Vanguard's Report on Climate-related Impacts 2024

In alignment with the Task Force on Climate-related Financial Disclosures (TCFD)

VANGUARD'S CORE PURPOSE

To take a stand for all investors, to treat them fairly, and to give them the best chance for investment success.

Contents

This report has been prepared by The Vanguard Group, Inc., in alignment with the guidelines of the Task Force on Climate-related Financial Disclosures. Reporting against such guidelines is a growing regulatory requirement in certain jurisdictions where Vanguard operates. Unless otherwise specified, the data used for this report are as of December 31, 2024.

Introduction

About Vanguard

Vanguard was founded in 1975 on the basis of a simple but revolutionary idea: An investment company should manage its funds in the best interests of its clients. What sets Vanguard apart in the industry is our unique mutual ownership structure. Vanguard is owned by our U.S.-domiciled funds, which in turn are owned by their investors. This structure is reflected in our core purpose: **To take a stand for all investors, to treat them fairly, and to give them the best chance for investment success.**

Today, we are one of the world's leading asset management companies, offering investment products, advice, and retirement services to individuals, financial professionals, and institutions.

A focus on the individual investor

Vanguard serves more than 50 million individual investors around the world who have chosen to entrust us with their hard-earned savings to invest for important goals, such as education, the purchase of a home, or retirement. We serve these investors directly, through workplace plans and financial intermediaries.

The Vanguard funds are managed in the best interests of the funds' shareholders and are used as tools to help our clients meet their financial objectives. Each portfolio strives to meet a specific investment objective, follow well-defined strategies, and adhere to clear policies.

Vanguard's approach to climate risk

Climate change—and the ongoing global response—will have far-reaching economic consequences for companies, financial markets, and investors. Vanguard's approach to understanding and attending to material risks that can erode our investors' long-term returns, including climate-related risks, spans several key areas of focus.

- We provide investors with the information and products they need to make sound investment choices and reflect their personal preferences, including several actively managed products that have net zero carbon emissions objectives as a component of their stated investment strategies.
- We engage with companies held by Vanguard funds to understand how boards of directors oversee material risks. In cases where climate change is a material risk for a portfolio company, the team looks for that company's board to disclose the specific risks and the strategies in place to oversee and mitigate those risks.[1]
- We offer our perspectives on markets and material risks to policymakers, who are specifically empowered to address complex societal matters like climate change.
- We publicly report on our efforts with respect to climate risk in line with the broadly accepted recommendations of the TCFD, in line with our deep commitment to our investors and their financial well-being.

1 Indexing relies on efficient and fair capital markets. Companies' disclosure of material financial risks is central to that market health, which is why material risk identification and disclosure is a critical priority for Vanguard.

Governance

In this section, we discuss Vanguard's approach to governance of climate-related risks and opportunities.

Vanguard addresses climate-related impacts and clients' best interests through an integrated structure of boards, committees, and functions.

Board oversight of climate-related risks and opportunities

The Vanguard Group, Inc. (VGI), is owned by our U.S.-domiciled funds, which in turn are owned by their investors. As of December 31, 2024, the VGI Board of Directors (VGI board) was comprised of 14 directors, 11 of whom also served as the U.S.-domiciled funds' Boards of Trustees (fund boards). Each member of these boards offers a wealth of executive leadership experience derived from their service as senior executives, board members, and leaders of various public operating companies, academic institutions, government agencies, and other organizations. The VGI board and fund boards meet regularly throughout the year to fulfill their functions and obligations.

The VGI board is responsible for, among other matters, setting broad policies for the company and overseeing risk management relating to Vanguard's corporate operations. Where applicable, the execution of these responsibilities includes consideration of material issues, such as sustainability and climate-related risks and opportunities, as relevant to Vanguard's corporate operations. In addition, the VGI Audit and Risk Committee (formerly the Audit Committee) reviews management's risk governance frameworks and discusses policies with respect to risk assessment and management, including any relevant framework or policy relating to material sustainability risks.

The fund boards oversee the Vanguard funds' risk management, including consideration of material climate-related risks.

The VGI board and fund boards also oversee the various Vanguard functions that conduct day-to-day risk management as applicable, including compliance, fund services and oversight, enterprise investment services, investment management, investment stewardship, legal, product, and risk management. In addition, the VGI board and fund boards have regular interactions with internal and external auditors.

Outside the U.S., the boards of our international businesses exercise similar oversight responsibilities in their respective regions. For a regional example, see "In focus: European ESG governance framework" on page 11.

IN FOCUS

Board engagement on climate matters affecting our product lineup

The U.S. fund boards retain proxy voting authority for the U.S. Vanguard-advised funds and receive regular updates on the funds' investment stewardship activities, including voting and portfolio company engagement. The U.S. fund boards discuss key themes and emerging areas of risk identified through investment stewardship activities (for example, financially material risks related to climate change) and provide guidance to the stewardship team on how to consider those risks consistent with the funds' proxy voting policies and guidelines. The U.S. fund boards consider updates to those policies and guidelines annually to address new or evolving issues.

Vanguard believes that the board of each portfolio company is responsible, and best situated, for determining the appropriate risk-mitigation approaches for that company to maximize shareholder value. To the extent that any legally binding or government-specified limits related to carbon emissions or other climate-related activities are applicable to our portfolio companies, we believe companies should disclose how their business strategies are appropriate in the context of those factors. For example, many companies have set targets aligned with the goals of the Paris Agreement on Climate Change.[2] Working on behalf of our investors, the Vanguard-advised funds encourage companies to provide fulsome disclosures related to those targets and their underlying strategies so that their share prices reflect the market's assessment of the associated risks and opportunities.

As part of the oversight process for our global investment product lineup, the U.S. fund boards meet directly with the managers of our actively managed funds as appropriate and receive reporting on each manager's consideration of material climate-related issues.

The U.S. fund boards also receive an annual report on the external advisors' proxy voting and approve their proxy voting policies and procedures. The 2024 proxy voting report for the externally managed funds included a discussion of key themes and material votes in 2024.

2 The Paris Agreement sets a goal of holding the increase in global average temperature to well below 2 degrees Celsius (2°C) above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees Celsius (1.5°C) above pre-industrial levels.

Management's role regarding climate-related risks and opportunities

CEO Council on Sustainability

Vanguard's CEO Council on Sustainability oversees and coordinates our global strategy on sustainability-related matters, to the extent that they may be financially material, including climate-related risks and opportunities, at both the corporate and product levels. Vanguard's chief executive officer serves as council chair, and members include a subset of Vanguard's executive team. The council meets as needed and reports to the VGI board and the fund boards as appropriate. The council provides guidance, oversight, and coordination on these matters in service of client interests.

Sustainability Risk and Strategy Oversight Committee

The Sustainability Risk and Strategy Oversight Committee, composed of senior leaders across our product, communications, stewardship, compliance, risk, and legal functions, is a subcommittee of the CEO Council on Sustainability that facilitates the council's oversight of global sustainability matters by:

- Sharing awareness of sustainability-related global risks, strategic opportunities, and investment perspectives.
- Building knowledge of precedent-setting sustainability-related reporting requirements and their implications.
- Deciding how to address such risks and opportunities or aligning department resources to do so.

The committee aims to facilitate enterprise strategic alignment and enhance accountability. In the course of carrying out its responsibilities, the committee may escalate risks, issues, or other matters to the CEO Council. In 2024, the committee discussed emerging regulatory trends, our climate-risk-related data strategy, and enterprise sustainability-related reporting—including the TCFD—among other topics.

Investment products and services

Vanguard takes a disciplined, long-term approach to product development and strategy, and our product governance structure is intended to cover material risks and opportunities, including those that are climate-related. As an integral part of this process, dedicated teams develop our global product strategy, monitor the performance of each Vanguard fund, and oversee the funds and their investment advisors to ensure that they follow defined investment objectives and collectively offer diverse investment exposures consistent with our investment philosophy.

Regional teams conduct product research and product management to evaluate local market conditions and assess local client preferences. Vanguard's Portfolio Review Department typically convenes Vanguard's Global Investment Committee 11 times a year to engage on key issues relevant to product oversight. The committee's work includes making recommendations to the respective regional investment committees and fund boards, as appropriate, regarding matters such as new products, risk guidelines, and manager selection. Vanguard's chief executive officer serves as the committee chair, and members include senior leaders from Vanguard's investment, product, business, legal, compliance, and risk functions.

In addition to the Global Investment Committee, the Manager Oversight Committee regularly meets with current and prospective managers as part of the oversight and selection process. The work of this committee supports the product-related recommendations made to the Global Investment Committee and, ultimately, to the fund boards for review and approval as appropriate.

Stewardship of portfolio securities

On behalf of Vanguard-advised funds, Vanguard's Investment Stewardship team engages with portfolio companies about governance best practices and material risks, including material climate risks. This dedicated team of experienced professionals operates globally while employing a regionally focused model. The team engages directly with company executives and boards and votes proxies. Investment Stewardship does not seek to dictate portfolio company operations; its objective is to vote proxies on behalf of the Vanguard-advised funds to maximize returns for their shareholders.

At the direction of the fund boards, our Investment Stewardship Oversight Committee oversees proxy voting and stewardship activity with respect to the equity securities held in portfolios advised by Vanguard. The committee typically meets at least quarterly and regularly reviews stewardship practices and proxy voting policies, including those concerning material climate risks. Those reviews encompass such topics as changes to proxy voting policies, portfolio company engagement and voting activities, and risk control processes. The committee reviews and assesses any appropriate proxy voting policy changes before those changes are recommended to the fund boards. The committee includes Vanguard's chief executive officer, fund officers and senior executives representing investment, product, risk, strategy, communications, and human resources functions. The Investment Stewardship team provides regular reports to the VGI board, fund boards, and boards of our international entities, as appropriate.

Since 2019, the proxy voting responsibilities for externally managed Vanguard funds have been delegated to the investment advisors for those funds, creating greater alignment of investment management and investment stewardship. A Proxy Oversight team conducts ongoing oversight to ensure that external advisors are consistently exercising their obligations with respect to voting proxies. The Proxy Oversight team also provides annual updates to the fund boards. The U.S. fund boards are required to review and approve each external advisor's proxy voting policies and procedures at least annually.

Vanguard as a corporate actor

Vanguard has established goals and targets for operational sustainability to help responsibly manage and reduce our own environmental footprint. Our corporate sustainability efforts are led by the Global Workplace Experience (GWx) department, which reports to Vanguard's chief financial officer. GWx's Environmental Sustainability Steering Group sets both short- and long-term goals and priorities, incorporates sustainability activities into business planning, and monitors and tracks progress toward targets. See "Vanguard as a company" on page 32 for more information.

IN FOCUS

European ESG governance framework

In addition to our global governance structure, we have regional structures in place to navigate the market and regulatory environments of each of the jurisdictions in which we operate. The Vanguard companies in Europe include our U.K.-regulated entities, Vanguard Asset Management, Limited (VAM), and Vanguard Investments UK, Limited (VIUK), as well as other affiliates, including but not limited to Vanguard Group (Ireland), Limited, and Vanguard Group Europe GmbH (collectively, Vanguard Europe).

Vanguard Europe's boards oversee risk management in their respective jurisdictions, including risks associated with environmental, social, and governance (ESG) matters, within Vanguard Europe's overall business strategy, regulatory and governance frameworks, and risk appetite. Vanguard Europe's boards oversee the risk management of various functions, including compliance, fund accounting, financial reporting, fund administration, investment management, investment stewardship, legal, product, and regional risk management. The boards typically meet at least five times a year. They consider issues affecting Vanguard Europe's evaluation of ESG risk and strategy matters and engage with Vanguard's management to help determine an effective course of action. Management arranges for periodic relevant training to the boards on ESG matters.

The following climate- and other ESG-related activities have been considered by the VAM board, the VIUK board, or both, during 2024:

- Training on regulatory developments, including management oversight of anti-greenwashing risk and disclosure.
- Updates to the Sustainability Risk policy.
- Updates on the response to the ESG Guiding Principles Multi-Firm Review Feedback letter from the Financial Conduct Authority (FCA) and findings of ESG product governance review.
- Approval of the Enterprise Risk Management Framework, which addresses the management of ESG-related risks and ensuring they form part of the normal risk management life cycle.
- Updates to the TCFD report.
- Overview of FCA's Sustainability Disclosure Requirements, the investment labels regime, and its application to Vanguard products, including approval of applicable disclosures.

European ESG Management Oversight Council

The European ESG Management Oversight Council (ESG MOC) provides oversight of ESG risks and strategy in relation to Vanguard Europe that may impact the broader Vanguard enterprise and its investment products and services. The ESG MOC reports to Vanguard's European Leadership team and the managing director of Europe.

The European head of the Portfolio Review Department chairs the ESG MOC, and the council's voting members include European management representatives from investment management, risk management, finance, and legal. Its remaining members are ESG subject matter experts from across our European business. The council meets or considers matters at least bimonthly and reports quarterly to the European Leadership team as is necessary. Members of the council meet periodically with Vanguard Europe boards and other Vanguard European councils and forums, as appropriate.

The ESG MOC has the following responsibilities:

- Acting as the designated forum for oversight, harmonization, and direction-setting on ESG risk and strategy matters related to Vanguard's European business.
- Overseeing the integration of ESG considerations into Vanguard Europe functions and processes, within the context of Vanguard's global approach to ESG investing and risk appetite.
- Reviewing U.K. and E.U. sustainability regulations and the implementation of applicable requirements by Vanguard's European business.

Strategy

In this section, we discuss how Vanguard considers climate-related risks and opportunities across our business.

We manage our business with the goal of creating long-term value for our clients.

Our client-centric strategy

Vanguard's strategy as a corporate actor and asset manager is grounded in our investor-owned structure.

In support of our strategy, we have an important role to play in understanding and responding to risks and opportunities that impact our ability to serve clients and help them meet their financial goals.

At Vanguard, climate risk is not considered a discrete risk. Instead, climate change and the resulting global response is viewed as a potential root cause or driver of the principal near-term and long-term risks facing the organization, namely financial, operational, regulatory, reputational, extended enterprise, strategic, technology, and investment management risks. The central objective of Vanguard's investment management is to maximize long-term returns for investors through our product lineup.

We identify and seek to manage short- and medium-term top risks to the enterprise while conducting longer-term horizon scanning to evaluate and prioritize action planning for future risks.

Climate-related risks and opportunities

Consensus market expectations—as well as Vanguard's own economic analysis (see **Figure 1**)—indicate that changes to the climate and the resulting global response will have far-reaching economic consequences for companies and financial markets, and therefore for investors.

In general, organizations face both physical and transition risks from climate change. Physical risk involves the tangible impacts of climate change, including extreme weather events such as flooding, wildfires, and droughts. Transition risk involves the move to a low-carbon economy through policy, preferences, technology, and market changes.

Vanguard seeks to understand and monitor physical and transition risk drivers that may present material risks to our ability to serve our investors. We conduct ongoing investment, expense management, and operational oversight to modernize and maintain the resiliency of our core infrastructure (such as computer systems and buildings) and to implement evolving regulatory and reporting requirements.

Figure 1 highlights examples of climate-related risks that Vanguard could face. We actively monitor these potential risks and remain confident in our approach for effectively managing risks that could affect our clients' long-term investments.

FIGURE 1

Summary of climate-related risks

	Risk category	Risk description	Illustrative risk impacts	Driver type
Investment product and management	Investment management risk	Market, credit, and liquidity risks that impact returns or impede our ability to manage assets on behalf of clients	Mass market movements and decreased liquidity driven by either the pace of any transition activity (like policy change) and the impact of any adverse climate events	Transition and physical
			Market repricing or increased volatility due to uncertainty about climate risks may be seen in certain companies, sectors, and geographies	Transition and physical
	Operational risk	The risk to operations due to human error, or inadequate or failed processes, systems, or service providers	Reputational damage and compensation costs related to holding securities that are not aligned to the ESG objectives of an ESG product because of data errors or other operational incidents	Transition
			Business interruptions to Vanguard and third parties stemming from climate-related physical impacts	Physical
	Regulatory risk	The risk of noncompliance with new or existing laws and regulations	Regulatory breach and legal costs associated with inaccurate disclosures or requirements related to climate objectives	Transition
	Strategic risk	Risks related to management's ability to make appropriate business decisions to prepare for and react to the broader economic or regulatory environment	Investment product range fails to align with changing investor sentiment	Transition
			Regulatory policies or incentives drive investors to require new or customized product offering	Transition
Business operations and financial health	Financial risk	Risks related to the organization's ability to manage its financial resources efficiently and responsibly	Loss of revenue from fund drawdowns as clients shift away from investment approaches not aligned with appropriate climate-risk-mitigation strategies	Transition and physical
	Operational risk	Risk of failure or deficiency in resiliency preparedness	Disruptive events affecting regions, buildings, or Vanguard employees' ability to continuously serve clients and execute on critical business activities (like an adverse climate event)	Transition and physical
	Regulatory risk	The risk of noncompliance with new or existing laws and regulations	Increased financial costs because of complex global regulatory requirements	Transition
	Strategic risk	Risks related to management's ability to make appropriate business decisions to prepare for and react to the broader economic or regulatory environment	Employee skill sets prove inadequate to address climate-related challenges (such as failing to meet requirements or misinterpreting data and client needs)	Transition
			Regulations on climate change and sustainable investing interfere with Vanguard's ability to conduct business	Transition

While certain risks exist, efforts to adapt to climate change and encourage innovation may also present Vanguard with opportunities, such as those outlined in **Figure 2**.

Transition-related corporate and investment risks

In the near term, Vanguard considers transition risks to be a greater driver of enterprise risk than physical risks, as we believe that regulations and reporting requirements are more likely to affect Vanguard than physical risks in the short-term. Climate-related regulations and reporting requirements are evolving at different paces and with varying degrees of complexity in markets around the world.

We also consider transition risks to be a more pressing driver of risk in the short-term and medium-term for companies held in our products, with physical risks either being event-driven or generally acting as a driver of longer-term risk. As governments and sectors diverge in climate policy approaches, and global markets approach key dates outlined in the Central Banks and Supervisors Network for Greening the Financial System (NGFS) scenarios, there is greater potential for transition risks driven by the emergence of disorderly transition scenarios.

FIGURE 2

Summary of climate-related opportunities

	Opportunity	Opportunity description	Illustrative opportunity impact	Driver type
Investment product and management	Operational	Innovations that stem from addressing climate change foster increased efficiency	Availability of improved datasets leads to enhanced oversight and client reporting, where appropriate	Transition
	Strategic	Investor demand for investment products and advice focused on managing through climate change	Meet client needs through a selection of products with specific climate-change-related strategies that we believe have enduring investment merit and are consistent with our time-tested product design principles	Transition and physical
Business operations and financial health	Financial	Greater understanding of operational resiliency	Improvements in identification and mitigation of risks and enhancements to operational resilience in response to climate-related challenges, which can lead to more efficient use of capital and cost savings achieved through optimized risk management and effective risk transfer strategies, such as insurance	Transition and physical

Meeting investment needs of clients

Vanguard has an opportunity to meet the evolving investment needs of our clients through products that consider certain risks and opportunities, including those that are climate-related.

Our product lineup includes both index and active funds. Our index funds enable investors to construct broadly diversified portfolios and frequently serve as the core building blocks underlying our extensive array of multi-asset products. Our equity index funds seek to track the performance of broad market indexes. Material risks to investment returns at particular portfolio companies held by those funds, including material climate-related risks, are considered when our Investment Stewardship team evaluates proxy proposals and engages with portfolio company boards and management teams. Investment Stewardship does not seek to dictate company strategy or day-to-day operations at portfolio companies. Vanguard's proxy voting and engagement on behalf of the Vanguard-advised funds are solely focused on safeguarding and promoting long-term shareholder returns at the companies in which the Vanguard-advised funds invest. See "Investment stewardship" on page 21 for more information.

Some of our investment products are designed to include specific goals and objectives related to environmental, social, or governance factors for investors who select such approaches. Our exclusionary ESG index products, for example, avoid or reduce exposure to specific business practices and industries, including many that are carbon-intensive, while still seeking to achieve market-like returns.

Our actively managed funds include several ESG-focused funds that aim to generate excess return by allocating capital to companies with leading or improving ESG practices. In some instances, these actively managed ESG funds account for climate considerations and also have specific and clearly stated net zero objectives.

We also offer many actively managed products that do not have ESG-specific mandates. The managers of these products may pursue their own approaches to integrating material ESG risks, including material climate risks, into their investment processes where they deem it appropriate to meet investment objectives.

Resilience of our strategy

Our U.S. mutual fund ownership structure enables us to continually invest in people and technology to ensure that we can serve our clients and remain operationally resilient at all times.

Vanguard's focus on long-term returns, rather than quarterly results, keeps our business resilient, even during challenging macroeconomic environments. We have captured positive net cash flows into our funds for 46 consecutive years, and our asset base is diversified across product type, asset class, and management style. We maintain a strong balance sheet and liquidity position, which are regularly monitored through stress testing to ensure that we can withstand the financial implications of significant, unexpected events, including those resulting from climate change.

We are confident in our approach to managing risks that could affect our clients' long-term investments, including material risks resulting from climate change. Our engagement with portfolio companies as part of our Investment Stewardship program, our rigorous processes for selection and oversight of the managers of our actively managed funds, and our thoughtful approach to product development remain core components of our approach.

IN FOCUS

Vanguard U.K. stress and scenario testing

A key component of Vanguard U.K. (VAM and VIUK) risk processes is a material risk assessment of harms.

The assessment's objectives are to:

- **Identify material harms:** Determine potential harms from the ongoing operation and winding down of Vanguard's U.K. business.
- **Determine material risks:** Assess the risks facing Vanguard's U.K. business, clients, and financial markets over various time horizons.
- **Assess probability and impact:** Evaluate the likelihood and potential impact of identified risks, including stress testing where appropriate, to inform strategic and financial planning.
- **Identify mitigating actions:** Assess and identify management actions and internal controls to mitigate risks.
- **Provide assurance:** Ensure stakeholders are confident in the effectiveness of management actions related to the level and nature of risks faced.

The material risk assessment of harms supports Vanguard U.K.'s overall risk life cycle and provides assurance that:

- Vanguard U.K. is able to remain financially viable throughout the economic cycle, with the ability to address any material potential harm that may result from its ongoing activities.
- Vanguard U.K.'s business could be wound down in an orderly manner, minimizing harm to customers and other market participants.

Vanguard U.K. has identified a series of severe but plausible risk scenarios with which to stress test our business. Stress testing involves adjusting specific parameters that affect the financial position of Vanguard U.K., including capital and liquid resources, income, and profit. To identify the relevant risk scenarios, Vanguard U.K utilizes research produced by a team within Vanguard's Investment Strategy Group. The team uses state-of-the-art economic and econometric models to provide research on sustainability topics for internal teams. The research seeks to understand how climate change risks may impact the macroeconomic outlook and security, portfolio, and market-level returns.

Our stress tests specifically evaluate:

- **Greenwashing risks:** The potential for misleading claims about the environmental benefits of our products.[3]
- **Client demand for ESG products:** The level of interest from U.K. clients in ESG-focused investment products.
- **Resilience to climate-related risks:** The robustness of Vanguard U.K.'s strategies in addressing climate-related risks and opportunities.

We consider various climate-related scenarios, including a temperature rise of 2°C above pre-industrial levels, which aligns with the expected transition to a low-carbon economy. Each year, we refine our stress tests and scenario analysis best practices to enhance our ability to assess and manage sustainability risks effectively.

3 Greenwashing is the making of false or misleading claims about sustainability benefits (environmental or social) of a product or service.

Risk management

In this section, we discuss how Vanguard identifies, evaluates, and manages climate-related risks and opportunities on behalf of our investors.

Vanguard has a long history of thoughtfully managing risk in order to safeguard and promote long-term shareholder returns.

Identifying and assessing climate-related risks

As a matter of course, we seek to identify, assess, and manage risks from both a corporate and an investment product management perspective, taking impact, likelihood, and urgency into account. In our experience, it is critical to continually evolve and refine the way each risk is considered.

Vanguard's risk-management life cycle has four key components: identification of risk, assessment of risk, management of risk, and monitoring and reporting of the risk environment. We see risk management as an ongoing process and mindset moving continuously through each stage.

Vanguard embeds relevant material sustainability risk considerations into existing corporate functions to ensure that these factors are considered alongside, not separately from, other matters important to serving our clients. Within our investment processes, we integrate material climate and broader governance considerations where appropriate.

Our overall risk-management approach is founded on three core lines of defense:

- **Vanguard's business units**, which include areas ranging from client-facing teams to shared service functions, such as technology and finance. We assess risks within the respective purview of each area and develop processes and control frameworks to mitigate potential impacts on our clients.
- **Vanguard's corporate risk functions**, which include Global Risk and Security and the Office of the General Counsel. We incorporate risk prevention across areas of our operations and businesses to match risk mitigation efforts with areas of expertise, including for climate-related risks.
- **Vanguard Internal Audit**, an independent and objective team directly accountable to the VGI board, assesses the adequacy of internal controls to enhance the governance and oversight of enterprise risks and risk management.

Business continuity

As a company dedicated to helping clients build and preserve wealth, Vanguard plans carefully and methodically to ensure a quick and smooth recovery from a potential emergency or disruptive event, including climate-related events.

Vanguard's Enterprise Resiliency and Business Continuity Management group, within Global Risk and Security, oversees enterprise resilience and partners with business continuity teams in every division at Vanguard sites globally. The group independently assesses and monitors business continuity to ensure that we can continue operations and serve our clients during natural disasters, weather-related events, and other potential disruptions.

Our integrated business continuity program oversees enterprise resilience and provides crisis management, governance, and oversight to ensure employee, supplier, technology, and workspace resilience. The process has three major components:

- Identifying and mitigating risks
- Documenting detailed business contingency plans
- Executing comprehensive contingency tests

In addition to regular planning, maintenance, and testing, we use several routine business strategies to ensure flexibility and resilience in our operations. For example, Vanguard runs key business functions from multiple geographic locations, which in turn reduces the risk of disruption due to climate-related events or other external factors.

Our portfolio managers and investment analysts in each region work as one team. This approach enables us to collaborate across multiple time zones to extend the number of hours in a trading day and ensure business continuity. We have trading desks in two of our U.S. locations (Pennsylvania and Arizona) and in the U.K. and Australia.

Managing climate-related risks within our investments

Relevant teams monitor material climate-related risks across our funds. For example, within the Vanguard-advised active strategies, monitoring is done through oversight of our external managers' practices.

Investment Stewardship

Vanguard-advised equity funds provide broadly diversified access to the global markets at a very low cost. Broad market diversification can include exposure to material risks, including material climate risks. On behalf of the Vanguard-advised equity funds and their investors, Vanguard's Investment Stewardship team monitors and promotes disclosure of material risks, including material climate-related risks. We do not seek to influence portfolio companies' strategy or management decisions, and we expect portfolio companies to follow the regulatory expectation of their respective jurisdictions.

Vanguard's proxy voting and engagement on behalf of the Vanguard-advised funds are solely focused on safeguarding and promoting long-term shareholder returns at each of the companies in which a Vanguard-advised fund invests.

The Investment Stewardship team engages with portfolio company directors and executives to learn about each company's corporate governance practices and to share our perspectives on corporate governance practices associated with long-term shareholder returns. In 2024, the global Investment Stewardship team engaged with 1,603 companies representing 66% of the Vanguard-advised funds' total assets under management.

Each fund's proxy voting policies and procedures are designed to promote long-term shareholder returns by supporting effective corporate governance practices. The proxy voting policies for each of the Vanguard-advised funds outline the general positions of the Vanguard-advised funds on proxy proposals that appear frequently at public companies. The Vanguard-advised funds have developed country- or region-specific policies for markets where the funds have significant portfolio company holdings. These regional policies reflect local market regulatory requirements and nuances related to governance practices. When we encounter a ballot item for which specific policies are not defined in the funds' proxy voting policies, the vote is determined on a case-by-case basis consistent with the principles articulated in the funds' proxy voting policies and each fund's investment objective.

On behalf of the Vanguard-advised equity funds, the Investment Stewardship team looks for portfolio company boards to effectively oversee any material climate-related risks that exist for that company and disclose those risks using widely recognized investor-oriented reporting frameworks. Where climate change is a material risk for a company, the team looks for a company's board to disclose the specific risks and strategies in place to oversee and mitigate those risks. Vanguard views such disclosure as central to the healthy and efficient functioning of capital markets. The team also evaluates the company's reporting on any climate-related goals they have set and disclosed. Investment Stewardship does not seek to dictate strategy or operations at portfolio companies.

The funds generally will support management or shareholder proposals whose provisions, in our assessment and on balance, serve the long-term financial interests of the funds and their investors. The funds will not support proposals that include elements we view as dictating company strategy or operating decisions, which, in our view, are the purview of the company's board of directors and management teams.

Offering Investor Choice for an expanded set of investors

In 2023, Vanguard launched the Investor Choice pilot program, giving individual investors the ability to express their perspective on shareholder matters at the companies held in their equity index funds. With Investor Choice, Vanguard is enabling investors in certain equity index funds to choose from certain proxy voting policies that best align with their preferences. An investor's policy selection directs how their proportionate share of portfolio company holdings is voted at the shareholder meetings included in each pilot. Vanguard Investor Choice allows those investors who choose to participate to select from a menu of voting policy options that reflect a broad range of approaches to proxy voting.

For the 2025 proxy season, Vanguard Investor Choice will give investors in U.S.-domiciled funds, which represent more than $200 billion in assets, the opportunity to help direct how their equity index funds vote at company shareholder meetings. Vanguard intends to continue expanding Investor Choice to investors in additional funds.

CASE STUDY

Importance of effective disclosures at Gestamp Automoción SA

Gestamp Automoción SA (Gestamp) is a Spanish multinational automotive engineering company listed on the Madrid Stock Exchange. At the company's 2024 annual meeting, the funds voted to abstain on a management proposal that sought shareholder approval of the company's progress on its ESG 2025 Strategic Plan (the Plan).

In keeping with the funds' proxy voting policies, we analyze all proposals on a case-by-case basis, focusing on the disclosures provided. A company's board has responsibility for effective oversight of strategy and risk management. As such, the funds do not seek to opine on company strategy or operations. We do support clear disclosure of material risks and opportunities related to a company's strategy that can impact the pricing of securities and the board's oversight of such risks.

After reviewing the company's public disclosures, questions remained regarding the board's objectives in seeking shareholder input on the Plan. It was also unclear to us, based on the company's public disclosures, to what extent the outcome of the vote might affect the board's responsibility for oversight of the Plan. We also identified a lack of disclosure of the ESG risks that the company deemed to be financially material within the Plan as well as a lack of detailed disclosure of the company's progress against targets the Plan set forth. This lack of disclosure raised questions for us as to how shareholders could effectively evaluate progress against the Plan. Ultimately, the funds abstained from voting on the proposal, as we determined that we did not have sufficient information to support or vote against the proposal.

Following the 2024 meeting, we engaged with Gestamp's leaders, including members of the executive team and investor relations. We sought to better understand the company's rationale behind putting forward the advisory proposal related to the Plan. We shared our perspective that it would be helpful for the company to provide additional disclosure regarding the board's objective in putting the proposal forward; how the board intended to act on shareholder votes on the Plan; what ESG matters in the Plan the board and management assessed to be material to the company; and the company's execution against its own Plan goals. Gestamp leaders shared that they noted our concerns and feedback. Company leaders also shared additional information regarding the rationale for putting the proposal forward. The company viewed the Plan as being relevant for shareholders and wanted to broaden the opportunity for shareholders to have a discussion on these topics, similar to how shareholders can discuss financial statements at shareholder meetings.

Outcome

As a result of the engagement, we were able to share our perspectives with company leaders regarding what type of disclosure would be helpful to effectively evaluate the proposal.

2024 Investment Stewardship activity at a glance

1,603
companies engaged

13,433
companies where a proposal was voted on

1,931
total engagements with or related to portfolio companies

182,241
proposals voted on

Additional resources on investment stewardship at Vanguard

- Investment Stewardship 2024 Annual Report
- Global proxy voting policy
- Vanguard's approach to climate risk governance
- Proxy voting disclosures for Vanguard funds

CASE STUDY

Shareholder proposal requesting Scopes 1 and 2 GHG emissions targets at Kinder Morgan, Inc.

At the 2024 annual meeting of Kinder Morgan, Inc. (Kinder Morgan), a U.S.-listed energy infrastructure company, the Vanguard-advised funds did not support a shareholder proposal requesting the company set an emissions reduction target covering Scopes 1 and 2 greenhouse gas (GHG) emissions.[4]

Ahead of Kinder Morgan's 2024 annual meeting, we engaged with members of the company's management team to discuss the shareholder proposal to inform the funds' voting decisions. We sought to understand the board's approach to oversight of material climate-related risks, as well as its approach to mitigating such risks. Kinder Morgan leaders shared their perspective that setting Scopes 1 and 2 GHG reduction targets, as the proposal requested, would require a change to the company's strategy and result in unnecessary costs and risks to shareholders.

We noted prior to the engagement that the company provided disclosures related to the company's stated emissions reduction strategies, including for a portion of their methane emissions, and described future expectations for those strategies. For example, the company noted that 16% of its Scopes 1 and 2 GHG emissions came from vented and fugitive methane emissions, and that it had a 2025 methane intensity target in place for these emissions. In our engagement, company leaders stated that the company had set targets that are within its control and noted that GHG reduction strategies must be compatible with the company's business purpose in a manner that creates returns for shareholders. The company believed it would not be consistent with management's philosophy to set Scopes 1 and 2 GHG reduction targets that could not reasonably be achieved through actions within its own control.

Outcome

Through our analysis, we determined that, while the proposal related to a material risk for the company, the requested action would necessitate a change in company strategy. We also recognized that Kinder Morgan had already set targets that the board deemed appropriate for its business, along with disclosures that provided investors with insight into the company's strategy and risks to that strategy. While we support the disclosure of both material risks and progress made toward stated strategies, the funds do not seek to direct company strategy, inclusive of climate-related strategies. Therefore, the funds did not support the shareholder proposal.

4 Scope 1 refers to all direct GHG emissions. Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat, or steam.

Investment management

Integration of climate risks and opportunities by our external advisors

The majority of Vanguard's active equity funds and active multi-asset funds are managed by external firms. In fact, 22 external asset management firms serve as investment managers and investment stewards for Vanguard's active funds. Vanguard recognizes that each firm brings a different perspective to the way it assesses and oversees climate risk, including in funds that do not pursue explicit climate objectives.

We work closely with each of our active managers to understand how they integrate risk management considerations, including climate change, into their investment processes. This approach has enabled us to observe how the landscape related to these issues has changed over time and how much the reliability of climate-related data has improved.

More broadly, we are responsible for assessing how each manager's approach aligns with its investment process, which is designed to deliver strong investment outcomes for our clients. Our approach to fund manager selection centers on what we believe to be the key drivers of investment success: firm, people, philosophy, and process. This approach provides our investors with diversity of thought and broader access to top investment talent. It also provides us with a unique perspective on the ways in which different active managers approach the investment process.

A team from Vanguard tasked with manager oversight regularly engages with current and prospective external fund managers. As part of these engagements, the team examines how managers incorporate financially material considerations, including climate change, into their security selection processes. The team considers how managers gather information, how their research efforts are structured to account for climate considerations, the extent to which they consider both quantitative and qualitative factors in their analysis, and how they engage with portfolio companies. The team regularly reports on its overall findings and discussions to the Manager Oversight Committee and the fund boards; it also discusses climate-related topics when relevant.

Vanguard holds these external investment managers to the highest standards to ensure that they remain focused on maximizing long-term investment performance for our investors. Included in our ongoing assessment is the appropriate consideration and management of material financial risks, such as those posed by climate change.

Integration of climate risks in fixed income

All of Vanguard's fixed income index funds and the majority of its actively managed fixed income funds are managed by Vanguard Fixed Income Group (FIG).

Where appropriate, and in accordance with a fund's mandate, FIG assesses the financial materiality of ESG risk factors along with other investment risks to complement standard credit assessment. FIG tailors its approach within applicable sub-asset classes to address nuances in material ESG risk factors across fixed income.

This assessment applies to most fixed income mandates, excluding money market mutual funds. FIG continually refines its process to consider financial markets' adaptation to societal and environmental risk factors, regulatory requirements, and the availability of ESG data.

Engagements with issuers are among the many informational inputs that FIG may use to integrate risk considerations into its investment process. FIG credit research analysts regularly meet with issuers to discuss a range of topics that may pose a financial or reputational risk to an issuer, including material climate risk.

CASE STUDY

Baillie Gifford: Petrobras

Driver type: Transition risk

Background

Petrobras is Brazil's national oil and gas company. It has been held in Vanguard external manager Baillie Gifford's emerging markets funds since 2016, where the investment is underpinned by the quality of the company's upstream asset base.

In 2021, Petrobras set a goal of net zero operational emissions by 2050. Brazil has restored and ramped up its climate commitments, so the company will need to increase operational decarbonization and ensure effective capital allocation for new projects to ensure it remains a competitive oil and gas producer.

Baillie Gifford is interested in the interplay between social and environmental factors in Brazil's energy transition. Its expectations for Petrobras include full emissions disclosure and a clear plan for reducing operational emissions with a focus on any fugitive methane.

Petrobras has sought to reduce its operational emissions, setting a net zero operational emissions target in 2021. It has achieved an overall 41% reduction in total operational absolute GHG emissions between 2015 and 2023 and has also met its intensity target of 15 kg carbon dioxide equivalent per barrel ($CO2e$/barrel) of oil.

2024 activities

In 2024, Baillie Gifford met with various energy and sustainability experts in Brazil, including Petrobras's chief financial officer and heads of governance and climate, to discuss engagement priorities in the context of Petrobras's updated business plan. Baillie Gifford also sought to monitor governance structures, given the Brazilian government's majority voting control and uneven progress following a corruption scandal in 2015.

Updated in November 2023, Petrobras's business plan shows continued commitment to oil and gas exploration and development along with new opportunities, including increasing its allocated capital expenditure for operational decarbonization.[5]

The company is focusing on efficiency gains, identifying opportunities to eliminate flaring further, and improving energy consumption and supply.[6] Petrobras has one of the largest carbon capture and storage (CCS) programs among offshore oil and gas producers, and this expertise is now being explored for new onshore CCS hubs that would link with adjacent emitting industries, such as chemicals and cement. Spending on low-carbon projects has increased from 6% to 11% of total capital expenditures. The company is looking at small investments in solar, onshore wind, sustainable aviation fuels, and hydrogen. However, its core skills of oil and gas exploration and development remain the priority.

Outcome

Meetings with Petrobras and other experts helped Baillie Gifford better understand the company's approach to the expected global energy transition. Baillie Gifford understands the company's approach and focus on its core business. Petrobras demonstrates strategic awareness and considers options for capital allocation that may unfold between oil and gas, new energies, and shareholder dividends. Baillie Gifford continues to track the company's progress, monitor company strategy in relation to Brazil's energy transition and global climate goals, and engage with the company where appropriate.

5 Areas of particular focus include the electrification of new floating production, storage, and offloading vessels and delivery of its near-zero methane emissions target for 2030.

6 Flaring is the practice of burning off excess material due to overpressure or other operational challenges.

CASE STUDY

Wellington Management Company: Foran Mining Corp. (Foran)

Driver type: Transition risk

In 2024, Wellington Management Company engaged with Foran, a Canada-based diversified exploration and development company, following the release of Foran's inaugural sustainability report. In the report, Foran expressed its ambition to become a net zero producer of copper and zinc; however, a plan to achieve this goal was not disclosed.

During discussions, Foran shared their intent to publish a net zero plan for their flagship McIlvenna Bay Project in Saskatchewan, Canada. This plan addressed project emissions and outlined strategies for reaching their carbon-neutral targets. Notable opportunities included procuring zero-emission hydropower, utilizing electric mining vehicles, deploying mine exhaust heat recovery technology, and designing a closed-loop water circuit that enables high levels of recycling, all of which would position McIlvenna Bay as a copper mine with one of the world's lowest rates of fresh water use. Foran noted that part of the project is being built on previously disturbed industrial land, helping to limit biodiversity impacts, with active rehabilitation and ecological enhancement planned during operations. They also highlighted the potential for carbon capture, carbon sequestration, and other technologies that together have the potential to remove more carbon from the atmosphere than is emitted by the project's development, production, and closure.

Wellington is aware that the introduction of new technology can bring operational risks to a mining project, but noted that McIlvenna Bay is being engineered to be carbon-neutral from first production. This proactive approach could help Foran avoid common challenges faced by miners when attempting to retrofit existing operations.

Foran indicated that climate-related oversight is integrated at the highest levels of the company, with the board's sustainability committee playing an active role in guiding the net zero carbon strategy. Foran also acknowledged the value of aligning with industry standards such as the TCFD and plans to embed climate risk management into broader project governance and decision-making processes.

Foran expressed confidence that their sustainability strategy goes beyond delivering environmental benefits. They anticipate that their approach will reduce operational costs relative to competitors and mitigate potential impacts of future regulation. For example, utilizing existing infrastructure to procure hydropower offers a market-competitive power rate and reduces volatility associated with diesel prices. Additionally, there is potential to receive a premium for low-carbon copper as downstream customers aim to reduce their emissions footprint.

Outcome

Through Wellington's engagement with Foran's management, the company demonstrated awareness of its sustainability outlook and informed Wellington that it has initiated processes to reach its targets. Additionally, Wellington learned that Foran has the infrastructure and capabilities to transition to the use of electric mining equipment, despite industry opinion to the contrary. Following the engagement, Wellington remained confident in Foran's ability to execute on its stated plans.

CASE STUDY

Company: Volkswagen AG (Volkswagen)

The European Commission (EC) has introduced more stringent 2025 carbon dioxide (CO^2) emissions targets for automotive manufacturers selling cars in the E.U. Volkswagen is likely to fall short of this target due to its product mix and weak demand for fully electric vehicles in key European countries. Manufacturers that miss the target could face monetary fines from the EC, with estimates suggesting that fines could be as high as €1.5 billion for 2025.

Vanguard's Active Taxable Fixed Income team discussed this risk with Volkswagen leaders, who shared several options to address this risk. For example, Volkswagen could pool emissions with other automotive original equipment manufacturers (OEMs) that are outperforming the target emissions level, such as automakers who only produce battery electric vehicles (BEVs). Volkswagen would then buy the other OEMs' credits. Other options include accelerating the sale of BEVs and plug-in hybrid electric vehicles, potentially impacting profit margins.

Vanguard's investment thesis takes into account that its management is fully committed to adopting new technologies over time and will manage the financial impact of the transition. Vanguard continues to monitor Volkswagen's plans to navigate transition risks as the auto industry experiences technological shifts.

IN FOCUS

Sustainability risk integration in Europe

In 2024, Vanguard—in compliance with regulatory obligations—implemented enhancements to our investment risk management and monitoring processes of sustainability risks (including climate risks) across our European funds' footprint. Our Investment Management and Finance Risk (IMFR) team, together with our technology and data teams, have rationalized, automated, and systemized our climate and ESG data into a bespoke risk dashboard.

Using exceptions analysis, IMFR utilizes this dashboard to conduct monthly identification, assessment, and monitoring of various climate risk metrics and principal adverse indicators against predetermined tolerances for each European-country-domiciled fund and its respective benchmarks.[7] Climate Value-at-Risk (Climate VaR) is further used as a form of scenario analysis and to assess the European funds against various NGFS-defined scenarios.

Monthly analytics of these sustainability risk metrics are presented to the Investment Management Group by IMFR as part of their regular cadence of risk management meetings and reported to the European Boards and senior managers on a quarterly basis through the European Risk and Compliance Committee.

7 These metrics are Scopes 1, 2, and 3 GHG emissions: total carbon emissions, implied temperature rise, Climate VaR, total carbon footprint, and weighted average carbon intensity.

Metrics and targets

In this section, we discuss the metrics and targets we use to assess climate-related risks and opportunities.

One of our most important responsibilities to our clients is clear, accurate, and useful disclosure about risks in Vanguard funds.

Measuring climate-related risks and opportunities

Climate data and metrics remain a rapidly evolving area. We are exploring the benefits and limitations of various climate metrics for our investors. We also acknowledge the growing global scrutiny and regulation of climate-related disclosures as well as the increasing demand for sustainability-related data among a subset of our clients. Vanguard continues to build out its data and reporting capabilities to meet regulatory reporting obligations and evolving client requirements.

In terms of our investment processes and stewardship activities, we focus on material climate-related risks as they relate to the overall risk exposure of our underlying portfolio companies. Vanguard views corporate disclosures—including disclosures pertaining to climate matters—through the lens of materiality to a firm's long-term value. We focus on the risks that are most relevant to specific companies while acknowledging that those risks might evolve over time. Disclosure and assessment of material risks, including material climate-related risks, are important for price discovery and returns. As disclosure of material climate-related risks improves, we believe that security prices will more accurately reflect these risks and that all investors will benefit.

For our equity index products, our Investment Stewardship team uses climate metrics disclosed at the company level to inform its understanding of material climate risk matters. We undertake proxy voting with a long-term perspective and the objective of safeguarding and promoting long-term shareholder returns over time. In some instances, the Investment Stewardship team supplements disclosed company metrics with climate metrics provided by third parties.

For our actively managed funds, corporate disclosures about climate risks and opportunities can inform the investment decisions of portfolio managers. The managers incorporate such disclosures into their investment processes and engagement strategies. Each manager's approach to the use of climate metrics is part of ongoing oversight of Vanguard's investment advisors.

IN FOCUS

In response to the evolving regulatory environment in Europe, we continue to consider how to integrate sustainability risk data into our enterprise and investment risk-management frameworks. In our 2021 TCFD report, we described our first climate change scenario analysis exercise, which was designed to help us obtain a deeper understanding of climate impact in different sectors of the capital markets. Since then, we've employed scenario analysis in our climate-related research and in the ESG stress testing of our U.K. business, which is required by regulation (and highlighted on page 17 of this report). These use cases are sharpening our understanding of the various tools and methodologies available and will inform our future approach to scenario analysis. Additionally, climate metrics are disclosed in our TCFD 2024 U.K. Supplemental entity-level and product disclosures report (starting on page 44).

Figure 3 illustrates climate-related metrics that are used in our U.K. TCFD supplement or are being considered for integration into sustainability risk disclosures in Europe.

FIGURE 3

Summary of climate-related metrics reported in European disclosures

Metric	Helps to answer the question	Definition
Total carbon emissions	How many metric tons of carbon dioxide equivalent (tCO_2e) emissions is the portfolio responsible for?	GHG emissions (Scopes 1, 2, and 3) multiplied by the current value of investment divided by the issuer's enterprise value including cash (EVIC). The calculation is based on the absolute GHG emissions associated with a portfolio, expressed in tCO_2e.
Total carbon footprint	How much tCO_2e in emissions is the portfolio responsible for per $1 million invested?	Total carbon emissions for a portfolio normalized by the market value of the portfolio, expressed in tCO_2e per $1 million invested.
Weighted average carbon intensity (WACI)	What is the portfolio's exposure to carbon-intensive companies?	A portfolio's exposure to carbon-intensive companies, expressed in tCO_2e per $1 million in revenue; reflects the carbon intensity of a portfolio across asset classes.
Implied Temperature Rise (ITR)	How well do public companies align with global temperature goals?	The ITR estimates the global implied temperature rise (in the year 2100 or later) if the entire economy had the same carbon budget overshoot or undershoot as the portfolio in question. The portfolio-level ITR compares the sum of "owned" projected GHG emissions, including Scope 3, against the sum of "owned" carbon budgets for the underlying portfolio holdings.

Notes: For U.K. product-level disclosures, as mandated by the FCA effective in 2022, we adopted the ITR metric given its wide adoption within the financial sector. At the same time, we acknowledge the limitations of the metric, including the static nature of the assessment and the heavy reliance on multiple assumptions.

ESG products and net zero objectives

Vanguard has been thoughtful and deliberate in building out our ESG product lineup by ensuring that each fund can address enduring needs for investors' portfolios and preferences. Our product development approach relies on a rigorous set of design principles. These principles require assessment of each product proposal based on investment merit, client needs, any competitive advantage, and any legal, regulatory, or operational constraints. Only after a multitier approval process, as outlined in "Management's role regarding climate-related risks and opportunities" on page 9, do we proceed with the introduction of a new fund for investors.

The ESG funds include a number of actively managed equity products that are aligned with a temperature rise of less than 2°C above preindustrial levels, meaning that, as part of the fund design, they are constructed to meet net zero objectives. The external managers of these active funds each determine their own interim targets and methodology for alignment, consistent with the fund's strategy. Their approach is disclosed in each fund's prospectus, and targets are monitored by both the manager and Vanguard.

IN FOCUS

Information on Vanguard ESG index funds

Vanguard reports information on certain Vanguard ESG index funds' asset-weighted average of holdings utilizing underlying asset-level Scopes 1 and 2 GHG emissions data from MSCI ESG Research LLC (MSCI), which is internally aggregated at a portfolio level by Vanguard. Vanguard also reports information on certain ESG index funds' total carbon footprint and weighted average carbon intensity from MSCI on Vanguard's Institutional and Financial Advisor websites.

MSCI collects publicly available emissions and intensity data from company-reported sources, government agencies, nongovernmental organizations, and media sources. When information is not publicly available, MSCI may make estimates. To Vanguard's knowledge, MSCI does not receive third-party assurances regarding the accuracy of the underlying information. Vanguard relies on the accuracy of the data provided by MSCI. Vanguard does not independently review the accuracy of MSCI's data and does not retain independent third-party verification services to review that data.

Vanguard as a company

In this section, we discuss our goals and progress regarding corporate sustainability in our business operations.

With more than 20,000 crew members around the world, Vanguard is committed to reducing our global carbon footprint and managing climate-related risks in our business operations.

Measuring progress on operational climate risks

Vanguard's corporate climate strategy seeks to reduce our firm's own climate impact, pursue sustainable business operations, and engage our crew. We are committed to effective corporate sustainability practices that can drive operating costs lower and mitigate the physical risks climate-related events can have on our operations and our ability to serve clients. We also invest time and resources to support the communities where we live and work.

In early 2020, we established goals to curb emissions and reduce the global carbon footprint of our operations.

In 2024, we continued to use 100% renewable electricity globally in owned and leased properties where Vanguard has operational control, an outcome we first achieved in 2021.

Where possible, our buildings are powered by on-site renewable electricity or direct renewable electricity from the utility supplier. We also purchase Green-e certified renewable energy certificates from a third-party provider.

We offset our remaining footprint with high-impact carbon offset projects that increase economic development.

Climate-related goals for our global operations

Goal	Date established	Target completion	Status
Achieve 100% renewable energy in our global operations	January 2020	2021	Achieved 100% renewable energy in 2024
Reach carbon neutrality throughout our global operations	January 2020	2025	Achieved 100% carbon neutral in 2024

Notes: Vanguard's Scopes 1, 2, and 3 GHG emissions for 2021, 2022, 2023, and 2024 have been assured by a third-party provider. This limited assurance is based on the International Standard on Assurance Engagements ISAE 3000 (revised).

Update on 2025 reduction targets

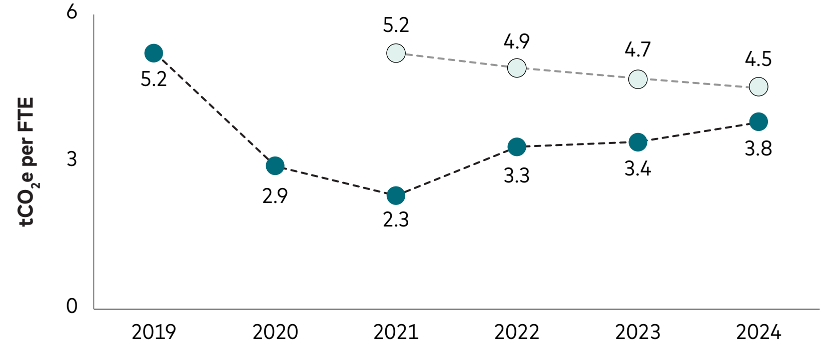
We previously adopted four reduction targets for 2025, based on 2019 baseline levels:

Goals	Results
Reduce carbon emissions by 20%*	27% reduction
Reduce electricity usage by 5%**	35% reduction
Reduce water usage by 20%***	47% reduction
Divert 80% of waste from landfills	85% diversion

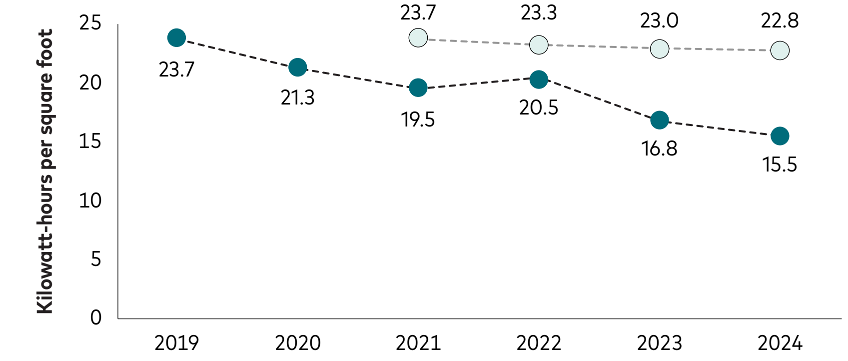
* Measured in tCO_2e per full-time equivalent (FTE).
** Measured in kilowatt-hours per square foot of space under operational control.
*** Measured in gallons per square foot of space under operational control.

The charts below show actual results.

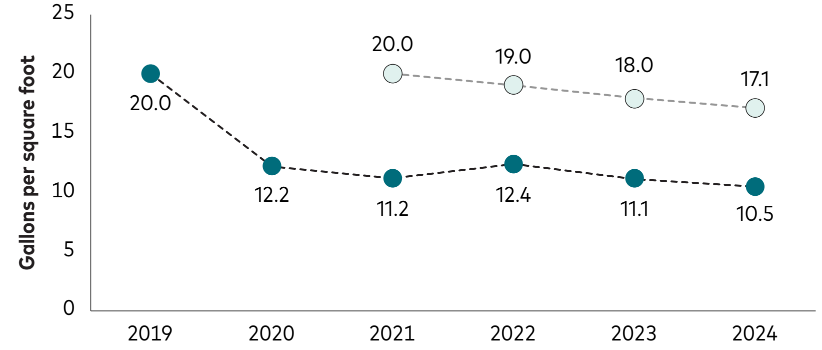
20% emissions reduction



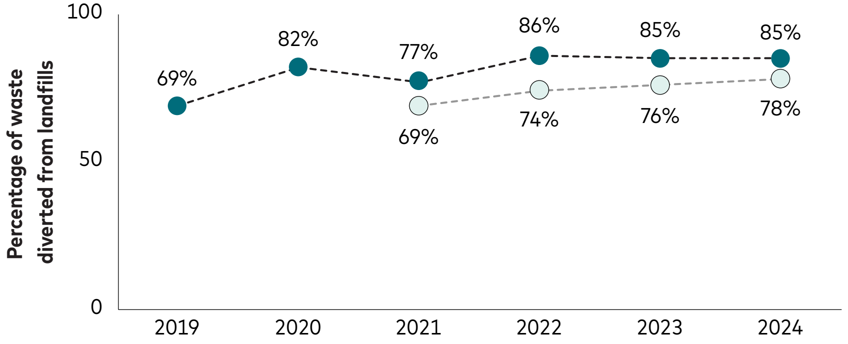
5% electricity reduction



20% water reduction



80% waste diversion



Target Actual result

Sustainable business operations

Green building criteria and certifications are integral to our corporate building design standards. Twenty-three buildings (or 35%) of Vanguard's total square footage across our global locations were either LEED, BREEAM, or WELL certified.[8] Of the 23 buildings, two were new certifications for Vanguard in 2024. These two new certifications include the Wellesley building on our Arizona campus, and our office space in Dublin, Ireland.

Water reduction project in Arizona campus

Vanguard implemented a comprehensive water reduction project at our Arizona campus, achieving a 51% decrease in irrigation water usage—or roughly 1.7 million gallons—within one year. The approach included optimized watering schedules, the replacement of 4,200 square feet of water-intensive grass with artificial turf, strategic reduction of live landscape features, and deployment of a real-time leak detection system.

Organic waste program

Vanguard launched a comprehensive organic waste program across all primary U.S. campuses, successfully diverting over 70 tons of organic waste from landfills through the implementation of composting systems in campus cafeterias. Additionally, we piloted an innovative paper towel waste diversion program in our Arizona office, further expanding our commitment to sustainable waste management practices.

Vanguard is a member of the U.S. Environmental Protection Agency's Green Power Partnership, which seeks to increase voluntary use of electricity produced from renewable energy resources.

Engaging our crew

We offer programs for our crew that enable their use of low-carbon transportation, including 239 free electric vehicle charging ports adjacent to our U.S. buildings, shuttles between campuses and to and from public transit, and pre-tax deductions for public transit costs. Additionally, we have begun to add electric vehicles to our U.S. maintenance fleet.

In 2022, we introduced a program offering U.S. crew an incentive toward the lease or purchase of a hybrid or electric vehicle. As of December 31, 2024, more than 1,900 crew had taken advantage of this incentive.

As a result of the adoption of electric vehicles, Vanguard reduced or offset approximately 991 tCO_2e from commuting emissions and contributed to saving approximately 164,566 gallons of gasoline, as estimated using data provided by ChargePoint, a third-party electric vehicle charging provider.

Our U.S. dining services focus on sustainable food purchasing practices and diverting waste from landfills. We implement waste and recycling programs, as well as cooking demonstrations for crew by Vanguard's Community Garden team. Additionally, Vanguard's Malvern, Pennsylvania, and Scottsdale, Arizona, campus community gardens are maintained and harvested by crew volunteers. The Community Garden donated over 1,300 pounds of produce to local food banks, pantries, and centers in 2024.

Globally, crew participate in various educational events such as Earth Day activities, e-waste recycling, and crew-led Green Teams throughout the year.

8 LEED (Leadership in Energy and Environmental Design) is administered by the U.S. Green Building Council; BREEAM (Building Research Establishment Environmental Assessment Methodology) is administered by BRE Global, a subsidiary of the U.K.-based BRE Group. WELL is administered by the International Well Building Institute (IWBI).

IN FOCUS

A LEED project

One George's Quay Plaza, located in Dublin, Ireland, received LEED Interior Design and Construction Silver certification. Its sustainability features include:

- Water-efficient faucets, toilets, and showers, which reduced water usage by 43% compared with previous systems
- A lighting control strategy, which allows for 92% of the occupied space to be covered
- Standard operating procedures for effective cleaning of all internal building components that are consistently used, managed, and audited to ensure best green practices on site

The One George's Quay Plaza project also used only low-emission paint, coatings, flooring, insulation, and ceiling products to ensure greater safety for construction workers and building occupants. In addition, air testing was performed and upgraded air filters were installed for effective removal of pollutants and contaminants.

Renewable energy and carbon offsets

In 2024, Vanguard purchased over 100,000 megawatt hour (MWh) of renewable energy, which resulted in a reduction of more than 31,000 tCO_2e.

As a company, we supported three cost-efficient and diversified carbon-offset projects in 2024 that offset 62,344 tCO_2e. These projects represent both U.S. and global efforts with multiple benefits.

UNITED STATES

Clinton Landfill Gas Collection and Combustion Project

Registry: Verra Verified Carbon Standard

Project type: Landfill gas

The project supports a landfill gas collection and utilization project at the Clinton Landfill in DeWitt County, Illinois. The project includes methane capture and destruction with two generators to convert the methane to biofuel. As a direct result, the surrounding community benefits from improved air quality and reduced odor.

LAOS

Nam Hinboun Hydropower Project

Registry: Verra Verified Carbon Standard

Project type: Small-scale hydropower

The project displaces fossil-fuel-based power generation by replacing it with run-of-river (ROR) hydroelectricity. ROR electricity is a type of renewable power that provides little or no water storage, ideal for rivers or streams that can sustain a minimum flow. This 15 MW project consists of two bulb turbines of 7.5 MW each and generates an annual supply of approximately 79,000 MWh of clean electricity to the Laos power grid.

KENYA

BioLite Improved Cookstoves Programme

Registry: Gold Standard

Project type: Improved cookstoves

The project distributes fuel-efficient cookstoves to replace wood and charcoal stoves, which will cut toxic pollution emissions by up to 90%, reduce fuel use by 50%, and generate electricity for mobile phone charging and home lighting. Other benefits include protecting forests, reducing indoor air pollutants, and improving home safety.

Vanguard's carbon offset projects, 2024

These carbon offset projects were part of Vanguard's total carbon emissions reduction for 2024.

We purchased carbon offsets exclusively from providers that require independent third-party verification of projects and corresponding emission reductions or removals achieved.

Inventory year	Name of project	Project ID number	Seller	Verification program*	Protocol	Type	Country	State
2024	BioLite Improved Cookstoves Programme	GS11194	3Degrees Group, Inc.	Gold Standard	AMS-II.G., "Energy efficiency measures in thermal applications of non-renewable biomass," version 3.0	Energy efficiency, avoided emissions	Kenya	N/A
2024	Clinton Landfill Gas Collection and Combustion Project	VCS318	3Degrees Group, Inc.	Verra Verified Carbon Standard	ACM0001, "Flaring or use of landfill gas," version 19.0	Avoided emissions—landfill gas	United States	Illinois
2024	15 MW Nam Hinboun Downstream Hydropower Project	VCS3662	3Degrees Group, Inc.	Verra Verified Carbon Standard	AMS-I.D.: "Grid connected renewable electricity generation," version 18.0	Small-scale hydropower, avoided emissions	Laos	N/A

* Vanguard does not have separate and additional third-party assurance for its carbon offset purchases for its 2025 carbon neutrality goal.

Disclosure of Scopes 1, 2, and 3 GHG emissions

	GHG emissions (tCO_2e)	2022	2023	2024
Scope 1	Emissions	4,375	2,699	4,001
Scope 2	Electricity emissions—location-based*	34,361	30,047	31,457
	Total electricity emissions—market-based**	0	0	0
Scope 3	Emissions	44,699	52,683	58,343
Total carbon emissions	Scopes 1, 2, and 3⁺	83,435	85,429	93,801
Renewable energy certificates		–34,361	–30,047	–31,457
Carbon offsets		–24,500	–41,472	–62,344
Total reported emissions⁺⁺		**24,573**	**13,910**	**0**

* Emissions from electricity before we purchased renewable energy certificates.
** Emissions from electricity after we purchased renewable energy certificates.
⁺ Total emissions before any purchased renewable energy certificates and carbon offsets.
⁺⁺ Total reported emissions = (Scope 1 + Scope 2 location-based + Scope 3) – renewable energy certificates – carbon offsets.

Assurance

Vanguard's Scopes 1, 2, and 3 GHG emissions for 2024 have been assured by a third-party provider.[9] This assurance is based on the International Standard on Assurance Engagements ISAE 3000 (revised).

Scopes 1, 2, and 3 are as defined by the Greenhouse Gas Protocol standard. Scope 1 refers to all direct GHG emissions. Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat, or steam. Scope 3 refers to other indirect emissions not covered in Scope 2 that occur in a company's value chain, including both upstream and downstream emissions.

Scope 3 data do not include Scope 3 categories 3.1: Purchased goods and services, 3.2: Capital goods, or 3.15: Fund investments.

Looking ahead: Vanguard's new 2035 reduction targets

With the successful completion of Vanguard's corporate 2025 goals and targets, six new reduction targets have been established for 2035:

- Reduce Scopes 1 and 2 GHG emissions by 40%
- Reduce Scope 3 (3.1 & 3.2) GHG emissions by 35%
- Reduce Scope 3 (3.3 – 3.8) indirect GHG emissions to 2.0 Mt CO_2e per FTE
- Produce 25% of total consumed electricity from onsite renewable energy sources
- Reduce potable water usage by 30%
- Divert 60% of waste from landfills[10]

9 Scope 3 GHG emissions refer to other indirect emissions not covered in Scope 2 that occur in a company's value chain, including both upstream and downstream emissions.
10 Vanguard's existing operational target for waste diversion (2025 goal) includes waste-to-energy as a diverted material. The 2035 reduction target does not include waste-to-energy as a diverted material. As such, the goals are not directly comparable.

2024 TCFD disclosure status

2024 TCFD disclosure status

The TCFD recommends disclosure in four primary areas: governance, strategy, risk management, and metrics and targets. This table is a summary of our plans and progress in each of the relevant areas.

	Pillar/recommendation	Summary
Governance: Disclose the organization's governance around climate-related risks and opportunities.	(a) Describe the board's oversight of climate-related risks and opportunities.	The Vanguard Group, Inc., board of directors is responsible for, among other matters, setting broad policies for the company and overseeing risk management relating to Vanguard's corporate operations. Where applicable, the execution of these responsibilities includes consideration of material issues, such as sustainability and climate-related risks and opportunities, as relevant to Vanguard's corporate operations. Outside the U.S., the boards of our international businesses exercise similar oversight responsibilities in their respective regions. See "Board oversight of climate-related risks and opportunities" on page 7. Our global governance structure includes an integrated network of committees and functions that oversee climate-related risks and opportunities. See "Management's role regarding climate-related risks and opportunities" on page 9.
	(b) Describe management's role in assessing and managing the climate-related risks and opportunities.	The Sustainability Risk and Strategy Oversight Committee, a subcommittee of the CEO Council on Sustainability, facilitates oversight of global sustainability matters. See "Management's role regarding climate-related risks and opportunities" on page 9. In Europe, Vanguard's European ESG Management Oversight Council oversaw ESG risks and strategy for the company's European businesses in 2024. See "In focus: European ESG governance framework" on page 11.
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	(a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	In the near term, Vanguard expects transition risks to outweigh physical risks as a driver of risk both for our organization and the companies held in our product portfolios. With climate-related regulations and reporting requirements evolving at varying paces around the world, there is greater potential for impacts from transition risks driven by the emergence of disorderly transition scenarios. We anticipate that physical risks will either be event-driven or generally acting as a driver of longer-term risk. See "Climate-related risks and opportunities" on page 13.
	(b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	The potential impacts of climate-related risks include higher operational costs related to complying with complex global regulatory requirements. Potential opportunities include meeting client preferences through a selection of ESG products with specific climate-change-related strategies that we believe have enduring investment merit and are consistent with our time-tested product design principles. See "Summary of climate-related risks" on page 14 and "Summary of climate-related opportunities" on page 15.
	* For asset managers: Describe how climate-related risks and opportunities are factored into relevant products or investment strategies.	Material climate-related impacts are considered in the management of our funds through engagement with portfolio companies and integration of risks as appropriate. See "Meeting investment needs of clients" on page 16.
	* For asset managers: Describe how each product or investment strategy might be affected by the transition to a low-carbon economy.	We consider transition risks to be a greater driver of enterprise risk than physical risks in the near term, as climate-related regulations and reporting requirements are evolving at different paces—and with varying degrees of complexity—in markets around the world. We also consider transition risks to be a more pressing driver of risk in the short-term and medium-term for companies held in our product portfolios, with physical risks either event-driven or generally acting as a driver of longer-term risk. See "Transition-related corporate and investment risks" on page 15.
	(c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	We manage our funds and business in the interests of our clients and with a long-term perspective. See "Resilience of our strategy" on page 16. In the U.K., we have conducted climate-related stress testing to assess our ability to remain financially viable throughout the economic cycle. See "Vanguard U.K. stress and scenario testing" on page 17.

(Continued on next page)

2024 TCFD disclosure status

	Pillar/recommendation	Summary
Risk management: Disclose how the organization identifies, assesses, and manages climate-related risks.	(a) Describe the organization's processes for identifying and assessing climate-related risks.	As a matter of course, we seek to identify, assess, and manage risks from both a corporate and investment product management perspective, taking impact, likelihood, and urgency into account. Vanguard's risk-management life cycle has four key components: identification of risk, assessment of risk, management of risk, and monitoring and reporting of the risk environment. We see risk management as an ongoing process and mindset moving continuously through each stage. See "Identifying and assessing climate-related risks" on page 19.
	* For asset managers: Describe, where appropriate, engagement activity with investee companies to encourage better disclosure and practices related to climate-related risks in order to improve data availability and asset managers' ability to assess climate-related risks.	On behalf of the Vanguard-advised equity funds, the Investment Stewardship program looks for portfolio company boards to effectively oversee any material climate-related risks that exist for that company and disclose those risks using widely recognized investor-oriented reporting frameworks. Investment Stewardship does not seek to dictate portfolio company operations or strategy. Its central objective is to maximize returns for the investors in Vanguard products. For Vanguard's externally managed funds, investment stewardship activities are carried out by the funds' respective managers. We support the disclosure framework created by the TCFD. See "Investment stewardship" on page 21.
	* For asset managers: Describe how material climate-related risks are identified and assessed for each product or investment strategy. This might include a description of the resources and tools used in the process.	Vanguard's Investment Stewardship team engages with portfolio companies and oversees proxy voting and stewardship activity on behalf of Vanguard-advised funds, including Vanguard equity index funds and ETFs. See "Investment stewardship" on page 21. Our external advisors serve as investment managers and investment stewards for the majority of our actively managed equity funds, including in funds that do not pursue explicit sustainability objectives. See "Integration of climate risks and opportunities by our external advisors" on page 24. Vanguard Fixed Income Group (FIG), which manages most of our fixed income funds, assesses the financial materiality of ESG risk factors alongside, and in the context of, other investment risks to complement standard credit assessment. See "Integration of climate risks in fixed income" on page 24.
	(b) Describe the organization's processes for managing climate-related risks.	Vanguard embeds relevant material sustainability risk considerations into existing corporate functions to ensure that these factors are considered alongside, not separately from, other matters important to serving our clients. Across our funds, relevant teams monitor material climate-related risks, including the Vanguard-advised active strategies, through oversight of our external managers' practices, and through investment stewardship activities conducted on behalf of the Vanguard-advised passive funds. See "Managing climate-related risks within our investments" on page 20.
	* For asset managers: Describe how the organization manages climate-related risks for each product or investment strategy.	The majority of Vanguard's active equity funds and active multi-asset funds are managed by 22 external asset management firms. We hold these managers to the highest standards to ensure that they remain focused on maximizing investment performance for our investors. The appropriate consideration and management of material financial risks, such as those posed by climate change, are part of our ongoing assessment of these firms. See "Identifying and assessing climate-related risks" on page 19.
	(c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	Vanguard's overall risk-management approach is founded on three core lines of defense: our business units, our corporate risk functions, and our independent Internal Audit team. See "Identifying and assessing climate-related risks" on page 19.

(Continued on next page)

	Pillar/recommendation	Summary
Metrics and targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	(a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk-management process.	For Vanguard's equity index products, our Investment Stewardship team uses climate metrics disclosed at the company level to to inform its understanding of material climate risk matters. The team undertakes proxy voting with the objective of safeguarding and promoting long-term shareholder returns. In some instances, the team supplements disclosed company metrics with climate metrics provided by third parties. For the Vanguard-advised active funds, corporate disclosures about climate risks and opportunities can inform the investment decisions of portfolio managers. The managers incorporate such disclosures into their investment processes and engagement strategies. See "Measuring climate-related risks and opportunities" on page 29.
	* For asset managers: Describe metrics used to assess climate-related risks and opportunities in each product or investment strategy. Where relevant, also describe how these metrics have changed over time. Where appropriate, provide metrics considered in investment decisions and monitoring.	In Europe, we've employed scenario analysis in U.K. stress testing as required by regulation. These use cases are sharpening our understanding of the various tools and methodologies and will inform our future approach. Additionally, climate metrics are disclosed in our U.K. supplementary entity-level and product disclosures. See "Summary of climate-related metrics reported in European disclosures" on page 30.
	* For asset managers: Where appropriate, provide metrics considered in investment decisions and monitoring.	Climate data and metrics remain a rapidly evolving area. We are exploring the benefits and limitations of various climate metrics for our investors. We also acknowledge the growing global scrutiny and regulation of climate-related disclosures as well as the increasing demand for sustainability-related data among a subset of our clients. Vanguard continues to build out its data and reporting capabilities to meet regulatory reporting obligations and evolving client requirements. See "Measuring climate-related risks and opportunities" on page 29.
	* For asset managers: Describe the extent to which the organization's assets under management and products and investment strategies, where relevant, are aligned with a well-below 2°C scenario. Also indicate which asset classes are included.	Vanguard has been thoughtful and deliberate in building out our ESG product lineup by ensuring that each fund can address enduring needs for investors' portfolios and preferences. This includes actively managed equity ESG products that are aligned with a temperature rise of less than 2°C above preindustrial levels, meaning that as part of the fund design, they are intended to meet net zero objectives. The external managers of these active funds each determine their own targets and methodology for alignment, consistent with the fund's strategy. Their approach is disclosed in the fund's prospectus, and the targets are monitored by both the manager and Vanguard. See "ESG products and net zero objectives" on page 31.
	(b) Disclose Scopes 1 and 2, and, if appropriate, Scope 3 GHG emissions, and the related risks.	As a company, we disclose Scopes 1 and 2 GHG emissions and several Scope 3 emissions. Our operational carbon footprint in 2024 was 93,801 metric tons of carbon dioxide equivalent (tCO_2e), which was reduced to 0 tCO_2e through the purchase of renewable energy and carbon offsets. See "Disclosure of Scopes 1, 2, and 3 GHG" on page 38.
	* For asset managers: Disclose GHG emissions for assets under management and the WACI for each product or investment strategy, where data and methodologies allow. Also consider providing other carbon footprinting metrics the organization believes are useful for decision-making.	Vanguard continues to build out its data and reporting capabilities to meet regulatory reporting obligations and evolving client requirements. In the U.K., we are disclosing GHG emissions and WACI for funds meeting specified data coverage thresholds, as mandated by the FCA. See "Measuring climate-related risks and opportunities" on page 29.

(Continued on next page)

	Pillar/recommendation	Summary
Metrics and targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	(c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	Vanguard previously adopted four reduction targets for 2025 for its own operations, based on 2019 baseline levels: • Reduce carbon emissions by 20%, measured in tCO_2e per full-time equivalent (FTE) • Reduce electricity usage by 5%, measured in kilowatt-hours per square foot of space under operational control • Reduce water usage by 20%, measured in gallons per square foot of space under operational control • Divert 80% of waste from landfills Vanguard successfully achieved all four emissions reduction targets established in 2020: • Reduced carbon emissions by 27% measured in tCO_2e per FTE • Reduced electricity usage by 35%, measured in kilowatt-hours per square foot of space under operational control • Reduced water usage by 47%, measured in gallons per square foot of space under operational control • Diverted 85% of waste from landfills **Vanguard's new 2035 reduction targets** With the successful completion of Vanguard's corporate 2025 goals and targets, six new reduction targets for Vanguard's own operations have been established for 2035:** • Reduce Scopes 1 and 2 GHG emissions by 40% • Reduce Scope 3 (3.1 & 3.2) GHG emissions by 35% • Reduce Scope 3 (3.3 – 3.8) indirect GHG emissions to 2.0 Mt CO2e per FTE • Produce 25% of total consumed electricity from onsite renewable energy sources • Reduce potable water usage by 30% • Divert 60% of waste from landfills*** See "Update on 2025 reduction targets" on page 34 and "Looking ahead: Vanguard's new 2035 reduction targets" on page 38. We also have a number of actively managed funds constructed to meet net zero targets. See "ESG products and net zero objectives" on page 31.

* Supplemental guidance for asset managers, from Implementing the Recommendations of the TCFD, published October 2021.

** Targets set with a 2022 baseline year.

*** Vanguard's existing operational target for waste diversion (2025 goal) includes waste-to-energy as a diverted material. The 2035 reduction target does not include waste-to-energy as a diverted material. As such, the goals are not directly comparable.

Connect with Vanguard® • vanguard.com

Important information

For more information about Vanguard funds and ETFs, visit vanguard.com to obtain a prospectus or, if available, a summary prospectus. Investment objectives, risks, charges, expenses, and other important information about a fund are contained in the prospectus; read and consider it carefully before investing.

Vanguard ETF shares are not redeemable with the issuing fund other than in very large aggregations worth millions of dollars. Instead, investors must buy and sell Vanguard ETF shares in the secondary market and hold those shares in a brokerage account. In doing so, the investor may incur brokerage commissions and may pay more than net asset value when buying and receive less than net asset value when selling.

All investing is subject to risk, including the possible loss of the money you invest. Diversification does not ensure a profit or protect against a loss.

Be aware that fluctuations in the financial markets and other factors may cause declines in the value of your account. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income.

Investments in bonds are subject to interest rate, credit, and inflation risk.

ESG portfolios are subject to ESG investment risk, which is the chance that the stocks or bonds screened by the index provider or advisor, as applicable, for ESG criteria generally will underperform the market as a whole or, in the aggregate, will trail returns of other portfolios screened for ESG criteria. The index provider or advisor assessment of a company, based on the company's level of involvement in a particular industry or their own ESG criteria, may differ from that of other portfolios or an investor's assessment of such company. As a result, the companies deemed eligible by the index provider or advisor may not reflect the beliefs and values of any particular investor and certain screens may not exhibit positive or favorable ESG characteristics. The evaluation of companies for ESG screening or integration is dependent on the timely and accurate reporting of ESG data by the companies. The advisor may not be successful in assessing and identifying companies that have or will have a positive impact or support a given position. In some circumstances, companies could ultimately have a negative or no impact or support of a given position. The weight given to ESG factors for active non-ESG funds may vary across types of investments, industries, regions and issuers; may change over time; and not every ESG factor may be identified or evaluated. Where ESG risk factor analysis is used as one part of an overall investment process (as is the case for actively managed equity and fixed income non-ESG Funds), such Funds may still invest in securities of issuers that all market participants may not view as ESG-focused or that may be viewed as having a high ESG risk profile.

Vanguard is owned by its funds, which are owned by Vanguard's fund shareholder clients.

To learn more about Vanguard, visit vanguard.com.

Vanguard®

P.O. Box 2600
Valley Forge, PA 19482-2600

Vanguard Marketing
Corporation, Distributor.

TCFD 062025