

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.

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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.

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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.

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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

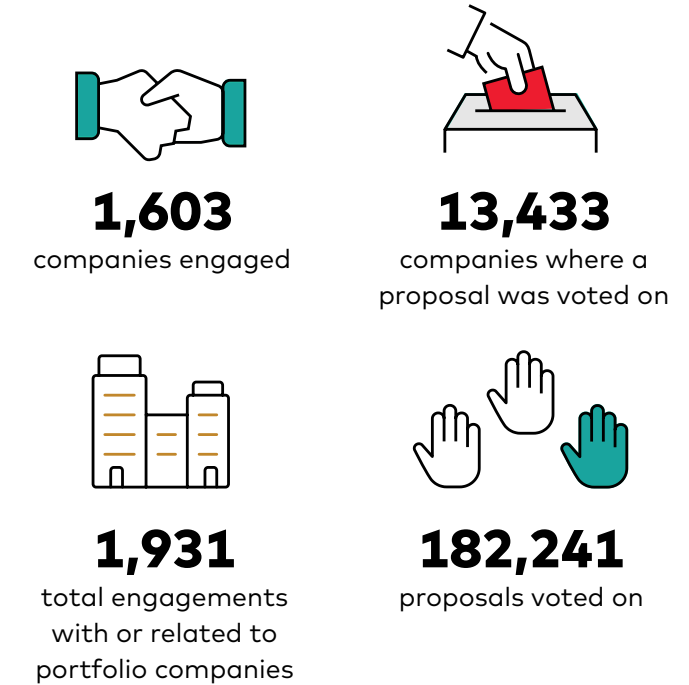
effectively evaluate progress against the Plan. Ultimately, the funds abstained from voting on the proposal, as we determined that we did not have sufficient information to support or vote against the proposal.

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



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 (CO²) 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.

Metrics and targets

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 ₂ e) 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 ₂ e.
Total carbon footprint	How much tCO ₂ e 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 ₂ e 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 ₂ e 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.

Metrics and targets

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).

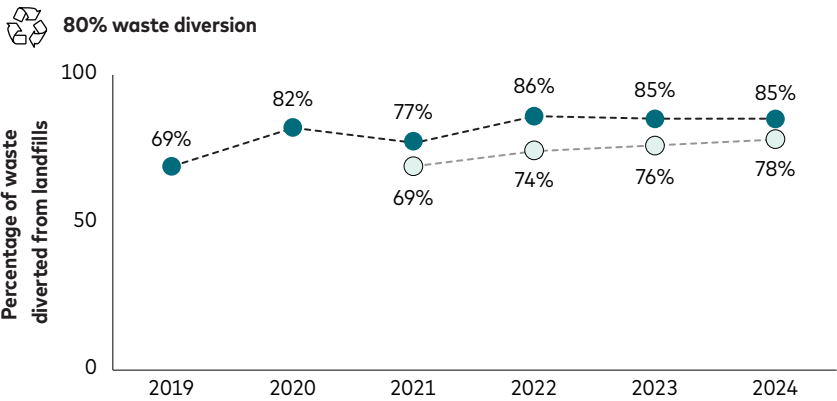
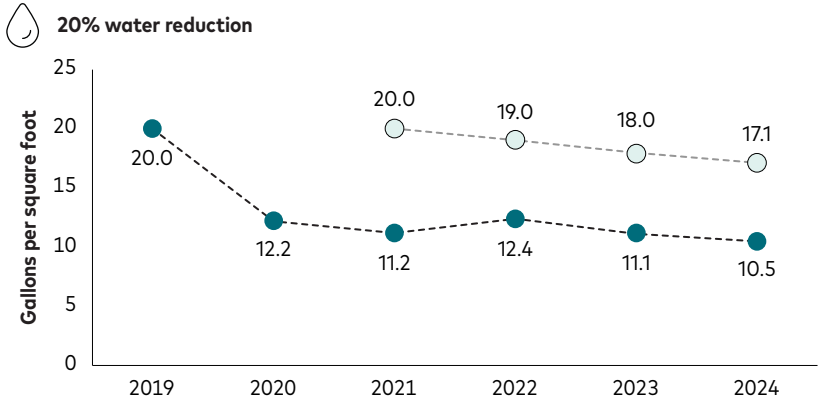
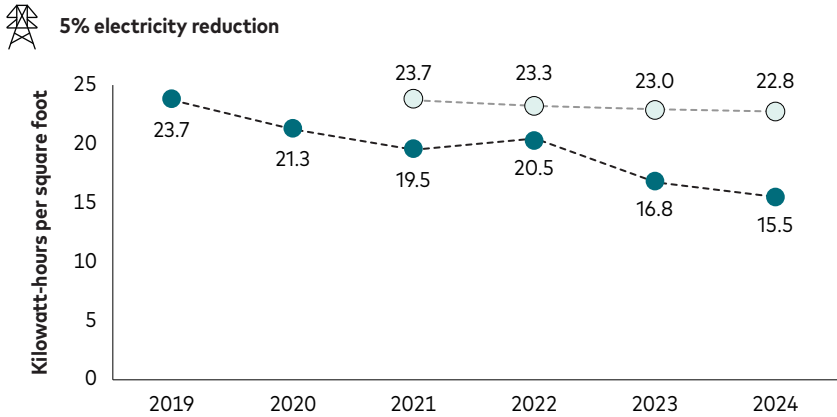
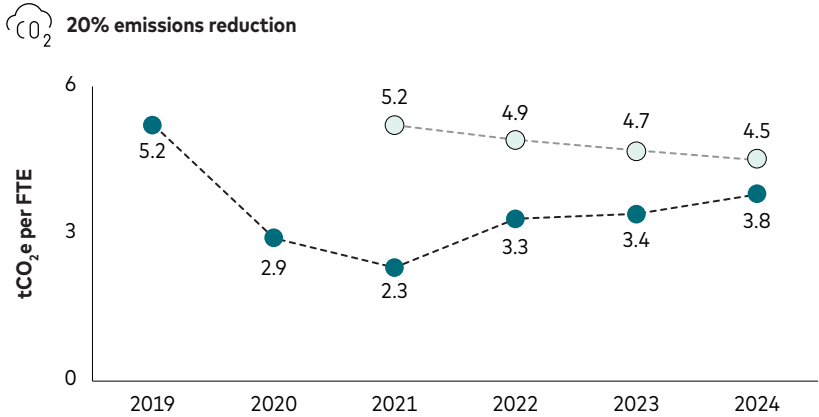
Update on 2025 reduction targets

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 tCO₂e 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.



○ 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.

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).

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 tCO₂e 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.

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 tCO₂e.

As a company, we supported three cost-efficient and diversified carbon-offset projects in 2024 that offset 62,344 tCO₂e. 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 ₂ e)	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 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 landfills¹⁰

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)

2024 TCFD disclosure status

	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 ₂ e), which was reduced to 0 tCO ₂ e 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)

2024 TCFD disclosure status

	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 tCO₂e 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 tCO₂e 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.

Vanguard UK supplementary entity-level and product disclosures

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With effect from 26 November 2024 the below Funds were renamed: Vanguard ESG Developed World All Cap Equity Index Fund (UK) changed to Vanguard ESG Screened Developed World All Cap Equity Index Fund (UK); Vanguard Global Sustainable Equity Fund changed to Vanguard Global Capital Stewards Equity Fund; Vanguard Sustainable Life 40-50% Equity Fund changed to Vanguard ActiveLife Climate Aware 40-50% Equity Fund; Vanguard Sustainable Life 60-70% Equity Fund changed to Vanguard ActiveLife Climate Aware 60-70% Equity Fund and Vanguard Sustainable Life 80-90% Equity Fund changed to Vanguard ActiveLife Climate Aware 80-90% Equity Fund.

Introduction

This supplement contains Vanguard UK's supplementary entity-level and product disclosures in accordance with the Environmental, Social and Governance (ESG) Sourcebook published by the Financial Conduct Authority (FCA).

It is intended as a supplement to *Vanguard's Report on Climate-related Impacts 2024*, The Vanguard Group, Inc., report in alignment with the Task Force on Climate-related Financial Disclosures (TCFD).

Unless otherwise stated, all climate-related disclosures relevant to Vanguard UK in-scope entities are contained in this supplement or within *Vanguard's Report on Climate-related Impacts 2024*. Carbon-related data disclosures for previous years were prepared solely by MSCI ESG Research LLC (MSCI) for the purposes of this supplement (see page 98 onwards). From 2024, Vanguard will be utilising internally calculated climate-related disclosures using underlying third-party data sourced from our data provider MSCI.

The change to internally calculated climate-related disclosures will result in changes to (a) the way in which security and entities are mapped; (b) the classification of certain bonds between corporate and sovereign and (c) the basis by which

coverage is calculated, in each case, as compared to MSCI. We have made these changes to standardise our climate-related disclosures across our European business.

Neither Vanguard UK nor the products disclosed in this supplement have set specific climate-related targets over and above those disclosed within *Vanguard's Report on Climate-related Impacts 2024*. For investors who specifically want to limit exposure to carbon-intensive industries, we offer ESG index funds that avoid or reduce exposure to such industries while seeking to achieve a broad market-like return.

Vanguard offers third-party actively managed ESG funds in the UK that seek to generate excess return by allocating capital toward companies that the fund managers deem as demonstrating leading sustainability practices consistent with each fund's mandate.

Consideration is given to financially material sustainability risk with data utilised in our investment and stewardship processes. For example, Vanguard incorporates a range of security-level sustainability metrics and data into investment decision making and management, which are dependent upon the specific investment opportunity. The specific, aggregate fund-level and entity-level metrics cited in this supplement are not utilised in internal investment decision processes. Furthermore, unless specifically stated or referenced within a particular fund's investment objective or policy, sustainability risks are generally not a material part of the investment decision process for our funds. For information on metrics and data used by our internal and external investment managers, refer to "Measuring progress on operational climate risks" on page 33 of *Vanguard's Report on Climate-related Impacts 2024*. Further details about how sustainability risks are incorporated into the investment process at Vanguard UK are found in our sustainability risk policy.

Approach to UK supplementary disclosures

Note to Vanguard investors: Climate data reporting continues to remain a fluid and evolving area. Considering the nascency of the dataset and corresponding data limitations, including challenges in interpreting the data, we caution investors who seek to use this information as the sole basis for investment decision making. Investing requires the consideration of many factors, including, but not limited to, investment goals, risk tolerance and time horizon. The availability of climate data does not change the importance of these foundational considerations for long-term investors.

Methodology

Our reporting is aligned to the [TCFD's 2021 implementation guidance](#) and our total carbon emissions metric calculations are aligned to the methodology of the [Partnership for Carbon Accounting Financials](#) (PCAF). Each of the climate metrics reported in this supplement relate to the relevant entities' investments only and do not take into account any emissions that may be attributable to such entity as part of its corporate activities outside of these investments.

Coverage

We define "coverage" as the percentage of in-scope assets within our funds for which we have obtained carbon data. The availability of carbon data remains a challenge. We have continued to apply the reporting threshold established over the last few years to prevent incomplete datasets from being presented that may not accurately reflect the carbon credentials of a fund.

Funds that have total carbon footprint data for less than 60% of in-scope assets have not been included in product reports for UK-domiciled funds. However, these have been included in the aggregated carbon metrics in the UK entity-level report. As more data becomes available, we may reassess our threshold. For more information, please refer to "Data and metrics limitations" starting on page 51.

One element that impacts coverage of carbon reporting is the exclusion of certain securities. From 2024, the exclusions are based on Bloomberg Global Sector Classification Scheme (BCLASS) classification that we transitioned to. For more information, please refer to "Data and metrics limitations" starting on page 51. This is either because of a lack of standards set out by PCAF or because, as of the time this report was being prepared, MSCI had limited data availability for some asset classes. As a result of these exclusions, 9.69% of assets for Vanguard Investments UK, Limited (VIUK) and 4.91% of assets for Vanguard Asset Management, Limited (VAM) are excluded from entity-level metrics.

Specifically, the following BCLASS classifications are in scope for the report:

- Treasury
- Government-related
- Corporate
- Government
- Funds
- Commodities
- Sovereigns
- Consumer Discretionary

- Consumer Staples
- Financials
- Health Care
- Industrials
- Energy
- Unknown

The following BCLASS classifications have been excluded from the report:

- Securitized
- US Municipal
- Municipals
- Cash
- Derivatives

Carbon metric definitions

Core metrics

- **Scopes 1 and 2 greenhouse gas (GHG) emissions:** Scope 1 emissions are emissions that occur from sources owned or controlled by the reporting company, such as emissions associated with fuel combustion in boilers, furnaces and vehicles. Scope 2 emissions are indirect emissions from the generation of purchased or acquired electricity, steam, heating or cooling consumed by the reporting company. Scope 2 emissions physically occur at the facility where the electricity, steam, heating or cooling is generated.

Approach to UK supplementary disclosures

- **Scope 3 GHG emissions:** Scope 3 emissions include all other indirect emissions not covered in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions. Scope 3 emissions include the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g. transmission and distribution losses), outsourced activities and waste disposal.
- **Total carbon emissions:** 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 emissions associated with a portfolio, expressed in metric tonnes of carbon dioxide equivalent (tCO₂e).
- **Total carbon footprint:** Total emissions for a portfolio normalised by the market value of the portfolio, expressed in tCO₂e per \$1 million invested. We do not report on a combined Scopes 1, 2 and 3 basis and instead calculate Scopes 1 and 2, and Scope 3 separately for total carbon footprint.
- **Weighted average carbon intensity (WACI):** A portfolio's exposure to carbon-intensive companies, expressed in tCO₂e

per \$1 million in revenue; reflects the carbon intensity of a portfolio across asset classes. We do not report on a combined Scopes 1, 2 and 3 basis and instead calculate Scopes 1 and 2, and Scope 3 separately, for WACI.

For corporate constituents, WACI measures a portfolio's exposures to carbon-intensive companies, defined as the portfolio-weighted average of companies' carbon intensity (emissions divided by sales).

For sovereign constituents, WACI measures a portfolio's exposures to carbon-intensive economies, defined as the portfolio-weighted average of GHG intensity of sovereigns (emissions divided by gross domestic product [GDP]).

Additional metrics

We use MSCI's proprietary methodology to report Implied Temperature Rise and calculate Climate Value-at-Risk.¹¹

- **MSCI Implied Temperature Rise (ITR):** The ITR metric provides an indication of how well 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 company or portfolio in question. The portfolio-level ITR compares the sum of "owned" projected emissions, including Scopes 1, 2 and 3, against the sum of "owned" carbon budgets for the underlying fund holdings. The portfolio's total estimated carbon budget overshoot/undershoot is then converted to a degree (Celsius) of temperature rise using the transient climate response to cumulative emissions.¹² The allocation base used to define ownership is EVIC, to enable the analysis of equity and corporate bond portfolios.

- **MSCI Climate Value-at-Risk (Climate VaR):** Climate VaR is a forward-looking climate risk metric that assesses how a company's valuation could be impacted by climate policy risks and physical climate risks (from extreme weather events) and could benefit from a low-carbon technology transition. The metric is expressed as a positive or negative percentage to reflect change from a company's or portfolio's current valuation. The aggregated Climate VaR is the sum of the aggregated Policy Risk Climate VaR,¹³ the Technology Opportunity Climate VaR¹⁴ and the Physical Risk Climate VaR¹⁵ associated with the selected transition and physical risk scenarios.

¹¹ Source: MSCI ESG Research methodologies published May 2023 (Climate Value-at-Risk: Transition Risk), December 2023 (Climate VaR Part 4: Physical Climate Risk) and September 2022 (Implied Temperature Rise).

¹² Transient climate response to cumulative emissions (TCRE) represents the ratio of the global average surface temperature change per unit of carbon dioxide (CO₂) emitted. It helps to model the carbon budget for given temperature targets.

¹³ Aggregated Policy Risk Climate VaR is a company's downside or neutral exposure, expressed as a percentage of the company's market value that may arise because of climate change policies that countries enact to enable the transition to a low-carbon economy.

¹⁴ Technology Opportunity Climate VaR is a company's upside exposure, expressed as a percentage of the company's market value because of technology opportunities born out of changes required to meet the transition to a low-carbon economy. For example, technology advances are considered through patent analysis and green revenue exposure.

¹⁵ Physical Risk Climate VaR is a company's downside or neutral exposure, expressed as a percentage of the company's market value that may arise because of asset damage and business interruption as a direct consequence of the physical hazards or perils of climate change.

Approach to scenario analysis

For scenario analysis, we rely on the MSCI Climate VaR model results to analyse the exposure of funds to climate risks and opportunities.

These risks and opportunities are applied to six scenarios produced by the Central Banks and Supervisors Network for Greening the Financial System (NGFS), which are divided into three categories: orderly transition, disorderly transition and hot house world, as described further in the adjacent table.

For this report, we chose to analyse the exposure of each fund to policy risk and technology opportunities through to 2050.¹⁶ We also chose to analyse physical risk through to 2100 under three of the NGFS scenarios: net zero 2050 for an orderly transition, delayed transition for disorderly and nationally determined contributions for hot house world.

The results indicate the potential impact of future climate shocks on the market value of each fund, based on aggregated policy risks, technology opportunities and physical risks.

- **Policy risks:** Using a hybrid top-down and bottom-up methodology, MSCI calculates the potential risks that may arise because of extensive regulatory and policy changes taking place to transition to a low-carbon economy across the globe.
- **Technology opportunities:** MSCI developed a low-carbon technology opportunity model based on a company’s current low-carbon revenue streams and company-specific patent data. Recently published patent databases allow an evidence-based view into the strategic research and development investments of companies.
- **Physical risks:** Physical risk scenarios model how the physical aspects of the climate system change, including variables such as temperature rise, sea-level rise and the frequency and severity of specific extreme weather events.

NGFS scenarios matrix

Category	Scenarios	Description
Orderly transition	• Net zero 2050 • Below 2°C	Orderly scenarios assume climate policies are introduced early and become gradually more stringent. Both physical and transition risks are relatively subdued.
Disorderly transition	• Divergent net zero • Delayed transition	Disorderly scenarios explore higher transition risk because of policies being delayed or divergent across countries and sectors. For example, carbon prices would have to increase abruptly after a period of delay.
Hot house world	• Nationally determined contributions • Current policies	Hot house world scenarios assume that some climate policies are implemented in some jurisdictions, but efforts are insufficient to halt significant global warming. The scenarios result in severe physical risk including irreversible impacts like sea level rise.

Source: [Climate Financial Risk Forum Guide 2021](#). Scenario analysis, October 2021.

¹⁶ Time horizon for policy risk and technology opportunity was updated as part of the MSCI Climate Value-at-Risk model update in April 2023.

Approach to identifying products with high exposures to carbon-intensive sectors

Most of Vanguard investors’ assets are held, by mandate, in index funds, the majority of which track broad stock and bond market indexes, each with their own sectoral characteristics and composition. Therefore, most of our funds are broadly diversified and are not concentrated in any one sector. In the absence of an industry standard threshold or interpretation for defining “high exposures to carbon intensive sectors,” we elected to continue to apply a threshold based on WACI.

WACI can be used as a proxy for a portfolio’s potential exposure to transition risks. When comparing two portfolios, the portfolio with higher WACI may be more susceptible to transition risk in the event of increased regulation targeting emissions.

To define a threshold for funds with the highest WACI, we calculated the average WACI across our UK funds and identified those with a WACI of one standard deviation above the mean. This year Vanguard ActiveLife Climate Aware 40-50% Equity Fund, Vanguard Global Emerging Markets Fund and Vanguard Global Equity Income Fund have been identified as having the highest exposure to carbon-intensive companies. As further described on page 56, Vanguard is not in a position to provide quantitative analysis utilising Climate VaR for these funds.

While this methodology does not directly describe exposure to high-carbon sectors within our funds, it can be applied across our fund lineup, both index and active, to provide comparable insight into the funds with the highest exposure to carbon-intensive companies. We remain open to refining our approach over time as industry standards and regulatory guidance continue to develop.

Approach for Vanguard’s externally managed funds

Data for externally managed funds within this report have been produced internally utilising underlying data from MSCI. This data may differ from the information that respective managers produce as part of their own TCFD disclosures given variation in data providers and methodologies. The usage of climate data within investment processes and stewardship activities may also vary among our external managers.

For more information, please refer to “Integration of climate risks and opportunities by our external advisors” on page 24 of *Vanguard’s Report on Climate-related Impacts 2024*.

The following funds are externally managed:

- Vanguard Active U.K. Equity Fund
- Vanguard Global Emerging Markets Fund

- Vanguard Global Equity Fund
- Vanguard Global Equity Income Fund
- Vanguard Global Capital Stewards Equity Fund
- Vanguard ActiveLife Climate Aware 40-50% Equity Fund
- Vanguard ActiveLife Climate Aware 60-70% Equity Fund
- Vanguard ActiveLife Climate Aware 80-90% Equity Fund

Data and metrics limitations

We recognise that climate risk metrics are evolving, and standards and methodologies are being developed and refined. Climate metrics are also an area of increased scrutiny as companies disclose new datasets for which assurance standards have been developed. In this section, we discuss some of the key challenges and limitations that we have encountered when preparing this report.

Data and metrics limitations

Data availability and quality

Carbon data availability and quality remain a focus area, and efforts are being made by companies and data providers to improve their respective coverage.

Changes to data technology

In 2024, we transitioned from the MSCI climate analytics reports to our strategic internal build solution. It drives greater consistency of the metrics and enables end clients to better understand what the fund level metrics depict. MSCI continues to be the source of our underlying ESG and climate data, which is aggregated by Rimes for use within our strategic internal build.¹⁷ The data received via Rimes uses the Refinitiv backbone to define the corporate structure, which ensures consistency across reporting disclosures and ESG data vendors.¹⁸ It also gives us the ability to propagate data across the corporate structure.

We also proactively moved from internal classification to the new industry classification aligned to Bloomberg Classification System (BCLASS) to meet the EU regulatory requirements of treating supranationals and Central Banks as sovereigns. This has been applied across the UK funds for consistency. As a result, the number of assets within the reported portfolios that are deemed ineligible for reporting has increased.

The transition from MSCI climate analytics to our internal build climate data solution has also resulted in certain changes to the calculation methodology for total carbon emissions. Our previously reported total carbon emissions were based on the total reported emissions for each holding in the portfolio adjusted for our and our funds' holdings. This year we transitioned to calculating the emissions as the sum of these emissions for each unique issuer of our and our funds' holdings.

This change was made to prevent double counting of individual securities that share a common parent reporting issuer and therefore has contributed to the reduction in emissions used in our calculations for both our entity and products this year.

In addition, Vanguard does not currently have access to emissions data for the underlying holdings of third-party-managed funds that may be held within certain fund portfolios. As a result, aggregated holdings data for these assets are not included in our calculations.

As a result of the transition to our internally built solution, we have enhanced the consistency and reduced discrepancies across our reporting of climate metrics, making it easier for investors to interpret the data provided.

Reported versus estimated data

Reported emissions are the preferred type of data; however, we recognise that for some companies, particularly small- and

mid-cap companies, reporting remains a challenge because of resourcing constraints. Further, emissions disclosures are not mandated in all jurisdictions. Where reported emissions are unavailable, MSCI estimated data are used, as per PCAF guidance.

This report discloses data calculated utilising underlying data provided by MSCI. MSCI collects emissions data for the companies in the coverage universe. Emissions data are updated on a dynamic cycle throughout the year from the most recent corporate sources available, including annual reports, corporate social responsibility reports and websites. ESG data reporting by companies tends to be produced on a lag relative to their financial data and there may also be a lag between the time when data is disclosed by companies and when it is incorporated into datasets produced by MSCI. In addition, MSCI uses emissions data reported through CDP (formerly the Carbon Disclosure Project) or government databases when data is not available through direct corporate disclosure. As such, data analysed and used for a particular company within a product or entity report may reflect emissions reporting for previous year(s) for some holdings within a given portfolio.

When companies do not disclose data, or data disclosures do not follow the Greenhouse Gas Protocol standards and guidance, MSCI uses proprietary methodologies to estimate Scopes 1, 2 and 3 GHG emissions, using company-specific data, industry averages or both.

¹⁷ Rimes is the ESG data provider for our enterprise data management solution.

¹⁸ London Stock Exchange Group (LSEG) Data & Analytics, formerly Refinitiv.

Data and metrics limitations

Whilst acknowledging that data gaps exist, Vanguard takes the following steps to ensure that these are minimised:

- Regular due diligence assessments of our climate data providers and benchmarking of the data market;
- Regular engagement with data providers to provide feedback on methodological changes and the impacts to data availability and quality and
- Direct engagement with individual companies through our Investment Stewardship team to advocate for the market-wide adoption of governance and disclosure best-practices.

Absolute emissions

Having reviewed our historically reported metrics against the evolving industry market practice, Vanguard has decided to remove previously reported aggregate absolute Scopes 1 and 2 and Scope 3 emissions metrics from our product and entity reporting this year. We made this decision on the basis that our approach of aggregating emissions for each issuer company within a portfolio was not relevant to the relative emissions that Vanguard, or our investors, were responsible for as a

result of our and our funds' holdings. We will continue to report total carbon emissions to reflect the relevant GHG emissions associated with a portfolio. This decision is in line with the [TCFD Guidance on Metrics, Targets and Transition Plans for Asset Managers](#) (please refer to page 41 of that document).

Scope 3 emissions

The measurement and reporting of Scope 3 emissions are fundamentally more complex and challenging than Scopes 1 and 2. The Greenhouse Gas Protocol standard is intended to enable companies to track GHG emissions over time, but it is not designed to support comparisons between companies because of the differences in inventory methodology or differences in company size or structure.

There are several inherent challenges that arise when looking at Scope 3 from a portfolio level:

- **Double counting as value chains overlap.** Within portfolios, there are often multiple companies exposed to the same tonne of GHG emissions, given that one company's value chain emissions are another company's direct emissions. For example, the

emissions from driving a car could be counted under multiple companies that one investor is exposed to in a portfolio: the carmaker, the oil and gas company that produces and sells fuel and, potentially, a leasing company or parts manufacturer.

- **Difficulties in capturing data in a systematic and auditable fashion across the value chain.** The longer, more complex or globalised a company's value chain is, the more likely it is that Scope 3 data is estimated or inconsistently calculated between relevant inputters. Scope 3 company data are also more susceptible to restatement than Scopes 1 and 2.
- **There is always a degree of estimation as companies continue to rely on models and use proxy data.** While the data is improving, it will take more time to fully develop consistent and credible reported data across all of a portfolio's constituents and their respective value chain contributors.

As a result of these challenges, Scope 3 emissions can be expected to be several multitudes larger than corresponding Scopes 1 and 2 emissions.

Data and metrics limitations

Sovereign constituents

Our disclosures do not reflect recent changes to MSCI's Climate VaR and ITR methodologies for sovereign constituents. Therefore, for two of our funds that invest in government securities – Vanguard U.K. Inflation-Linked Gilt Index Fund and Vanguard U.K. Long Duration Gilt Index Fund – only the WACI is reported.

We note that the scopes for emissions as set out in the Greenhouse Gas Protocol for corporate constituents do not apply to sovereign constituents, including Scope 3.

Use of historical data

As a result of the transitioning from MSCI climate analytics to our internally built climate data solution, we are currently unable to provide historic data comparisons utilising the previous calculation methodology used in our 2023 and 2024 reports due to data availability. These methodological changes are described in detail on pages 52 and 53.

Investors should therefore exercise caution and take these changes into account when comparing year-on-year metrics for the purposes of trend analysis in our entity and product metrics. Vanguard has provided historical data (as calculated and previously reported utilising MSCI's climate analytics) where such data was previously available in our 2023 and 2024 reports in the Appendix starting on page 98.

Data for the following funds are published for the first time in this report: Vanguard LifeStrategy 20% Equity Fund, Vanguard LifeStrategy 40% Equity Fund, Vanguard Target Retirement 2015 Fund and Vanguard Target Retirement 2020 Fund. Therefore, we have not provided historical data for these funds.

This report is also the first to include VAM in its capacity as asset owner of Vanguard Personal Pension, so historical data is not provided.

In accordance with our updated approach to absolute emissions as outlined on page 53, we have not included historically reported data for Scopes 1 and 2 and Scope 3 aggregated absolute emissions for 2022 and 2023.

Vanguard will continue to evolve its internal data capability to provide comparability between currently and historically reported data where possible. In addition, we continue to periodically scrutinise our third-party climate data providers, and assess the climate data market more generally, to ensure that underlying data used to make the disclosures in this report remains fit for purpose with respect to its quality, coverage, frequency and availability.

Carbon metrics

Climate change is a complex issue, and no single climate-related metric can fully represent the position of a product or portfolio. We have disclosed several carbon metrics in line with TCFD recommendations, each of which has their respective strengths and weaknesses.

All backward-looking metrics rely on historical data and do not recognise future plans to reduce emissions. Hence, this could lead to greater focus on short-term reduction of emissions, rather than long-term considerations.

Backward-looking metrics such as total carbon emissions, carbon footprint and WACI are normalised using financial metrics (EVIC or revenue) and are prone to market volatility between reporting periods. Therefore, the carbon credentials of a fund might reflect the sensitivity to market valuation of the issuer rather than changes to its underlying emissions. This can also limit the use of these metrics as a comparator between two portfolios of differing sizes.

Forward-looking climate metrics provide an estimate of the company's impact on, and exposure to, climate change. These metrics are also subject to certain limitations.

Carbon metrics and limitations

Metric	Formula	Limitations
Total carbon emissions, Scopes 1 and 2	$\sum_n^i \frac{\text{Current value of investment}}{\text{Investee company's enterprise value}} \times \text{Investee company's Scopes 1 \& 2 emissions}$	Total carbon emissions is not useful for benchmarking and portfolio comparison as it is an absolute metric.
Total carbon emissions, Scope 3	$\sum_n^i \frac{\text{Current value of investment}}{\text{Investee company's enterprise value}} \times \text{Investee company's Scope 3 emissions}$	Total carbon emissions is not useful for benchmarking and portfolio comparison as it is an absolute metric.
Total carbon footprint, Scopes 1 and 2	$\frac{\sum_n^i \frac{\text{Current value of investment}}{\text{Investee company's enterprise value}} \times \text{Investee company's Scopes 1 \& 2 emissions}}{\text{Current value of all investments}}$	Carbon footprint is only calculated for corporate constituents and is not relevant for sovereign constituents.
Total carbon footprint, Scope 3	$\frac{\sum_n^i \frac{\text{Current value of investment}}{\text{Investee company's enterprise value}} \times \text{Investee company's Scope 3 emissions}}{\text{Current value of all investments}}$	Carbon footprint is only calculated for corporate constituents and is not relevant for sovereign constituents.
WACI, Scopes 1 and 2 <i>Corporate constituents</i>	$\sum_n^i \frac{\text{Current value of investment}}{\text{Current value of all investments}} \times \frac{\text{Investee company's Scopes 1 \& 2 emissions}}{\text{Investee company's revenue}}$	WACI does not take into account the difference in carbon characteristics among sectors. WACI is sensitive to outliers. Using revenue (instead of physical or other metrics) to normalise the data tends to favour companies with higher pricing levels relative to their peers.
WACI, Scope 3 <i>Corporate constituents</i>	$\sum_n^i \frac{\text{Current value of investment}}{\text{Current value of all investments}} \times \frac{\text{Investee company's Scope 3 emissions}}{\text{Investee company's revenue}}$	WACI does not take into account the difference in carbon characteristics among sectors. WACI is sensitive to outliers. Using revenue (instead of physical or other metrics) to normalise the data tends to favour companies with higher pricing levels relative to their peers.
WACI, Scopes 1 and 2 <i>Sovereign constituents</i>	$\sum_n^i \frac{\text{Current value of investment}}{\text{Current value of all investments}} \times \frac{\text{Country's Scopes 1 \& 2 emissions}}{\text{Gross domestic product}}$	WACI does not take into account the difference in carbon characteristics among sectors. WACI is sensitive to outliers. Using revenue (instead of physical or other metrics) to normalise the data tends to favour companies with higher pricing levels relative to their peers.

Data and metrics limitations

Implied Temperature Rise (ITR)

ITR is a forward-looking metric that relies on projected emissions and estimated data. The stated company-level reduction targets that inform this metric might not reflect a company's real-world transition. ITR is designed to show the temperature alignment of a given portfolio against global temperature goals; however, it is largely based on lagged and proxy data, so the value might not reflect the real time decarbonisation efforts of companies within the portfolio. Highly diversified portfolios and those with a prevalence of companies in the high-emitting sectors will naturally have higher ITR scores.¹⁹

Climate Value-at-Risk

Climate VaR is reliant on assumptions made under the various scenarios. Climate VaR models assume no change or adaptation from companies over time, which can limit any analysis around investment opportunities. Climate VaR results can also be overestimated when costs are already priced into the market and can be underestimated when opportunities are already priced in.

While our in-house investment strategists continue to research this topic, Vanguard takes no view on which climate scenario, if any, is currently priced in by financial markets. Similarly, Vanguard makes no assumptions about the likelihood of each climate scenario eventually becoming a reality and acknowledges that these scenarios are not an exhaustive set of all possible outcomes.

One of the key limitations of modelling high emissions scenarios like the hot house world scenario is the need to consider complex

interactions within the earth's climate system. Such modelling is still in its nascency and does not capture the full potential magnitude of those impacts. Because such impacts are most likely to manifest in hot house world scenarios, the models skew toward transition risks present under orderly and disorderly scenarios. This limitation helps explain why the hot house world scenario contained in our product reports represents the lowest total Climate VaR across all three scenarios.

In 2022, a Vanguard Megatrends research paper, [The Economics of Climate Change](#), indicated that the net cost to the economy increases meaningfully as temperatures rise to more than 3°C above preindustrial levels. This research is in line with the latest Intergovernmental Panel on Climate Change report, which states that the "global economic benefit of limiting global warming to 2°C is reported to exceed the cost of mitigation in most of the assessed literature."²⁰

Vanguard relies upon third-party models and proprietary data for the provision of Climate VaR data. While preparing this year's report, Vanguard was informed that the methodology applied by this third party within the Technology Opportunities VaR model was incorrect. Vanguard has been unable to restate and revalidate the third-party-provided Climate VaR data given the timing of the identification of these issues and the reporting deadline for this report.

Consequently, Vanguard will not be disclosing Climate VaR metrics in this year's report, and as these issues also affect 2022 and 2023 data, investors can not and should not rely on

the Climate VaR metrics within our historic reports. Vanguard is working with the third-party provider to resolve this issue for next year's report.

We acknowledge that Vanguard's scenario analysis heavily relies upon Climate VaR as a key forward-looking metric. As a result, the issues with Climate VaR modelling set out above have impacted the our ability to quantitatively disclose the impact of climate change upon our funds and we will not be providing such analysis in this year's report. Given that the issue is limited to Technology Opportunity Climate VaR, we are comfortable that our qualitative analysis remains valid across our funds as the aggregated Policy Risk Climate VaR and Physical Risk Climate VaR remain the dominant factors across future scenarios assessed.

Scenario analysis

Scenario analysis is a dynamic exercise that is meant to help demonstrate potential future outcomes, not a prediction of the future. The climate scenario analysis conducted here is an iterative process intended to provide Vanguard and its investors with a mechanism to evaluate climate-related risks and opportunities in both a quantitative and qualitative manner. The NGFS scenarios rely on assumptions concerning policy, technology and society made by NGFS itself; the scenarios' formulations may not fully capture compounding effects of climate change or the impact or scale of potential monetary and fiscal policy responses to climate change. Investors should, therefore, not infer that the figures reported represent a definitive prediction of future climate impact.

¹⁹ This explains why certain funds like our ClimateAware range have higher ITR scores despite aiming for net zero targets.

²⁰ See *Climate Change 2022: Mitigation of Climate Change*, available at <https://www.ipcc.ch/report/ar6/wg3/>.

Data and metrics limitations

Next steps

We anticipate that, over time, the data limitations outlined in this section will be reduced as data availability continues to improve in response to increasing regulatory disclosure requirements, such as the anticipated introduction of International Sustainability Standards Board standards. In addition, as compared to financial metrics, the methodologies for estimating and calculating emissions are in their early stages of adoption. These methodologies are likely to be further refined and improved over time because of the increasing application of regulatory requirements. We continue to periodically scrutinise our third-party climate data providers, and assess the climate data market more generally, to ensure that the underlying data used to make the disclosures in this report remain fit for purpose with respect to its quality, coverage, frequency and availability.

Entity-level report

This report contains disclosures for our FCA-regulated entities, Vanguard Asset Management, Ltd., and Vanguard Investments UK, Limited.

Entity-level report

This report contains entity-level disclosures for two entities:

- Vanguard Asset Management, Ltd. (VAM), in its capacity as an asset manager in relation to portfolio management services.
- Vanguard Investments UK, Limited (VIUK), in its capacity as an asset manager for Vanguard’s UK domiciled UCITS funds.

The carbon metrics in the adjacent table relate to VAM and VIUK’s investments only and are set out in accordance with the methodology in the “Carbon metrics and limitations” table on page 55. Only 2024 data is shown; see the Appendix (page 98) for historical data created using an alternative data provider (MSCI). For more information on changes to our data technology, refer back to page 52.

We note that total carbon emissions have decreased year-on-year across VAM and VIUK and attribute these reductions to changes in our calculation methodology described in more detail on page 52.

Asset management carbon metrics

Reporting period: 1 January 2024 to 31 December 2024

	VAM	VIUK
Assets under management (\$ billions)*	\$500.64	\$110.69
Total carbon emissions Scopes 1 and 2 (tCO ₂ e)	13,423,848.82	3,936,229.62
Coverage (%)	98%	98%
Total carbon emissions Scope 3 (tCO ₂ e)	105,322,638.62	34,782,421.04
Coverage (%)	97%	97%
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)	118,746,487.45	38,718,650.66
Coverage (%)	98%	98%
Total carbon footprint Scopes 1 and 2 (tCO ₂ e per \$1 million invested)	42.73	44.05
Coverage (%)	98%	98%
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	339.72	391.09
Coverage (%)	97%	97%
Weighted average carbon intensity for corporate constituents Scopes 1 and 2 (tCO ₂ e per \$1 million revenue)	103.54	98.26
Coverage (%)	99%	98%
Weighted average carbon intensity for corporate constituents Scope 3 (tCO ₂ e per \$1 million revenue)	672.68	719.89
Coverage (%)	99%	98%
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	223.97	171.98
Coverage (%)	79%	85%

* VAM's entity-level report includes metrics on its portfolio management services and as asset owner of the Vanguard Personal Pension. These figures include the UK-domiciled UCITS funds for which VIUK is the asset manager. Consequently, metrics for these funds will be included in both VAM's and VIUK's figures.

Notes: Asset figures are in US dollars and are as of 31 December 2024. GHG = greenhouse gas. tCO₂e = metric tonnes of carbon dioxide equivalent. Scopes 1, 2 and 3 GHG emissions are rounded to the nearest whole number. All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

Entity-level report

This report contains entity-level disclosures for Vanguard Asset Management, Ltd. (VAM), in its capacity as an asset owner and in relation to its operation of the Vanguard Personal Pension (SIPP). SIPP is a UK-registered self-invested personal pension scheme that was established by trust deed, registered with HMRC in accordance with Chapter 2 of Part 4 of the Finance Act 2004 and is administered and operated by VAM.

The carbon metrics in the adjacent table relate to VAM’s investments only and are set out in accordance with the methodology in the “Carbon metrics and limitations” table on page 55.

Note that, during the reporting period, VAM met the asset owner reporting threshold in its capacity as operator of the SIPP. As a result, we are publishing climate metrics for the first time in this year’s report and are unable to provide historical data.

Asset owner carbon metrics

Reporting period: 1 January 2024 to 31 December 2024

	Self-Invested Personal Pension (SIPP)
Assets under administration (\$ billions)*	\$10.06
Total carbon emissions Scopes 1 and 2 (tCO ₂ e)	12,145,692.99
Coverage (%)	98%
Total carbon emissions Scope 3 (tCO ₂ e)	92,699,238.12
Coverage (%)	97%
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)	104,844,931.12
Coverage (%)	98%
Total carbon footprint Scopes 1 and 2 (tCO ₂ e per \$1 million invested)	44.47
Coverage (%)	98%
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	343.26
Coverage (%)	97%
Weighted average carbon intensity for corporate constituents Scopes 1 and 2 (tCO ₂ e per \$1 million revenue)	109.42
Coverage (%)	98%
Weighted average carbon intensity for corporate constituents Scope 3 (tCO ₂ e per \$1 million revenue)	679.38
Coverage (%)	98%
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	211.01
Coverage (%)	81%

* VAM's entity-level report includes metrics on its portfolio management services and as asset owner of the Vanguard Personal Pension. These figures include the UK-domiciled UCITS funds for which VIUK is the asset manager. Consequently, metrics for these funds will be included in the figures for VAM and VIUK.

Notes: Asset figures are in US dollars and are as of 31 December 2024. GHG = greenhouse gas. tCO₂e = metric tonnes of carbon dioxide equivalent. Scopes 1, 2 and 3 GHG emissions are rounded to the nearest whole number. All coverage percentages are rounded to the nearest whole number.

This report has been included for the first time this year due to SIPP assets only exceeding the reporting threshold of \$5 billion USD in 2024, so there is no data for comparison from 2022 and 2023.

Source: MSCI - powered by RIMES; Vanguard.

Compliance statement

The disclosures contained within the TCFD entity-level report for Vanguard Asset Management, Ltd., and Vanguard Investments UK, Limited, including any third-party or group disclosures cross-referenced therein, are in compliance with the applicable requirements for the disclosure of climate-related financial information set out in Chapter 2 of the FCA's *Environmental, Social and Governance Sourcebook*.

Date: 26 June 2025

Signed:



Jon Cleborne

Managing Director of Vanguard Europe

Product reports

This report contains product disclosures in relation to VAM and VIUK.

Product reports

Vanguard's 35 UK UCITS funds are in scope for the product reports. Because one fund falls short of the 60% coverage threshold described on page 47, we have excluded this fund from our product reports and included product reports for the other 34 funds. All 35 funds are included in the entity-level report for both VAM, in its capacity as an asset owner in relation to its operation of the Vanguard Personal Pension, and VIUK, in its capacity as an asset manager for UK UCITS funds.

The one fund excluded from our product reports is:

- Vanguard Sterling Short-Term Money Market Fund

Vanguard ActiveLife Climate
Aware 40-50% Equity Fund²¹

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The fund is an active fund whereby at least 70% of the Fund's assets will meet at least one of the climate considerations. The Fund uses an independent sub-investment adviser which follows a distinct approach in managing the Fund's investments to maintain a balance between its investments in shares and bonds.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk. This Fund has been identified as having a high exposure to carbon-intensive sectors.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 100) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics^{*}

	Vanguard ActiveLife Climate Aware 40-50% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	3,953.36	95%	84.94%	10.92%
Total carbon emissions Scope 3 (tCO ₂ e)	48,085.13	91%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	52,038.49	95%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	40.47	95%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	515.03	91%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	140.44	96%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	1,040.72	96%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	208.56	90%	—	—

^{*} As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

^{**} Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.7°C

Source: MSCI - powered by RIMES; Vanguard.

²¹ The Fund was previously named Vanguard SustainableLife 40-50% Equity Fund and changed to Vanguard ActiveLife Climate Aware 40-50% Equity Fund with effect from 26 November 2024.

Vanguard ActiveLife Climate
Aware 60-70% Equity Fund²²

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The fund is an active fund whereby at least 70% of the Fund’s assets will meet at least one of the climate considerations. The Fund uses an independent sub-investment adviser which follows a distinct approach in managing the Fund’s investments to maintain a balance between its investments in shares and bonds.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 100) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics^{*}

	Vanguard ActiveLife Climate Aware 60-70% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	38,164.88	97%	89.50%	8.30%
Total carbon emissions Scope 3 (tCO ₂ e)	585,489.41	94%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	623,654.28	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	36.50	97%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	577.14	94%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	124.93	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	1,160.54	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	207.71	87%	—	—

^{*} As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

^{**} Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.8°C

Source: MSCI - powered by RIMES; Vanguard.

²² The Fund was previously Vanguard SustainableLife 60-70% Equity Fund, and changed to Vanguard ActiveLife Climate Aware 60-70% Equity Fund with effect from 26 November 2024.

Vanguard ActiveLife Climate
Aware 80-90% Equity Fund²³

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The fund is an active fund whereby at least 70% of the Fund’s assets will meet at least one of the climate considerations. The Fund uses an independent sub-investment adviser which follows a distinct approach in managing the Fund’s investments to maintain a balance between its investments in shares and bonds.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 100) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics^{*}

	Vanguard ActiveLife Climate Aware 80-90% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	6,591.32	99%	93.31%	5.87%
Total carbon emissions Scope 3 (tCO ₂ e)	113,585.44	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	120,176.76	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	35.99	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	631.47	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	121.96	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	1,273.17	99%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	224.99	89%	—	—

^{*} As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

^{**} Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.8°C

Source: MSCI - powered by RIMES; Vanguard.

²³ The Fund was previously named Vanguard SustainableLife 80-90% Equity Fund and changed to Vanguard ActiveLife Climate Aware 80-90% Equity Fund with effect from 26 November 2024.

Vanguard Active U.K. Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund is an active fund investing primarily in shares of UK companies, that are incorporated, domiciled or conduct a significant portion of their business in the UK.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 100) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Active U.K. Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,136.97	98%	95.46%	2.55%
Total carbon emissions Scope 3 (tCO ₂ e)	14,578.60	98%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	15,715.57	98%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	26.32	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	337.50	98%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	39.06	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	542.35	98%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard ESG Screened
Developed World All Cap Equity
Index Fund (UK)²⁴

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the FTSE Developed All Cap Choice Index, a market-capitalisation weighted index representing the performance of large-, mid- and small-size shares covering developed markets around the world.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Under the disorderly transition scenario, policy and physical risk are on par as the biggest drivers of impact. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 100) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard ESG Screened Developed World All Cap Equity Index Fund (UK)	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	23,145	99%	87.02%	12.29%
Total carbon emissions Scope 3 (tCO ₂ e)	230,456.53	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	253,601.54	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	14.77	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	146.98	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	42.64	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	401.12	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.2°C

Source: MSCI - powered by RIMES; Vanguard.

²⁴ The Fund was previously named Vanguard ESG Developed World All Cap Equity Index Fund (UK) and changed to Vanguard ESG Screened Developed World All Cap Equity Index Fund (UK) with effect from 26 November 2024.

Vanguard FTSE 100 Index Unit Trust

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Trust seeks to track the performance of the FTSE 100 Index, a market-capitalisation weighted index representing the performance of the 100 largest companies traded on the London Stock Exchange that pass screening for size and liquidity.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Under the disorderly transition scenario, the Trust is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE 100 Index Unit Trust	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	96,006.35	99%	98.17%	0.43%
Total carbon emissions Scope 3 (tCO ₂ e)	1,131,020.03	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	1,227,026.38	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	59.93	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	705.98	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	80.60	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	961.20	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.
Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.2°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard FTSE Developed Europe ex-U.K. Equity Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the FTSE Developed ex-U.K. Index. The Index comprises large- and mid-size shares providing coverage of developed markets around the world, excluding the UK.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE Developed Europe ex-U.K. Equity Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	253,523.19	98%	90.78%	8.01%
Total carbon emissions Scope 3 (tCO ₂ e)	2,105,284.65	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	2,358,806.83	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	51.47	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	423.62	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	76.73	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	729.62	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.
Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.1°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard FTSE Developed World ex-U.K. Equity Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the FTSE Developed ex-U.K. Index. The Index is comprised of large- and mid-size shares providing coverage of developed markets around the world, excluding the UK.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE Developed World ex-U.K. Equity Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	736,890.00	99%	87.46%	12.11%
Total carbon emissions Scope 3 (tCO ₂ e)	6,028,651.42	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	6,765,541.42	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	34.16	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	279.26	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	92.44	100%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	641.62	100%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.
Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.6°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard FTSE Global All Cap Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the FTSE Global All Cap Index, a market-capitalisation weighted index representing the performance of large-, mid- and small-size shares covering developed and emerging markets around the world.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE Global All Cap Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	255,067.46	99%	85.41%	13.70%
Total carbon emissions Scope 3 (tCO ₂ e)	1,836,821.07	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	2,091,888.53	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	44.28	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	318.70	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	115.85	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	675.21	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.6°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard FTSE U.K. All Share Index Unit Trust

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Trust seeks to track the performance of the FTSE All-Share Index, a free-float market-capitalisation weighted index representing the performance of all eligible companies listed on the London Stock Exchange’s main market, which pass screening for size and liquidity.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Trust is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE U.K. All Share Index Unit Trust	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	985,287.35	94%	92.67%	0.95%
Total carbon emissions Scope 3 (tCO ₂ e)	11,558,825.05	94%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	12,544,112.40	94%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	58.12	94%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	681.83	94%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	78.48	94%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	921.07	94%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise 2.2°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard FTSE U.K. Equity Income Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the FTSE U.K. Equity Income Index. The Index consists of common shares of companies listed on the London Stock Exchange’s main market that are expected to pay dividends that generally are higher than average.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 101) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard FTSE U.K. Equity Income Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	129,968.02	100%	98.49%	1.34%
Total carbon emissions Scope 3 (tCO ₂ e)	1,468,327.82	100%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	1,598,295.84	100%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	83.54	100%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	943.79	100%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	118.53	100%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	1,213.80	100%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.
Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Global Emerging Markets Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund is an active fund, and its multi-manager structure uses two independent sub-investment advisers, managing approximately equal portions of the Fund’s investments. The Fund seeks to achieve its investment objective by investing primarily in shares of companies located in emerging market countries.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk. This Fund has been identified as having a high exposure to carbon-intensive sectors.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 102) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Global Emerging Markets Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	54,485.29	94%	87.01%	7.67%
Total carbon emissions Scope 3 (tCO ₂ e)	244,881.64	94%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	299,366.93	94%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	124.35	94%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	558.89	94%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	185.20	95%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	756.84	95%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.
Note: All coverage percentages are rounded to the nearest whole number.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
3.1°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Global Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund is an active fund, and its multi-manager structure uses two independent sub-investment advisers, managing approximately equal portions of the Fund’s investments. The Fund seeks to achieve its investment objective by investing primarily in shares of companies which may be located anywhere in the world.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 102) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Global Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	20,428.83	99%	86.10%	13.36%
Total carbon emissions Scope 3 (tCO ₂ e)	152,614.88	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	173,043.70	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	36.96	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	277.10	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	91.00	99%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	652.88	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.5°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Global Equity Income Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund is an active fund, and its multi-manager structure uses two independent sub-investment advisers, managing approximately equal portions of the Fund’s investments. The Fund seeks to provide an annual level of income (gross of fees) greater than that of the FTSE Developed Index together with an increase in the value of investments over the long term (more than five years).

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk. This Fund has been identified as having a high exposure to carbon-intensive sectors.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 102) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Global Equity Income Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	42,671.15	100%	90.55%	9.45%
Total carbon emissions Scope 3 (tCO ₂ e)	287,665.53	100%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	330,336.68	100%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	84.52	100%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	568.22	100%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	161.40	100%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	1,056.85	100%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise 2.8°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Global Capital
Stewards Equity Fund²⁵

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The fund is an active fund whereby the investment advisor uses their expertise to pick investments that meet certain sustainability criteria. The Fund seeks to achieve its investment objective by investing almost exclusively (at least 90% of the Fund’s assets) in shares issued by large companies worldwide which demonstrate good governance and act as good “stewards” of their capital.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Under the disorderly transition scenario, the Fund is most exposed to physical risk while also experiencing high policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 102) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics^{*}

	Vanguard Global Capital Stewards Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,783.02	100%	81.57%	18.43%
Total carbon emissions Scope 3 (tCO ₂ e)	18,137.32	100%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	19,920.34	100%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	11.43	100%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	116.29	100%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	60.05	100%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	477.56	100%	—	—

^{*} As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

^{**} Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2°C

Source: MSCI - powered by RIMES; Vanguard.

²⁵ The Fund was previously named Vanguard Global Sustainable Equity Fund and changed to Vanguard Global Capital Stewards Equity Fund with effect from 26 November 2024.

Vanguard LifeStrategy 20% Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to hold investments that will pay out money and increase in value through exposure to a diversified portfolio comprised of approximately 20% shares and 80% bonds and other similar fixed income instruments.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56.

2024 carbon metrics*

	Vanguard LifeStrategy 20% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	26,097.07	97%	85.71%	11.73%
Total carbon emissions Scope 3 (tCO ₂ e)	173,940.01	92%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	200,037.08	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	52.24	97%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	366.79	92%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	129.57	97%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	670.26	97%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	180.82	87%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 and 2023 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard LifeStrategy 40% Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to hold investments that will pay out money and increase in value through exposure to a diversified portfolio comprised of approximately 40% shares and 60% bonds and other similar fixed income instruments.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56.

2024 carbon metrics*

	Vanguard LifeStrategy 40% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	178,360.57	97%	86.69%	11.02%
Total carbon emissions Scope 3 (tCO ₂ e)	1,350,615.08	94%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	1,528,975.65	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	48.31	97%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	376.12	94%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	114.75	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	690.21	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	180.81	86%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 and 2023 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard LifeStrategy 60% Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to hold investments that will pay out money and increase in value through exposure to a diversified portfolio comprised of approximately 60% shares and 40% bonds and other similar fixed income instruments.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 102) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard LifeStrategy 60% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	582,481.60	97%	87.12%	10.75%
Total carbon emissions Scope 3 (tCO ₂ e)	4,836,502.64	96%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	5,418,984.24	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	44.87	97%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	377.93	96%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	103.70	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	698.19	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	186.42	84%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard LifeStrategy 80% Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to hold investments that will pay out money and increase in value through exposure to a diversified portfolio comprised of approximately 80% shares and 20% bonds and other similar fixed income investments.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 103) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard LifeStrategy 80% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	556,333.37	98%	87.88%	10.11%
Total carbon emissions Scope 3 (tCO ₂ e)	4,922,381.53	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	5,478,714.89	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	42.90	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	381.62	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	96.95	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	704.09	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	190.32	81%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard LifeStrategy 100% Equity Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund’s investment objective is to hold investments that will pay out money and increase in value through exposure to a diversified portfolio comprised of approximately 100% by value of shares.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 103) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard LifeStrategy 100% Equity Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	438,147.90	98%	88.58%	9.60%
Total carbon emissions Scope 3 (tCO ₂ e)	3,908,667.08	98%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	4,346,814.98	98%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.19	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	385.30	98%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	97.88	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	716.61	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	—	—	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2015 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2015.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56.

2024 carbon metrics*

	Vanguard Target Retirement 2015 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	236.10	97%	86.91%	11.06%
Total carbon emissions Scope 3 (tCO ₂ e)	1,685.51	95%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	1,921.61	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	51.87	97%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	380.08	95%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	124.68	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	698.53	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	180.56	89%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 and 2023 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2020 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2020.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56.

2024 carbon metrics*

	Vanguard Target Retirement 2020 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,971.10	98%	87.36%	10.75%
Total carbon emissions Scope 3 (tCO ₂ e)	14,948.12	96%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	16,919.22	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	49.04	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	379.94	96%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	116.35	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	699.84	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	182.58	88%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 and 2023 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2025 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2025.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 103) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2025 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	13,250.47	98%	87.56%	10.52%
Total carbon emissions Scope 3 (tCO ₂ e)	107,254.97	96%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	120,505.44	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	46.53	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	382.81	96%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	107.91	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	703.65	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	188.47	86%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement 2030 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2030.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 103) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2030 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	18,077.20	98%	87.66%	10.44%
Total carbon emissions Scope 3 (tCO ₂ e)	151,139.87	96%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	169,216.89	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	45.04	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	382.10	96%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	103.72	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	703.20	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	194.01	83%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.
** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: All coverage percentages are rounded to the nearest whole number. 2022 reporting is not provided due to coverage being below 60% threshold, for further information refer to “Coverage” on page 47.
Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2035 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2035.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 103) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2035 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	17,608.42	98%	87.75%	10.39%
Total carbon emissions Scope 3 (tCO ₂ e)	150,071.29	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	167,679.71	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	44.53	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	384.08	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	102.10	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	706.18	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.82	83%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2040 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2040.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 104) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2040 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	15,292.57	98%	87.82%	10.34%
Total carbon emissions Scope 3 (tCO ₂ e)	131,846.20	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	147,138.77	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	44.13	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	384.10	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	100.63	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	707.49	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.83	82%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2045 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2045.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 104) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2045 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	14,251.18	98%	87.90%	10.30%
Total carbon emissions Scope 3 (tCO ₂ e)	125,031.92	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	139,283.10	97%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.52	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	384.74	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	98.91	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	708.47	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.69	81%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement 2050 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2050.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 104) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2050 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	11,293.99	98%	88.04%	10.18%
Total carbon emissions Scope 3 (tCO ₂ e)	100,277.30	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	111,571.30	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.12	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	385.08	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	97.15	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	708.55	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.53	80%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2055 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2055.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 104) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2055 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	7,036.23	98%	88.03%	10.18%
Total carbon emissions Scope 3 (tCO ₂ e)	62,507.36	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	69,543.58	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.12	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	385.39	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	97.18	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	707.99	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.42	80%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement 2060 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2060.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 104) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2060 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	2,638.04	98%	88.05%	10.18%
Total carbon emissions Scope 3 (tCO ₂ e)	23,487.27	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	26,125.31	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.12	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	386.09	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	97.09	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	708.91	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	192.98	80%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard Target Retirement
2065 Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to achieve an increase in value and, consistent with a gradually changing investment allocation, hold investments that will pay out money for investors planning to retire in or within approximately five years after 2065.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 105) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard Target Retirement 2065 Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	2,014.54	98%	88.06%	10.18%
Total carbon emissions Scope 3 (tCO ₂ e)	17,916.77	97%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	19,931.30	96%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.13	98%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	385.81	97%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	97.14	98%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	708.61	98%	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	193.52	80%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise

2.4°C

Source: MSCI - powered by RIMES; Vanguard.

Vanguard U.K. Inflation-Linked Gilt Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the Bloomberg U.K. Government Inflation-Linked Float Adjusted Bond Index, a float-adjusted market-capitalisation weighted index representing the UK government inflation-linked securities market, offering exposure to inflation-linked gilts with maturities greater than one year.

Only 2024 data is shown; see the Appendix (page 106) for historical data created using an alternative data provider (MSCI). For more information on changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard U.K. Inflation-Linked Gilt Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	—	—	—
Total carbon emissions Scope 3 (tCO ₂ e)	—	—	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	—	—	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	—	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	—	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	—	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	—	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	113.57	100%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: The coverage percentage is rounded to the nearest whole number.
Please refer back to page 52 for the rationale as to why only the WACI is reported here.

Source: MSCI - powered by RIMES; Vanguard.

Vanguard U.K. Long Duration Gilt Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the Bloomberg U.K. Government 15+ Years Float Adjusted Bond Index. The Index is a float-adjusted market capitalisation weighted index representing a segment of the UK government bond market, offering exposure to gilts with maturities greater than 15 years.

Only 2024 data is shown; see the Appendix (page 105) for historical data created using an alternative data provider (MSCI). For more information on changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard U.K. Long Duration Gilt Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	—	—	—
Total carbon emissions Scope 3 (tCO ₂ e)	—	—	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	—	—	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	—	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	—	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	—	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	—	—	—
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	113.57	100%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Notes: The coverage percentage is rounded to the nearest whole number.
Please refer back to page 52 for the rationale as to why only the WACI is reported here.

Source: MSCI - powered by RIMES; Vanguard.

Vanguard U.S. Equity Index Fund

Reporting period: 1 January 2024 to 31 December 2024
Domicile: United Kingdom

The Fund seeks to track the performance of the S&P Total Market Index, a market-capitalisation weighted index representing the performance of large, mid, small, and micro-size companies traded on the U.S. stock market.

Scenario analysis

Under the orderly transition scenario, policy risk is the biggest driver of impact. This scenario assumes that policies are introduced early and become gradually more stringent. Likewise, under the disorderly transition scenario, the Fund is most exposed to policy risk, which is exacerbated by the delayed introduction of high carbon prices. The hot house world scenario has the lowest policy risk, which is in line with scenario assumptions on limited policy action, and the highest physical risk.

For more information about our approach to Scenario Analysis please refer to page 49. For further information about the limitations regarding Climate VaR and scenario analysis please refer to page 56. Only 2024 data is shown; see the Appendix (page 105) for historical data created using an alternative data provider (MSCI). For more information changes to our data technology, refer back to page 52.

2024 carbon metrics*

	Vanguard U.S. Equity Index Fund	Coverage	Reported emissions	Estimated emissions
Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	614,284.01	99%	83.51%	15.93%
Total carbon emissions Scope 3 (tCO ₂ e)	4,608,410.47	99%	—	—
Total carbon emissions Scopes 1 and 2 and Scope 3 (tCO ₂ e)**	5,222,694.48	99%	—	—
Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	29.93	99%	—	—
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	224.85	99%	—	—
Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	92.18	100%	—	—
Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	587.17	99%	—	—

* As a result of methodological changes to the way we calculate the 2024 carbon metrics, investors should exercise caution in making year on year comparisons for the purpose of trend analysis for this product.

** Total carbon emissions Scopes 1 and 2 and Scope 3 coverage demonstrates the percentage of holdings within a fund that has both Scopes 1 and 2 emissions and Scope 3 emissions. There may be instances where Scopes 1 and 2 emissions are available for a certain holding but no Scope 3 data is available for them. This has resulted in the coverage for Scope 1+2+3 emissions being lower than the individual coverage for Scope 1 + 2 emissions and Scope 3 emissions.

Note: All coverage percentages are rounded to the nearest whole number.

Source: MSCI - powered by RIMES; Vanguard.

MSCI Implied Temperature Rise
2.7°C

Source: MSCI - powered by RIMES; Vanguard.

Appendix

Historically published carbon metrics –
entity and product reports

Appendix

This appendix includes historical data for the entity and product reports, created using an alternative data provider (MSCI Climate Analytics) to our current year’s data. For more information on changes to our data technology, refer back to Page 52.

	VAM		VIUK	
	2022	2023	2022	2023
Assets under management (\$ billions)*	\$319.35	\$397.46	\$74.20	\$120.23
Total carbon emissions Scopes 1 and 2 (tCO ₂ e)	19,602,904.73	22,734,579.62	4,580,395.37	6,511,257.43
Coverage (%)	61%	63%	66%	85%
Total carbon emissions Scope 3 (tCO ₂ e)	—	155,236,394.13	—	51,994,605.30
Coverage (%)	—	63%	—	85%
Total carbon footprint Scopes 1 and 2 (tCO ₂ e per \$1 million invested)	62.40	57.20	63.74	54.16
Coverage (%)	61%	63%	66%	85%
Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	390.57	—	432.45
Coverage (%)	—	63%	—	85%
Weighted average carbon intensity for corporate constituents Scopes 1 and 2 (tCO ₂ e per \$1 million revenue)	151.72	116.11	146.92	110.67
Coverage (%)	67%	68%	69%	87%
Weighted average carbon intensity for corporate constituents Scope 3 (tCO ₂ e per \$1 million revenue)	—	743.69	—	762.07
Coverage (%)	—	68%	—	86%
Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	248.66	244.99	199.30	189.49
Coverage (%)	29%	28%	12%	12%

* VAM's entity-level report includes metrics on its portfolio management services and as asset owner of the Vanguard Personal Pension. These figures include the UK-domiciled UCITS funds for which VIUK is the asset manager. Consequently, metrics for these funds will be included in the figures for VAM and VIUK.

Notes: Asset figures are in US dollars and are as of 31 December for the year stated. GHG = greenhouse gas. tCO₂e = metric tonnes of carbon dioxide equivalent. Scopes 1, 2 and 3 GHG emissions are rounded to the nearest whole number. All coverage percentages are rounded to the nearest whole number.

Source: MSCI.

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard ActiveLife Climate Aware 40-50% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,783.78	3,341.85	74%	80%	65.50%	72.70%	14.40%	13.17%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	32,496.07	—	80%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	37.41	43.76	74%	80%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	425.55	—	80%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	136.60	147.09	80%	86%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	810.97	—	85%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	267.76	283.35	16%	11%	—	—	—	—
Vanguard ActiveLife Climate Aware 60-70% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	18,508.23	41,718.83	85%	86%	75.60%	77.92%	13.50%	12.32%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	436,560.50	—	86%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	37.76	43.76	85%	86%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	457.97	—	86%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	132.17	128.29	89%	90%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	809.41	—	89%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	255.57	271.28	9%	8%	—	—	—	—
Vanguard ActiveLife Climate Aware 80-90% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	4,903.15	5,459.45	94%	95%	84.00%	84.93%	11.80%	12.13%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	59,090.27	—	95%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	39.26	44.30	94%	95%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	479.52	—	95%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	137.82	120.73	96%	97%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	818.66	—	96%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	255.68	277.00	3%	2%	—	—	—	—
Vanguard Active U.K. Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,937.30	1,610.85	88%	95%	76.80%	88.64%	12.50%	6.16%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	19,568.38	—	92%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	47.86	37.16	89%	95%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	451.43	—	92%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	77.32	54.80	89%	95%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	638.40	—	92%	—	—	—	—
Vanguard ESG Screened Developed World All Cap Equity Index Fund (UK)	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	14,267.42	25,035.44	98%	99%	79.80%	84.73%	18.60%	14.62%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	203,684.65	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	20.24	21.03	98%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	171.13	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	59.88	51.06	98%	99%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	462.70	—	99%	—	—	—	—

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard FTSE 100 Index Unit Trust	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	96,496.42	110,289.76	98%	100%	94.30%	98.44%	4.60%	0.72%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	1,262,333.82	—	100%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	87.06	69.89	98%	100%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	799.91	—	100%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	125.11	89.61	99%	100%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	1,001.93	—	100%	—	—	—	—
Vanguard FTSE Developed Europe ex-U.K. Equity Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	251,585.66	305,730.02	98%	98%	93.20%	89.62%	4.70%	8.77%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	1,834,373.91	—	98%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	67.16	67.07	98%	98%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	402.40	—	98%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	105.69	86.99	98%	98%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	690.89	—	98%	—	—	—	—
Vanguard FTSE Developed World ex-U.K. Equity Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	678,253.82	756,523.34	98%	99%	84.10%	88.32%	14.40%	11.18%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	5,209,860.82	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	49.85	43.73	98%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	301.18	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	143.20	107.37	98%	99%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	682.39	—	99%	—	—	—	—
Vanguard FTSE Global All Cap Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	150,216.98	223,772.25	98%	99%	78.70%	84.44%	19.50%	14.82%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	1,358,765.39	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	64.12	60.44	98%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	367.03	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	169.00	137.97	98%	99%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	761.86	—	99%	—	—	—	—
Vanguard FTSE U.K. All Share Index Unit Trust	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,125,870.59	1,103,063.95	95%	97%	89.40%	93.89%	5.60%	2.18%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	12,934,933.71	—	97%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	81.09	67.54	95%	97%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	791.96	—	97%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	122.19	90.04	96%	97%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	1,036.10	—	97%	—	—	—	—
Vanguard FTSE U.K. Equity Income Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	141,875.46	134,970.46	100%	100%	96.30%	99.20%	3.40%	0.65%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	1,545,666.43	—	100%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	92.28	83.73	100%	100%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	958.85	—	100%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	140.06	123.86	100%	100%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	1,264.28	—	100%	—	—	—	—

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard Global Emerging Markets Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	69,253.30	94,601.97	96%	97%	84.10%	87.75%	12.30%	9.18%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	278,183.74	—	96%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	219.91	184.88	96%	97%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	543.65	—	96%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	395.59	322.37	96%	97%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	931.26	—	96%	—	—	—	—
Vanguard Global Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	17,478.55	28,139.36	97%	99%	75.40%	82.85%	22.30%	16.97%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	128,099.15	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	44.79	54.71	97%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	249.05	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	132.79	133.51	98%	100%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	600.43	—	99%	—	—	—	—
Vanguard Global Equity Income Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	22,661.13	35,280.25	100%	99%	90.90%	88.83%	9.10%	11.17%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	254,296.13	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	89.28	93.11	100%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	671.16	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	204.53	171.01	100%	100%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	1,064.72	—	100%	—	—	—	—
Vanguard Global Capital Stewards Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	747.69	1,653.65	98%	100%	94.70%	89.85%	3.70%	10.15%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	14,158.91	—	100%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	11.04	14.73	98%	100%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	126.10	—	100%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	46.43	46.87	98%	100%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	453.20	—	100%	—	—	—	—
Vanguard LifeStrategy 60% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	1,056,516.37	—	68%	—	62.47%	—	9.95%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	7,897,001.54	—	68%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	57.79	—	68%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	431.93	—	68%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	124.34	—	73%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	783.35	—	72%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	—	215.92	—	25%	—	—	—	—

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard LifeStrategy 80% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	623,793.38	740,533.38	68%	83%	58.50%	74.66%	11.90%	10.56%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	5,735,366.68	—	83%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.48	57.66	68%	83%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	446.58	—	83%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.59	120.50	71%	85%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	796.55	—	85%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	220.62	220.80	12%	13%	—	—	—	—
Vanguard LifeStrategy 100% Equity Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	368,902.25	460,185.36	80%	99%	78.70%	87.90%	19.50%	10.78%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	3,618,755.52	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.59	57.27	80%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	450.33	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.97	117.95	80%	99%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	799.11	—	99%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	220.23	238.14	0.013%	0.02%	—	—	—	—
Vanguard Target Retirement 2025 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	21,424.99	—	63%	—	57.88%	—	9.55%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	160,746.82	—	63%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	58.26	—	63%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	437.12	—	63%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	127.31	—	68%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	790.03	—	67%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	—	220.99	—	30%	—	—	—	—
Vanguard Target Retirement 2030 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	24,237.48	—	70%	—	64.05%	—	10.15%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	184,400.22	—	70%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	57.87	—	70%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	440.31	—	70%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	123.95	—	74%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	792.39	—	74%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	—	225.17	—	23%	—	—	—	—
Vanguard Target Retirement 2035 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	16,140.06	22,582.51	62%	74%	54.10%	67.12%	11.80%	10.29%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	172,987.67	—	74%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.54	57.85	62%	74%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	443.17	—	74%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.30	122.89	66%	78%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	795.22	—	77%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	222.40	224.91	19%	20%	—	—	—	—

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard Target Retirement 2040 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	13,141.92	18,665.72	65%	77%	56.10%	70.21%	12.00%	10.42%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	143,961.96	—	77%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.64	57.80	65%	77%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	445.79	—	77%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.30	121.88	68%	81%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	798.04	—	81%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	222.60	225.21	16%	17%	—	—	—	—
Vanguard Target Retirement 2045 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	11,781.55	16,671.86	68%	81%	58.20%	73.24%	12.20%	10.58%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	129,194.01	—	81%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.66	57.82	68%	81%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	448.04	—	81%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.40	121.12	71%	84%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	800.59	—	84%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	222.78	225.26	13%	14%	—	—	—	—
Vanguard Target Retirement 2050 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	7,757.66	12,117.60	69%	84%	59.10%	75.26%	12.20%	10.67%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	94,174.68	—	84%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.75	57.89	69%	84%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	449.92	—	84%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.44	120.69	71%	86%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	803.38	—	86%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	222.78	224.84	11%	12%	—	—	—	—
Vanguard Target Retirement 2055 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	4,848.58	7,564.98	69%	84%	59.20%	75.25%	12.20%	10.68%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	58,794.65	—	84%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.73	57.79	69%	84%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	449.18	—	84%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.56	120.50	72%	86%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	801.72	—	86%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	222.77	225.02	12%	12%	—	—	—	—
Vanguard Target Retirement 2060 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,508.23	2,523.24	69%	84%	59.10%	75.22%	12.20%	10.68%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	19,604.18	—	84%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.74	57.87	69%	84%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	449.59	—	84%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.61	120.64	71%	86%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	802.55	—	86%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	221.84	224.91	12%	12%	—	—	—	—

Appendix

		Carbon metrics		Coverage		Reported emissions		Estimated emissions	
		2022	2023	2022	2023	2022	2023	2022	2023
Vanguard Target Retirement 2065 Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	1,328.15	2,142.50	69%	84%	59.10%	75.25%	12.20%	10.66%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	16,647.55	—	84%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	65.61	57.91	69%	84%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	449.96	—	84%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	155.53	120.78	71%	86%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	803.73	—	86%	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	221.31	225.48	12%	12%	—	—	—	—
Vanguard U.K. Inflation-Linked Gilt Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	—	—	—	—	—	—	—
	Total carbon emissions Scope 3 (tCO ₂ e)	—	—	—	—	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	—	—	—	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	131.74	131.74	72%	100%	—	—	—	—
Vanguard U.K. Long Duration Gilt Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	—	—	—	—	—	—	—	—
	Total carbon emissions Scope 3 (tCO ₂ e)	—	—	—	—	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	—	—	—	—	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	—	—	—	—	—	—	—
	Weighted average carbon intensity for sovereign constituents (tCO ₂ e per \$1 million GDP nominal)	131.74	131.74	100%	100%	—	—	—	—
Vanguard U.S. Equity Index Fund	Total carbon emissions Scope 1 and Scope 2 (tCO ₂ e)	617,548.98	609,291.88	98%	99%	76.70%	82.11%	21.40%	17.38%
	Total carbon emissions Scope 3 (tCO ₂ e)	—	4,467,819.54	—	99%	—	—	—	—
	Total carbon footprint Scope 1 and Scope 2 (tCO ₂ e per \$1 million invested)	43.12	34.89	98%	99%	—	—	—	—
	Total carbon footprint Scope 3 (tCO ₂ e per \$1 million invested)	—	255.87	—	99%	—	—	—	—
	Weighted average carbon intensity Scope 1 and Scope 2 (tCO ₂ e per \$1 million revenue)	147.99	105.42	98%	99%	—	—	—	—
	Weighted average carbon intensity Scope 3 (tCO ₂ e per \$1 million revenue)	—	639.83	—	99%	—	—	—	—

Notes: Scopes 1, 2 and 3 GHG emissions are rounded to the nearest whole number. All coverage percentages are rounded to the nearest whole number.
Source: MSCI.

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