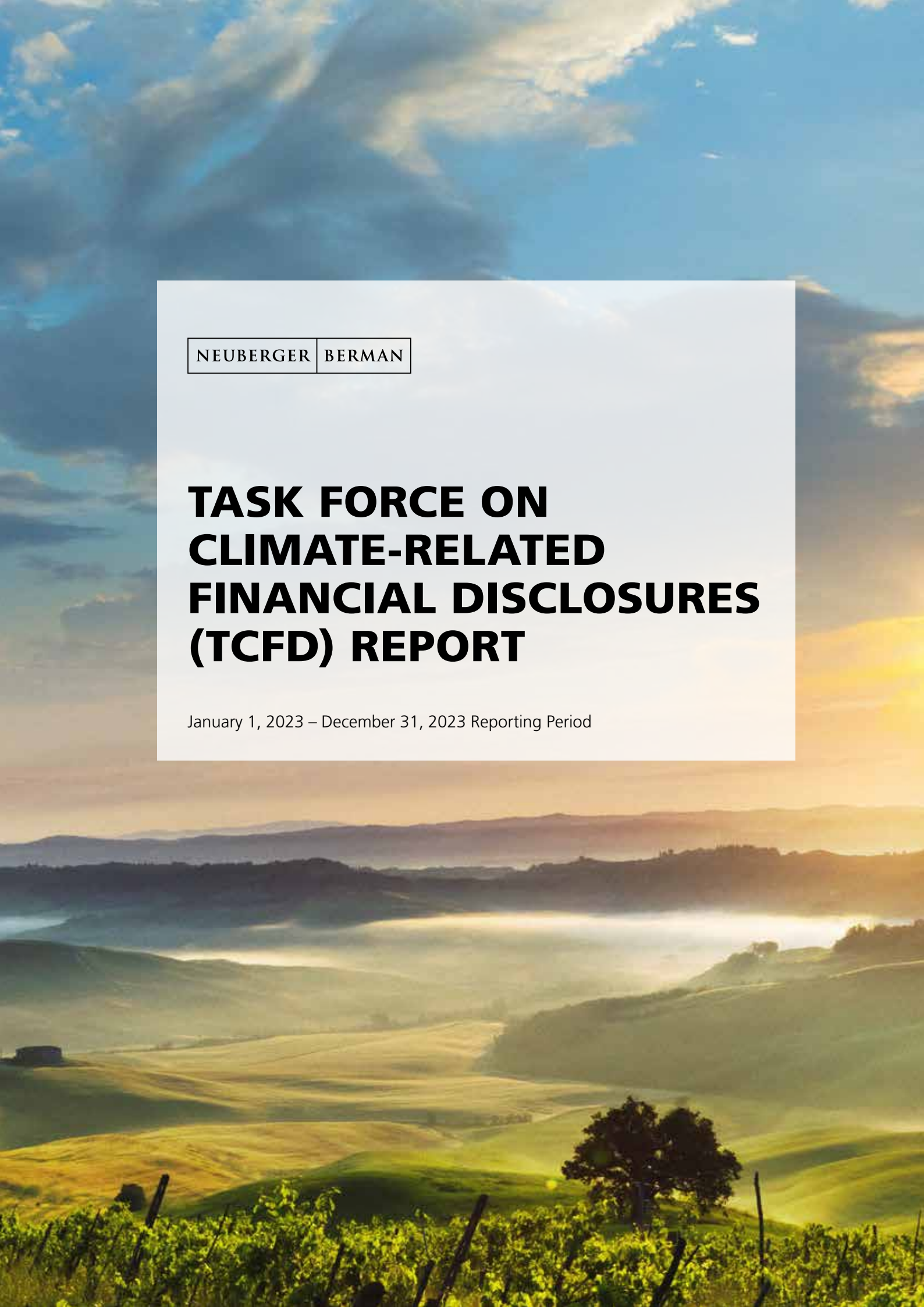
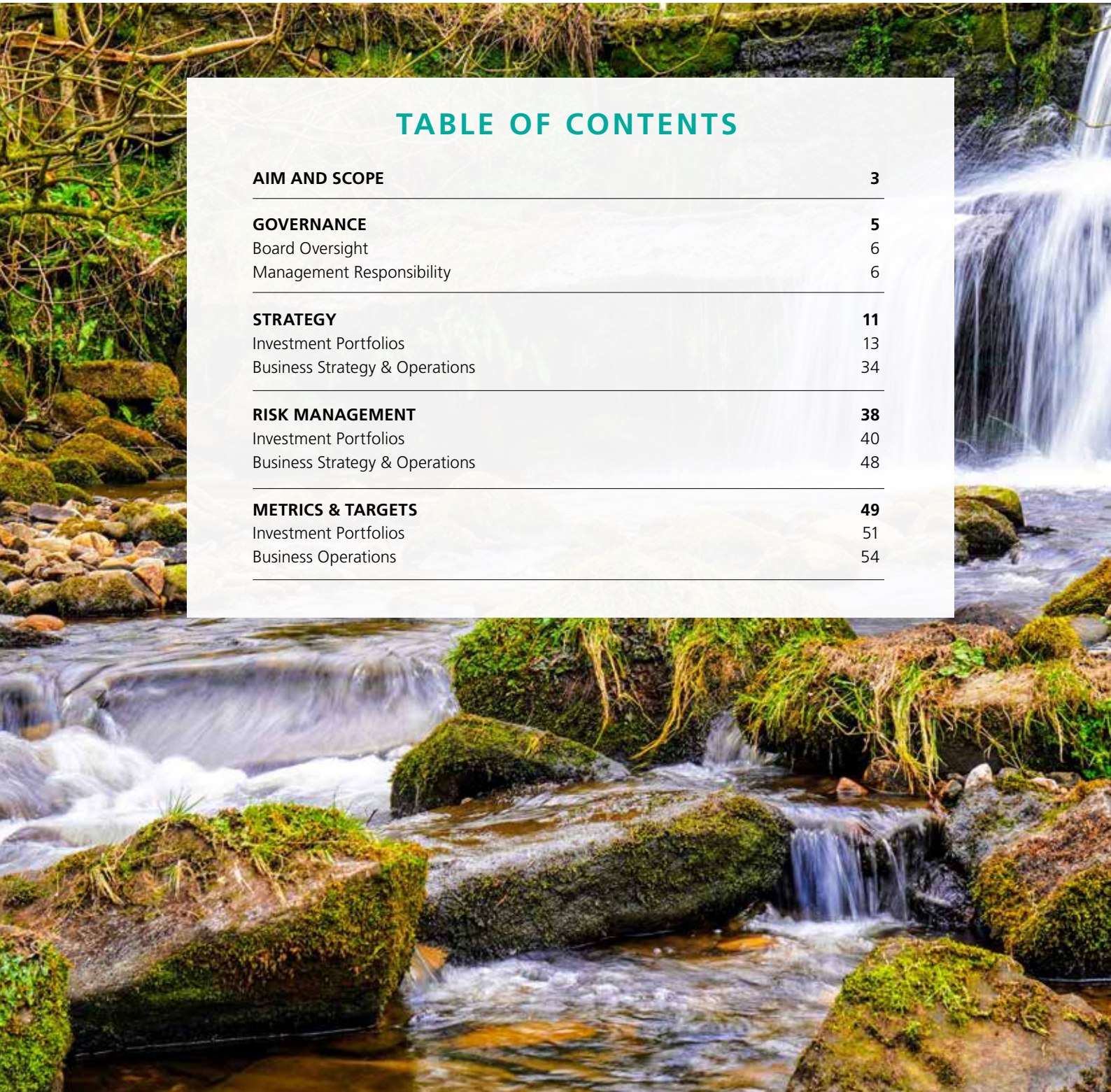


NEUBERGER BERMAN

# TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD) REPORT

January 1, 2023 – December 31, 2023 Reporting Period

Neuberger Berman is an employee-owned, private, independent investment manager founded in 1939 with 2,800 employees in 26 countries. The firm manages $463 billion of equities, fixed income, private equity, real estate and hedge fund portfolios for global institutions, advisors and individuals. Neuberger Berman's investment philosophy is founded on active management, fundamental research and engaged ownership. The PRI identified the firm as part of the Leader's Group, a designation awarded to fewer than 1% of investment firms for excellence in environmental, social and governance practices. Neuberger Berman has been named by *Pensions & Investments* as the #1 or #2 Best Place to Work in Money Management for each of the last 10 years (firms with more than 1,000 employees). Visit www.nb.com for more information. Data as of December 31, 2023.



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# A MESSAGE FROM OUR CEO

We are pleased to present this year's Neuberger Berman Group TCFD Report.

## Financial markets rely on disclosure and active judgment

A central premise of corporate reporting has been that financial markets rely on good disclosures to inform asset pricing and capital allocation. As an active manager investing on behalf of clients across public equities, fixed income, real estate and private markets, a significant part of our role is applying the expert judgment of our portfolio managers and analysts to evaluate corporate disclosure. We strongly believe that in the long term our clients are best served by markets which are driven by the hard work of price discovery grounded in fundamental analysis rather than momentum and the vagaries of index construction methodologies.

As a firm, we believe that financially material environmental, social and governance factors may be an important driver of long-term investment returns from both an opportunity and a risk-mitigation perspective; to that end, we look to companies to provide reporting on these financially material factors. Because climate-related risks and opportunities are potentially financially material across a wide range of industries and asset classes, Neuberger Berman has long been a supporter of the Taskforce on Climate-related Financial Disclosure (TCFD) as a framework for corporate reporting. It is therefore fitting that we ourselves report using the TCFD framework. Given that we are a private, employee-owned asset manager with no external shareholders, the disclosures that we provide in this report are primarily in service of our clients. We hope that these disclosures also serve as an example for the companies that we invest in as to what robust climate reporting can look like.

## Serving clients

We know that our clients have diverse portfolio objectives; some are solely focused on managing material financial risks including climate, while others seek specific environmental outcomes such as achieving a "net-zero" portfolio by a certain date or gaining exposure to climate solutions. We are committed to offering clients the choice for how they wish their precious capital to be invested.

Over the course of 2023 we continued to invest in research, analysis and capabilities which allow us to support clients in achieving their climate-related objectives:

- **Net-Zero Alignment Indicator.** Our proprietary indicator helps clients understand the degree of alignment a company has with a 2050 net-zero objective. The indicator draws on both third-party data and—importantly—qualitative inputs from our research analysts to capture alignment. Over the past year, our research analysts have focused on expanding the qualitative coverage of the indicator, reviewing 1,829 holdings across equities and fixed income, and applying overrides to 337 of those. This means that qualitative analysis now applies to 76% of the MSCI World Index by market cap. With over $5 billion of assets under management in strategies integrating net-zero alignment objectives, we are proud to support our clients in finding a feasible glidepath to net-zero emissions by 2050.
- **Engagement.** Engagement with companies is essential to understand the transition and physical risks that clients may be exposed to. We believe that engagement is best done by research analysts and portfolio managers that understand the business model and market context that a company is operating within. Over the course of 2023, our equities and fixed income teams discussed a combined 2,000+ engagement topics with companies, of which 800+ focused on green opportunities, 600+ focused on climate risk management, 500+ focused on climate reporting, and 80+ focused on physical climate risk.
- **Use of Artificial Intelligence.** AI is presenting new opportunities across all aspects of investment management, including the analysis of climate-related data. In 2023 we explored how AI might be able to correct for the fragmented and backward-looking nature of climate data by helping paint a clearer picture of companies' climate strategies. In particular, we piloted the application of in-house AI capabilities to more efficiently extract information from sustainability reports and assess use of proceeds for green bonds.

## Real-world context

These analytical tools and capabilities are not used in a vacuum, and it is only right that we acknowledge that after strong performance from 2017 – 2021 on volume growth and incremental policy action, 2023 was a year when investments in climate solutions, such as clean-energy stocks performed poorly.

The underperformance of clean-energy stocks was set against a backdrop of macro headwinds that increased capital costs tied to higher interest rates, and raised the cost of capital contributing to increased project write-downs and cancellations. That said, during the year renewable energy installations grew at a record pace, with global annual renewable capacity additions increasing by almost 50% to nearly 510 gigawatts. China commissioned as much solar as the entire world had in 2022, and added significant production capacity in many climate solutions that contributed to overcapacity and lower prices in the near term. While challenging for profitability, lower prices are a powerful incentive for consumer adoption. We will continue to monitor this delicate balance in the years ahead, including any new tariffs and import/export bans.

Despite low ingoing expectations, the 28th annual Conference of the Parties (COP28) meeting in Dubai did offer incremental commitments by nation states. Among the actions taken, almost 200 participating nations committed to a "transition away from" fossil fuels—marking a significant shift in global cooperation to tackle climate change. In addition, more than 100 countries agreed to triple renewable energy capacity by 2030, creating a compelling investment opportunity in renewable technology and the sectors that stand to benefit from increased efficiencies.

Capital is still flowing toward the energy transition, attracting $1.8 trillion of invested capital last year according to Bloomberg. The investment opportunity is much broader than solar and wind stocks as we see clients deploy capital into grid infrastructure, more efficient industrial processes and data center energy optimization, to name a few across public and private markets. We are also seeing clients particularly focus on the transition that incumbent companies may choose to make, particularly in hard-to-abate sectors like cement, steel, aviation and chemicals, where we believe there will be strong continued end-product demand. This naturally leads clients to think beyond public equities and to embrace the opportunities that fixed income markets offer for climate transition investing.

## Disclosure regulation

We are slowly seeing the emergence of minimum corporate climate disclosure requirements. Most prominently the U.S. Securities and Exchange Commission's Climate Disclosure Rule, approved in March 2024, sets forth requirements for the disclosure of climate risks and emissions on the part of U.S. public companies and some private companies subject to SEC reporting requirements. While the rule is currently subject to legal challenge, we continue to believe that it would provide an important baseline for US-listed companies.

Beyond the U.S., it has been positive to see that at least 20 countries are working on implementation of the International Sustainability Standards Board's (ISSB) bringing a degree of alignment around a global baseline. We also welcome China's recognition of the ISSB as a global baseline and the alignment of its Corporate Sustainability Disclosure Standards to the framework.

Of course, 2024 will see elections in countries representing half the global population. We will follow the outcomes carefully to understand the potential implications for policy, regulation and client portfolios.

## Looking ahead

At Neuberger Berman, we understand that climate change and its financially material effects should not be considered in a vacuum. This means weighing those effects alongside other investment risks and recognizing the connections between climate change and other global social and environmental challenges, such as a just transition and biodiversity. Over time, we anticipate that further impacts from climate will emerge and may become even more impactful on portfolios, requiring additional tools and analytical capabilities. We also understand that the investment solutions that clients are looking for will also change. Partnering with clients to build compelling long-term solutions to pursue their investment objectives is our purpose, and we thank you for your continued trust.

**GEORGE WALKER**
CHAIRMAN AND CEO OF NEUBERGER BERMAN

# AIM AND SCOPE

As an asset manager with a long-term perspective, Neuberger Berman recognizes the impact of climate change and that the transition toward global net-zero emissions is well underway. Ultimately, countries will be shaping policy around their Nationally Determined Contributions (NDCs), and as investors, we have to consider the impact of those policies. We are committed to understanding the climate-related risks and opportunities that are financially material to the portfolios we manage, as well as to our business strategy and operations.

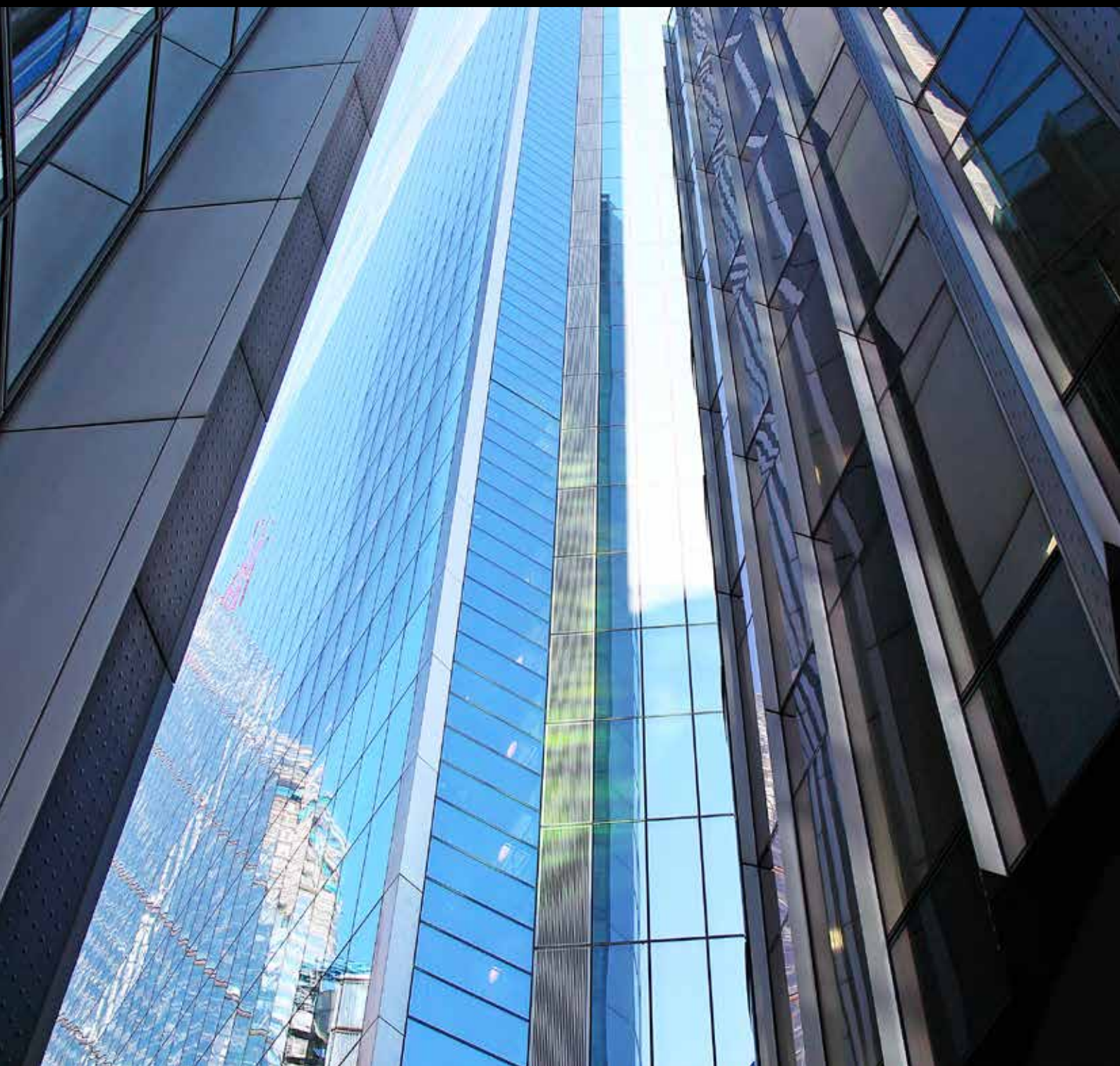
The extent to which climate considerations are factored into investment decisions is two-fold. First, in line with our fiduciary duty to our clients, we consider climate risks or opportunities that may impact the financial performance of a security or a portfolio. We believe that climate risks are financially material for many sectors, and therefore, we consider climate risk factors alongside any other factor which could impair client capital.

Second, we know that for many of our clients, the climate impact of their portfolio is an increasingly important consideration in conjunction with investment performance. For clients with these outcome-focused objectives, we also consider how climate risks and opportunities may contribute to their desired sustainability outcomes.

This document describes Neuberger Berman Group's climate-related corporate strategy in line with disclosure recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD). The purpose of this report is to provide our current and future clients and any additional stakeholders with information to help them understand how we assess climate-related issues and opportunities through our approach to governance, strategy, risk management, metrics and targets. It also serves as a disclosure of our commitment to the Net Zero Asset Managers Initiative as well as our Investor Climate Action Plan (as defined by the Investor Agenda). To satisfy our obligation under the Financial Conduct Authority's PS21/23, we have also published a TCFD report annex specific to our U.K.-based entity Neuberger Berman Europe Limited (NBEL), which can be found here.

This report covers the reporting period from January 1, 2023 to December 31, 2023. The calculation date for the reported metrics is December 31, 2023.

# GOVERNANCE



## BOARD OVERSIGHT

As a private, 100% independent, employee-owned investment manager, Neuberger Berman is structurally aligned with the long-term interests of our clients. We have no external parent or public shareholders to serve, nor other lines of business to distract us from our core mission.

Neuberger Berman's Board of Directors (the "Board") is currently comprised of seven directors, one of whom is the firm's Chief Executive Officer with the remaining six appointed by members of the firm. Four directors are independent within the meaning of the New York Stock Exchange listing requirements. The Board is responsible for reviewing and approving the Neuberger Berman Group Strategy, which includes the ESG Strategy. As a subset of all enterprise-wide risks, the Board oversees climate-related enterprise risk and reviews the firm's approach to climate-related risks and opportunities at least once a year during the regularly scheduled Neuberger Berman Group Board meetings.

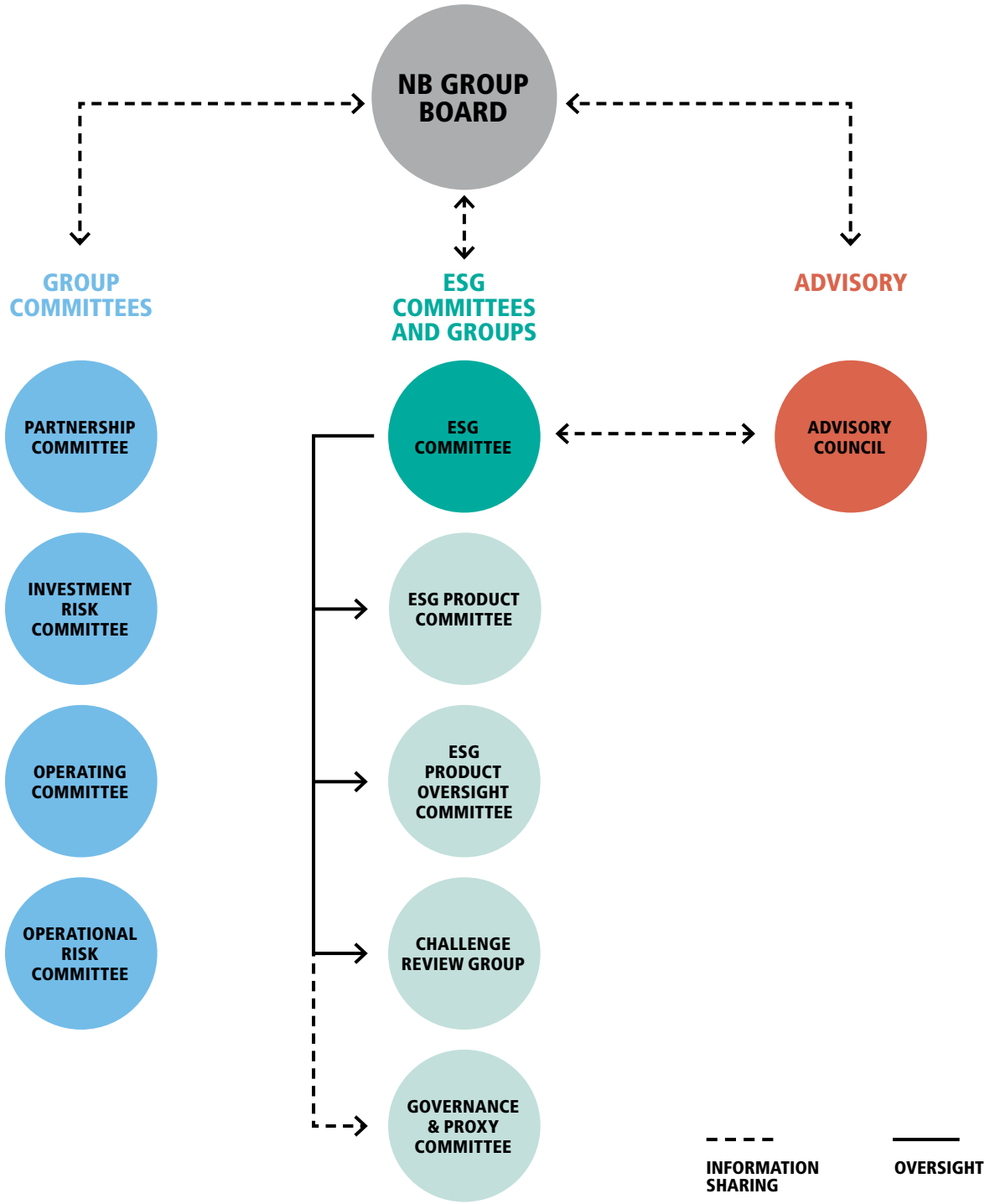
Where relevant, senior management has integrated ESG risk factors and climate-related risks into day-to-day operations at the firm, including into budget, overall strategy, capital management, risk management, and other matters that the Board oversees, and this is reflected in the materials that are provided to the Board. The Board is periodically updated on the firm's progress on its commitment to the Net Zero Asset Managers Initiative. In addition, the Board receives materials and information from the Advisory Council, which is comprised of six industry experts, four with climate expertise, and provides guidance on emerging sustainability topics.

## MANAGEMENT RESPONSIBILITY

Senior management is responsible for overseeing the firm's operations, risk department and investment professionals. As a subset of overall management of the enterprise, senior management oversees climate-related risks and opportunities. The CEO is ultimately responsible for updating the Board on material updates and relevant climate-related risks and opportunities, and is supported by the Global Head of ESG & Impact Investing, Chief Risk Officer (CRO), Chief Investment Officers (CIOs) and Chief Operating Officer (COO). The Global Head of ESG & Impact Investing, together with the CRO and CIOs, is responsible for ensuring appropriate climate expertise and analytical capabilities are in place to support portfolio managers and research analysts in understanding the potential implications of climate change for security analysis and portfolio construction.

The governance structure of Neuberger Berman includes four key committees: Partnership, Operating, Investment Risk, and Operational Risk. The committees are engaged in discussion on a variety of topics, including ESG topics and climate-related risks and opportunities as part of the normal course of business.

## OVERVIEW OF NEUBERGER BERMAN'S ESG GOVERNANCE STRUCTURE



# NEUBERGER BERMAN'S KEY COMMITTEES

| | Membership | Description | Climate Oversight |
|---|---|---|---|
| **PARTNERSHIP COMMITTEE** | Leaders from large businesses and client channels, large equity holders and senior management across asset classes, including the Global Head of ESG & Impact Investing. | Engages in how to effectively develop the firm's investment strategies and client franchise through evolving markets, while enhancing our firm culture. | Engages in discussion on material climate-related risks and opportunities as part of the normal course of business. |
| **INVESTMENT RISK COMMITTEE** | Senior investment leaders including the CRO (Chair), CEO, President and CIO for Equities and other senior investment and risk professionals. | Oversees investment performance and risk evaluation, acts as an escalation point for investment risks, evaluates the suitability of new products under consideration, and oversees and reviews commingled fund liquidity. | Engages in discussion of material climate-related risks related to investment strategies and asset classes. |
| **OPERATING COMMITTEE** | Global heads of the firm's operating platform functions, including marketing, product COOs across asset classes. | Engages in how to promote high quality execution of our business, including opportunities for global scale, regional specialization and workforce development. | Engages in discussion of material climate-related risks and opportunities in the context of evaluating the impacts of ESG-related regulation and resourcing data and technology functions in response to demand for ESG data, including climate data. |
| **OPERATIONAL RISK COMMITTEE** | Senior operations leaders including the Head of Business Risk (Chair), CRO, COO, CFO, Chief Technology Officer (CTO), General Counsel – Asset Management and other senior risk, operations and technology professionals. | Provides oversight of and acts as an escalation point for risks that may expose the firm to uncompensated loss or significant business disruption, and acts as a forum for review and approval of actions taken to mitigate, manage or accept those risks. | Engages in discussion of material climate-related risks as a subset of enterprise-wide operational risks. |

# NEUBERGER BERMAN'S KEY ESG COMMITTEES AND GROUPS

**In addition, Neuberger Berman has formed specific ESG committees and groups comprised of senior professionals across the firm, which include:**

| | Membership | Description | Climate Oversight |
|---|---|---|---|
| **ESG COMMITTEE** | • Chaired by the Global Head of ESG & Impact Investing.<br>• Comprised of senior investment professionals across all asset classes, including the CIO for Equities, and representatives from Equity, Fixed Income and Private Equity teams.<br>• Includes senior professionals from client coverage, risk management, legal and compliance, marketing and our client organization. | The ESG Committee reviews the ESG Strategy for the firm. Its primary responsibility is reviewing the ESG Policy and amending it as needed. It also acts as a cross-asset class forum to share research on ESG issues and trends, and to drive deeper engagement and education on ESG topics across the firm. | • Reviews the firm's approach to climate-related risks and opportunities at least once a year.<br>• Periodically reviews the firm's progress on its commitment to the Net Zero Asset Managers Initiative. |
| **ESG PRODUCT COMMITTEE** | • Chaired by the Global Head of ESG & Impact Investing.<br>• Includes the CIO for Equities. | The ESG Product Committee oversees ESG commitments made at the product and/or investment strategy level. | • Oversight includes claims made in relation to climate-related risks and opportunities.<br>• Approves or denies the setting of net-zero targets that have been requested and approved by clients at the product and/or investment strategy level. |
| **ESG PRODUCT OVERSIGHT COMMITTEE** | • Co-chaired by the Head of Business Risk and the Head of Investment Risk<br>• Includes senior leaders such as the Global Head of ESG & Impact Investing, Head of Product Development, and other senior leaders across the support and controls teams (Compliance, Legal, Marketing and Risk). | The ESG Product Oversight Committee oversees previously approved ESG commitments made at the product and/or investment strategy level. | • Oversight includes claims made in relation to climate-related risks and opportunities<br>• Monitors progress toward net-zero alignment for designated assets that have set a net-zero target. |
| **CHALLENGE REVIEW GROUP** | • Includes selected members of the ESG Committee. | The Challenge Review Group is responsible for the critical review and decision of appeals submitted by investment teams against names identified as prohibited under an applicable avoidance policy. | • Engages in discussion on ESG topics and climate-related risks and opportunities if relevant to an applicable avoidance policy. |
| **GOVERNANCE & PROXY COMMITTEE** | • Chaired by President & CIO for Equities.<br>• Comprised of senior investment professionals across Equities business. | The Governance & Proxy Committee oversees firmwide proxy voting guidelines and procedures, including NB Votes initiative. | • Oversight of proxy voting guidelines and procedures, including those related to climate risks and opportunities.<br>• Oversight of NB Votes, including those on climate-related proposals. |

## ADVISORY COUNCIL

Vijay Advani

Former Executive Chairman of Nuveen, the Investment Management arm of TIAA, and current Chairman of the U.S.-India Business Council Global Board of Directors

Ben Caldecott

Director, Oxford Sustainable Finance Program & Founding Director of the UK Centre for Greening Finance & Investment

Janine Guillot

Former Special Advisor to the Chair of the International Sustainability Standards Board

Mindy Lubber

President and CEO of Ceres, a sustainability focused nonprofit organization based in Boston, MA

George Serafeim

Charles M. Williams Professor of Business Administration and Chair of the Impact-Weighted Accounts Project at Harvard Business School

Theresa Whitmarsh

Former Executive Director of the Washington State Investment Board and Chair of the Board of Directors, FCLT (Focusing Capital on the Long Term) Global

| | Membership | Description | Climate Oversight |
|---|---|---|---|
| **ADVISORY COUNCIL** | • Consists of six respected external thought leaders across the ESG landscape, four of which have climate-specific expertise. | The Advisory Council brings the latest knowledge from academia, the non-profit sector and institutional asset owners to provide guidance on the future of impact investing and sustainability topics, and challenge us to go further in our own efforts. Unlike our ESG Committees, it is not part of the formal ESG governance structure. | • No formal oversight, but shares materials with the ESG Committee. Meetings chaired by the Global Head of ESG and Impact Investing and attended by the CEO and CIO. |

## ADVISORY COUNCIL CASE STUDY DISCUSSION
## NAVIGATING CARBON MARKETS

**Background:** In the aftermath of COP28, we saw a renewed focus on carbon markets and increasing interest from companies in using carbon offsets to meet their climate commitments. In engagements, our analysts have received specific questions from companies on whether to use offsets as part of their climate action plan, and how to ensure the quality of those offsets. We saw a clear need to establish internal guidelines on carbon markets for three reasons:

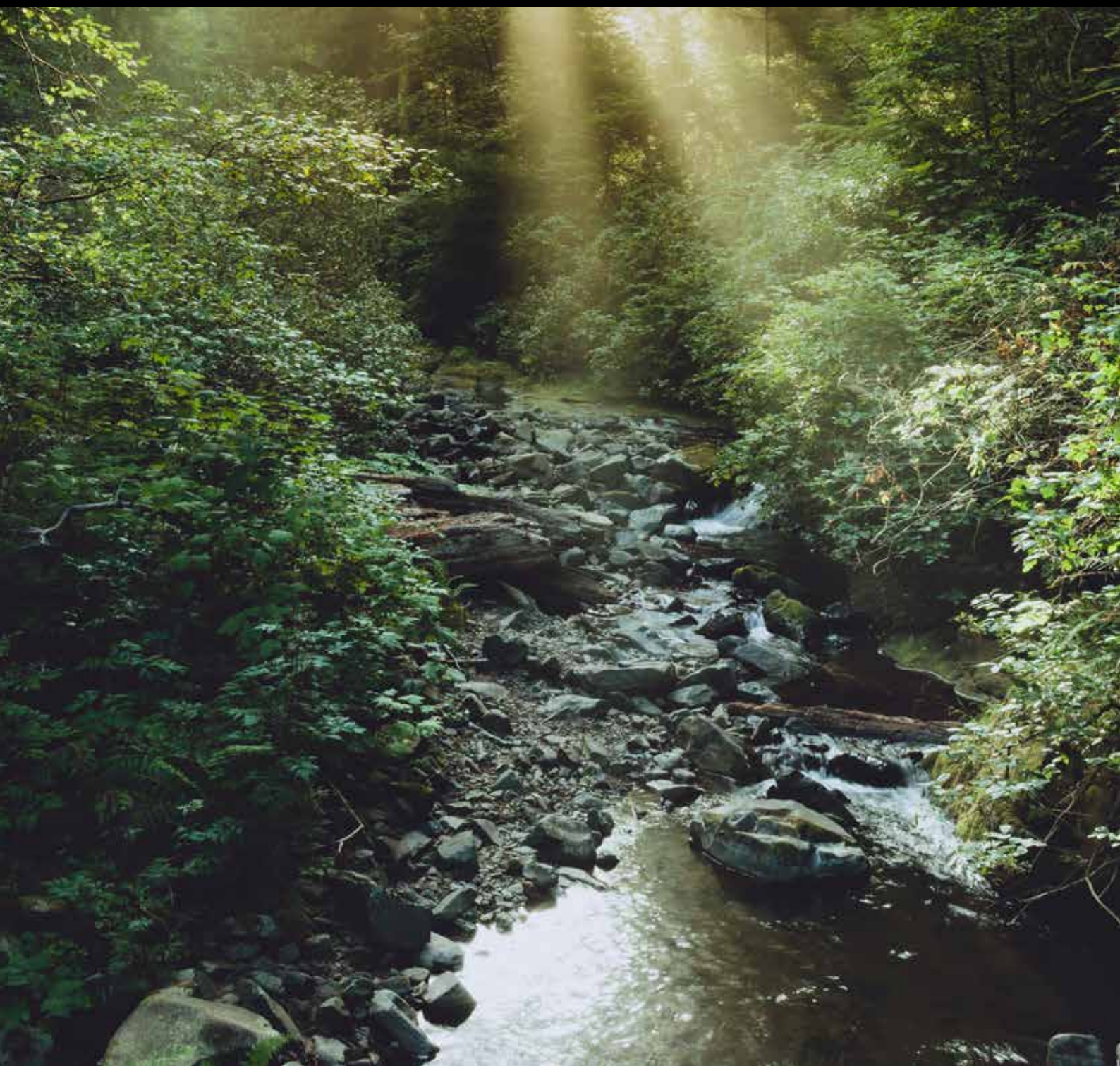
- **Companies are already using offsets:** offset retirements grew from 70 million in 2019, to 174 million in 2023.
- **If used credibly, offsets can lead to real-world impact:** offsets are an important option for sectors where decarbonization technologies are not yet fully viable, and can support the Just Transition.
- **Offset usage can carry financially material risk:** concerns about environmental integrity both on the supply side (additionality of offsets) and demand side (potential for corporate greenwashing) can lead to reputational and litigation risk.

**Guidance:** Given the climate and carbon markets expertise of our Advisory Council members, we sought their input on how we should treat corporate carbon offset usage. The council members offered the following guidelines:

- In general, voluntary offsets should only be used in sectors where there is no credible decarbonization trajectory to zero, i.e., hard-to-abate sectors like cement, steel, aviation. If companies are using offsets, they should have an existing climate action plan that shows what they are doing to reduce emissions internally.
- There is a use case for both avoidance and removal offsets at this time, with a preference for removals if financially feasible.
- Companies should be careful to avoid investing in offsets when it comes at the expense of innovation on carbon-efficient processes or products.
- Our position is not to change company offsetting behavior, but to monitor usage with the goal of minimizing reputational risk within our portfolios.

**Implementation:** Following the Advisory Council, we held a carbon markets teach-in with professionals responsible for ESG integration across our platform. We also integrated these guidelines into our climate expectations engagement guide, which investment professionals across the firm use to engage with companies in sectors where climate is a material topic.

# STRATEGY



We are committed to understanding our climate-related risks and opportunities, and managing risks material to our business. We can segment climate-related risks into two categories:

- **Physical risk:** Physical risks resulting from climate change will be both event-driven (acute) and longer-term shifts (chronic) in climate patterns. Physical risks could result in asset damage and business disruptions to portfolio companies that lead to decreased security valuations and thus affect our investment value chain. Physical risks may also cause direct weather-related damage to our assets and disrupt our own business operations.
- **Transition risk:** The global transition to a low-carbon economy will cause policy, legal, technology and market shifts as the world addresses the mitigation and adaptation requirements related to climate change over the short, medium and long term. Transition risks could result in increased capital expenditures, increased stranded asset risk, and decreased demand for certain goods and services for portfolio companies that lead to decreased security valuations and thus affect our investment value chain. Regulation and shifting consumer preferences regarding green investment products may also directly affect our business.

There is increasing recognition in the investment community that climate and nature are intrinsically linked. As a result, our clients are increasingly interested in understanding their exposure to nature-related risks and opportunities. We have therefore started identifying the impacts and dependencies of certain investments on natural capital, as we expect these to become more financially material in the long term.

# INVESTMENT PORTFOLIOS

## Identifying Climate Risk and Opportunity Channels

We have identified key channels through which climate risks and opportunities would impact portfolio companies and thus present a source of investment risk. We adopt the following definitions regarding the timeframe of critical impact, which is when we believe portfolios will have the greatest level of financial exposure to the risk under consideration:

- **Short-term:** 1 year
- **Medium-term:** 2 – 5 years
- **Long-term:** 5+ years

### CLIMATE RISK CHANNELS FOR INVESTMENT PORTFOLIOS

| Risk | Description | Timeframe of Critical Impact | Impact on Portfolio Companies | Portfolio-Level Risk Assessment Tools | Investment Risk |
|---|---|---|---|---|---|
| **Physical: Acute** | Risks from increased severity of extreme weather events, including cyclones, flooding, river low flow and wildfires | Long-term | Increased write-offs, capital costs, and insurance premiums due to physical asset damage; decreased revenues due to business disruptions | Climate Value-at-Risk (CVaR), Sovereign Sustainability Assessment, third-party and proprietary catastrophe models | Portfolio performance, which leads to lower AUM and decreased revenues |
| **Physical: Chronic** | Risks from increased variability in weather patterns, including wind gusts, precipitation and temperatures, including extreme heat and extreme cold | Long-term | Increased operating expenses due to the need to adapt to variable weather patterns and temperatures; decreased revenues due to business disruptions; increased insurance premiums | CVaR, Sovereign Sustainability Assessment | Portfolio performance, which leads to lower AUM and decreased revenues |
| **Transition: Policy** | Risks from climate transition regulation that can affect a company's direct operations, suppliers or customers | Short-term, medium-term and long-term | Increased capital expenditures due to nationally determined emissions reduction targets or carbon pricing for certain sectors or their suppliers; increased electricity costs due to grid demand from low carbon transition; decreased revenues due to shifting market demand | CVaR | Portfolio performance, which leads to lower AUM and decreased revenues |
| **Transition: Technology** | Risks from failing to create or transition to new low carbon emissions technologies | Short-term, medium-term and long-term | Decreased demand for products and services; stranded asset risk | CVaR, Net-Zero Alignment Indicator | Portfolio performance, which leads to lower AUM and decreased revenues |
| **Transition: Market** | Risks from changing consumer behavior, increased costs of raw materials and uncertain market signals | Short-term, medium-term and long-term | Decreased demand for goods and services due to shift in consumer preferences; increased production costs due to input prices; changes in energy costs | Net-Zero Alignment Indicator, NB ESG Quotient, EU Taxonomy Alignment | Portfolio performance, which leads to lower AUM and decreased revenues |
| **Transition: Reputation** | Risks from negative stakeholder feedback resulting from inadequate climate action | Short-term, medium-term and long-term | Decreased demand for goods and services; decreased revenue from impacts on workforce; decreased capital availability | NB ESG Quotient, Controversy monitoring | Portfolio performance, which leads to lower AUM and decreased revenues |

## CLIMATE OPPORTUNITY CHANNELS FOR INVESTMENT PORTFOLIOS

| Opportunity | Description | Timeframe of Critical Impact | Impact on Portfolio Companies | Portfolio-Level Risk Assessment Tools | Investment Opportunity |
|---|---|---|---|---|---|
| **Resource Efficiency** | Opportunities from efficiency in use of water and raw materials | Long-term | Decreased operating expenditures due to efficiencies | NB ESG Quotient | Portfolio performance, which leads to higher AUM and increased revenues |
| **Energy Source** | Opportunities from use of lower emissions sources, supportive policy incentives and new technologies | Short-term, medium-term and long-term | Decreased operating expenditures due to efficiencies, decreased sensitivity to energy prices | NB ESG Quotient, Net-Zero Alignment Indicator | Portfolio performance, which leads to higher AUM and increased revenues |
| **Products & Services, Resilience** | Opportunities from development of climate mitigation and adaptation solutions | Short-term, medium-term and long-term | Increased revenue through demand for climate mitigation and adaptation solutions | CVaR, Net-Zero Alignment Indicator, EU Taxonomy Alignment | Portfolio performance, which leads to higher AUM and increased revenues |
| **Markets** | Access to new markets, use of public-sector initiatives | Short-term, medium-term and long-term | Increased revenues due to access to subsidies and tax credits | Net-Zero Alignment Indicator | Portfolio performance, which leads to higher AUM and increased revenues |

## Proprietary Tools to Assess Climate Risks & Opportunities

Climate considerations are becoming more important for investors across asset classes, and we believe metrics will need to rapidly evolve in response. While first- and second-generation tools that rely solely on carbon emissions or readily available quantitative ESG metrics are important, we increasingly see investors recognize the need for nuanced analyst judgment to understand the complexities of the climate transition. For this reason, we have developed proprietary third-generation climate risk and opportunity assessments that combine quantitative and qualitative inputs, and can be customized different asset classes.

### EVOLUTION OF CLIMATE METRICS

**Measuring Progress**

#### FIRST GENERATION

- Third-party frameworks that are backward-looking and can lag financial disclosures by up to two years
- Volatile due to market movement
- Examples: carbon emissions—absolute and intensity metrics

#### SECOND GENERATION

- Third-party frameworks that are forward-looking but limited in coverage
- Relies on readily available ESG metrics and harder to measure intangibles and assess strategy
- Examples: Climate VaR, quantitative transition ratings

#### THIRD GENERATION

- Proprietary frameworks that have broad coverage and generate a forward-looking view on issuer climate transition readiness
- Combines quantitative metrics with qualitative judgment and insights gained from active engagement
- Examples: NB Net-Zero Alignment Indicator

**Backward-looking** — **Forward-looking**

We are committed to continuously innovating our analytical tools to meet client needs, and are excited to share the enhancements we have made in 2023. For listed equity and corporate fixed income, where the ESG data landscape is most developed, we deploy an extensive suite of metrics, including our proprietary Net-Zero Alignment Indicator and various climate solutions assessments. This past year, we also introduced a natural capital horizon scanning tool, as well as leveraging AI to support our research efforts. For sovereigns, we introduced new indicators measuring ecosystem fragility and social determinants of a Just Transition. For private equity, we created a matrix to assess GP's climate-related activities and added new due diligence questions for direct investments that we make within certain strategies.

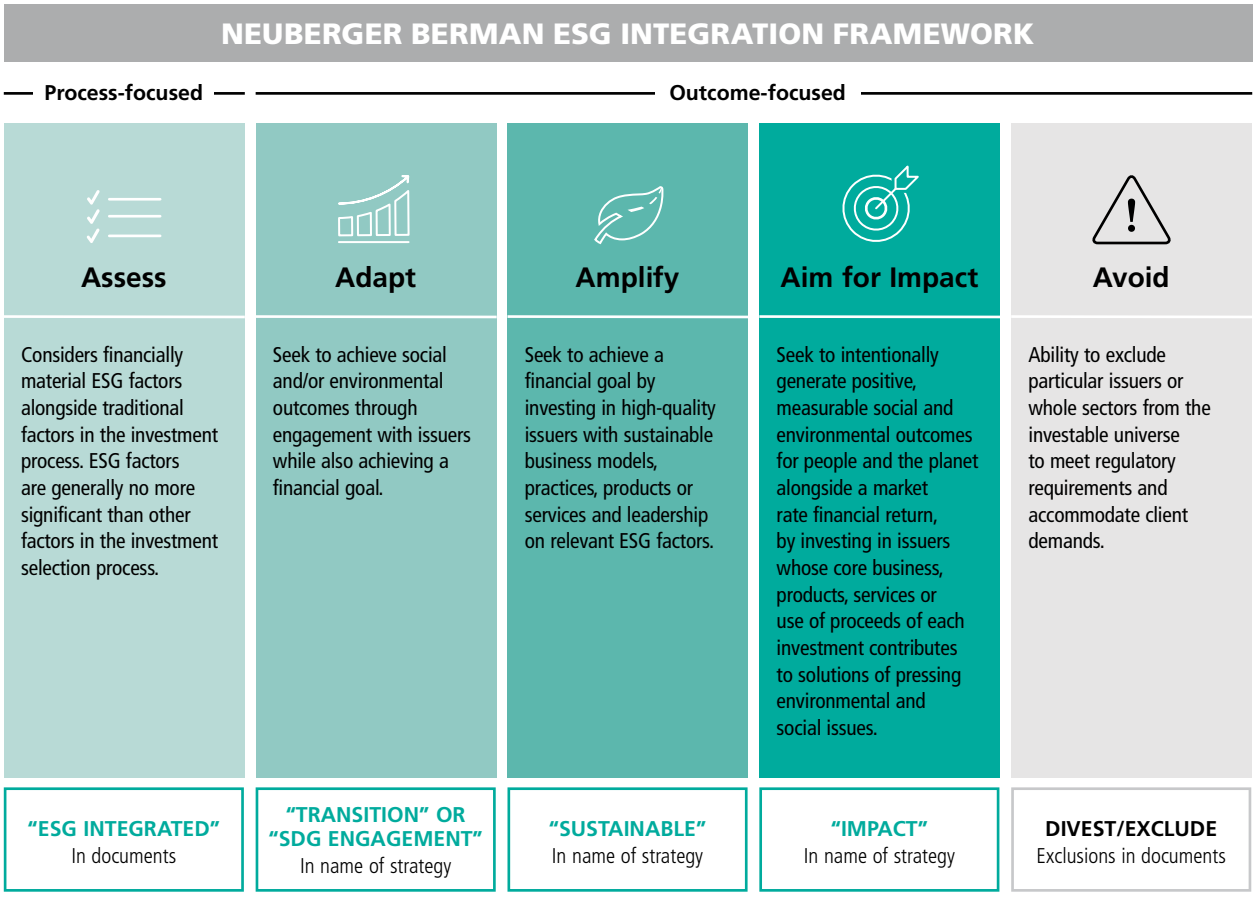
## AVAILABILITY OF MEASUREMENT AND ASSESSMENT TOOLS ACROSS ASSET CLASSES

| Asset Class | Corporate Fixed Income | | | Sovereigns | | Listed Public Equity | | | Private Markets and Alternatives | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sub-Asset Class | Investment Grade Credit | Non-Investment Grade Credit | Emerging Market Debt | Developed Market Sovereigns | Emerging Market Sovereigns | Developed Market Global Equity | Small Cap Equity | Emerging Market Equity | Private Equity | Private Debt | Insurance-Linked Securities |
| Climate Value-at-Risk | ■ | ■ | ■ | | | ■ | ■ | ■ | | | |
| Carbon Emissions | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| Net-Zero Alignment Indicator | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| Natural Capital Assessment | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| Climate Solutions | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | | |
| NB ESG Quotient | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | |
| Controversy Monitoring | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ | ■ | |
| Engagement | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Sovereign Sustainability Assessment | | | | ■ | ■ | | | | | | |
| Catastrophe Modelling | | | | | | | | | | | ■ |

## Applying Proprietary Tools to Relevant Strategies

We distinguish our ESG philosophy by process-focused investing and outcome-focused investing. For process-focused investing strategies, such as our ESG-integrated strategies, the conclusions drawn from each assessment can be used by portfolio managers to more accurately price securities in their investment selection process. In considering financially material ESG factors, they can construct more resilient portfolios that can help protect client value over the long term. For outcome-focused investment strategies, such as impact strategies, where our clients specifically seek to achieve climate or sustainability outcomes alongside financial returns, we continue to be dedicated to launching innovative investment strategies to meet their objectives. In pursuit of this, we have developed processes that measure positive outcomes for climate mitigation and adaptation. In response to increasing demand from clients for transition-related investment products, as well as an increasing policy drive to define the transition, we updated our ESG Integration framework to include the introduction of a fifth category called 'Adapt'. The Adapt category captures transition and engagement-oriented products. It is designed to ensure alignment with the upcoming European Securities and Markets Authority (ESMA) guidelines for funds with ESG names and the labels of the UK Sustainability Disclosure Requirements (SDR), in addition to European Commission Communication on Transition Finance published in July 2023.

Ultimately, as active managers, we rely on the judgment of our investment professionals. There is no one-size-fits-all response to the climate transition–each portfolio manager uses the suite of risk and opportunity assessment tools available to them to make decisions that fit their individual investment and sustainability objectives.




Note: Investment strategies' ESG integration approaches may evolve over time. Strategy names and classifications are subject to change as a result of changing sustainability-related regulatory requirements across different jurisdictions. Please refer to Neuberger Berman's ESG Policy for the full definitions. Not all investment strategies consider ESG factors. The ESG Investing team works together with respective investment teams in order to receive approval from the ESG Product Committee for appropriate taxonomy designation. Avoidance screens can be combined with other ESG integration strategies based on client requests. Transition, Sustainable and Impact named funds may have to meet specific local regulatory requirements, including specific exclusions, investment policies, disclosure and reporting requirements which may go above and beyond what is listed here. Please refer to specific fund and strategy disclosures for further information.

## Listed Public Equity and Corporate Fixed Income

We believe climate risks impact different asset classes through various transmission channels. In equity markets, investors face the risk of losing their entire invested capital. However, they can also participate in upside by investing in companies that are effectively transitioning their business models to net zero or delivering climate solutions. In credit markets, while investors will typically see a return of some principal in the event of a default, credit risk can increase after an acute event such as a hurricane or flood that damages corporate assets, impairs cash flows, and thus a company's ability to service debt.[1]

## Net-Zero Alignment Indicator

To enable a robust bottom-up assessment of a company's transition toward net zero, we created the Neuberger Berman Net-Zero Alignment Indicator, informed by the high-level expectations of the Institutional Investor Group on Climate Change (IIGCC). The Indicator serves two purposes: for our process-focused strategies, it serves as a measure of companies' net-zero readiness and hence ability to mitigate climate risks; and for our outcome-focused strategies, it can be used to engage with issuers and drive positive outcomes at client request. The Indicator is considered at both the portfolio and security level across listed equity and corporate fixed income portfolios. You can read more about the Indicator in our white paper, Net-Zero Alignment: Beyond the Numbers.

### NET-ZERO ALIGNMENT INDICATOR – KEY ADVANTAGES

Proprietary Indicator assesses issuers' net-zero readiness and guides engagement targets to create positive feedback loop

**1 ROBUSTNESS** of Indicator methodology

**Diversified data sources 40+** quantitative data points from multiple providers

**Qualitative judgment** from **125+** equity and credit research analysts

Incorporation of **forward-looking elements,** e.g., decarbonization strategies, planned capital allocation

**2 ACCURACY** in reflecting real-world transition

**Capturing data anomalies** through data redundancy approach and **reducing information lag** with analysts' real-time insights, creating a more accurate picture of issuer transition plans

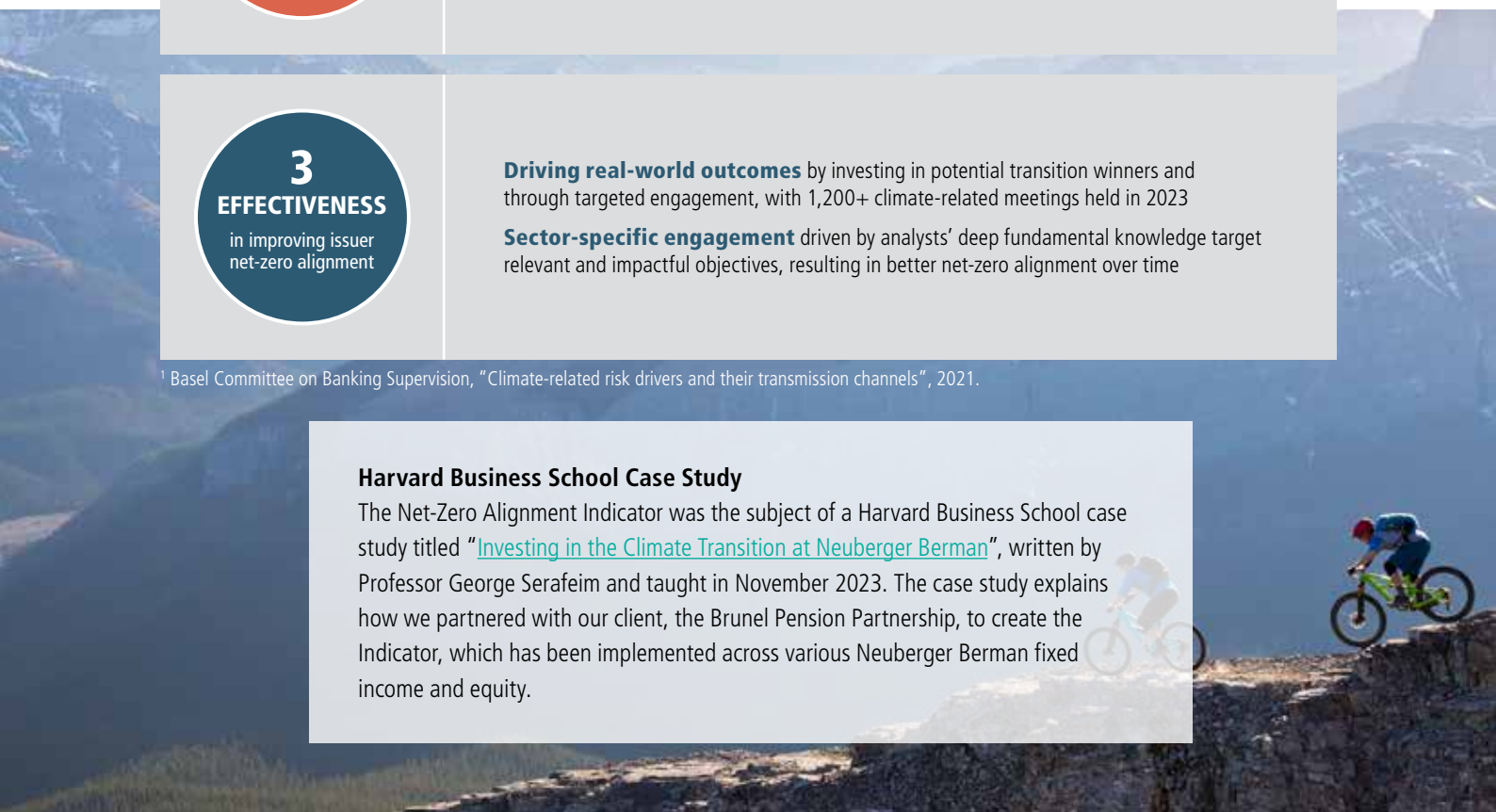
**Net-zero engagement roadmap** informing engagement efforts with results fed back into the Indicator, which helps to address key weaknesses of transition plans

**3 EFFECTIVENESS** in improving issuer net-zero alignment

**Driving real-world outcomes** by investing in potential transition winners and through targeted engagement, with 1,200+ climate-related meetings held in 2023

**Sector-specific engagement** driven by analysts' deep fundamental knowledge target relevant and impactful objectives, resulting in better net-zero alignment over time

[1] Basel Committee on Banking Supervision, "Climate-related risk drivers and their transmission channels", 2021.



**Harvard Business School Case Study**

The Net-Zero Alignment Indicator was the subject of a Harvard Business School case study titled "Investing in the Climate Transition at Neuberger Berman", written by Professor George Serafeim and taught in November 2023. The case study explains how we partnered with our client, the Brunel Pension Partnership, to create the Indicator, which has been implemented across various Neuberger Berman fixed income and equity.

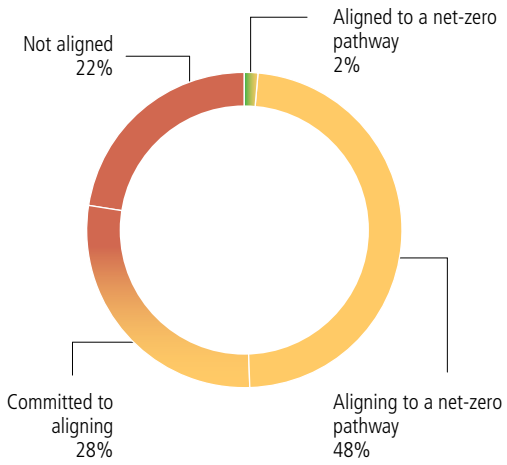
# NET-ZERO ALIGNMENT STATUS FOR LISTED EQUITY AND CORPORATE FIXED INCOME PORTFOLIOS

Using our the Net-Zero Alignment Indicator at the firm level, we have reviewed the aggregated net-zero alignment results for firm-wide holdings across listed public equities and fixed income.

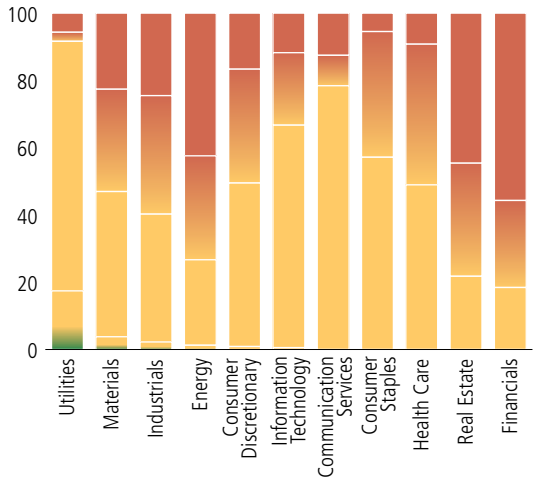
The majority of issuers are Committed to Aligning, Aligning Toward a Net-Zero Pathway or Aligned to a Net-Zero Pathway. For issuers that are currently Not Aligned, the Net-Zero Alignment Indicator aims to help us understand issuers' transition plans and inform future engagement.

## EQUITY

### Alignment Status (Portfolio Weight)

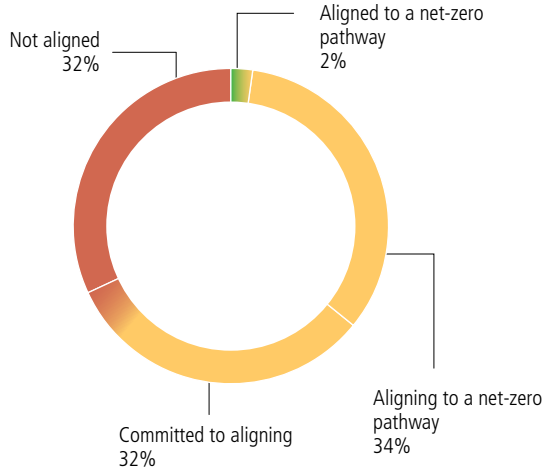



### Alignment Status by Asset Type (Portfolio Weight)

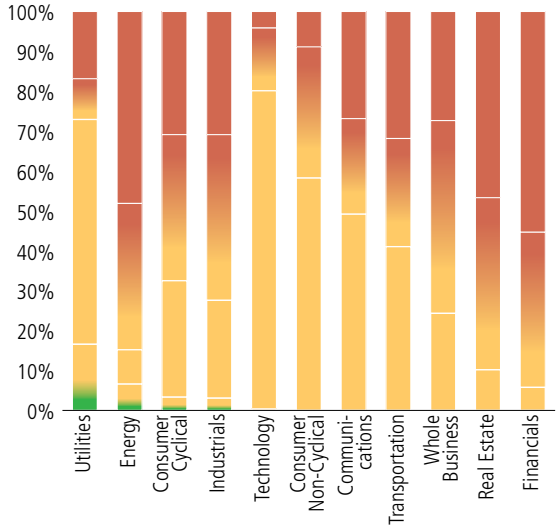



## FIXED INCOME

### Alignment Status (Portfolio Weight)




### Alignment Status by Sector (Portfolio Weight)



# STRATEGY HIGHLIGHT
# CLIMATE TRANSITION MULTI-SECTOR CREDIT STRATEGY

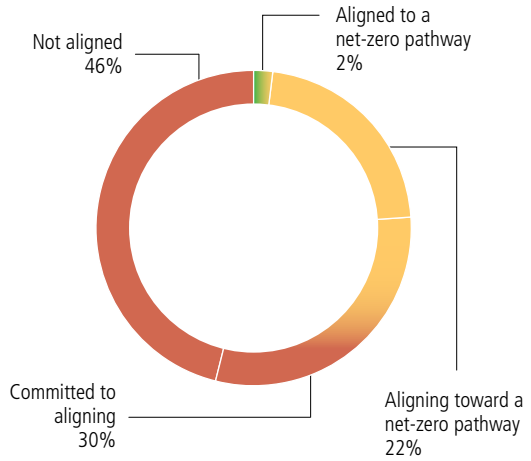
The Neuberger Berman Climate Transition Multi-Sector Credit strategy is a relative value, credit-focused strategy with the flexibility to invest across sectors, rating cohorts and geographies. The strategy seeks to decarbonize in line with the Paris Agreement through a multi-tool approach, which includes measuring progress using a proprietary Net-Zero Alignment Indicator.

- **Portfolio commitment:** aims to align 90% of the portfolio's corporates and quasi-sovereign exposure with 'Aligning to Net Zero' status or higher by 2030, 100% with 'Achieving Net Zero' status by 2050, while reducing scopes 1, 2 and material scope 3 greenhouse emissions by a minimum of 30% relative to a 2019 baseline by 2030 and over time, to net zero by 2050.[2]
- **Minimum standards:** avoids carbon-intensive issuers that are misaligned with the net-zero transition and failing to demonstrate progress through engagement efforts.
- **Company analysis:** uses the Neuberger Berman Net-Zero Alignment Indicator to assess issuers' net-zero readiness, complemented by proprietary tools such as the Neuberger Berman ESG Quotient to assess financially material sector-specific ESG risks and opportunities, and third-party data tools such as Climate Value-at-Risk (CVaR) scenario analysis to measure company physical and transition risks.
- **Engagement:** company- and sector-specific engagements are informed by the Indicator, identifying the key areas of weaknesses in issuers' transition plans that need to be addressed

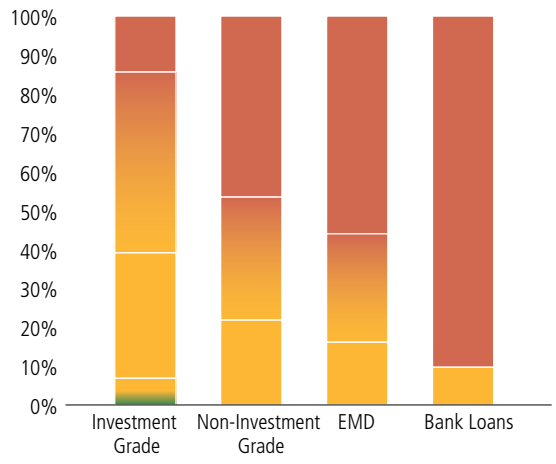
## Portfolio Net-Zero Alignment Status

The majority of issuers in the portfolio are Committed to Aligning, Aligning Toward a Net-Zero Pathway or Aligned to a Net-Zero Pathway. Issuers that are currently Not Aligned are a key focus of our engagement strategy, which aims to help us understand issuers' transition plans and inform future positioning. In addition, we believe it is important to extend our analysis to asset classes that have historically offered poorer disclosure, but still play a vital role in financing the transition such as non-investment grade credit bank loans.

**Alignment Status (Portfolio Weight)**




**Alignment Status by Sub-Asset Class (Portfolio Weight)**




As of December 31, 2023. This material is intended as a broad overview of the portfolio managers' current style, philosophy and process and is subject to change without notice. Portfolio managers' views may differ from those of other portfolio managers as well as the views of Neuberger Berman. Investing entails risks, including possible loss of principal. See Additional Disclosures at the end of this piece, which are an important part of this presentation.

[2] The path to decarbonization is aligned with Paris goals and executed in line with the Institutional Investors Group on Climate Change (IIGCC) Net Zero Investment Framework. 30% reduction relative to 2019 baseline.

# STRATEGY HIGHLIGHT
# CLIMATE TRANSITION GLOBAL EQUITY STRATEGY

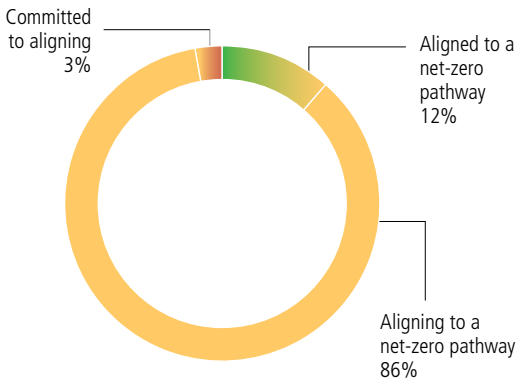
The Neuberger Berman Climate Transition Global Equity strategy seeks to invest in companies globally that are well positioned for a transition to a low-carbon economy, without taking excessive benchmark risk. To achieve future carbon reductions, we leverage our proprietary Net-Zero Alignment Indicator, which provides bottom-up assessment of each company's progress toward achieving net zero.

- **Insightful assessment of net-zero alignment:** uses a forward-looking score that leverages multiple data sources and includes analyst assessments for 79% of the MSCI World Index.[3] Seeks to invest in companies with a credible transition plan, not just low emitters.
- **Active engagement:** 3,100+ annual equity engagements enabled by a 27-person ESG Investing team and 120+ research analysts. 78% of model portfolio holdings have been engaged[4] with.
- **Detailed net-zero reporting:** granular reporting of the portfolio exposure to key components of net-zero alignment.

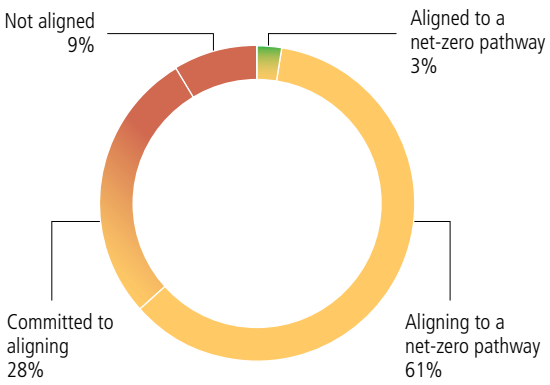
## Model Portfolio Net-Zero Alignment Status

The Climate Transition Global Equity model portfolio's net-zero alignment status is nearly 30 percentile higher than the MSCI World Index as measured by the Net-Zero Alignment Indicator. It also has around a 65% lower current carbon footprint (scope 1 and 2 combined) than the MSCI World Index.[5]

**Alignment Status (NB Net-Zero Aligned Model Portfolio Weight)**




**Alignment Status (MSCI World Index Weight)**




[3] As of December 31, 2023. Source: Neuberger Berman, MSCI ESG Research LLC and S&P Trucost.

[4] Engagement data used is for calendar year 2023. Portfolio holdings as of December 31, 2023. Model portfolios are provided for illustrative and discussion purposes only. They do not constitute research, investment advice or investment recommendation. Because of the inherent limitations of all models, potential investors should not rely exclusively on the model when making an investment decision. The model cannot account for the impact that economic, market and other factors may have on the implementation and ongoing management of an actual investment portfolio. Unlike actual portfolio outcomes, the model outcomes do not reflect actual trading, liquidity constraints, fees, expenses, taxes and other factors that could impact future returns.

[5] The MSCI World is a free float-adjusted market capitalization weighted index that is designed to measure the large- and mid-cap equity market performance of developed markets. With 1,546 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country. The MSCI World Index consists of the following 23 developed market country indices: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States.

## Climate Value-at-Risk

We have implemented top-down scenario analysis for modelling transition and physical risks at the company level in line with the recommendations of the TCFD. This scenario analysis currently focuses on listed public equity and corporate-issuer fixed income holdings in the firm's U.S. mutual funds, international UCITS range and separately managed accounts. The resulting CVaR considers transition risks, from both policy and technology changes related to the transition to net-zero emissions, and physical risks, including acute weather events and chronic changes in climate patterns. Security-level estimates can be aggregated at the portfolio level, which helps portfolio managers understand CVaR for their portfolios.

CVaR provides a framework for identifying climate risk over the long term, and for assisting in understanding potential issuer exposure to physical and transition risks. It provides the flexibility to carry out climate-scenario analysis along various global-warming pathways, i.e. 1.5°C warming, 2.0°C warming, or more. By translating climate impacts into an economic value in present dollars, CVaR enables us to integrate this into security-level analysis of both equity and corporate fixed income.

However, because the CVaR relies on a number of projections and assumptions about future costs and company valuations under various scenarios, it has significant limitations in sectors where estimates are uncertain and imprecise over longer-term horizons. The physical risk output, for example, is highly relevant to industrial companies whose primary exposure comes through facilities location data, but doesn't account for insurance companies who are primarily exposed through their portfolios. The transition risk data may also underestimate the ability of companies in certain sectors, like airlines or cement, to pass through costs related to technology and policy risk. In general, all scenario analysis is dependent on top-down assumptions that need to be contextualized across sectors and individual issuers. As such, we believe that scenario analysis should serve as a starting point for further bottom-up analysis that more precisely identifies climate-related risks and financial materiality through issuer engagement.

Different securities will have varying levels of exposure to transitional and physical risk. From a transitional risk perspective this could be due to potential regulatory costs or technology opportunities related to low-carbon technology solutions for companies that need to comply with GHG reduction requirements. From a physical risk perspective this could be due to the nature of their businesses, real asset holdings and locations of key assets. We can use this as a pre- and post-trade tool to enable us to screen portfolios and identify areas of elevated climate risk at the security level. However, CVaR is just one tool we use amongst many to measure climate risk. Overdependence on such models could lead to unintended consequences for capital allocation if the scenarios inadvertently understate both the economic damage of climate change and possible positive opportunities.

At the firm level, we review the aggregated CVaR results for firm-wide holdings across listed public equities and fixed income. This year, we moved to using the REMIND scenarios in line with industry recommendations, and in order to better understand the impact of orderly vs. disorderly scenarios. At year-end 2023, the coverage for this scenario analysis was $180 billion of assets under management (AUM). Our standard approach centers around a 2°C orderly scenario. However, we also have the capability to estimate climate impacts across 1.5°C orderly, 1.5°C disorderly, 2°C disorderly, and 3°C scenarios. The key differences in assumptions across scenarios are indicated in the table below.

**REMIND NETWORK FOR GREENING THE FINANCIAL SYSTEM (NGFS) CLIMATE SCENARIO VARIABLES**

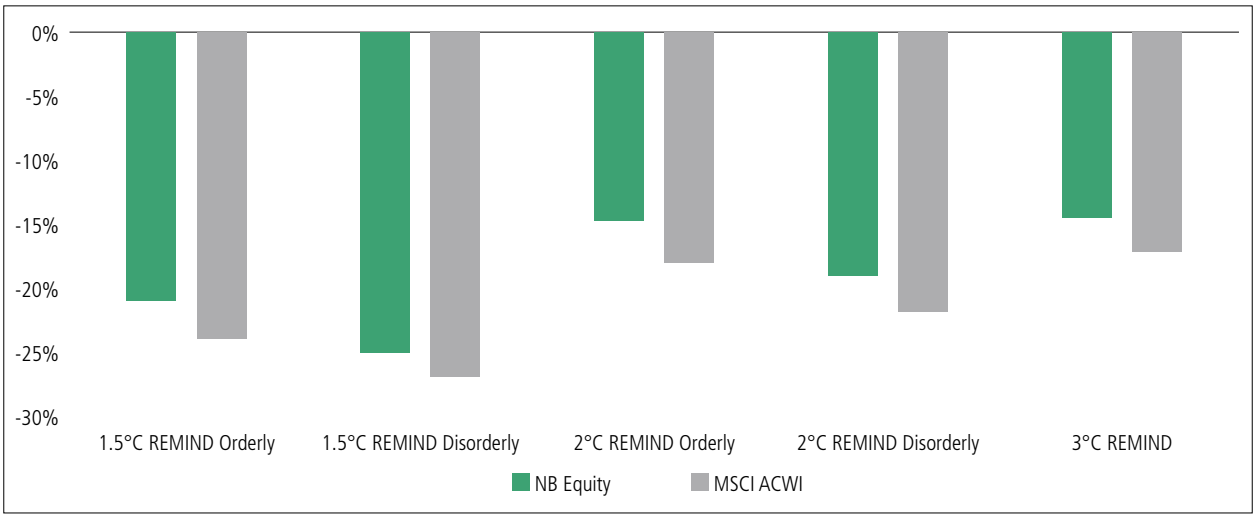
| Assumption | 1.5°C REMIND Orderly | 1.5°C REMIND Disorderly | 2°C REMIND Orderly | 2°C REMIND Disorderly | 3°C REMIND |
|---|---|---|---|---|---|
| **Population** | | | | | |
| World population peak | 2070 | 2070 | 2070 | 2070 | 2070 |
| World population in 2100 (million) | 9,019 | 9,019 | 9,019 | 9,019 | 9,019 |
| **Electricity generation by fuel source** | | | | | |
| 2030 fuel mix, renewables (%) | 72% | 71% | 50% | 30% | 30% |
| 2050 fuel mix, renewables (%) | 94% | 93% | 73% | 80% | 50% |
| **Carbon sequestration ($MtCO_2$/yr)** | | | | | |
| Uptake (surpasses 5,000 Mt/yr) | 2037 | 2045 | 2050 | 2050 | 2090 |
| Carbon sequestration peak (Mt/yr) | 8,779 | 7,645 | 7,498 | 5,926 | 5,342 |
| **Low carbon fuel source in transport** | | | | | |
| 2050 low carbon fuel sources (%) | 26% | 46% | 18% | 26% | 14% |
| **GHG emissions** | | | | | |
| Peak year | 2020 | 2020 | 2020 | 2030 | 2025 |
| 90% reduction achieved by | 2045 | 2045 | 2055 | 2049 | N/A |
| Zero emissions achieved by | 2055 | 2055 | 2100 | 2060 | N/A |
| **Outcomes** | | | | | |
| Global warming temperature 2100 | 1.66°C | 1.63°C | 1.90°C | 1.84°C | 2.63°C |
| Global carbon price 2100 ($/$tCO_2$) | $600 | $900 | $400 | $2,000 | $100 |

Source: MSCI ESG Research.

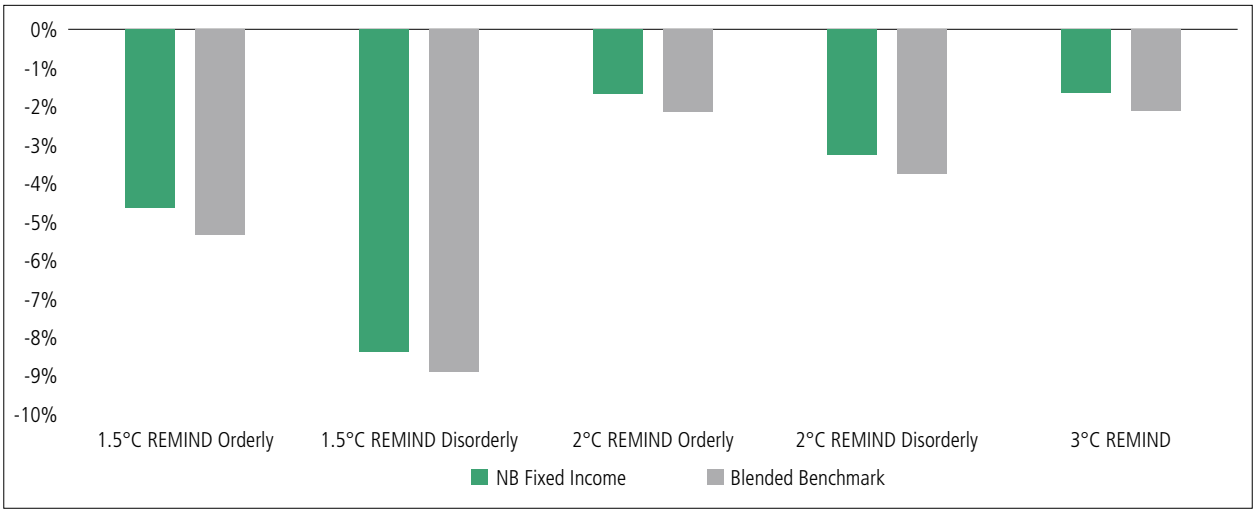
## Climate VaR Analysis Combines Physical and Transition Impacts Under Four Representative Temperature Pathways for Equity and Fixed Income Securities vs. Respective Benchmarks

Across all scenarios, our firm-wide client holdings are more resilient to climate risks than their respective benchmarks.

### EQUITY EXPOSURE TO AGGREGATED CLIMATE RISK



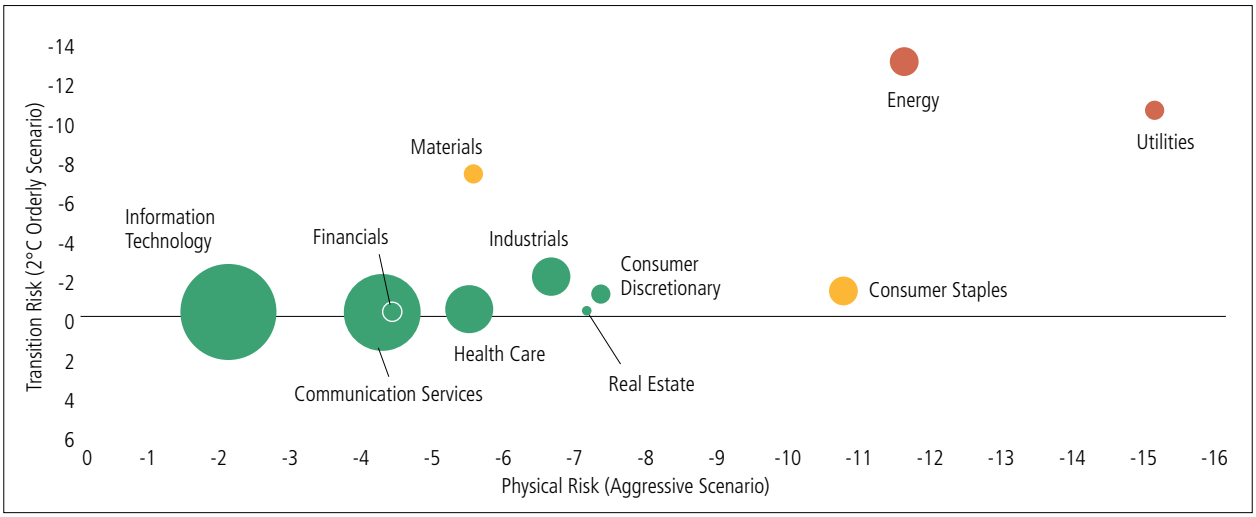

### FIXED INCOME EXPOSURE TO AGGREGATED CLIMATE RISK




Note: Blended Benchmark: 65% BBG Global Aggregate Corporate Index/25%ICE BofA Global High Yield Index (HW00)/10%JP Morgan Corporate Emerging Markets Bond Index - Regular Diversified.

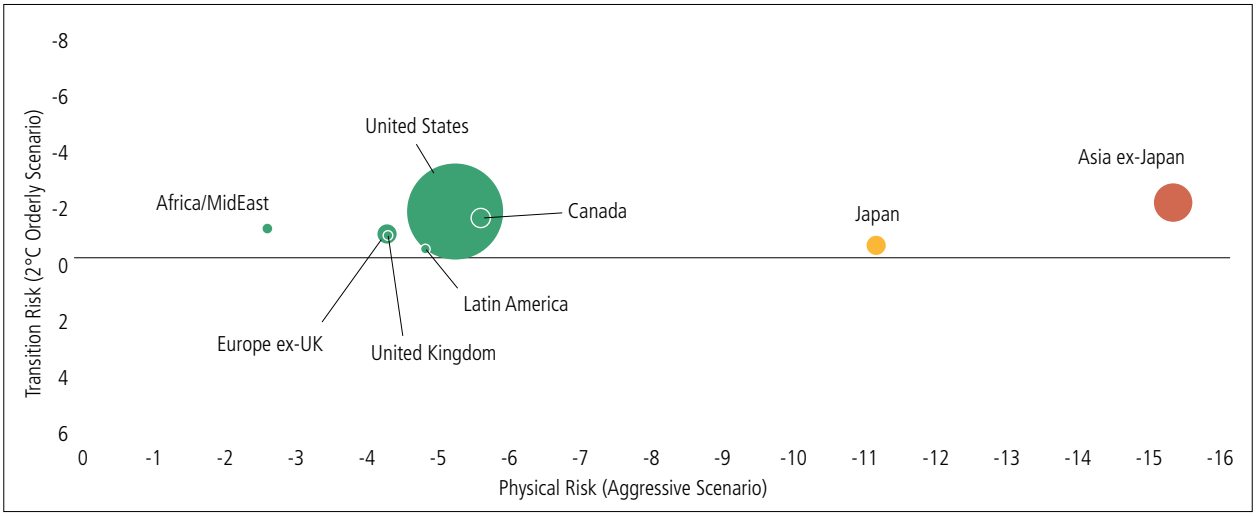
In addition, the holdings-level CVaR data allows us to identify key sectors and regions within the portfolio with the highest financial exposure to climate risks overall, as well as specific types of physical risks. While some sector/region combinations within the portfolio face significant climate risk, we have a lower level of exposure to those sectors relative to overall investment in the region. In addition, our holdings in certain regions appear to have lower climate risk than the expected risk for those regions. In terms of physical risk, the assets we manage face lower physical risk than MSCI ACWI in all categories except for river low flow and fluvial flooding, and we have fewer positive effects from extreme cold.

## LOWER LEVEL OF FINANCIAL EXPOSURE ACROSS THE NEUBERGER BERMAN PORTFOLIO TO THE HIGHEST CLIMATE RISK SECTORS



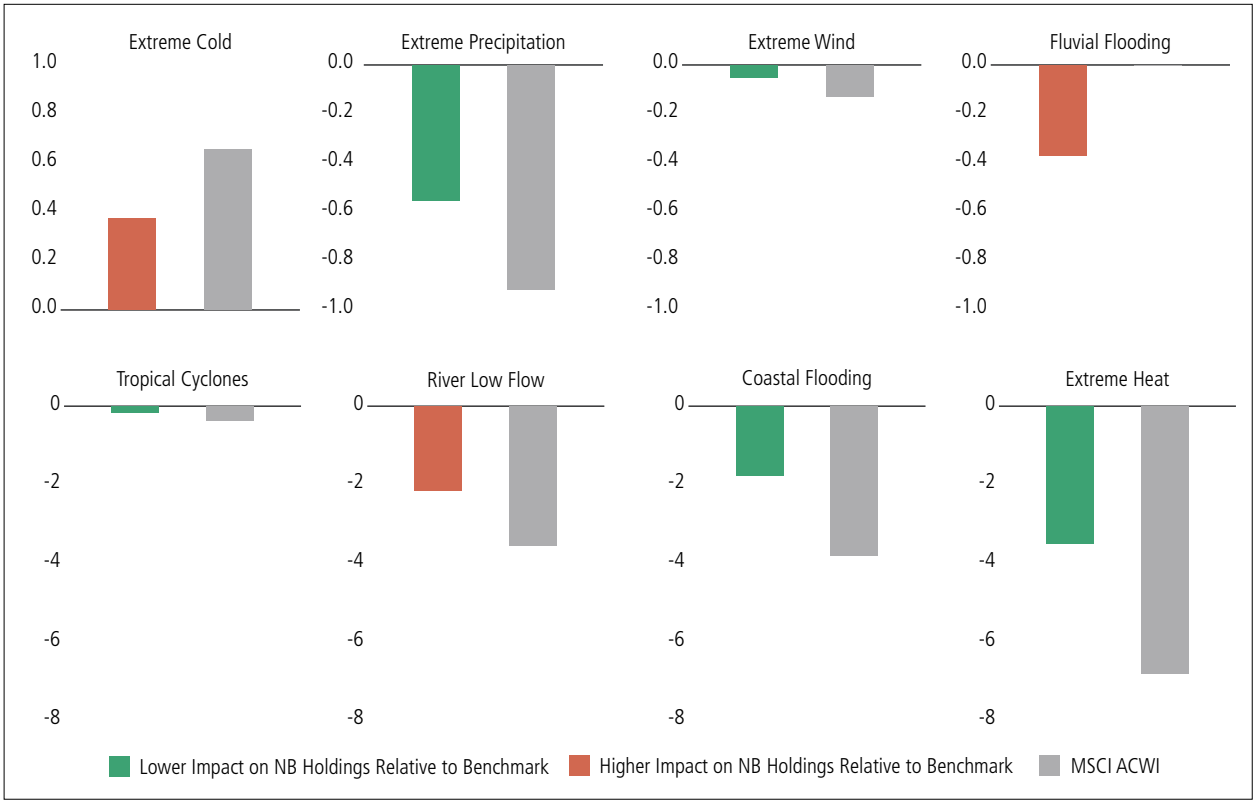

Source: MSCI. Climate impact by sector. Climate risk is shown from best overall (green) to worst overall (red). The circles represent holdings size.

## LOWER LEVEL OF FINANCIAL EXPOSURE ACROSS THE NEUBERGER BERMAN PORTFOLIO TO THE HIGHEST CLIMATE RISK REGIONS




Source: MSCI. Climate impact by sector. Climate risk is shown from best overall (green) to worst overall (red). The circles represent holdings size.

## LOWER IMPACT FROM MOST PHYSICAL RISKS ACROSS THE NEUBERGER BERMAN PORTFOLIO COMPARED TO MSCI ACWI




### Carbon Emissions

We understand that carbon-intensive securities, companies and portfolios will be more materially exposed to transition risks. Therefore, our portfolio managers have access to tools to track (i) carbon metrics at a point in time, and (ii) carbon metrics progress year-over-year. While the two main metrics portfolio managers track are carbon footprint and carbon intensity, they also have access to absolute emissions and apportioned emissions. Scope 1, Scope 2 and Scope 3 carbon metrics are available for listed public equities and fixed income issuers, subject to data availability across certain sub-asset classes. For sovereign holdings, in line with the IIGCC's formal endorsement of the PCAF standards, we track financed emissions on a territorial, production and emissions basis, as well as weighted average carbon intensity on a territorial basis.

### Neuberger Berman ESG Quotient

The Neuberger Berman ESG Quotient, our proprietary ESG ratings system, is built around the concept of measuring financially material sector-specific ESG risks and opportunities. Thus, it considers energy efficiency, carbon emissions intensity, carbon footprint and low carbon opportunities where it is material at the subsector level. Where relevant, it also considers biodiversity impacts, resource intensity and waste management, and adherence to standards and regulations on impact to communities and the environment. The Neuberger Berman ESG Quotient covers 4,000+ equity ratings and 2,700+ credit ratings.

### Climate Solutions

For clients focused on climate solutions, we can report on and set sustainability objectives around alignment with the EU Taxonomy (which identifies environmentally sustainable economic activities), and impact investment exposure as well as alignment with certain UN Sustainable Development Goals (SDGs). For those invested in our specialized impact strategies, we calculate estimated avoided emissions for portfolio companies where we deem it relevant to the investment thesis. For fixed income clients looking for climate solutions exposure, we can set labeled bond targets, where options include green bonds, sustainability-linked bonds or SDG-linked bonds with green themes. For equity clients interested in decarbonization innovation as a theme, we also offer a Climate Innovation strategy. For this strategy, the investment team validates that >50% of incremental sales/EBITDA growth or capex is on theme on a bottoms-up, stock-specific basis. The data must be in recurring, publicly available filings (e.g., earnings transcripts, 10k, annual report) and it can be further informed by direct engagement with management. The investment team undertakes this process upon each new initiation and also updates it periodically to ensure all holdings remain on track.

# STRATEGY HIGHLIGHT
# CLIMATE INNOVATION

The Neuberger Berman Climate Innovation strategy is a thematic, forward-looking, global equity portfolio investing in key enablers and beneficiaries of climate innovation related technologies and/or activities. The premise of the strategy is that targeting GHG emissions reductions on a Scope 3 basis offers a significantly more impactful decarbonization opportunity and expanded investment universe, given that Scope 3 emissions typically account for three quarters of a company's total GHG emissions, on average.[6]

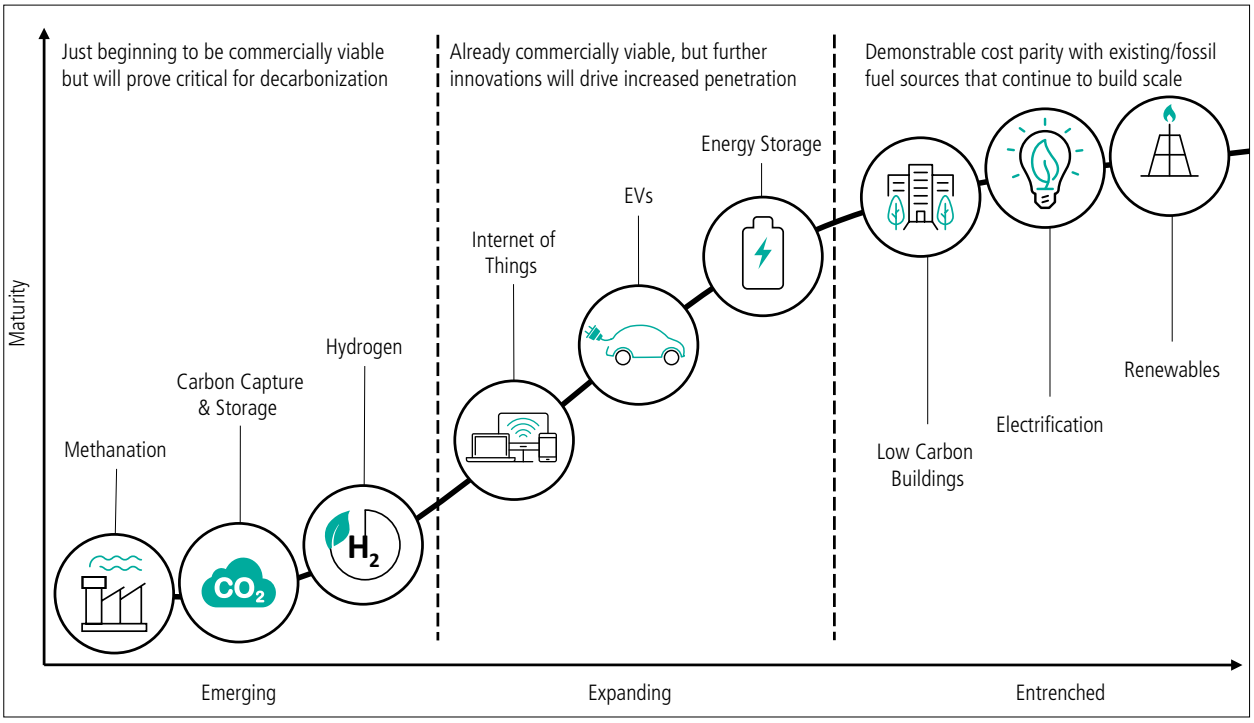
We believe that decarbonization innovation as a theme offers durable growth in an expanding investment universe as emissions reduction solutions become more economically viable. While policy impetus can further augment or accelerate uptake of decarbonization technologies, the investment team firmly believes in owning holdings where technological leadership can drive upward earnings revisions without policy intervention.

- **Concentrated global portfolio:** 30 – 60 companies selected on the basis of thematic purity, technological innovation, commercial viability and ESG characteristics
- **All-cap thematic:** differentiated portfolio diversified across countries and economic sectors
- **Secular growth and durability:** focused on key enablers and beneficiaries of climate innovation and structural change
- **Rigorous bottom-up driven process:** disciplined fundamental research investment approach incorporating the consideration of material ESG factors

We believe the backdrop for investing in climate innovation is at a critical inflection point, supported by the convergence of technology and policies. With higher capital investment required to spur structural growth opportunities, we think that climate innovation equities can capture substantial investment while offering cash generation and liquidity.

## Categories of Technologies and Solutions

Investment opportunities are focused on three categories of technologies and solutions: emerging, expanding and entrenched.




Source: Neuberger Berman. This material is intended as a broad overview of the portfolio managers' current style, philosophy and process. Portfolio information (characteristics, holdings, weightings, etc.) is subject to change without notice.

[6] https://www.wri.org/update/trends-show-companies-are-ready-scope-3-reporting-us-climate-disclosure-rule.

## Natural Capital Assessment

Alongside our tools to assess climate-related risks, we have also created top-down and bottom-up tools to assess exposure to nature-related risks. These tools seek to avoid the false precision that out-of-the-box biodiversity footprints claim to provide. Our top-down 'Horizon Scanning' tool assists in assessing biodiversity exposure by industry, theme or commodity, isolating where portfolios are financially exposed to risks associated with dependencies and impacts on nature.

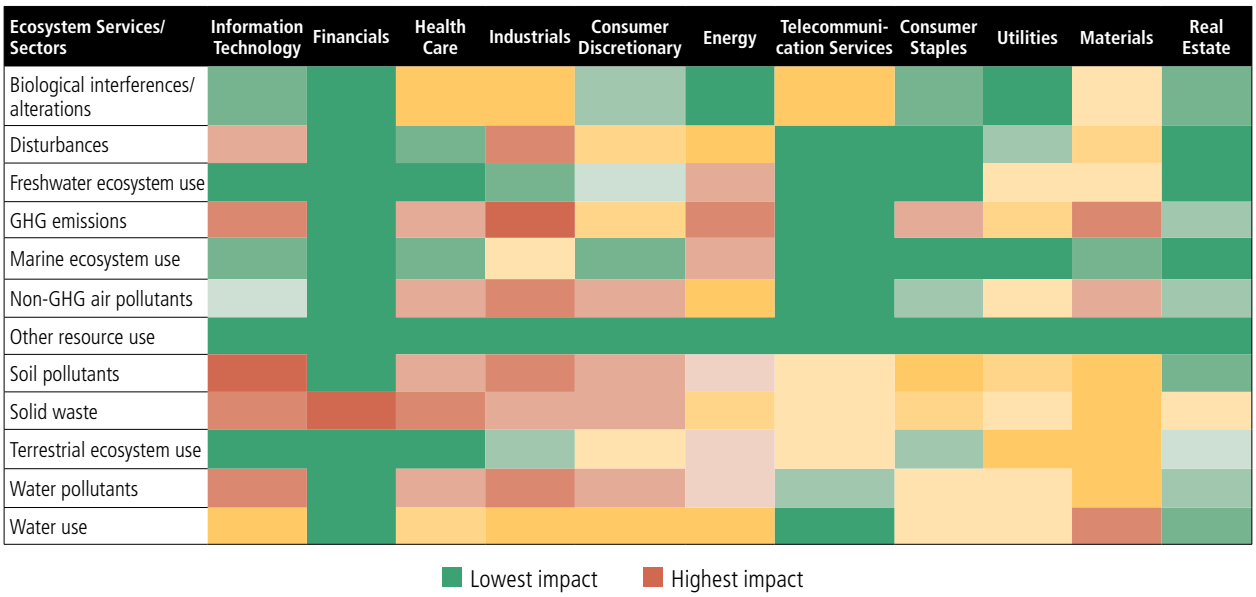
Using ENCORE, we have developed a natural capital heatmap, identifying sectors with the highest relative exposure to processes that are dependent on and impact ecosystem services. First, we create a coefficient at the sub-industry and ecosystem service level, which average all the processes within the sub-industry and their level of dependency and impact on nature. Second, we multiply the coefficient by Neuberger Berman's client AUM invested in the sub-industry to get relative exposure. Finally, we sum up the exposure at the sector level, with results presented below.

**NATURAL CAPITAL HEATMAP SHOWING RELATIVE EXPOSURE TO DEPENDENCIES ACROSS THE NEUBERGER BERMAN PORTFOLIO**

We define biodiversity dependencies as the reliance of various species, ecosystems and human activities on biodiversity. This can include:

- **Ecological dependencies:** relationships between species, such as pollination, predation and symbiosis, which are crucial for ecosystem health and resilience.
- **Economic dependencies:** industries such as agriculture, fisheries and pharmaceuticals that depend on biodiversity for resources, raw materials and ecosystem services.
- **Social dependencies:** the cultural, recreational and health benefits that humans derive from biodiversity, including traditional knowledge and practices.

## NATURAL CAPITAL HEATMAP SHOWING RELATIVE EXPOSURE TO IMPACTS ACROSS THE NEUBERGER BERMAN PORTFOLIO




We define biodiversity impacts as the effects that actions, policies or environmental changes have on the variety of life within a given ecosystem or the planet as a whole. This can include:

- **Positive impacts:** conservation efforts, habitat restoration and sustainable practices that enhance or preserve biodiversity.
- **Negative impacts:** pollution, deforestation, climate change and other human activities that lead to habitat loss, species extinction and ecosystem degradation.

Once horizon scanning has identified areas of interest, we use a bottom-up tool to isolate how a company's production processes interact with nature through dependencies and impacts. We begin by analyzing the nature-related dependencies and impact of a company's own operations before seeking to understand up- and downstream supply chains to delineate between direct operations and supply chains.

While location of operations is a key input when calculating nature risk, quality company operational location data is not yet widely available. However, understanding geographical dispersion of key commodity inputs can strengthen understanding of likely hotspots. Lastly, understanding companies' involvement in controversies and their efforts to mitigate biodiversity risk through policies and practices is also essential. We utilize data points from recognized and knowledgeable NGOs and institutions, e.g., CDP and Forest 500, alongside company-reported and third-party biodiversity-related data points. Moreover, the Neuberger Berman ESG Quotient measures company performance on biodiversity, land use and water management in 45 sectors where these issues are deemed material.

Biodiversity is very challenging to measure, and while there are exciting advances in the use of satellite data to measure forest cover or bioacoustics measurement to track species abundance per square hectare, we believe engagement is vital to validate biodiversity risks and achieve the best outcomes.

## ARTIFICIAL INTELLIGENCE (AI) INTEGRATION

In late 2023, our ESG Investing, ESG Data & Reporting, Equity Research and select investment teams partnered to start exploring use cases for AI in for sustainable investing. Use cases included comparing voting guidelines across proxy advisors, generating sophisticated summaries of sustainability reports, completing our labelled bond checklist, generating initial criteria for new sustainable issuers, creating engagement questions and more. The case study below illustrates the steps our Emerging Market Debt team followed using NB-GPT Chatbot, our in-house generative AI model, to assess labelled bonds.

## CASE STUDY
## LEVERAGING GENERATIVE AI TO IMPROVE THE EFFICIENCY OF ASSESSING LABELLED BONDS

### Background

Recognizing significant advancements in Generative AI ("GenAI"), we decided to launch our own NB ChatGPT program in the summer of 2023. Its interface is similar to the public OpenAI ChatGPT workspace with greater security controls. It is based on a Large Language Model (LLM) designed to generate human-like text responses, and documents can be uploaded and incorporated into queries. Our pilot phase included 300 users across the firm and has since been rolled out firm-wide. Given the current nascent state of ESG data, and the myriad potential use cases, ESG investing was identified as a priority area for testing.

### Process

Three years ago we created a proprietary labelled bonds checklist that can be utilized for green, social, blue, sustainable, SDG, transition and/or sustainability-linked bonds. The checklist scrutinises labelled bonds through six key pillars:

**Strategy –** We look for evidence that the Use of Proceeds are linked directly to the company's sustainability strategy. For example, with climate, targets, structures, penalties and decisions to issue net-zero debt financing should all clearly flow from the issuer's stated net-zero transition plan.

**Relevance –** We scrutinize the projects proposed by the company for Use of Proceeds or targets/KPIs and ensure these are relevant to the company and its sector. Unfortunately, we have seen examples of issuance where targets and KPIs selected have little relevance to the company.

**Ambition –** ICMA recommends that "the variation of the bond financial and/or structural characteristics should be commensurate and meaningful relative to the issuer's original bond financial characteristics". For investors, step-ups need to balance materiality and credit risk: large enough to incentivise the issuer to meet its targets and hedge against additional risks created by failure to do so, and not so material as to put undue pressure on the cashflow of the business.

**Additionality –** Ideally capital should be allocated to new projects rather than refinancing existing ones. Issuers will also want to consider how their approach to debt financing can augment individual issuances. For instance, green bonds and sustainability-linked bonds (SLBs) may also be issued on a complementary basis, strengthening alignment across the debt stack. This approach demonstrates an issuer's commitment to converting activities into emission reductions across its emissions profile.

**Transparency –** We look for Second Party Opinion (SPO) recommendations, annual reporting on commitments, KPIs and other measurable targets over time. Post-issuance reporting, including impact reporting, should be within a year of issuance.

**Accountability –** We focus on transparency and accountability, determining the processes and management systems that govern the proceeds, mitigating risks and the approach to reporting. We are looking for accountability that avoids lengthy look-back periods, and with sustainability-linked bonds (SLBs) committing to target dates which are realised after the first call option.

### Outcomes

As an example, we fed this checklist alongside the green bond documentation for Masdar into NB ChatGPT. We asked NB ChatGPT to answer the full checklist and provide sources. NB ChatGPT generated a table with the answers to each of the 14 questions on our green bond checklist, greatly reducing the time it would have taken our credit analyst to fill in the checklist. Of course, the output still needs to be validated by the credit analyst, but the technology can free up time the analyst can use for deeper analysis or direct engagement with the company. Going forward, we plan to establish an AI in Sustainable Investing Taskforce to help document and implement further applications.

## Securitized Credit

Securitized investments and instruments vary substantially in collateral type and quality. However, they are uniformly real asset-heavy. As such, our approach has focused on understanding and evaluating the exposure of the underlying collateral pools to relevant climate hazards, physical risks, and implied social vulnerabilities and preparedness. Though tailored to the subsector, some of factors we consider include exogenous catastrophe risk and community preparedness, trends in energy consumption, fuel cost burden and emissions, and social vulnerability indicators that may impact collateral strength and bond repayment.

## Sovereigns

Climate risks are also as important to assess for sovereign issuers as they are for corporate issuers. For sovereigns, the effects of physical risk are particularly important and primarily transmitted through lower tax revenues—as a result of impaired corporates or households—and increased spending to fund adaptation measures.[7] We believe that an effective approach to assessing sovereign sustainability needs to be forward-looking, surmount the challenges of data limitations and be comparable to corporate sustainability measures. We measure climate risks and opportunities for sovereigns by leveraging carbon metrics, the Neuberger Berman Sovereign ESG Quotient, Neuberger Berman Sovereign Sustainability Assessment and Neuberger Berman Net-Zero Alignment Indicator.

### Climate Risk Assessment and Net-Zero Alignment

The Neuberger Berman Sovereign ESG Quotient, which applies to all emerging and developed market sovereigns, includes eight environmental indicators that make up a combined 20% weight of the quotient: energy efficiency, climate adaptation, carbon emissions per GDP, carbon emissions trend-adjusted for the economic cycle, air and household pollution, unsafe sanitation and tree cover loss. We also assess the level and trend of territorial net GHG emissions, adjusted for GDP, to understand climate-mitigation efforts by the sovereign. Finally, we use multiple data inputs to measure a sovereign's alignment with net zero.

The Sustainable Emerging Market Debt Strategies excludes sovereign issuers who are in the top 25th percentile in territorial greenhouse gas emissions per GDP globally, absent improvement over the past three years. For these strategies, we also deploy a Neuberger Berman Sovereign Sustainability Assessment, which measures sovereigns' income-adjusted performance in climate change adaptation and mitigation. Leveraging the Notre Dame Global Adaptation Initiative Country Index, we measure sovereigns' projected vulnerability to climate risks across six categories: food, water, health, ecosystem services, human habitat and infrastructure. Moreover, we measure readiness across economic, governance and social categories. Through this analysis, our portfolio managers can gain a better understanding of the risks to sovereigns that will be exacerbated by climate change, such as overcrowding, food insecurity, inadequate infrastructure and civil conflict.

### Natural Capital Assessment

In 2023, we also added the Ecosystem Vitality policy indicator from the Environmental Performance Index to our Neuberger Berman Sovereign Sustainability Assessment to see how well countries do in protecting their biodiversity and habitat, tackling agricultural and water emissions, and providing ecosystem services.

[7] Basel Committee on Banking Supervision, "Climate-related risk drivers and their transmission channels", 2021.

# STRATEGY HIGHLIGHT
# SUSTAINABLE EMERGING MARKETS DEBT HARD CURRENCY STRATEGY

The Neuberger Berman Sustainable Emerging Markets Debt Hard Currency strategy seeks to outperform the JPMorgan JPM EMBI Global Diversified Index by investing primarily in hard currency emerging market debts issued by countries that comply with the strategy's sustainable investment criteria. The strategy deploys a proprietary sovereign sustainability screen that goes beyond sovereign ESG scores and tilts the portfolio to best-in-class countries based on:

- **Climate-change preparedness and mitigation:** advancement in climate change adaptation and mitigation based on income-adjusted Notre Dame Global Adaptation Initiative Index scores, Environmental Performance Index Ecosystem Vitality scores, net GHG emissions and the NB Net-Zero Alignment Indicator.
- **Social progress on public health, education and tackling income inequality:** advancement in life expectancy, access to vaccinations and medical services, education, and tackling income inequality, based on the UNDP Human Development Index and WHO Global Health Observatory database.
- **"Do No Harm" and minimum thresholds:** application of sustainability and sovereign-specific exclusions.
- **Proprietary ESG analysis and engagement:** integration of material ESG factors in bottom-up credit assessment using of the NB ESG Quotient, supported by proactive ongoing engagement with issuers.

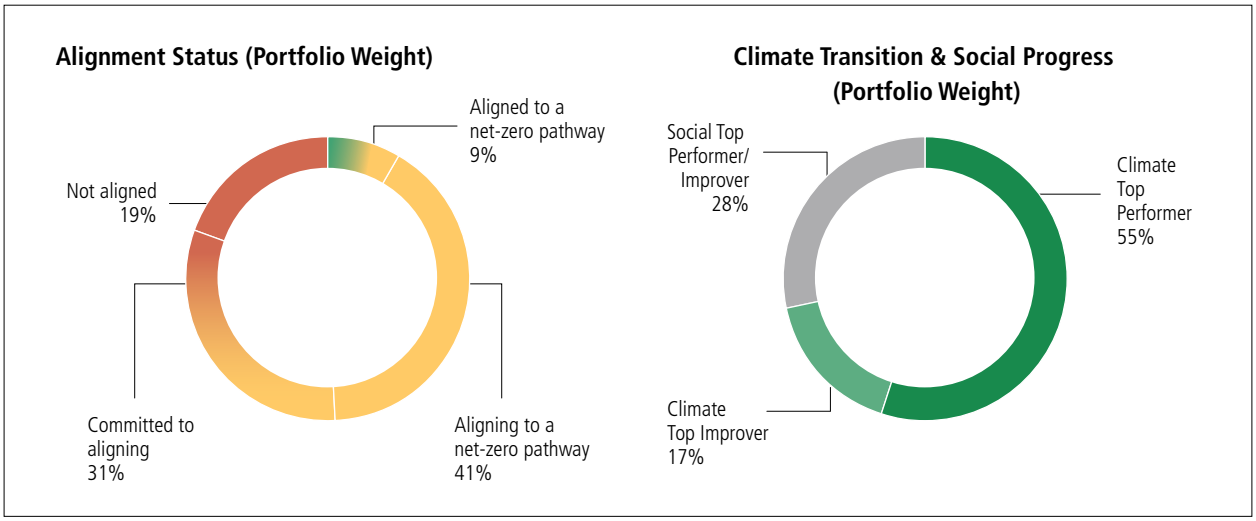
## Portfolio Net-Zero Alignment and Sovereign Sustainability Assessment

The strategy measures countries' progress on climate mitigation and adaptation and, thus, preparedness for transition and physical risks. Portfolio exposure is tilted toward:

I. Countries in the top 25th percentile in latest year scores

II. Countries in the second 25th percentile showing improvement over latest three years

III. Countries further along the net-zero alignment status spectrum




Source: Neuberger Berman analysis, sovereign bond exposures only, as of December 31, 2023. For illustrative purposes only.

## Private Markets and Alternatives

NB Private Markets generally focuses on ESG factors that we believe are financially material on an industry and asset class basis. Given the breadth of our private markets platform, the ESG-related issues that we believe to be important may vary by investment. However, our NB Materiality Matrix includes environmental as a dedicated ESG factor category for consideration, along with supply chain, social, workforce, and leadership & governance.

A key benefit of private markets is that they afford investors the opportunity to benefit from climate upside by investing in earlier-stage climate solutions. The private equity industry also tends to invest in lower-carbon industries (e.g., technology and health care), which helps mitigate transition risk. However, the ability to mitigate transition risk differs between general partners (GPs), who tend to take controlling stakes in their targets and thus have direct influence over climate-related decisions, and limited partners (LPs), who exert their preferences mainly through capital commitments decisions and engagements with GPs.

In 2023, NB Private Equity[8] developed new tools focused on assessing financially material climate risks and opportunities that can be used in addition to our standard due diligence processes, where directed by clients for select mandates. These tools include a framework for assessing a GP's climate-related initiatives, which can be applied to primary fund commitments for select mandates. The framework allows us to benchmark GPs by their climate-related commitments and may serve as a starting point for engagement with select GPs on climate-related topics, as applicable. In addition, NB Private Equity developed additional climate-focused due diligence questions for direct investments that help identify and analyze financially material climate-related risks and opportunities applicable to the business, which can similarly be applied to select investments when directed by clients. We also may apply a materiality-based assessment to conduct targeted climate risk analysis for certain direct investments.

NB Private Equity continues to work toward more comprehensive climate analysis over time by requesting carbon emissions metrics from private equity primaries, co-investments and select secondaries investments, and engaging with GPs on climate-related topics.

Engagement remains a key means to encourage greater awareness, disclosure and action on climate risk by private equity managers. In addition to broader ESG integration, climate has become a topic for some of our GP engagements. On behalf of certain clients, NB Private Equity conducts targeted engagements with GPs on climate topics, including reporting GHG emissions, setting net-zero and emissions reduction goals, engaging with portfolio companies on climate and climate risk analysis, among others.

Within the alternatives space, there are some investment strategies where the assessment of climate risks is intrinsic to the class, for example, insurance-linked securities (ILS).

[8] "NB Private Equity" consists of Private Equity Investment Portfolios and Co-investment Platform and Private Equity Secondary Platform.

## STRATEGY HIGHLIGHT
## INSURANCE-LINKED STRATEGIES (ILS)

As an overarching theme, the ILS asset class involves the transfer of climate-related catastrophe risk into the broader capital markets. Insurance-linked securities are neither equity nor traditional debt, but rather support insurance contracts ready to pay when a predefined set of criteria are met, usually linked to the risk of large-scale, low-probability natural catastrophe events (i.e., hurricanes, earthquakes and wildfires). We believe this transfer of climate-related catastrophe risk into the broader capital markets contributes to the enhancement of corporate and societal climate resiliency, and that the ILS asset class is therefore unique in that it inherently incorporates many environmental and social factors as part of the direct investment process.

Neuberger Berman's Insurance-Linked Strategies seeks to generate risk-adjusted returns that are uncorrelated with traditional asset classes, with a focus on capturing natural event risk premium.

Strategy highlights:

- **Uncorrelated return strategy:** uncorrelated with traditional asset classes as returns are based on occurrence of large-scale, low-probability natural catastrophe events independent of financial markets
- **Active management approach:** uses short-term privately negotiated contracts with a data-driven, dynamic risk focus, providing for an edge over other reinsurance strategies
- **Specialized team:** 10 dedicated professionals with deep backgrounds in climate science, risk modeling, underwriting and portfolio management
- **Proven expertise:** experience in managing ~$3.3 billion in assets dedicated to insurance-linked investment[9]

Furthermore, our approach to the asset class promotes climate adaptation by quantifying acute physical climate risks and developing products that transfer the risk and contribute to a growing and innovative risk transfer market. We quantify climate risks by applying deep expertise in the use and application of catastrophe models and proprietary tools. The risk products and the risk transfer expertise we then provide promote societal resilience by facilitating faster disaster recovery and relief financing.

### ENTITIES THAT HAVE UTILIZED THE CATASTROPHE BOND MARKETS TO FACILITATE NATURAL CATASTROPHE RISK TRANSFER

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

**$3.29bn of protection obtained**

Notes covering worldwide earthquake, named storm and pandemic risk issued from 2017 – 2021 and in 2023

MTA

**$525mn of protection obtained**

Notes covering New York storm surge risk issued in 2013, 2017, 2020 and 2023

TWIA TEXAS WINDSTORM INSURANCE ASSOCIATION

**$3.70bn of protection obtained**

Notes covering Texas named storm and severe convective storm risk issued in 2014, 2015 and annually since 2017

FEMA

**$2.53bn of protection obtained**

Notes covering U.S. flood risk issued annually since 2018

AMTRAK

**$275mn of protection obtained**

Notes covering U.S. earthquake and named storm risk issued in 2015

LA DWP

**$80mn of protection obtained**

Notes covering California wildfire risk issued in 2020 and 2021

Source: Neuberger Berman. This material is intended as a broad overview of the portfolio managers' current style, philosophy and process.

[9] As of December 31, 2023, includes all investment vehicles managed by the NB ILS team.

## BUSINESS STRATEGY & OPERATIONS

In addition to investment portfolios, we know that climate change will also likely impact Neuberger Berman's own business strategy, financial planning and operations across various dimensions, including how we design investment solutions in response to client demand, choose our facilities and access capital. We have identified key channels through which climate risk will affect our business operations and adopt the same definition regarding timeframe of critical impact that we do for investments.

### CLIMATE RISK CHANNELS FOR BUSINESS STRATEGY & OPERATIONS

| Risk | Description | Timeframe of Critical Impact | Business Risk |
|---|---|---|---|
| **Physical: Acute** | Risks from increased severity of extreme weather events, including cyclones, flooding, river low flow and wildfires | Long-term | Physical damage to offices, business disruptions due to extreme weather events, increased insurance premiums |
| **Physical: Chronic** | Risks from increased variability in weather patterns, including wind gusts and precipitation, and temperatures, including extreme heat and extreme cold | Long-term | Increased operating expenses to allow people and equipment to continue working under extreme heat and cold |
| **Transition: Policy** | Risks from climate transition regulation that can affect a company's direct operations, suppliers or customers | Short-term, medium-term and long-term | Increased complexity of sustainability disclosures, both for our business (under e.g., the EU's Corporate Sustainability Reporting Directive (CSRD)) and investment products (e.g., fund disclosure rules in the EU, U.K. and U.S.) |
| **Transition: Technology** | Risks from failing to create or transition to new low carbon emissions technologies | Short-term, medium-term and long-term | N/A |
| **Transition: Market** | Risks from changing consumer behavior, increased costs of raw materials and uncertain market signals | Short-term, medium-term and long-term | Meeting demand from new and existing clients to implement and monitor climate objectives requires using third-party data and developing internal infrastructure. In addition, internal education and hiring resources necessary to support clients in meeting their climate goals |
| **Transition: Reputation** | Risks from negative stakeholder feedback resulting from inadequate climate action | Short-term, medium-term and long-term | Increased costs of maintaining robust governance procedures to avoid greenwashing investment products |

## CLIMATE OPPORTUNITY CHANNELS FOR BUSINESS STRATEGY & OPERATIONS

| Opportunity | Description | Timeframe of Impact | Investment Opportunity |
|---|---|---|---|
| **Resource efficiency** | Opportunities from efficiency in use of water and raw materials | Long-term | Decreased operating expenditures for leased offices |
| **Energy Source** | Opportunities from use of lower emissions sources, supportive policy incentives and new technologies | Short-term, medium-term and long-term | Decreased operating expenditures for leased offices |
| **Products & Services, Resilience** | Opportunities from development of climate mitigation and adaptation solutions | Short-term, medium-term and long-term | Growing demand from new and existing clients to offer strategies that deliver climate outcomes such as climate transition and climate solutions |
| **Markets** | Access to new markets, use of public sector initiatives | Short-term, medium-term and long-term | Access to sustainability-linked credit |

### Policy Advocacy & Industry Collaboration

We are eminently aware of the growing complexity and challenges that sustainability-related regulation and disclosure requirements place on the asset management industry, but equally we appreciate the incumbrance they place on our clients. We believe that engaging with policymakers is vital and a responsibility we take very seriously. This engagement allows us to anticipate future requirements and contribute our insights and expertise to enhance the policymaking process.

Over the past year, we engaged on policy discussions and consultations impacting asset managers, our clients and investee companies, including:

- The European Commission public consultation on the Level 1 review of the Sustainable Finance Disclosure Regulation (SFDR) to support the enhancement of the current regime through streamlined disclosures and, potentially, the introduction of voluntary labels
- The European Supervisory Authorities' (ESAs) consultation regarding amendments to the SFDR's Regulatory Technical Standards (RTS) to provide constructive feedback on the impact of certain changes, including the introduction of new templates and transparency requirements
- The European Commission's draft European Sustainability Reporting Standards (ESRS) to highlight the important of aligning asset managers' disclosure requirements to what companies are required to report on under the ESRS and the Corporate Sustainability Reporting Directive
- The International Sustainability Standards Board (ISSB) consultation to express our support for the use of the IFRS Sustainability Disclosure Standards as a global baseline, as well as a separate survey regarding the ISSB's next priorities
- The Taskforce for Nature-related Financial Disclosures (TNFD) Disclosure Framework to highlight the challenges and opportunities of nature-related reporting for financial institutions
- The U.S. Securities and Exchange Commission's (SEC) proposed rule on ESG disclosures by funds and investment advisers, which we believe will help investors make better informed investment decisions and understand how ESG factors are or are not used in the management of their assets
- The U.K. Financial Conduct Authority's (FCA) consultation paper on its Sustainability Disclosure Requirements (SDR), introducing a disclosures, naming, labelling and marketing regime

In addition, a trend we see as positive and that is likely to continue is the increasing regulatory efforts to consider the role of sustainable finance in supporting transitioning companies in their journeys to net zero. This is reflected in the work that some jurisdictions are doing to provide frameworks for credible transition planning, the development of sectoral pathways for companies, and the adoption of transition taxonomies. As an active investor, we welcome this growing focus on providing forward-looking metrics and objectives which, in conjunction with investor engagement and stewardship, could lead to the achievement of real-world decarbonization and the ability of investors to better assess companies' net-zero alignment. As mentioned in the Strategy section, we have therefore added an "Adapt" category to our ESG Integration Framework to ensure that transition- and engagement-oriented products are captured and aligned with these regulatory efforts.

We find it valuable to be an active member in key industry groups to debate and share our practitioner views on emerging policy issues. We are members of the Investment Association's Stewardship Committee and Climate Change Working Group, the Investment Company Institute's ESG Advisory Group, the UK Sustainable Investment and Finance Association (UKSIF), and other groups that actively contribute to ESG policy and regulatory discussions. On an annual basis, our ESG Committee reviews the membership organizations we belong to in order to ensure our memberships do not conflict with our ESG Policy. Where we believe our views on a particular policy topic diverge from those of our membership bodies, we may consider engaging with such organization to bring our views to the table, and/or publishing our individual position.

In particular, examples of climate-focused industry organizations where we believe our leadership can make a significant contribution include:

## OUR CONTRIBUTION TO CLIMATE-FOCUSED INDUSTRY ORGANIZATIONS

**IIGCC**
The Institutional Investors Group on Climate Change

- Member
- Work with IIGCC to support and help public policies, corporate action and investment practice required to address climate risk
- Serve on Bondholder Stewardship Working Group

**The Net Zero Asset Managers initiative**

- Signatory
- Serve on Net Zero Asset Managers Advisory Board

**Ceres**

- Investor Network member
- Participate in Paris Aligned Investment Working Group

**Climate Action 100+**

- Signatory and Member
- Individual engager focused on an electricity transmission and distribution company

**Transition Pathway Initiative**

- Funding partner
- First North American Research Funding Partner, encouraging companies to set practical targets and increase disclosure of progress in the transition to low-carbon economy

**IFRS Sustainability Alliance**

- Member of the ISSB Investor Advisory Group (IIAG) and other technical working groups
- Founding member of the Sustainability Accounting Standards Board (SASB) Alliance and TCFD supporter, now under the ISSB umbrella

For further detail on our engagement with industry groups and trade associations, please refer to Principle 10 of our Investment Stewardship Code Report.

Resources

Net Zero Bondholder Stewardship Guidance

15.06.23

**This guidance focuses on publicly listed corporate debt. It offers a detailed breakdown of the challenges and opportunities presented by different bond types, as well as a six step toolkit and examples of corporate bondholder stewardship in action.**

Its approach is designed to help bondholders build long-term relationships with bond issuers, setting objectives on time horizons beyond their initial holdings and protecting the value of current and future investments from the transition risks of climate change.

It also demonstrates the potential of engaging across the capital markets ecosystem, such as with banks or credit rating agencies, to further investor stewardship activities. This offers significant opportunities for bondholders, who are unable to exercise voting rights in the way that an equity holder can.

## CASE STUDY: CONTRIBUTING TO THOUGHT LEADERSHIP

**Working with the IIGCC Bondholder Stewardship Group to shape guidance engagement best practices**

**Background:** Bondholders play a crucial role in the corporate bond ecosystem. In 2022, global fixed income was $22.5 trillion, compared to approximately $1 trillion in total global equity issuance. Yet they lack some of the tools equity investors can leverage in engagement, such as proxy voting. Drawing upon our long-standing experience engaging with debt issuers, Neuberger Berman became a founding member of the IIGCC Bondholder Stewardship alongside some of our clients.

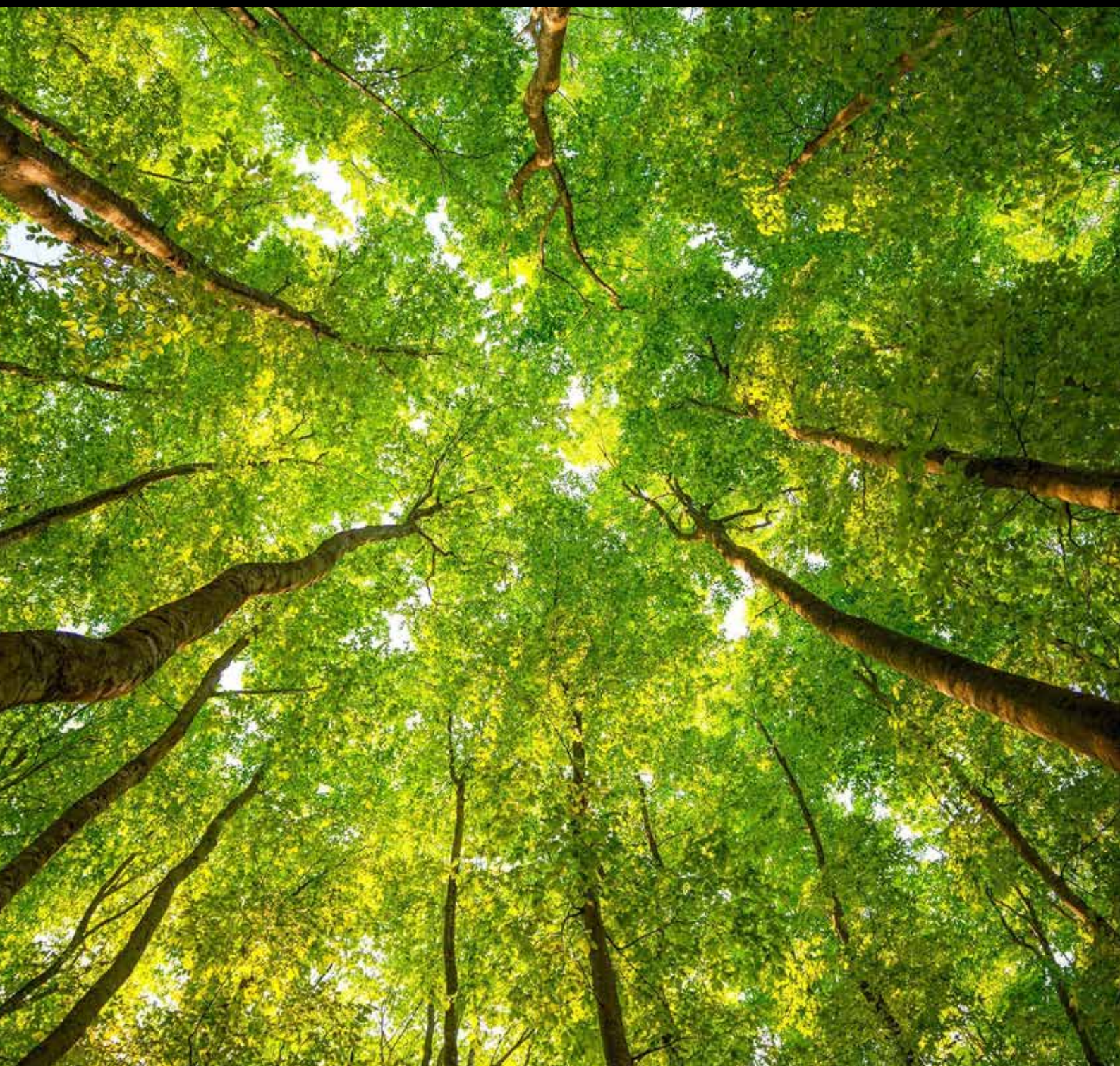
**Key Contributions:** In 2023, we worked with the group to document the challenges and opportunities presented by different bond types, as well as key steps investors can take to develop their stewardship programs. This resulted in the Net Zero Bondholder Stewardship Guidance, which laid out a six step toolkit for bondholders. In particular, we contributed case studies that laid out how we prioritize issuers for engagement to avoid downside risk through our proprietary NB ESG Quotient, and how we have developed relationships with high yield issuers to achieve meaningful engagement outcomes.

Source: https://www.iigcc.org/resources/net-zero-bondholder-stewardship-guidance.

### Considering Climate Risks in Operations

We also actively seek to identify and monitor our potential exposures to climate-related physical risks, and are aware that the firm's facilities, data centers and key locations may be at risk. Through top-down climate modelling and proxy data, we have estimated the specific physical climate risks our Neuberger Berman Group headquarters in New York, NBEL headquarters in London, and regional headquarters in Hong Kong and Tokyo may face. The NBEL office in London is vulnerable primarily to river flooding. Extreme heat is the largest risk factor for the Neuberger Berman Group's offices in New York, Hong Kong and Tokyo.

# RISK MANAGEMENT



**Neuberger Berman identifies, assesses and manages climate risks through a framework that is jointly implemented by the ESG Investing team, the Investment teams, and the Enterprise Risk and Internal Audit teams.**

The **ESG Investing team** is responsible for providing guidance on avoidance policies that are applied to certain mandates or funds to minimize climate risks, support issuer engagement efforts on climate risks, and engage in discussions with policymakers and regulators to promote transparency and clarity on climate topics.

The **Investment teams** are responsible for assessing climate risks and opportunities at the issuer level; in process-focused investing strategies, the conclusions drawn from this assessment may be used in pricing securities and assessing risk, whereas in outcome-focused investing strategies, they may be used to drive specific climate outcomes. Climate risk assessments can also be used to identify engagement priorities.

The **Enterprise Risk team,** comprised of the Investment Risk and Business Risk teams, oversee ESG-related risks, including climate risks, as part of the firm's top-down Risk Framework and Governance structure. The firm has established a Risk Appetite Statement, which defines the Risk Framework's five key pillars: Strategic, Financial, Investment, Operational and Regulatory Risk. The framework assesses the level and types of risk that the firm is willing to accept to achieve its strategic objectives and plans, and to ensure compliance with applicable regulatory requirements. We have also identified a set of Risk Categories, which are detailed on our Risk Register, an inventory of operational risks, and this includes climate risk. This is complemented by a bottom-up approach to identify and manage climate risks throughout a product life cycle alongside all risk inherent to the activities conducted. Climate-related risk is integrated throughout the process of defining, measuring and monitoring identified through each portfolio's risk profiles. Throughout this process, climate-related risks are identified both at the entity and product level, and assessed based on risk appetite level and possible financially material impacts.

The Enterprise Risk team regularly engages with portfolio managers and the ESG Investing team on strategy- and fund-level material ESG risks, which may include reviewing key ESG metrics, including those related to climate such as carbon emissions, CVaR, etc., as well as implementation of avoidance policies on specific mandates or funds. The Head of Business Risk and the Head of Investment Risk also chair the ESG Product Oversight Committee, which oversees ongoing compliance with ESG claims for all strategies/products and is a member of the ESG Product Committee and the ESG Committee.

Finally, the **Internal Audit team** performs full-scope audits of the ESG Investing function and evaluates ESG integration practices, which may include climate risks and opportunities assessments, of individual investment teams.

# INVESTMENT PORTFOLIOS

Within investment portfolios, we leverage two key pillars to identify and manage climate risks: (i) minimum standards and (ii) issuer engagement.

## Minimum Standards for Certain Vehicles

For certain clients and investment vehicles, we have a number of avoidance policies designed to meet client climate and sustainability objectives and comply with regulations in specific jurisdictions.

- **Thermal Coal Involvement Policy:** The Neuberger Berman Thermal Coal Involvement Policy applies to all of our co-mingled U.S. registered mutual funds, exchange-traded funds, closed-end funds and international UCITS range. Consistent with our fiduciary duty to clients to provide attractive investment returns while mitigating risk, investments in companies that have more than 25% of revenue derived from thermal coal mining or are expanding new thermal coal power generation are subject to formal review and approval by the ESG Committee before the initiation of any new investment positions in the securities of such companies. The Thermal Coal Involvement Policy does not apply to subadvised funds. For fund-specific details, which may include other and/or additional avoidance criteria, please review the relevant fund prospectus documentation.
- **Global Standards Policy:** The Neuberger Berman Global Standards Policy applies to all of our UCITS and QIAIF portfolios that have been categorized as either Article 8 or Article 9 financial products in accordance with the Sustainable Finance Disclosure Regulation (SFDR). The policy excludes violators of (i) the United Nations Global Compact Principles ("UNGC Principles"), (ii) the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct ("OECD Guidelines"), (iii) the United Nations Guiding Principles on Business and Human Rights ("UNGPs") and (iv) the International Labour Standards ("ILO Standards"). The UNGC principles state that businesses should support a precautionary approach to environmental challenges, promote environmental responsibility, and encourage the development of environmentally friendly technologies.
- **Sustainable Exclusion Policy:** The Neuberger Berman Sustainable Exclusion Policy is implemented for certain mandates and funds that are either labeled as sustainable or impact, or specifically opt to use the exclusion policy. The policy has specific thresholds relating to coal, unconventional oil and gas supply (oil sands), conventional oil and gas, and electricity generation from thermal coal, liquid fuels (oil) and natural gas.
- **Private Markets Avoidance Policy:** NB Private Markets Avoidance Policy is available to implement for certain mandates and funds across primary, direct co-investment, secondary and private debt strategies. This policy applies to new investment opportunities made on behalf of select clients and commingled funds, and is generally consistent with global standards, including UNGC Principles, and addresses financially material topics related to sanctions, controversial weapons and thermal coal, among others. The potential for additional avoidance and other ESG considerations is driven by the investment teams, client mandates, third-party ESG label requirements or regulations.

Our separate accounts can be customized based on a client's expressed values and preferences.

## Issuer Engagement

We use engagement as a tool to mitigate exposure to transition and physical risks by encouraging issuers to enhance disclosures, evaluate their practices, and make changes to mitigate potentially material risks where necessary. In 2023, the highlights of our climate-stewardship included:

- Publishing 43 vote intentions for shareholder proposals as part of NB Votes, our advance proxy-voting initiative, of which five vote intentions related to material climate-related topics.
- Conducting 1,000+ engagements with corporates on material climate topics.
- Updating our engagement guides to include guidance on net-zero alignment, carbon markets, sustainability reporting standards, nature-related risk and sector-specific guidance for 44 sectors.
- Supporting 86% of Just Transition-related and 67% of Methane Emissions-related shareholder proposals, where company-specific considerations around financial materiality warranted our support.
- Engaging with private equity managers on a range of ESG topics including climate-related topics. During these engagements, we encourage greater disclosure of climate-related data such as carbon emissions and serve as a platform to disseminate knowledge and education related to net-zero initiatives and implementation considerations.

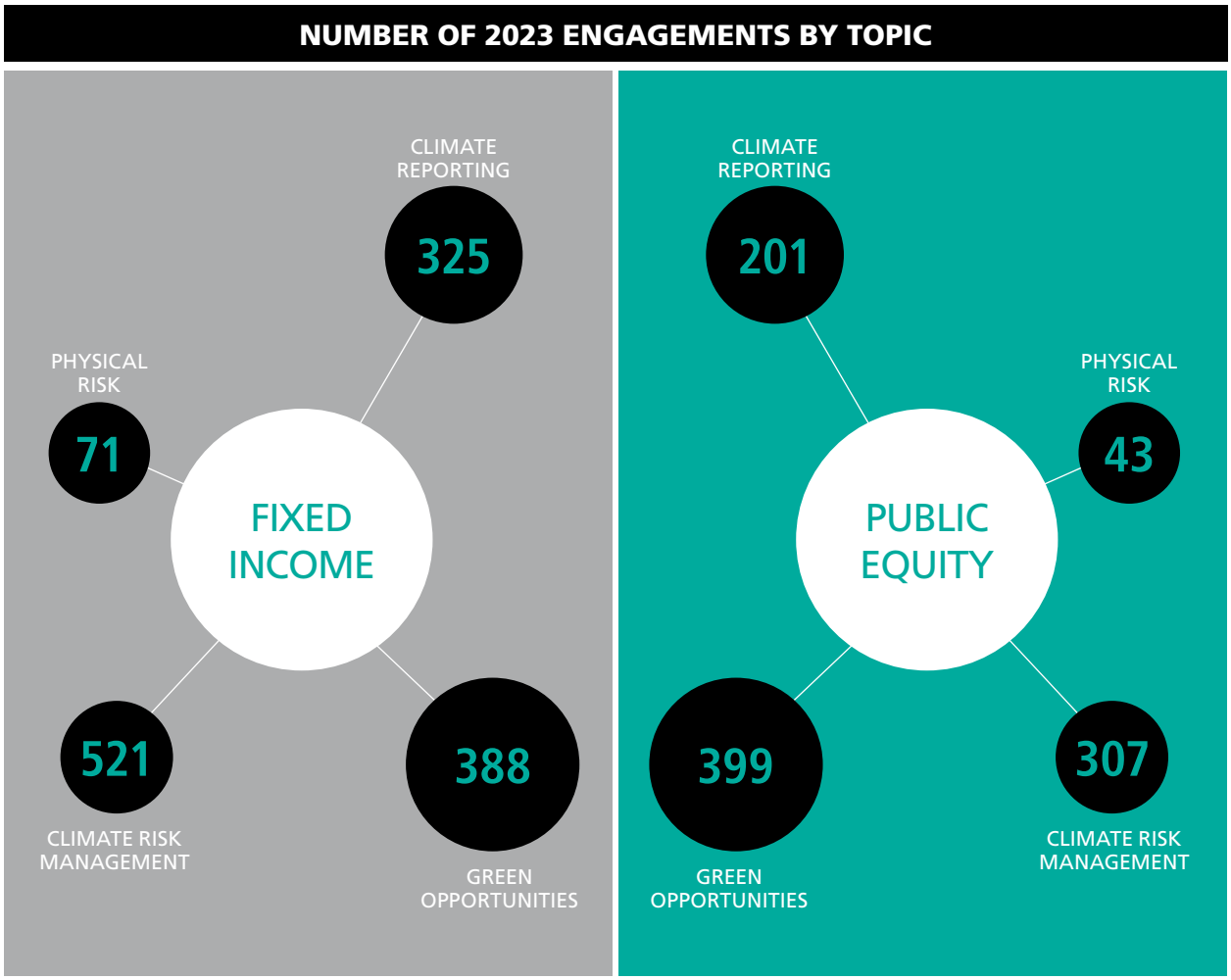
**Listed Equity and Corporate Fixed Income Engagement**

At Neuberger Berman the public fixed income and equity research analysts collaborate and share resources for external engagement. We believe that this is a real strength as all teams can leverage, and ultimately benefit, from the engagement activities conducted across the various asset classes. Occurrences that prompt engagement may differ depending on asset class. For example, a public equities team may seek to engage with a company regarding an upcoming proxy vote at a company's annual general meeting, while a fixed income team on our public markets side may seek to engage with an issuer regarding an upcoming issuance or a material change to the issuer's credit profile. Research analysts and portfolio managers track these engagements in dedicated research management tools for both public equities and corporate fixed income.

Our climate change engagement priorities include encouraging company boards to establish formal oversight of climate risk; encouraging issuers to disclose emissions and set Science-Based Targets; requesting disclosure on how companies are managing financially material physical and transition risks; and tracking management responsiveness and progress toward their stated goals. In addition to asking companies for emissions disclosure, we also ask for TCFD-aligned reporting. We believe escalation of engagement should be investment-driven, taking into consideration matters such as investment objectives, issuer-specific circumstances and our history of engagement. In the event that an issuer is not taking sufficient action to manage material climate risks, we may take investment action if we believe the financial risks warrant such a response.

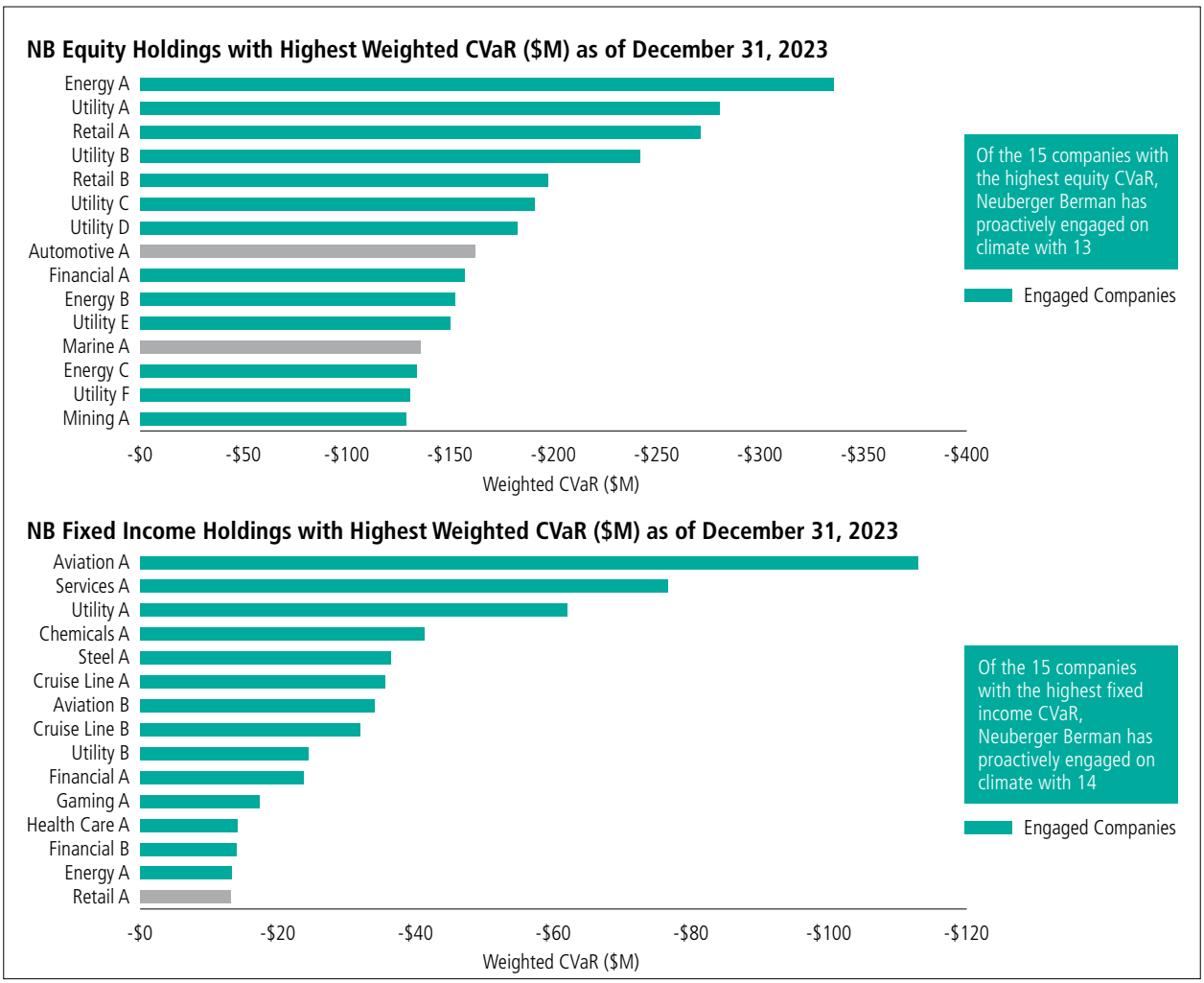
In addition, for specific mandates with client-directed net-zero objectives, the Net-Zero Alignment Indicator allows us to undertake more targeted stewardship in areas where a company is making less progress toward net-zero alignment. Research analysts and portfolio managers can drive targeted engagement toward very specific areas of improvement. As a result, the indicator creates a positive feedback loop: research analysts and portfolio managers can conduct engagements on the weakest sub-indicators, and the company's responses can be fed back into the indicator to enhance our insights.

Between January 1, 2023, and December 31, 2023, our corporate climate-related engagement efforts included:



As illustrated below, of the 15 companies with the highest CVaR across our firm-level equity holdings, in 2023 we proactively engaged with 13. For our firm-level fixed income holdings, we engaged with 14 out of the 15 highest CVaR holdings.

## ENGAGEMENT WITH THE HIGHEST CLIMATE RISK HOLDINGS ACROSS EQUITY AND FIXED INCOME



## ENGAGEMENT CASE STUDY
# JOINING FORCES TO EDUCATE AN IMPACTFUL SECTOR

### Background

Welltower is a real estate investment trust (REIT) with a focus on health care facilities including nursing homes, skilled nursing homes and office buildings. With a $52 billion equity market capitalization as of February 29, 2024, it is the fourth largest REIT in the U.S. We believe that the company could make more strides in limiting climate impact.

### Scope and Process

Real estate is acknowledged as one of the most impactful economic sectors on climate emissions, but in some cases has been slow to initiate change due to a lack of clarity as to the economic benefits. This is particularly true within health care real estate, where costs of conversion and mitigation can be significant without the marketing advantages found in offices and warehouses, to name two examples. Therefore, a key aspect of engagement can be to highlight potential bottom-line impacts from increased sustainability.

In our most recent engagement with the company, we posed a series of questions regarding the company's plans to achieve Scope 1 and Scope 2 emissions reduction targets as well as longer-term net-zero emissions targets; plans for capital expenditures on "green technologies"; increasing its number of green-certified buildings; the potential installment of efficient technologies such as electric boilers; and the use of funds from green bond issuances. We also made use of our Net-Zero Alignment Indicator, drawing on third-party data and qualitative inputs from our research analysts, to illustrate the company's position relative to peers in terms of climate goals, and ways it can make further progress.

### Outcomes and Outlook

We were encouraged with the company's responses. Welltower has already hired a new vice president of sustainability, who can help drive emissions targets, and has achieved the sustainability goals laid out in the long-term incentive plan. Now the company is working to enhance disclosures and carbon efficiency across a range of metrics, understands the importance of interim goal-setting, and recognizes potential revenue and tax opportunities associated with improvements. It also expressed interest in setting a Scope 3 target, but is waiting on further regulatory guidance from the SEC, and is considering the institution of a net-zero target.

We look forward to the company's next ESG report, where it plans to lay out its plans and commitments in further detail.

## ENGAGEMENT CASE STUDY
# WATER DIVERSIFICATION: ACCRETIVE TO FINANCIALS AND IMPACT

### Background

Pentair provides water solutions such as pumps, filters and heaters across multiple end markets. Historically associated with consumer pool equipment, the company has been diversifying toward more commercial and industrial water treatment applications. On behalf of clients that have chosen strategies focused on intentionally seeking measurable positive environmental and/or social outcomes from companies they invest in, we advocated in support of this strategy to expand the business mix with the addition of a new water treatment segment and believed that the company could benefit from more comprehensively reporting the positive outcomes achieved by its products.

### Scope and Process

Since establishing our position in 2021, we have engaged regularly with Pentair's Chief Financial Officer and Investor Relations teams. At the outset, our discussions focused on the opportunity for Pentair to increase investment in its water treatment solutions business, which was smaller than its consumer pool segment, but had the potential to reduce the cyclicality of its overall business and provide more critical outcomes for water quality. We also discussed the potential to report the aggregate positive outcomes from its products, instead of one-off case studies and statistics. In 2023, we also participated in an in-depth "perception study" conducted by a strategic investor relations advisory firm hired by Pentair, through which we were able to reinforce our message on fundamentals and impact while sharing examples of best practices from water peers.

### Outcomes and Outlook

In 2022, Pentair acquired a medium-sized commercial ice and water treatment provider, diversifying its business mix toward more critical services and away from consumer pools. In its 2021 Sustainability Report, released in April 2022, the company reported aggregated and more detailed positive outcomes on its products that we could use in our impact analysis. These included detailing roughly 440,000 tons of $CO_2$ avoided through the use of energy-efficient pool pumps, recovery solutions with the capacity to recover an estimated 7.5 million tons of $CO_2$ annually, and 9 billion single-use plastic water bottles avoided, among other examples. Finally, the company reorganized in 2023 from two to three divisions, with a new water treatment segment to help margin expansion efforts and provide investors with greater transparency as to the performance of this growth area, which we felt was underappreciated.

We continue to engage Pentair on multiple fronts, including capital allocation priorities and achieving its science-based emission reduction targets.

## ENGAGEMENT CASE STUDY
# RAISING THE BAR ON EMISSION TARGETS

### Background

PPG Industries, Inc. is a global specialty chemicals company and a leader in paints and coatings with a diverse portfolio of products across several end markets. Although the company has made strides in mitigating material climate risk, we believed there was an opportunity to set more ambitious long-term targets around emissions and environmentally sustainable products.

We believe these objectives are particularly relevant for PPG given the potential compliance risks and opportunity costs related to weak decarbonization targets or a lack of sustainable product offerings. Over 30% of PPG's revenues come from European markets, where regulatory requirements are tighter than those in the US, and customers are increasingly selective based on these issues.

### Scope and Process

As an investor in PPG bonds, we have regularly engaged with senior management, investor relations and its ESG team to provide guidance on a range of issues. We view climate transition as both a financially material risk and opportunity for chemical companies. PPG is an important supplier to many companies across end markets, including automotive, aerospace, packaging and architectural coatings, where both regulatory and consumer-driven requirements for lower carbon impact are rising. Given growing demand for products with lower carbon impact by sustainability-conscious customers seeking to abate their own Scope 3 emissions, we asked the company to set more ambitious goals to sell sustainable products. We believe capital allocation to expand PPG's product offering to more sustainable products may help them profitably and improve market share.

Initially, PPG only pledged to reduce Scope 1 and 2 emissions intensity by 2025, a shorter-term goal than many of its peers. As part of our engagement, we encouraged the company to set longer-term targets and extend them to Scope 3 emissions as well. We also asked that it more clearly articulate an emissions reduction pathway, and introduce a net-zero target to better align with a longer-term decarbonization commitment that helps guide future management teams.

### Outcomes and Outlook

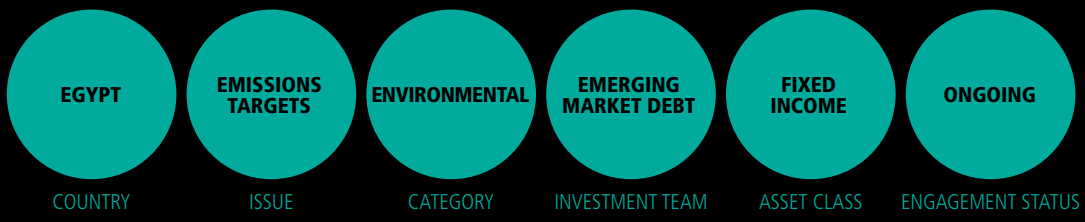
In July 2023, PPG announced new emissions targets, with the goal of a 50% reduction in Scope 1 and 2 emissions and 30% reduction in Scope 3 emissions by 2030 (relative to 2019 levels), in addition to its existing 15% carbon intensity reduction target by 2025 (from a 2017 baseline)—goals that have been validated by the Science-Based Targets initiative. Another important commitment was to target 50% of sales from sustainable products by 2030, up from just over 40% of sales today. This will include a greater portion of water-borne coatings with a smaller carbon footprint than traditional paints and coatings—a transition that could not only support climate goals, but also introduce new market opportunities addressing emerging end-market needs.

We view these actions as an important step for PPG in managing its climate risk; however, there are still opportunities to engage on further improvements. At this stage, the company remains reluctant to introduce a net-zero target, which we think would be achievable given its already low-impact profile relative to other more carbon-heavy chemical companies. In the meantime, we want to acknowledge the company's progress so far and look forward to continuing our highly constructive dialogue.

## SOVEREIGNS

The ability to access a sovereign is not comparable to that of a corporate issuer, but it is certainly not impossible, and where opportunities arise, we seek to engage. A sovereign issuer's path to sustainability will vary based on geographical, historical, demographic and socioeconomic factors, and as a result, progress can be slow and modest. When it comes to net zero or climate resilience, as investors we rely on commitments made by policymakers and published through e.g., the Nationally Determined Commitments (NDCs). However, these tend to be very high-level documents and we view it as our responsibility to understand how a sovereign will deliver on any commitments it has made. For instance, for some sovereigns we may consider it prudent for the NDCs to be considered no more than a declaration of intent, whereas for others we seek to understand gaps in implementation such as incomplete transition plans for sectors like transportation or agriculture. We think engagements through industry initiatives can be influential in improving a sovereign's overall climate resilience and ability to generate long-term excess returns.

## ENGAGEMENT CASE STUDY
## ENGAGING WITH A SOVEREIGN FACING A HIGH LEVEL OF CLIMATE RISK




### Background

We are a long-term investor in Egypt with over $500 million invested in sovereign bonds, and have engaged with the government for a number of years on environmental and governance topics. We noted that Egypt's emission metrics were higher than those of our sovereign benchmark. After visiting Egypt in person as part of an investor trip, our Emerging Market Debt team followed up with the Ministry of Finance regarding the country's progress on its ambitious climate targets.

### Engagement Scope and Process

We discussed several aspects of Egypt's decarbonization strategy such as renewables, natural gas pricing and carbon taxes. First, we asked the government to explain how it intended to meet its ambitious target to raise the share of renewables to 40% of electricity production by 2035, as it seemed only a small percentage of generation was coming from wind and solar. The Ministry of Finance estimated the gap was made up by hydroelectric production. Second, we asked whether subsidies for natural gas may be disincentivizing the use of renewable energy. The Ministry of Finance clarified that there is no intention at the moment to reduce the price differential between natural gas and renewables, but that they did not expect this to disincentivize renewables uptake, due to growing demand for renewables from the country's aspirations to develop a green hydrogen industry in particular. Third and finally, we sought to understand how Egypt intends to grow its Carbon Capture and Storage (CCS) capabilities in order to meet its power section emissions targets by 2030. We noted that Egypt has significant potential for CCS development due to the presence of large carbon sinks, and four CCS hubs have already been identified in Cairo, Ain Sokhna/Suez, Damietta and Alexandria. We believe that attracting further private investment in this area will require carbon taxes and investment incentives. The Ministry of Finance shared with us that the Egyptian Exchange (EGX) is working on developing Egypt's carbon market and is expected to begin operations on a pilot program in early 2024; this is expected to further incentivize investment in CCS.

### Outcomes and Outlook

Based on our engagement, we believe that the Egyptian government is in the process of making decarbonization a policy priority. The Ministry of Finance did, however, note that the country may revise its climate targets. This is an area of concern for us, and we will continue to make efforts to access other parts of the government in order to gain additional insight into how Egypt plans to meet its targets. Looking ahead, we will seek to engage with different ministries on this topic.

## PRIVATE MARKETS

Being a leading participant in the private equity ecosystem, with over $110bn of assets under management and a GP-centric model, we believe that NB Private Markets has an important role to play in engaging with private equity managers on ESG topics. In addition to broader ESG integration, climate has become a topic for some of our GP engagements.

Engagement remains a key means to encourage greater awareness, disclosure and action on climate risk by private equity managers. Within NB Private Equity, our ESG due diligence can often serve as a starting point for engagement with GPs. We also connect with GPs in seminars and one-on-one settings to provide guidance and support to improve ESG integration policies and practices, including the assessment of financially material climate risks and opportunities. NB Private Equity believes fostering a dialogue with clients and private equity managers on these topics is an important part of our role in the ecosystem. More broadly, we disseminate our insights and information through participation on industry advisory boards and working groups, particularly on timely topics like climate analysis.

## ENGAGEMENT CASE STUDY
## COLLABORATIVE ENGAGEMENT TO HIGHLIGHT PRACTICAL CLIMATE ANALYSIS TOOLS FOR PRIVATE EQUITY GENERAL PARTNERS

### Background

Neuberger Berman Private Equity engages with clients and private equity managers to share ESG best practices. Neuberger Berman engages with industry stakeholders, contributes research and time to advisory groups, and supports the creation and adoption of industry standard ESG disclosures, measurement and reporting. In 2023, Neuberger Berman Private Equity hosted a webinar focused on practical climate analysis tools for private equity GPs.

### Engagement Scope and Process

As part of its broader industry engagement, in 2023, NB Private Equity contributed a resource for GPs to the Private Markets Decarbonization Roadmap, developed by Bain & Co. on behalf of the initiative Climat International (iCI) and the Sustainable Markets Initiative's Private Equity Task Force.

Building off these efforts, in late 2023, Neuberger Berman hosted an engagement webinar for private equity GPs focused on practical tools for climate analysis in private equity. The webinar included a presentation of the Roadmap by Bain & Co. as well as a demonstration by climate software company Watershed on how companies can measure, report and manage their emissions.

The questions from webinar participants focused on data availability challenges facing private markets investors, decarbonization strategies, and best practices for reporting climate-related metrics and progress to investors.

### Outcomes and Outlook

Results from this educational effort are still in early stages as Neuberger Berman Private Equity continues to engage with industry stakeholders and advisory groups on the climate-related topics discussed during the webinar. We continue to seek to share best practices with general partners on the current state of the market.

# BUSINESS STRATEGY & OPERATIONS

## Navigating the Regulatory Landscape

The sustainability-related regulatory landscape is rapidly evolving both for us as investors, and for our clients and investee companies. As a global investor, we operate in many different jurisdictions with myriad regulatory regimes, with requirements and standards that sometimes diverge. This presents a source of transition risk for our business strategy and operations. As different governments can have diverging views on the climate transition, political changes contribute to this regulatory and policy-related uncertainty. In addition, the volume of new requirements and, in some cases, the unpredictability of regulatory change, may continue to be a risk from a resource, financial and an organizational perspective.

We closely monitor legal and regulatory requirements that may directly affect our business, which include but are not limited to:

- **Corporate reporting requirements,** including under the EU's Corporate Sustainability Reporting Directive and the U.K.ESG Sourcebook's climate-related disclosure requirements;
- **Fund disclosure requirements,** including under the SEC's proposed investment advisor and fund disclosure rules, the U.K.'s Sustainable Disclosure Requirements (SDR) and the EU's Sustainable Finance Disclosure Regulation (SFDR);
- **Due diligence requirements and the definition of fiduciary duty,** including the U.K. government's clarification of fiduciary duty as part of its Green Finance Strategy and the EU's evolving definition in the context of the EU Corporate Sustainability Due Diligence Directive add (CSDDD).

The need to comply with these regulations is taken into consideration where applicable in business decisions around developing or enhancing infrastructure such as committees focused on ESG matters, risk oversight and monitoring and internal audit. Our ESG Regulatory Program, a forum of senior representatives from across business functions impacted by ESG regulation, oversees the implementation of regulatory requirements and the assessment of business implications of sustainability-related rules.

Furthermore, as advocates of regulatory consistency across jurisdictions, we are a strong supporter of the International Sustainability Standards Board (ISSB) introducing a global baseline that builds on existing frameworks. As a member of the ISSB's Investor Advisory Group (IIAG), we support the ISSB in developing the global baseline for sustainability reporting by providing feedback on the technical and practical aspects of the standards from an investor point of view.

## Operational Risk & Business Continuity

As climate change accelerates, we believe its impacts could affect not only investment portfolios, but increasingly also directly affect our business operations. To prepare for this possibility, the Business Risk team, which manages the implementation of control and governance processes, is also considering climate as part of its overall approach to risk management. Specifically, three sub-teams within this function interface with climate risks.

First, the Operational Risk team, as part of the operational risk identification process within our Risk and Control Self-Assessment (RCSA) program, identifies relevant climate risks associated with key processes, discusses these risks with the department owners, documents the risks along with key controls and assesses residual risk exposure. In addition, all errors and breaches identified are recorded on Neuberger Berman's operational risk database (NORD) to ensure consistency of the resolution and investigation, with a dedicated workflow that ensures independent review from the Operational Risk team and the Compliance team. Within NORD, there are dedicated categories to record whether there is any climate-related impact associated with an error or breach.

Second, the Asset Management Guideline Oversight (AMGO) undertakes exclusion monitoring by implementing pre-trade restrictions directly into the order management systems, which alert portfolio managers to transactions that may potentially be in breach of client investment guidelines. By overseeing continuous compliance with the applied exclusion policies for a certain vehicle or account, AMGO ensures that the client's desired level of climate risk tolerance is maintained.

Third and finally, the Business Continuity team is engaged in the identification, monitoring and management of potential exposures to climate-related physical risks across our business. This team has developed an Incident Response Guide that outlines specific procedures to follow during an event or business disruption, including climate-related disasters.

We also recognize that our own operational carbon footprint could subject us to transition risks. Both our clients and our employees expect Neuberger Berman to be prepared for these scenarios, and we have taken specific steps to minimize our exposure in this regard:

- We carefully consider energy efficiency and other sustainability metrics when selecting buildings for our offices. Our New York headquarters is a Silver LEED building. In 2023, our office space was also recognized as an Energy Star tenant. In fact, 50% of the buildings in which we have a tenancy have a sustainability accreditation such as LEED, BREEM or WELL (a designation given when building standards demonstrate a commitment to occupant health and comfort). Our new Zurich office is in a recently renovated building that has a solar photovoltaic (PV) system installed which will significantly reduce our carbon footprint.
- We have enhanced our recycling efforts, leading to a waste diversion rate of 60% (the percent of waste kept out of landfills and incinerators) in our New York headquarters and an impressive 94.3% in our London office.

# METRICS & TARGETS

We employ several metrics across both the investments we manage and our own operations to track progress against our climate strategy and ensure we are actively holding ourselves accountable. We partner with a sophisticated carbon platform to measure complete Scope 1, 2 and operational Scope 3 emissions across our global offices in over 26 countries. We are pleased to share a summary of select carbon metrics across our in-scope client portfolios, as well as our own operations.

As part of the Net Zero Asset Managers Initiative, we have set an interim target for assets where clients have directed us to manage the account in line with net zero by 2050. Any net-zero commitment for a fund or account is clearly disclosed in the relevant documents. We are committed to working in partnership with our clients and portfolio managers to achieve this goal. In setting our interim targets, we have taken a client-centric approach. Through our firmwide initiative we engage with clients on setting net-zero targets for individual accounts that have expressed net-zero ambition, but not yet set targets. Our current committed AUM reflects:

a) where we have received client approval to implement a decarbonization target;

b) where the portfolio management team, through engagement strategies, commits to support investing aligned with net-zero emissions whilst still seeking to meet client outcomes; or

c) specific Sustainable and Impact funds that have affirmed their intent, consistent with their stated objectives and strategies, to invest with the goal of net-zero alignment.

We have defined two decarbonization options for our net-zero committed investment teams, who can each determine the methodology most aligned with their investment process and philosophy. These options conform with the IIGC's Net-Zero Investment Framework:

a) **Portfolio decarbonization reference target:** 50% reduction in carbon footprint by 2030 relative to a 2019 baseline and a subsequent decline to net zero by 2050.

b) **Portfolio coverage and portfolio decarbonization reference target:** Achieve >90% of portfolio (by value) with Science-Based Targets initiative (SBTi) validated targets (or equivalent as assessed by our Net-Zero Alignment Indicator) by 2030 and to achieve 100% of the portfolio's AUM by 2050. The portfolio must also achieve a 30% reduction in carbon footprint by 2030 relative to a 2019 baseline and a subsequent decline to net zero by 2050.

Read more about our interim targets here.

# INVESTMENT PORTFOLIOS

At the firm level, in-scope assets for this report are approximately $255 billion, of which $217 billion is composed of corporate assets and $38 billion is in sovereign holdings (our methodology for determining in-scope assets is further detailed in the disclaimer). For corporate holdings, consistent with TCFD guidance, we report total carbon emissions, carbon footprint and weighted average carbon intensity across Scope 1, 2 and material Scope 3 emissions. We report material Scope 3 emissions on a best-efforts basis according to the Partnership for Carbon Accounting Financials (PCAF) standards. In addition, we report the percentage of the portfolio that has SBTi-validated targets. The AUM coverage varies due to data availability for underlying measures. Our carbon metrics cover approximately $173 billion in assets. Carbon intensity is dependent on revenue and is thus fully covered. Total apportioned carbon emissions and carbon footprint rely on Enterprise Value Including Cash (EVIC) and as a result have somewhat lower coverage. Comparatively from 2022 to 2023 emissions decreased across total emissions, weighted average carbon intensity and carbon footprint. This was driven by both a decline in Scope 3 absolute emissions, in particular for TruCost-estimated values in material sectors, and decreased exposure to securities that were in material sectors. While we are encouraged by the decrease in portfolio emissions, we note that this is driven by estimated and backward-looking values that cannot be relied upon in isolation, and we continue to consult other metrics such as our proprietary Net-Zero Alignment Indicator to measure and assess transition progress.

## CARBON METRICS FOR CORPORATE SECURITIES

| Metric | Description | Formula |
|---|---|---|
| **Total Emissions** | The absolute carbon emissions associated with a portfolio, expressed in tons $CO_2e$ | $\sum_{i}^{n} \frac{\text{current value of investment}_i}{EVIC_i} \times \text{issuer's emissions}_i$ |
| **Weighted Average Carbon Intensity** | Portfolio's exposure to carbon-intensive companies, expressed in tons $CO_2e$/$M revenue. Carbon emissions are allocated based on portfolio weights (the current value of the investment relative to the current portfolio value) | $\sum_{i}^{n} \frac{\text{current value of investment}_i}{\text{current portfolio value}} \times \frac{\text{issuer's emissions}_i}{\text{issuer's \$M revenue}_i}$ |
| **Carbon Footprint** | Total carbon emissions for a portfolio normalized by the market value of the portfolio, expressed in tons $CO_2e$/$M invested | $\sum_{i}^{n} \frac{\frac{\text{current value of investment}_i}{EVIC_i} \times \text{issuer's emissions}_i}{\text{current portfolio value (\$M)}}$ |
| **SBTi Validated Targets** | Percentage of market value with targets approved by the Science-Based Targets initiative | $\sum_{i}^{n} \frac{\text{current value of investment}_i}{\text{current portfolio value}} \times \text{companies with validated SBTi}$ |

The carbon metrics for corporate securities are in line with the TCFD recommendations and the PCAF standards. For carbon footprint, we have elected to use EVIC as the denominator in accordance with the PCAF standards and in order to cover both equity and debt.

For sovereign holdings, in line with the IIGCC's formal endorsement of the PCAF standards, we have chosen to expand the metrics we report on this year to include financed emissions on a territorial, production and emissions basis, as well as weighted average carbon intensity on a territorial basis. However, it is important to note that the normalization factor for assessing sovereign carbon intensity has been the subject of intensive debate in the investment industry, and we have therefore also included a description of the advantages and disadvantages of each type of factor below.

## CARBON METRICS FOR SOVEREIGN SECURITIES

| Metric | Description | Formula |
|---|---|---|
| **Financed Emissions** | Financed emissions of sovereign debt are calculated by multiplying the attribution factor by the Sovereign Domestic Emissions and Exported Emissions of the respective sovereign borrower | $\sum_{i}^{n} \frac{outstanding\ amount_i}{PPP\text{-}adjusted\ GDP_i} \times sovereign's\ emissions_i$ |
| **Weighted Average Carbon Intensity – Production Emissions per PPP-adjusted GDP** | Sovereign Domestic Emissions and Exported Emissions per PPP-adjusted GDP | $\sum_{i}^{n} portfolio\ weight_i \times \frac{country\ production\ emissions\ (tCO_2e)_i}{PPP\text{-}adjusted\ GDP\ (\$M)_i}$ |
| **Weighted Average Carbon Intensity – Consumption Emissions per Capita** | Sovereign Domestic Emissions and Imported Emissions per Capita | $\sum_{i}^{n} portfolio\ weight_i \times \frac{country\ consumption\ emissions\ (tCO_2e)_i}{country\ population_i}$ |

The TCFD recommendations do not include a specific formula for the calculation of sovereign-financed emissions. The formulas included reflect our interpretation of the PCAF standards.

## LIMITATIONS OF NORMALIZATION FACTORS FOR SOVEREIGN EMISSIONS

| | Production-Based | Consumption-Based | Territorial Emmisions + Imported Emissions |
|---|---|---|---|
| **Scope** | Emissions generated by an economy within its national territory | Emissions associated with the consumption of a country's population or final demand | Emissions associated with any aspect of an economy's activity, i.e. the carbon intensity of an economy |
| **Calculation** | Territorial emissions = Domestic emissions + Exported emissions | Domestic emissions + Imported emissions | Domestic emissions + Exported emissions + Imported emissions |
| **Bias** | Toward exporters or GHG producers | Toward importers or GHG consumers | No bias |
| **Complexity** | Low | Low | High |
| **Pros (+)** | • Consistent with international standards<br>• Reflects the carbon-intensity of an economy's output | • Reflects demand-based emissions, wherever the emission is produced | • Reflects the carbon dependency of an economy, whether it is demand-driven (domestic or imported) or offer-driven (exported)<br>• Equivalent of accounting for direct + indirect emissions already a standard in the corporate world. |
| **Cons (-)** | • Unable to address carbon leakage<br>• May be seen as socially unfair as puts the responsibility on emerging economies (vs. developed economies) | • Does not capture the carbon intensity of an economy's output<br>• Political acceptability<br>• Difficult or complex mitigation effectiveness | • Introduces double-counting |

Source: TruCost.

## FIRM-LEVEL METRICS FOR PORTFOLIO CORPORATE ASSETS

| Indicator | 2023 | 2022 | Unit |
|---|---|---|---|
| **Total Emissions** | **64,227,998** | **75,289,100** | **$tCO_2e$** |
| Scope 1 & 2 | 12,484,993 | 12,190,081 | $tCO_2e$ |
| Scope 3* | 51,743,005 | 63,099,019 | $tCO_2e$ |
| **Weighted Average Carbon Intensity** | **1,917** | **3,037** | **$tCO_2e$/$ million revenue** |
| Scope 1 & 2 | 189 | 229 | $tCO_2e$/$ million revenue |
| Scope 3* | 1,728 | 2,808 | $tCO_2e$/$ million revenue |
| **Carbon Footprint** | **850** | **1,012** | **$tCO_2e$/$ million invested** |
| Scope 1 & 2 | 72 | 71 | $tCO_2e$/$ million invested |
| Scope 3* | 778 | 940 | $tCO_2e$/$ million invested |
| **SBTi-Validated Targets** | **28.58** | **23.83** | **Market Value %** |

Source: Neuberger Berman (Holdings), S&P TruCost (emissions), MSCI (EVIC).
*Scope 3 included company investments in NACE sectors L2: 05-09, 10-18, 19, 20,21-33, 41-43, 49-53, 81).

## FIRM-LEVEL METRICS FOR PORTFOLIO SOVEREIGN ASSETS

| Indicator | 2023 | 2022 | Unit |
|---|---|---|---|
| **Financed GHG Emissions** | | | |
| Financed GHG Emissions - Territorial + Imports-Based (MV / GDP-PPP)* GHG Emissions | 19,607,739 | 13,923,348 | $tCO2_2e$ per $million GDP-PPP |
| Financed GHG Emissions - Production-Based (MV / GDP-PPP)*GHG Emissions | 15,116,544 | 10,979,093 | $tCO_2e$ per capita |
| Financed GHG Emissions - Consumption-Based (MV / GDP-PPP)* GHG Emissions | 12,173,964 | 12,812,939 | $tCO2_2e$ per $million GDP-PPP |
| **Weighted Average Carbon Intensity** | | | |
| Weighted Average Carbon Intensity – Territorial + Imports Emissions per PPP-GDP | 525 | 409 | $tCO2_2e$ per $million GDP-PPP |
| Weighted Average Carbon Intensity – Production Emissions per PPP-GDP | 405 | 322 | $tCO2_2e$ per $million GDP-PPP |
| Weighted Average GHG Emissions – Consumption Emissions per Capita | 9 | 17 | $tCO_2e$ per capita |

Source: Neuberger Berman (Holdings), S&P TruCost (emissions, GDP, population).

# BUSINESS OPERATIONS

## ENVIRONMENTAL METRICS ACROSS OUR BUSINESS OPERATIONS

| Indicator | 2023 | 2022 | Unit |
|---|---|---|---|
| **Scope 1 & 2** | **5,307** | **4,710** | **$mtCO_2e$** |
| Scope 1 | 1,070 | 1,561 | $mtCO_2e$ |
| Scope 2 | 4,237 | 3,149 | $mtCO_2e$ |
| **Scope 3** | **27,668** | **11,286** | **$mtCO_2e$** |
| 3.3 Fuel and energy-related categories | 1,443 | 1,494 | $mtCO_2e$ |
| 3.5 Waste generated in operations | 216 | 233 | $mtCO_2e$ |
| 3.6 Business travel | 23,326* | 6,689 | $mtCO_2e$ |
| 3.7 Employee commuting | 2,677 | 2,862 | $mtCO_2e$ |
| 3.8 Upstream leased assets | 5.3 | 8.3 | $mtCO_2e$ |
| **Environmental Metrics** | | | |
| Total water used (NY headquarters) | 7.7 | 7.3 | gallons |
| Waste recycled (NY headquarters) | 59% | 59% | diversion rate |

Above, we have reported our global emissions for Scope 1, 2 and 3.3, 3.5, 3.6, 3.7, and 3.8. We have reported on Neuberger Berman's business operations:
(i) that are material to the Neuberger Berman business as a financial institution; and
(ii) where we had access to sufficiently robust data within the reporting period.
*Between 2022 and 2023, our firm's business travel emissions increased significantly as travel activities returned to pre-COVID-19 levels.

We are committed to addressing our operational emissions consistent with efforts to achieve global net-zero emissions by 2050, and are undertaking further analysis to reduce and offset our operational emissions. In addition, for our NY headquarters, we measure our nature-related impacts including water usage and waste recycled.

Aligned with this commitment, Neuberger Berman is proud to announce our initiatives to offset our global travel emissions for the 2022 fiscal year for the fourth year in a row. Recognizing the urgent need to address climate change, this year we have strategically invested in innovative projects focused on carbon removal and sustainable development.

## Direct Air Capture Removal

Among these, a direct air capture project in New Mexico and Wyoming stands out for its novel approach to $CO_2$ removal using a low-energy process and commercially available sorbent, which not only prioritizes cost-effectiveness, but also aims to uplift local communities by creating jobs in regions heavily reliant on fossil fuels.

## Enhanced Weathering Removal

Additionally, our collaboration with an enhanced weathering project involves spreading ultrafine basalt rock on agricultural soils to accelerate natural carbon sequestration processes, while simultaneously improving crop yields and soil health. This project targets significant carbon dioxide removal and employs advanced soil models and machine learning to optimize $CO_2$ capture.

## Biochar Removal

Our efforts extend to supporting a biochar project, which produces high-quality biochar from local biomass, contributing to long-term carbon sequestration in soil and offering many agricultural benefits. This project aligns with our vision of fostering sustainable land management practices that benefit both the environment and local communities.

## Reforestation Removal

Lastly, a removal reforestation initiative in Uganda exemplifies our dedication to supporting high-quality, community-led forestry projects that not only sequester carbon, but also promote biodiversity, enhance income stability for rural farming families and ensure sustainable land use.

By engaging in these diverse and impactful projects, Neuberger Berman is actively contributing to the global effort against climate change, ensuring that our business operations promote environmental sustainability and social responsibility.

# LOOKING AHEAD

Looking ahead, we believe governments, companies and investors will continue to feel and respond to the effects of climate change, and new investment risks and opportunities will arise as a result. We are dedicated to proactively identifying, assessing and managing these risks and opportunities to protect client assets. In the coming year, we will continue to leverage real-time insights from our analysts to bridge the climate data gap and paint a more accurate picture of the climate risks issuers face, and how they plan to address them. Similarly, our research analysts and investment teams, who deeply understand the business model and market context companies are operating within, will continue to thoughtfully engage with issuers on improving disclosure and risk management of financially material climate issues. As AI becomes more closely integrated throughout our firm, we will also seek to leverage it to enhance our climate assessment tools. Finally, we look forward to continuing to partner with our clients on developing innovative solutions that meet their individual investment and climate objectives.

**DISCLAIMER**

**Gaps in Underlying Data and Methodological Challenges**

Across the industry, carbon emissions and climate risk data face limitations, including but not limited to lack of standardization of data reported and data aggregation methodologies, gaps in data coverage for private and emerging markets, time-lags in reported data, and reliance on estimates by third party ESG data vendors.

We have taken specific steps to mitigate these limitations, including but not limited to utilizing third-party data and proxy data along with internal research; developing a proprietary ESG rating (NB ESG Quotient), which supplements third-party data with internally generated research and knowledge; developing a proprietary Net-Zero Alignment Indicator; engaging in a mass letter campaign to request ESG data metrics (including carbon emission and climate risk metrics) directly from issuers; engaging directly with issuers and policymakers to advocate for greater standardized disclosures; and engaging our third party ESG data vendors on improving data coverage.

For certain asset classes adequate, reliable and/or verifiable data coverage was not available to Neuberger Berman Group to meet the TCFD reporting standards and these asset classes were thus excluded.

They include:

- **Private markets:** Private markets funds currently face challenges that inhibit our ability to disclose carbon emissions and related risks specifically in relation to such funds. Currently, we request portfolio company metrics of general partners (GPs) across private equity primaries, co-investments, and select secondaries on a look-through basis. However, we have received a low response rate for such metrics. Overall, portfolio company level data of primaries and secondaries tends to be inconsistent across both data coverage and frequency of reporting. Specifically for secondaries, obtaining data on a look-through basis is even more challenging where our private markets funds are a secondary buyer of private equity fund positions. In response, our private markets funds have developed a methodology for estimating the carbon footprint of such funds' investments (limited to certain direct and primary funds investments). However, we continue to request and encourage the disclosure of actual data as we believe that the available estimated data may be limited in its accuracy and application to the full portfolio.
- **Senior Floating Rate Loans (including CLOs), Municipals, Currency and Cash Management:** For these asset classes, the Climate Value-at-Risk (CVaR) and carbon metrics are generally not made available by our data vendors, therefore we were unable to generate TCFD metrics for dedicated strategies for these asset classes.
- **Alternatives:** Our key public markets alternatives strategies include hedge funds, options, commodities, diversified real assets and long/short real estate. For these asset classes CVaR or carbon metrics are also not made available by our data vendors. However, where such strategies hold substantial equity and fixed income assets, they have been included in our TCFD reporting.

Where proxied emissions data has been used, we have relied on third parties to gather this data. While we use best efforts to ensure the accuracy of the data reported, we cannot verify third party data.

All information is as of December 31, 2023 unless otherwise indicated.

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Firm data, including employee and assets under management figures, reflect collective data for the various affiliated investment advisers that are subsidiaries of Neuberger Berman Group LLC (the "firm"). Firm history and timelines include the history and business expansions of all firm subsidiaries, including predecessor entities and acquisition entities. Investment professionals referenced include portfolio managers, research analysts/associates, traders, product specialists and team-dedicated economists/strategists.

The Neuberger Berman Asset Allocation Committee reviews and sets long-term asset allocation models and establishes preferred near-term tactical asset class allocations. The views of the Asset Allocation Committee may not reflect the views of the firm as a whole, and Neuberger Berman advisers and portfolio managers may recommend or take contrary positions to the views of the Asset Allocation Committee.

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# Talk to Neuberger Berman

For more information, please contact your Neuberger Berman representative or visit www.nb.com.

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