect emissions in its supply and distribution chains.



Source: WRI/WBCSD Corporate Value Chain (Scope 3) Accounting and Reporting Standard

For the commitment to be carbon neutral in our operations, HMC will measure, reduce, and remove our Scope 1, 2, and 3 emissions. HMC's Scope 2 emissions consist of purchased electricity. Scope 3 emissions include business travel, procurement of goods and services, employee commuting, and the HVAC system used in our leased offices. We do not anticipate incorporating "downstream" Scope 3 emissions into our calculation. For HMC, "downstream" activities include the investment portfolio and the portion of Harvard's annual budget that is financed by the endowment. These activities are managed separately under the University's climate action plan, including its goals to be fossil fuel neutral by 2026 and fossil fuel-free by 2050, and HMC's net-zero by 2050 commitment. We don't expect HMC to have any Scope 1 emissions. For the endowment, HMC is working to determine the appropriate scope of emissions for our reporting and target setting. The results of this effort will be discussed in a future Climate Report.

Appendix 2

Aligned Organizations

Broad adoption of aggressive net-zero targets is critical to achieving global climate goals. HMC looks forward to continued collaboration with others on developing climate-related best practices and methodologies.

HMC is a signatory to, supporter of, or member of the following organizations:

CDP

CDP, formerly known as the Carbon Disclosure Project, works with investors, companies, and governments to drive industrial-scale environmental disclosure on climate change, water security, and deforestation. The data disclosed through the CDP platform provides the investment community with high quality, consistent, and comparable data at scale, in line with the TCFD recommendations. The Harvard endowment became a signatory to CDP in 2014.

Ceres

The Ceres Investor Network, which includes over 200 institutional investors that manage more than $47 trillion in assets, was established to advance leading investment practices, corporate engagement strategies, and key policy and regulatory solutions. Ceres is also one of the founding partner organizations of Climate Action 100+. HMC has been a member of the Ceres Investor Network since 2018.

Climate Action 100+

Launched in December 2017, Climate Action 100+ is a five-year initiative to engage with the world's largest systemically important greenhouse gas emitters to take critical action to align their own operations with the goals of the Paris Agreement. As of December 2021, 617 investors representing more than $60 trillion in assets under management have committed to engage with the initiative's 167 focus companies who represent 80% of corporate industrial GHG emissions to reduce emissions and improve climate disclosure and governance. The Harvard endowment joined Climate Action 100+ in September 2019.

Commented [DK40]: Some of these organizations (UN PRI and Ceres are examples) have reporting that member organizations complete on their climate footprint. Those reports are far more detailed that what has been presented in the Climate Report. HMC is silent on its willingness to disclose some or all of what it is already collecting as a signatory to these organizations. The Climate Report in 2023 should expressly list what reporting is required for each of these partnerships, what components of those reports HMC and Harvard are willing to release publicly, and the reasons it is unwilling to release the other parts.

Principles for Responsible Investment (PRI)

The United Nations-sponsored Principles for Responsible Investment (PRI) were developed in 2006 by an international group of institutional investors reflecting the increasing relevance of ESG issues to investment practices. The six principles are a voluntary and aspirational set of investment principles that offer possible actions for incorporating ESG issues into investments. In 2014, Harvard University's endowment became the first U.S. university endowment to become a signatory to the PRI. Accordingly, we committed to considering ESG factors in the course of our investment underwriting, analysis, and monitoring processes. HMC submits a report to the PRI each year, accounting for its efforts incorporating ESG considerations across its portfolio.

SASB Standards

The SASB Standards are a set of 77 globally applicable industry-specific standards that identify the minimal set of financially material ESG topics and their associated metrics for the typical company in an industry. SASB Standards enable businesses around the world to identify, manage and communicate financially material sustainability information to their investors. HMC has been a member of the SASB Alliance since 2018 and a member of its Investor Advisory Group since 2019.[9]

Task Force on Climate-Related Financial Disclosures (TCFD)

The climate risk management and disclosure guidance developed by the TCFD provides investors with the ability to advocate for a single, meaningful, and material framework through which corporations can manage climate risks and provide climate-related disclosures. Through the consistency provided by the framework, investors can properly evaluate the efforts and progress of the companies they invest in across regions, sectors, or portfolios. HMC publicly supported the TCFD in April 2020.

[9] In November 2021, the IFRS Foundation announced the consolidation of the Value Reporting Foundation, which houses the Integrated Reporting Framework and the SASB Standards, by June 2022.