

The PIMCO logo is displayed in a white, serif, all-caps font. It is positioned on the left side of the cover, above the main title. The background behind the text is a solid blue shape that tapers to the right, resembling a stylized arrow or a section of a tree trunk.

PIMCO®

Global TCFD 2023 Report



CEO Statement

The global economy continues to recognize that financial markets are not immune to the multifaceted impacts of climate change, which can significantly influence asset valuations, investment strategies, and long-term financial stability for investors. Having attended and participated in the last three UN Climate Conferences, PIMCO has witnessed firsthand that investment in the climate transition, and increasingly in climate resilience, appears poised to lead the sustainability agenda.

With our fiduciary duty in mind, PIMCO acknowledges the responsibility we hold as a leading asset manager to continue enhancing our proprietary climate risk evaluation capabilities that seek to enable us to best serve our clients' diverse investment objectives.

This was first demonstrated by PIMCO's decision to become a signatory to the UN Principles of Responsible Investment (PRI) in September 2011, and we have since reemphasized our commitment to that responsibility by being an active member in numerous climate-related industry initiatives, including the Institutional Investors Group on Climate Change (IIGCC) and the Partnership for Carbon Accounting Financials (PCAF). Alongside our continued external commitments to these initiatives, we have heavily invested in resources and technology, developing and embedding thoughtful enhancements to our climate assessment models in 2023. This includes developing a proprietary carbon attribution

methodology that seeks to assess the different factors contributing to changes in portfolio carbon metrics over time, including potential real world emissions decarbonization. Further, we rolled out our carbon projection tool, which shows potential carbon emissions pathways over a period of time, based upon certain scenarios and assumptions specifically relevant for fixed income. This projection tool will assist with forward-looking analysis of transition risks and portfolio decarbonization targets, where relevant. PIMCO additionally incorporated carbon emissions data at the security and portfolio level to a growing range of structured products, which helps facilitate a more granular analysis of this universe.

PIMCO endorses reporting guidelines designed to improve the disclosures of financial information related to climate risk management, such as those in line with the Task Force on Climate-related Financial Disclosures (TCFD). In this report, we deliver an extensive overview of our methods for addressing climate-related risk and opportunities, focusing on their application to PIMCO in our role as a fiduciary to our clients' assets.

The purpose of this document is to present a detailed account of our management of climate-related risks and opportunities, including the processes for their identification, assessment, and management.



A handwritten signature in black ink that reads "E. Roman". The signature is stylized and written in a cursive-like font.

Emmanuel Roman
CEO, PIMCO

Introduction

In order to help stakeholders better understand an organization’s climate-related risks and opportunities, the Financial Stability Board established the Task Force on Climate-related Financial Disclosures (TCFD). Enabling decision-useful and forward-looking information, the framework’s four main areas are governance, strategy, risk management and metrics and targets.

- Governance disclosures illustrate how an organization’s board and management team monitor and assess climate risks and opportunities.
- Strategy disclosures provide insight on the actual and potential impact of climate risks and opportunities on the organization.
- Risk management disclosures highlight how the firm identifies, assesses, and manages these risks.
- The final section consists of the metrics and targets that are relevant to manage and assess these climate-related risks and opportunities, for example Scope 1, 2, and 3 greenhouse gas emissions.¹

The purpose of this report is to disclose PIMCO’s procedures and capabilities in these four areas, as well as share practical case studies to illustrate these efforts where relevant. Importantly, this report encompasses both PIMCO’s portfolios that follow sustainability strategies² and guidelines as well as those that do not. Therefore, the extent to which the frameworks, assessments, and metrics discussed are applied and optimized in individual portfolios will vary dependent on client-driven preferences.

Our investment approach seeks to appropriately integrate material ESG factors, including climate-related risks and opportunities, into our investment decision-making and portfolio construction process, where applicable. This was one of the main drivers that led us to formalize our support for the TCFD in 2019. We aim to integrate material climate factors into our top-down (i.e. longer-term macro and socio-economic) view and our bottom-up assessment in seeking to enhance clients’ risk-adjusted returns. We believe these factors should be part of a robust investment process.

Integrating relevant climate-related risks and opportunities into the evaluation process does not mean that this is the sole or primary consideration for an investment decision; instead, PIMCO’s portfolio managers and analyst teams consider a variety of factors including the financial materiality of those factors to make investment decisions. Importantly, by increasing and diversifying the information available to the portfolio management team we are able to pursue a more holistic view of an investment, which we believe will ultimately benefit our clients.

As an asset manager and fiduciary, our duty is to seek to achieve our clients’ stated investment objectives, which vary across portfolios based on investor direction. We offer solutions to support clients’ ambitions to achieve decarbonization goals over a long-term horizon in their portfolios, but also recognize the diversity of strategies, approaches, and commitments to get there. Our role as a fiduciary differs from asset owners that set targets to reduce their portfolio emissions. Without instruction to do so, we have not imposed any transition targets or climate-related exclusion policies on our client portfolios, as our fiduciary duty obliges us to manage portfolios consistent with our clients’ preferences.

CORE ELEMENTS OF RECOMMENDED CLIMATE-RELATED FINANCIAL DISCLOSURES



Source: TCFD.
For illustrative purposes only.

1 Scope 1 emissions are direct GHG emissions that occur from sources owned or controlled by a company (for example, company vehicles and facilities), Scope 2 emissions are indirect GHG emissions from the purchase of electricity, steam, heating or cooling, and Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain.

2 Sustainable Strategies are strategies with client-driven sustainability requirements. For these strategies, PIMCO actively incorporates sustainability principles (i.e. excluding issuers fundamentally misaligned with sustainability factors, evaluating issuers using proprietary and independent ESG scoring) consistent with those strategies and guidelines. Further information is available in PIMCO’s Sustainable Investment Policy Statement. For information about funds that follow sustainability strategies and guidelines, please refer to the fund’s prospectus for more detailed information related to its investment objectives, investment strategies, and approach to sustainable investment.

Summary

The below summary table provides an overview of how the content of this report aligns with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).³

TCFD recommendations to Asset Managers	Section's focus	Title	Summary
Governance Describe the board's oversight of climate-related risks and opportunities and describe management's role in assessing and managing climate-related risks and opportunities.	PIMCO's governance concerning climate-related risks and opportunities.	Management's role in assessing and managing climate-related risks and opportunities.	PIMCO's governance framework includes defined roles and groups that are responsible for the facets of sustainable investing.
		Sustainability Leadership team and committees overseeing climate risks and business strategy.	Sustainability Leadership is responsible for overseeing climate risk integration into the investment process, guiding PIMCO's portfolio management team.
		PIMCO's Forums, Global Advisory Board, and specialized Committees.	Climate risks have been assessed as part of both PIMCO's Secular and Cyclical forums as well as regional committees.
			ESG risk (including climate-related risks) is considered as a risk category in PIMCO's risk taxonomy, risk management framework and risk appetite.
Strategy Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. Describe how climate-related risks and opportunities are factored into relevant products or investment strategies. Asset managers should also describe how each product or investment strategy might be affected by the transition to a lower-carbon economy. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Actual and potential impacts of climate-related risks and opportunities on PIMCO's business, strategy and financial planning.	Climate-related risks and opportunities: potential impacts, specific issues and time frames.	Over the cyclical horizon (short term: 0-1 year), we see mixed trends for the energy transition and continued potential for weather-related disruptions. Over the secular horizon (medium to long term: 1-5 years and beyond), key developments suggest a structural rise in both transition and physical risks.
		The impact of climate-related risks on PIMCO's business.	These potential impacts led us to continuously deepen our framework that aims to systematically integrate relevant climate factors into our investment process.
		The impact of climate-related opportunities on PIMCO's business.	PIMCO has developed a framework to seize opportunities linked to financing the transition. Introduced PIMCO's Net Zero Framework to Decarbonize Bond Portfolios to support clients with specified decarbonization goals.
		How climate-related risks and opportunities are factored into PIMCO's investment strategy.	Climate risks are embedded into PIMCO's process to integrate ESG factors into our credit research and investment process firmwide, including frameworks for major asset classes relevant to PIMCO.
		Climate risks and impact embedded into PIMCO's sustainable investment solutions.	In PIMCO's sustainable investment solutions, we embed climate change into our three-step approach of exclusion, evaluation and engagement.
		Climate scenario analysis models: assessing the resilience of assets from top-down to bottom-up.	Our climate scenario models suggest it is important to pay attention to climate change now, before damage in the future becomes irreversible and much more severe.
		Collaboration to advance climate risk measurement and management.	PIMCO assists with climate efforts in numerous regions and via multiple initiatives.

³ While PIMCO has not made a firmwide net zero commitment, we are committed to providing industry-leading advice and solutions for clients on a range of sustainability and ESG issues, including climate change and reducing greenhouse gas emissions to net zero.

TCFD recommendations to Asset Managers	Section's focus	Title	Summary
<p>Risk management</p> <p>Describe the organization's processes for identifying and assessing climate-related risks.</p> <p>Describe the organization's processes for managing climate-related risks.</p> <p>Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.</p> <p>Describe, where appropriate, engagement activity with investee companies to encourage better disclosure and practices related to climate-related risks in order to improve data availability and asset managers' ability to assess climate-related risks.</p> <p>Asset managers should also describe how they identify and assess material climate-related risks for each product or investment strategy. This might include a description of the resources and tools used in the process.</p>	<p>How PIMCO identifies, assesses and manages climate-related risks.</p>	<p>Process for identifying, assessing and managing climate-related risks.</p>	<p>PIMCO measures and manages portfolio risk by focusing on a series of factor-based risk measures.</p> <p>PIMCO's ESG specialists designed proprietary climate tools and frameworks covering a range of perspectives and metrics.</p> <p>We engage with issuers for enhanced corporate disclosure on climate change.</p>
<p>Metrics and Targets</p> <p>Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.</p> <p>Describe metrics used to assess climate-related risks and opportunities in each product or investment strategy. Where relevant, asset managers should also describe how these metrics have changed over time. Where appropriate, asset managers should provide metrics considered in investment decisions and monitoring.</p> <p>Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.</p> <p>Provide the weighted average carbon intensity, where data are available or can be reasonably estimated, for each product or investment strategy. In addition, asset managers should provide other metrics they believe are useful for decision-making along with a description of the methodology used.</p> <p>Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.</p>	<p>Climate-focused investment exposure of PIMCO.</p>	<p>Metrics and targets used to assess and manage relevant climate-related risks and opportunities.</p>	<p>This section shows, for PIMCO, selected metrics linked to the recommendations of the Task Force on Climate-Related Financial Disclosures and similar disclosure frameworks.</p> <p>At present, given our role as a fiduciary, PIMCO does not employ any universal climate-related targets on the assets managed on behalf of our clients.</p>

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GOVERNANCE

Roles and Responsibilities



Management’s role in assessing and managing climate-related risks and opportunities

PIMCO’s global governance framework includes defined roles and groups that are responsible for the facets of sustainable investing, including keeping our Risk Committee and Executive Committee apprised of our efforts.

Our Sustainability Leadership Team sets the strategic priorities for the platform and oversees our firmwide integration efforts, including our research frameworks, systems and tools. Key members of PIMCO’s Sustainability Leadership team with a clearly defined oversight function include:

- Executive Committee member who is responsible for oversight of the firm’s Sustainability initiatives including ESG, as well as product development, Marketing, and messaging for all of our Sustainable Investment Solutions and our firmwide integration of ESG.

- Head of Corporate Sustainability who oversees all aspects of corporate sustainability including the firm’s strategy, initiatives, and external partnerships.
- Portfolio Management Lead for ESG Investing who is responsible for: coordination with the broader credit research team; overseeing the ESG Research Analyst team responsible for evaluating and engaging with issuers globally; ESG integration across the trade floor; and consistent implementation of our research frameworks.

Business Management group functions each have designated contacts to help coordinate functional support for sustainability efforts across areas such as Operations, Legal & Compliance, Information Technology and Marketing.

Sustainability Leadership team and committees overseeing climate risks and business strategy

The Sustainability Leadership team, including Grover Burthey, PIMCO’s Portfolio Management Lead for ESG investing, manages PIMCO’s ESG investment process that seeks to factor in climate change risks across selected portfolio management teams, from credit and sovereign research to mortgage and municipal analysis.

The Sustainability Leadership team builds on inputs from PIMCO professionals focused on climate research and investing as well as analytics and technology teams who have developed tools available firmwide to assess climate risks. This involves portfolio management tools or a weekly dashboard shared with portfolio managers that is comprised of key data on ESG-labelled⁴ bond issuances, pricing, and notable market observations including a list of news flows and research covering important

developments linked to climate risks (e.g. regulatory updates).

PIMCO’s Global Executive Committee is responsible for PIMCO’s strategic direction and management including establishing firmwide business strategy and deciding upon a range of financial, operational and other material matters, while PIMCO’s investment strategy is established by our Global Investment Committee, guided by our economic forums and subsequent strategy sessions. Notably, in recent years, our Investment Committee covered the topics of portfolio decarbonization targets and potential winners and laggards of the energy transition, including “stranded assets” (defined as those that turn out to be worth less than expected as a result of changes associated with the energy transition).

⁴ **ESG-labelled** bonds are defined as green, social, sustainability and sustainability-linked bonds. **Green Bonds** are those issues with proceeds specifically earmarked to be used for climate and environmental projects. **Social Bonds** are use-of-proceeds bonds earmarked to finance new and existing projects or activities with positive social impacts. **Sustainability Bonds** are use-of-proceeds bonds earmarked to finance new and existing projects or activities with positive environmental and social impacts. **Sustainability-Linked Bonds (SLBs)** are any type of bond instrument for which the financial and/or structural characteristics can vary depending on whether the issuer achieves predefined Sustainability/ESG objectives.

PIMCO's Forums, Global Advisory Board and specialized committees

PIMCO's active investment process combines our top-down macroeconomic view with bottom-up research and analysis. Top-down views are driven by our economic forums, consisting of the Secular and Cyclical forums.

During our Secular forums, the firm formulates its outlook for global financial markets over the next five years and, where relevant for such considerations or discussions, considers climate-related issues. For example, in PIMCO's 2021 annual Secular Forum, the transition from brown to green energy was highlighted as one of the major disruptive trends to likely drive a major transformation of the global economy and markets. In 2022, the Secular Forum addressed physical risks and climate resilience, including a focus on the agriculture sector. In 2023, PIMCO's Secular Outlook underscored how energy security and independence have grown into paramount objectives for various countries after widespread geopolitical conflict triggered acute energy supply shocks in several regions around the world. Further, during the forum itself, PIMCO had a dedicated session towards the secular outlook on capital expenditures ("capex"), including a portion spent analyzing a potential green capex super-cycle driven by fiscal incentives.

PIMCO's Global Advisory Board, which comprises macroeconomic thinkers and former policymakers, participates in these forums and typically provides insights on global economic, political and strategic developments and their relevance for financial markets. The impact of climate risks was notably highlighted over recent years by Mark Carney, UN Special Envoy on Climate Action and Finance, who is a member of the Global Advisory Board. These topics are also analyzed in the context of PIMCO's quarterly Cyclical Forums to the extent that they affect our bottom-up perspective, as well as growth and inflation forecasts over the business cycle horizon of the next 6-12 months. For example, the momentum for green, sustainability and sustainability-linked bonds associated with climate targets – including potential step-ups triggered by greenhouse gas emissions reduction targets being missed – was explored during the latest quarterly forums held in 2023.

PIMCO's Secular and Cyclical Forums build on PIMCO's research and economic data from presentations by the firm's three regional portfolio committees and the ESG Research Analysts, among others. Our regional committees are supplemented by additional committees focused on certain

sectors (e.g., PIMCO's European Credit Committee) meeting weekly and addressing a broad range of climate-related risks throughout the year. In recent years, these presentations examined topics such as the U.S., Asian or European climate policy agenda for businesses and the finance sector in particular (such as the US Inflation Reduction Act, or the EU taxonomy for sustainable activities), and the consequences of the international climate policy ambition (takeaways of the United Nations Climate Change conferences). These presentations were led by PIMCO's ESG Research Analysts in collaboration with credit research analysts and portfolio managers. Metrics included a review of portfolio greenhouse gas emissions, and net zero⁵ alignment methodologies or portfolios' exposure to long-dated bonds in the energy and fossil fuel industries, with a focus on issuers whose transition plan is less advanced.

Further, over the past few years we have conducted a number of climate-focused educational sessions for PIMCO's investment professionals, with internal and external experts focusing on specific topics, including meeting client targets for decarbonizing their portfolios, green bonds, and carbon pricing risks.

Additionally, PIMCO has formed an ESG Data Governance Group, which includes representatives from various teams such as Risk, Analytics, Client Solutions, Credit and Portfolio Management. This group's focus areas include, among others: exploring ways of updating and enhancing proprietary ESG methodologies, and further embedding climate-related risk into existing PIMCO core stress-testing tools; portfolio risk-profiling; and research.

Specifically in regards to enterprise risk management, ESG risk is considered as a risk category in PIMCO's risk management framework, both for the top-down strategic assessments (top risk assessments and risk appetite statement) and the bottom-up operational risk and control reviews (risk inventory, risk control self-assessments). The processes described in the risk management section hence systematically consider ESG risks and mitigations. Additionally, PIMCO broadly takes into account a wide array of risk categories, including those related to distribution and marketing risk, regulatory compliance risk, and vendor risk.

⁵ While PIMCO has not made a firmwide net zero commitment, we are committed to providing industry leading advice and solutions for clients on a range of sustainability and ESG issues, including climate change and reducing greenhouse gas emissions to net zero.



STRATEGY

Climate Risk Integration



PIMCO's role in the transition to a low-carbon economy

PIMCO is committed to providing appropriate advice and solutions for clients on a range of sustainability issues, including climate change. PIMCO, as an asset manager, recognizes the distinct role that it plays relative to asset owners, who each have varying investment objectives, preferences, and regulatory environments. Our role is to manage our clients' assets using the parameters that they have set out, which can often incorporate climate risk considerations but will do so to varying degrees and in varying formats. Consequently, PIMCO has not imposed universal climate targets on portfolios managed by the firm. However, as clients begin or continue to assess the possibility of adding these targets, we will work collaboratively with them on assessing the feasibility of structuring and managing these.

Our strategy has been to:

1. Provide clients with investment solutions to meet their decarbonization ambitions.

2. Develop portfolio analytics available to our portfolio managers to use in evaluating investments and managing portfolios.
3. Engage with issuers, where relevant, to evaluate their transition plans to maximize value for investors.
4. Work with industry groups that meet internal criteria to develop standards and educate constituents.

As part of our support to clients with specified decarbonization goals, in 2022, we developed a four-pronged approach: 1. managing the carbon footprint; 2. investing in climate leaders or in those progressing in their climate objectives; 3. supporting climate solutions; and 4. influencing change through engagements.

Climate-related risks and opportunities: potential impacts, specific issues and time frames

PIMCO recognizes that climate change may have a profound impact on the global economy, financial markets, and issuers. While the horizon of climate models can span a very long period, which we typically characterize as the secular or super-secular horizon (1-5 years and beyond), the pace of change can be swift and relate to our cyclical horizon (0-1 year). Risks

and opportunities related to climate change may materialize in unexpected ways, and can affect investments across asset classes, including a wide range of fixed income securities, such as corporate credit, mortgage-backed securities, sovereign debt and municipalities. The impact on financial markets and bond prices may be abrupt and sudden.

How climate-related risks and opportunities are factored into PIMCO's investment process

When evaluating climate-related risks of specific sectors and issuers as part of PIMCO's integration of ESG factors into our investment process firmwide, we begin with two broad categories:

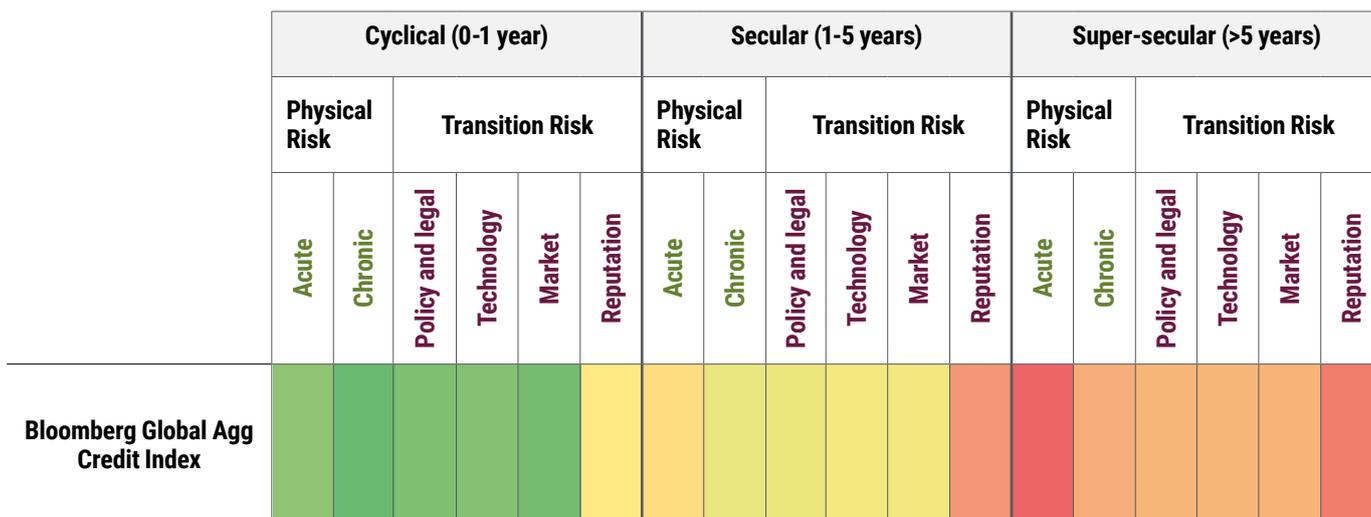
1. **Transition risks**, including policy, legal, technology, market, and reputation risks (e.g., tighter regulations on carbon emissions, climate-related litigation).
2. **Physical risks**, including both acute and chronic. Acute risks are event-driven, such as hurricanes and wildfires. Chronic risks are longer-term shifts in climate patterns, such as how the rising intensity and frequency of extreme weather events affects critical assets and natural resources used by the issuer.

ILLUSTRATIVE CLIMATE RISK DRIVERS AND ASSETS EXPOSED TO THESE DRIVERS

	Transition Risk	Physical Risk
Examples	<ul style="list-style-type: none"> Carbon regulation (e.g. tax or cap and trade systems). Energy-related technology changes (e.g. rise of low-carbon sources of energy such as renewables). Shifting customer preferences. Liability (e.g. litigation against governments and companies due to a lack of action). 	<ul style="list-style-type: none"> Acute physical risks (e.g. increased severity of extreme weather events, such as cyclones and floods) Chronic physical risks (e.g. changes in precipitation patterns and extreme variability in weather patterns, rising mean temperatures and sea levels) Air pollution Water stress Forest and land degradation
Corporates	Autos, Energy, Coal mining	Insurance Property and Casualty (P&C), Utilities, Refining
Sovereign	Fossil fuel-exporting and energy-intensive sovereigns, depending on their fiscal positions and savings.	Developing and least developed economies, resource-limited economies with weak institutions, especially those dependent on sectors like agriculture and situated near the equator or on small islands, due to their limited adaptive capacity and increased exposure
Munis	Coal-fired generation among utilities.	Significant risks of water shortages for U.S. water utilities connected with regional and local governments
Mortgage- and asset-backed securities (MBS and ABS)	ABS: Aircraft, auto loans, leases affected by carbon regulations; MBS: 'Brown' assets lacking compliance with energy efficiency and environmental standards.	MBS: Holders of residuals or Mortgage Servicing Rights, mostly on the private side; activities with concentrated exposure to specific geographies, such as Commercial Real Estate lending

As of 31 December 2023. Illustrative climate risk drivers and assets exposed to these drivers. Source: PIMCO, IPCC, IEA, Maplecroft, Moody's.

PIMCO has developed a climate risk scoring methodology that evaluates corporate sectors' exposure to these two climate risks over different time horizons: the cyclical (0-1 year); secular (1-5 years); and super-secular (>5 years). This assessment serves as a starting point before drilling down into specific issuers. The graphic below provides an illustration of this scoring methodology, examining PIMCO's and one corporate credit-focused benchmark.



For Illustrative Purposes Only

As of 31 December 2023. Source: Moody's, PIMCO, IPCC, IEA, DNB, IPR Climate Transition Forecasting Consortium.



The following table provides more information on the time horizons we use to assess climate-related risks and opportunities when relevant, alongside selected issues identified and analyzed in terms of potential investment implications (illustrative given that PIMCO's global footprint across various asset classes involves a broad range of climate-related risk drivers) and other types of impacts, such as on our clients or PIMCO from a regulatory or reputational perspective.

Time horizons	Time horizon label	Short term (0-1 year)	Medium term (1-5 years)	Long term (>5 years)	
	PIMCO's investment process (forums' terms)	Cyclical	Secular	Super-secular	
	Perspective	How to identify potential changes in monetary and fiscal policies, market risk premiums, and relative valuations that drive portfolio positioning	How to position portfolios to benefit from structural changes and trends in the global economy		
Transition Risk	Policy and Legal	Greater support for low-carbon energy sources, such as renewable energy and storage, as part of government's response to the energy shock	Carbon price increase in terms of value and coverage of greenhouse gas emissions phase-out (including bans) of certain high-carbon sources of energy, technologies and products		
	Technology	Record growth of renewables capacity additions amid improved competitiveness	Renewable energy emerges as the dominant source of electricity generation	Deployment at scale of advanced batteries, hydrogen electrolyzers, and direct air capture and storage	
	Market	Increased uncertainties and growing demand for fossil fuel ESG-labelled bonds growth and diversification (e.g. transition-related green bonds and sustainability-linked bonds)	Increased investments into renewable energy and lower investment into fossil fuels supply Growth in climate-related requirements and requests from clients	Declining demand for fossil fuels, especially oil	
	Reputation	Increased scrutiny and concerns over "greenwashing" (e.g., misrepresentation of climate characteristics of an issuer or financial product), including ESG data and standards integrity			
Physical Risk	Acute	Rising costs of disasters such as hurricanes, wildfires, floods			
	Chronic	Disruptions to energy supply brought about by droughts	Heatwaves could result in labor productivity and crop yield losses, disrupting soft commodity supply		

As of 31 December 2023. Source: IEA, PIMCO, S&P, Munich Re, Swiss Re. **For illustrative purposes only.**

Over the cyclical horizon, we could see some geopolitical uncertainties and other sources of energy market volatility and continued potential for weather-related disruption impacting our investments, as seen in previous years. Over the long term, key developments suggest a structural rise in both transition and physical risks.

The impact of climate-related risks on PIMCO's business

In recent years, PIMCO enhanced our proprietary climate risk evaluation framework, which we have been continuously expanding and enhancing. This led to the development of tools and methods that seek to integrate over time relevant climate risk evaluations in our investment decisions as per applicable investment guidelines or business considerations.

PIMCO aims to consider all potential risks and opportunities that could affect particular issuers or industries where

appropriate, including climate-related risks – both physical and transition. For instance, PIMCO's fundamental analysis of credits in the energy sector closely examines companies' exposure to different types of energy sources and extraction methods, environmental and regulatory risks to their business activities, the relative cost positions of companies and their commitments, and steps taken to diversify into lower-carbon sources of energy. Further, PIMCO has developed proprietary carbon measurement

and optimization tools. These include an attribution methodology which allows users to measure the estimated contribution of different factors to a change in portfolio carbon metrics over time and identify potential real world emissions decarbonization.

Ultimately, we look to map the extent to which long-term climate risks can be reflected in our credit views and bond prices where applicable, and, if they are not, what this could mean for issuers' credit quality considering bond characteristics (e.g., duration) over time.

The impact of climate-related opportunities on PIMCO's business

As risks mount, many issuers around the world are shifting from climate awareness to action, giving rise to new investment opportunities. Investors are monitoring government responses to climate risks in the form of regulation, carbon taxes, and public investment, as well as shifts in consumer sentiment and business models. We expect these trends to materially change the investment landscape: the transition away from fossil fuels toward clean energy, for example, could create attractive investment opportunities not just limited to the energy sector (e.g. clean transports, energy efficient buildings) and significantly transform the global economy.

Fixed income markets, in our view, currently offer a diverse array of sustainable investment options and even more so in the years to come. The sustainable bond market, including green and sustainability-linked bonds, continues to grow at a rapid pace, offering compelling opportunities to finance – among others – the climate transition. PIMCO's ESG Research Analysts has published best practices for issuers of ESG-labelled bonds in both the corporate, sovereign, and municipals space.

[PIMCO's Best Practice Guidance for Corporate Sustainable Bond Issuance](#)

[PIMCO's Best Practice Guidance for Sovereign Sustainable Bond Issuance](#)

[PIMCO's Best Practice Guidance for Municipal Sustainable Bond Issuance](#)

For clients looking to implement decarbonization targets, PIMCO has developed a four-pillar decarbonization framework to help investors target long-term objectives to reduce portfolio exposure to greenhouse gases. This framework provides a meaningful and realistic approach to decarbonizing fixed income portfolios over time, while engaging and investing in the climate solutions and leaders best positioned to contribute to real-economy emissions reductions.

As certain asset owners explore the possibility of incorporating decarbonization targets in their investment portfolios, PIMCO has collaborated with numerous clients on assessing the feasibility and portfolio implications of implementing decarbonization targets.



CASE STUDY: PORTFOLIO LEVEL DECARBONIZATION TARGETS IN CREDIT MANDATES

PIMCO recently worked with a UK-based institutional client to explore the potential implementation of numerous climate-related portfolio targets. The targets focused primarily on portfolio level decarbonization as well as increasing investment exposure to issuers with verified science-based carbon emissions reduction targets. From a decarbonization perspective, the client was interested in the potential to reduce portfolio weighted average carbon

intensity (WACI) by 35% by 2025 and 60% by 2030, relative to a 2019 baseline. PIMCO's tailored analysis assessed numerous possible ways to potentially implement these targets, balancing the greenhouse gas emissions reduction and investment in issuers with ambitious carbon emissions reduction targets, while seeking to minimize portfolio impact (e.g., transaction costs or constraints on investment universe).

The example above is presented for illustrative purposes only, as a general example of PIMCO's ESG research and engagement capability and is not intended to represent any specific portfolio's performance or how a portfolio will be invested or allocated at any particular time. PIMCO's ESG processes may yield different results than other investment managers' and a company's ESG rankings and factors may change over time. All data is as of 31 December 2023, unless otherwise stated.

PIMCO'S ASSESSMENT OF CLIMATE RISKS ACROSS ASSET CLASSES

This section provides details on climate risks identified and analyzed for major asset classes relevant to PIMCO (for illustrative purposes only), including how they may be affected by the transition to a lower-carbon economy: Corporate, Sovereign, Municipal, Securitized, and Alternative.

While the findings of this climate risk assessment may inform various actions (e.g. engagement), the examples below illustrate how they impact our research and investment decisions. They broadly show that our evaluation of climate risks fits into PIMCO's global credit investment process, including the assessment of issuers' credit quality and whether we are appropriately compensated for the climate-related financial risks analyzed.



CASE STUDY: CORPORATE CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Physical risks: There have been a limited number of instances where acute risks already had a more significant impact on corporate issuers. In these scenarios, the impact has been on a rather small number of corporate issuers (e.g., hurricanes for U.S. refiners or chemicals, or floods in Europe for financials).

Chronic physical risks are inherently set to be more apparent over a longer period. While there are large uncertainties, we evaluate the possibility for those to occur sooner rather than later and thus to potentially have a significant importance already over a medium-term horizon. In the short term, heatwaves and reduced rainfall are two examples of risks that had a limited and temporary impact on corporate issuers' financials, for example for food and beverage and utilities in Europe.

Climate models suggest that these impacts may be exacerbated in the very long term (second part of the century) and could potentially remain moderate in the coming decade (e.g. by 2035). 2023 has been identified as the hottest year

on record globally, with an average temperature of almost 1.5 degrees Celsius above pre-industrial levels⁶. This has been linked to severe heatwaves and wildfires in places with very different climates such as Canada and Greece.

Transition risks: Policy, technology, market, and reputation transition risks have had a significant impact in Western markets, for example in the utilities sector given carbon regulations, renewables subsidies, shifting demand from end-use sectors, and the changing economics of coal versus modern renewables. Transition risks also had a significant impact on the automobile sector, given tightening carbon standards and the shift to electric vehicles.

2023 proved eventful for the transition to a lower-carbon economy. While certain trends were mixed when looking at market or policy developments (e.g., disruptions occurred in parts of the renewables market), we believe the drivers of green technologies remain solid overall and the momentum for additional climate action remains strong.

Below are select examples which illustrate how material climate factors may affect a PIMCO analyst's overall credit view on a corporate issuer.

	Corporate 1	Corporate 2
Climate risk type	Transition risk	Transition risk
Issuer profile	Regulated utility	Renewable equipment manufacturer
Material climate factors affecting analyst overall view	Secular gas volume decline for regulated gas issuer given the policy and consumer shift towards lower-carbon energy sources	Headwinds for offshore wind projects, supply chain disruption and cost inflation, including for commodities most in demand given the energy transition
PIMCO credit research and investment implication	Negative sub-sector outlook	Underweight recommendation

As of 31 December 2023. **The examples above are presented for illustrative purposes only**, as a general example of PIMCO's ESG research and engagement capability and is not intended to represent any specific portfolio's performance or how a portfolio will be invested or allocated at any particular time. PIMCO's ESG processes may yield different results than other investment managers' and a company's ESG rankings and factors may change over time. All data is as of 31 December 2023, unless otherwise stated.

6 <https://climate.copernicus.eu/global-climate-highlights-2023#:~:text=2023%20marks%20the%20first%20time,than%20%2C2%B0C%20warmer>.



CASE STUDY: SOVEREIGN CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Physical risks: Countries’ exposure and costs from both acute physical risks (wildfire, flooding, and storms) and chronic risks (those manifesting over the medium to longer term, including changes to precipitation and temperature patterns and sea level rise) are expected to increase⁷. Countries around the equator, and those reliant on agriculture, appear particularly vulnerable. Southeastern Asia, Central and Eastern Africa regions, the Caribbean and Central America are among the regions that could be the most impacted.

Climate hazards can affect countries and their wealth over a long-term horizon through direct damage to their physical capital stock (loss of land, changing crop yields, depleted natural resources, damages to infrastructure etc.), but also via indirect social impacts (food insecurity, productivity loss, international migration, civil unrest etc.), or biodiversity loss and international trade disruptions (climate change impacts on supply chains).

Public finance could be particularly affected by climate shocks (e.g. loss of revenues, increasing insurance costs, loss of value), leading to greater debt burdens that can undermine the financial stability of a country (e.g. increased probability of default).

Economies with limited resources, stringent financial conditions, and inadequate insurance coverage often face prolonged recovery periods. This was evident in the aftermath of the 2022 floods in Pakistan, where reconstruction costs exceeded the national budget⁸. Development policies may not always prioritize climate risk mitigation, as issues like poverty alleviation often take precedence, despite the interconnectedness of these challenges. Furthermore, countries with insufficient governance and scarce resources find it more difficult to build resilience against climate hazards. The 2023 IPCC report⁹ lists the following as particularly vulnerable: Africa; Small Island Developing States (SIDS); Least Developed Countries (LDCs); Central and South America; Asia; and the Arctic.

Different sovereigns will have differing levels of buffer to absorb the impacts of physical climate risks and results will vary according to policy responses that governments may take to manage and adapt to such risks. Opportunities could arise from mitigation actions, including climate resilience investments (e.g. seawalls, climate-smart agriculture, and infrastructure that is more resilient to high heat and extreme storms).

Below is an example which illustrates how material climate factors may affect a PIMCO analyst’s fundamental valuation on a sovereign.

Issuer	EM country
Asset Class/Sector	Sovereign
Climate risk type	Physical risks
Issuer profile	Central America Country
Material climate factors affecting analyst overall view	Despite its strong growth and diversification, the country’s economic stability has been undermined by the COVID-19 pandemic, social unrest, and disputes within the mining sector, alongside significant climate-related physical risks. The country is notably vulnerable according to climate change, though its relative resilience mitigates some of this vulnerability. Projected increases in temperatures, along with more frequent storms, droughts, and rising sea levels, are expected to cause fluctuating water levels. These changes pose a risk to the country’s maritime trade routes, potentially impacting revenues.
PIMCO credit research and investment implication	Our analysts have been more cautious on the country’s outlook, given climate risks and the deterioration in governance, anticipating market adjustments/pricing.

As of 31 December 2023. **Source: Germanwatch, IPCC, UNDP, World Bank.** The example above is presented for illustrative purposes only, as a general example of PIMCO’s ESG research and engagement capability and is not intended to represent any specific portfolio’s performance or how a portfolio will be invested or allocated at any particular time. PIMCO’s ESG processes may yield different results than other investment managers’ and a company’s ESG rankings and factors may change over time. All data is as of 31 December 2023, unless otherwise stated.

7 Sources: Bennett Institute, Federal Reserve Bank of Dallas, Moody’s, NGFS, S&P, World Bank. Example: https://www.ngfs.net/sites/default/files/medias/documents/ngfs_climate_scenarios_for_central_banks_and_supervisors_phase_iv.pdf
 8 https://thedocs.worldbank.org/en/doc/4a0114eb7d1cecbbf2f65c5ce0789db-0310012022/original/Pakistan-Floods-2022-PDNA-Main-Report.pdf?_gl=1*ypw3ki*_gcl_au*NTMxODIzMTc1LjE3MjQ0NDkxMzE
 9 https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf



CASE STUDY: SOVEREIGN CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Transition risks: The impact of transition risks varies across different countries and sectors. For example, countries with a large dependence on fossil fuels may see their budget pressured by the energy transition.

In the International Energy Agency (IEA) core scenarios, either oil demand peaks this decade or has already peaked. In the latest IEA Net Zero Scenario, the IEA reiterated that 'no new long lead time conventional oil and gas projects need to be approved for development'.

The general trend towards more aggressive carbon targets and tightening carbon policies across carbon intensive

sectors could entail material implications for businesses, households, and government spending. The impact could stem from both domestic and international action, e.g. carbon border tax or reduced demand for fossil fuel.

Mitigation actions partly depend on countries' response and resilience. Significant opportunities could arise on the back of low-carbon technology and governments propping up these sectors could in turn foster their economic growth. Transition policies that would help advance the global net zero target in an orderly fashion could help alleviate these risks.

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CASE STUDY: SECURITIZED CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Similar to other financial assets, securitized products are subject to transition and physical risks, which can be material.

Physical risks: We view physical risk affecting securitized credit predominantly through the risk that natural hazards could impose on the underlying collateral.

Given the wide span of securitized credits, we think that a differentiated approach to measure physical risk is warranted. For those where collateral is mostly concentrated in real assets, such as Residential Mortgage-Backed Securities (RMBS) or Commercial Mortgage-Backed Securities (CMBS), we utilize proprietary tools to locate the real estate assets in the underlying pool and combine the geographic data with climate research data (e.g. Federal Emergency Management Agency) to estimate the aggregated historical impact of various natural hazards (e.g. hurricanes or wildfire) on these assets.

For those where collateral is mostly concentrated in financial assets, such as Collateralized Loan Obligations (CLOs), we look to leverage physical risk tools, including forward-looking data that we are developing for the underlying corporates, but further extend the analysis to the CLO manager and structure level.

While we think that physical risk could have a more meaningful impact in both the medium term (more likely

via acute risks) and long term (via both chronic risks and more frequent occurrences of acute risks), we note the collateralization nature could, to some extent, reduce risk from certain tranches and the impact across tranches may be different.

Transition risks: The main transition risk focus for securitized credit stems from the potential impacts of an acceleration of the energy transition and tightening carbon regulations on the underlying sectors and assets (e.g., reduced value for those lacking compliance with energy efficiency and environmental standards). Therefore, we leverage internal corporate sector frameworks designed to evaluate climate risks for those relevant to the underlying loans, such as automotive, banks, or real estate.

From the risk perspective, we focus not only on the greenhouse gas (GHG) emissions from underlying assets, but also collateral’s exposure to carbon-sensitive or hard-to-abate sectors (e.g. aircraft ABS). We’re actively engaging with industry groups such as Partnership for Carbon Accounting Financials (PCAF) to evaluate and refine our estimate of financed GHG emissions for structured credit, especially for sectors most exposed to transition risks.

From the opportunity side, we focus on the potential ability of underlying assets to decarbonize across the value chain.

Select Securitized Credit Potential Materiality Exposure

	Transition Risk	Physical Risk
Residential Mortgage-Backed Securities (RMBS)	High	High
Commercial Mortgage-Backed Securities (CMBS)	High	High
Auto Asset-Backed Securities (ABS)	High	Low
Student Loan ABS	Low	Low
Credit Card ABS	Low	Low
Collateralized Loan Obligation (CLO)	Medium	Medium
Covered Bond	Medium	Medium

As of 31 December 2023. Source: PIMCO. For illustrative purpose only.

High
 Medium
 Low

Note: High/Medium/Low refer to the perceived materiality (potential exposure) in scenarios that may be deemed extreme relative to the current situation and unfold over several decades from now (e.g., disorderly transition to net zero, or limited climate action resulting in a significant increase in the intensity and frequency of extreme weather events). 'Low' includes areas where there is a particularly low visibility given data availability and quality.

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CASE STUDY: SECURITIZED CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Below are select examples which illustrate how material climate factors may affect a PIMCO analyst’s overall view on a securitized investment.

Issuer	Solar Loans / Leases Asset-Backed Security (ABS)	Non-Agency Commercial Mortgage-Backed Securities (CMBS)
Asset Class/Sector	Securitized	Securitized
Climate risk type	Transition risk	Transition risk
Issuer profile	Residential solar installer and financier	Single-asset / single-borrower fixed-rate deal secured a newly constructed certified building
Material climate factors affecting analyst overall view	Extension of solar Investment Tax Credit given recent passage of Inflation Reduction Act will continue to provide economic incentives to residential customers Secular trend of electrification and de-carbonization, spearheaded by major metropolitan cities where residential solar has been serving traditionally, further supports sector growth.	Attractive from an ESG perspective (environmental impact credentials, including energy efficiency), as well as desirable from a tenant perspective The CMBS financing framework reflects industry best practice, aligned to ICMA Green Bond Principles
PIMCO Credit research and investment implication	Supportive. PIMCO participated in the new issue	Supportive. PIMCO participated in the new issue

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CASE STUDY: ALTERNATIVE INVESTMENTS

Alternative investments are subject to potential transition and physical risks which, similar to other financial assets, can be material and partly depend on the segment in scope.

commercial real estate deals, as asset performance can be severely impacted by weather-driven disruptions to tenancy, property availability, or residual value.

Physical risks: Alternative assets with physical underlying collateral or real asset exposure have the greatest sensitivity to physical risks. Natural hazards and perils are taken into consideration during the pre-investment due diligence process, particularly when underwriting

Transition risks: Alternative assets are exposed to potential transition risk with the built environment and transportation-related collateral having the greatest potential exposure.

Select Alternative Investment Potential Materiality Exposure

	Transition Risk	Physical Risk
Aircraft Finance	High	Low
Auto Loans	High	Low
CMBS	High	High
Consumer Loans	Low	Medium
CRE Equity / Debt	High	High
Equipment Finance	Medium	Low
Land Development	High	High
Private Resi	Medium	High
REIT	High	High
Small Business Loans	Low	Medium
Telecom Infrastructure	Medium	Medium

As of 31 December 2023. Source: PIMCO. **For illustrative purpose only.**

Note: High/Medium/Low refer to the perceived materiality (potential exposure) in scenarios that may be deemed extreme relative to the current situation and unfold over several decades from now (e.g., disorderly transition to net zero, or limited climate action resulting in a significant increase in the intensity and frequency of extreme weather events). 'Low' includes areas where there is a particularly low visibility given data availability and quality.

■ High ■ Medium □ Low

EXAMPLE ALTERNATIVE INVESTMENT – DATA CENTERS

Data centers enable the storage and access of data securely and efficiently. They also provide the processing power needed to run complex applications and services. Data centers require significant power, cooling, and a sizable physical presence to host servers.

and battery storage; rain water harvesting; natural water cooling solutions; and rain gardens or green infrastructure.

Physical risks: The physical presence of data centers could be subject to hazards and perils that are impacted by climate change. Additionally, data centers can be water intensive, as servers often require substantial cooling. Adaptation measures can be taken during development to address potential issues. Considerations include: on-site renewables deployment; back-up power generators

Transition risks: The energy and cooling demands inherent to data centers exposes this property type to expected transition risks, as data centers can generate substantial carbon emissions. Mitigating actions can be taken during development that may help address carbon emissions on a life-cycle basis. Potential actions include: reuse of existing land and materials; installation of on-site renewable power generation; green building certifications; backup power generation via biofuels; building management systems; and natural water cooling solutions.

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CASE STUDY: MUNICIPAL CREDIT CLIMATE-RELATED RISKS AND OPPORTUNITIES

Physical risks: Physical risks can be both short- and long-term, with exposure to acute events in the near term, such as flooding, wildfire, and hurricanes, and the expectation of long-term changes to communities from permanent sea level rise, temperature change, extended droughts, damage from acute events, and other physical impacts. Currently, the Federal Emergency Management Agency (FEMA) plays a significant role in helping state and local governments recover from acute events, though FEMA does not eliminate physical risks entirely. Additionally, we expect that physical hazards may continue to worsen, potentially having more significant long-term impacts on communities that do not have the ability or means to sufficiently adapt or retreat, with the potential to substantially impair a community's tax and/or employment base.

Transition risks: While physical risk is a more immediate consideration for the municipal market than transition risk, we consider how transition risk could affect communities with significant ties to the fossil fuel industry, such as significant concentration in the fossil fuel industry in the tax or employment base. We view transition risk as a more medium-term risk and more likely to have a nearer-term impact on communities located in states with more robust renewable portfolio standards, net zero carbon targets, or other climate-related regulations. We also look at where the transition away from fossil fuels could have positive impacts on communities. For example, where communities are experiencing growth in sectors that are supportive of the transition, such as renewable energy technology manufacturing plants or generation facilities, the transition could be a net job creator.

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Climate risks and impact embedded into PIMCO's sustainable investment solutions

In PIMCO's portfolios that follow sustainability strategies and guidelines¹⁰, we embed climate change into our three-step approach of exclusion (e.g. fossil fuels¹¹), evaluation (e.g. climate performance) and engagement to assess both the portfolio's contribution to climate change, and the impact of climate change from a credit risk perspective. Sustainability strategies aim to be better positioned than their respective benchmarks with respect to their exposure and management of climate risks, given their relative focus on issuers with stronger climate

characteristics overall (e.g., issuers with lower carbon intensity than peers, and companies with science-based carbon emission reduction targets and robust transition plans).

PIMCO's process to evaluate these risks includes both the incorporation of this analysis into our credit and ESG research as well as the implementation of climate scenario analysis and stress tests.

¹⁰ Sustainable Strategies are strategies with client-driven sustainability requirements. For these strategies, PIMCO actively incorporates sustainability principles (i.e. excluding issuers fundamentally misaligned with sustainability factors, evaluating issuers using proprietary and independent ESG scoring) consistent with those strategies and guidelines. Further information is available in PIMCO's Sustainable Investment Policy Statement. For information about funds that follow sustainability strategies and guidelines, please refer to the fund's prospectus for more detailed information related to its investment objectives, investment strategies, and approach to sustainable investment.

¹¹ Defined as issuers principally engaged in the oil industry, including extraction, production, refining, transportation, or the production, sale of coal and coal-fired generation.

Climate-scenario analysis models: assessing the resilience of assets from top-down to bottom-up

PIMCO has developed models taking both top-down and bottom-up approaches to climate scenario analysis in order to assess our portfolio’s potential resilience to relevant climate risks. PIMCO conducts scenario analysis based on emerging methodologies and guidelines, such as those seeking to model

the potential impact an extreme and sudden climate transition would have on bond prices (value at risk). Existing climate models could also examine the potential impact on bond prices in the event where no action is taken on climate change.

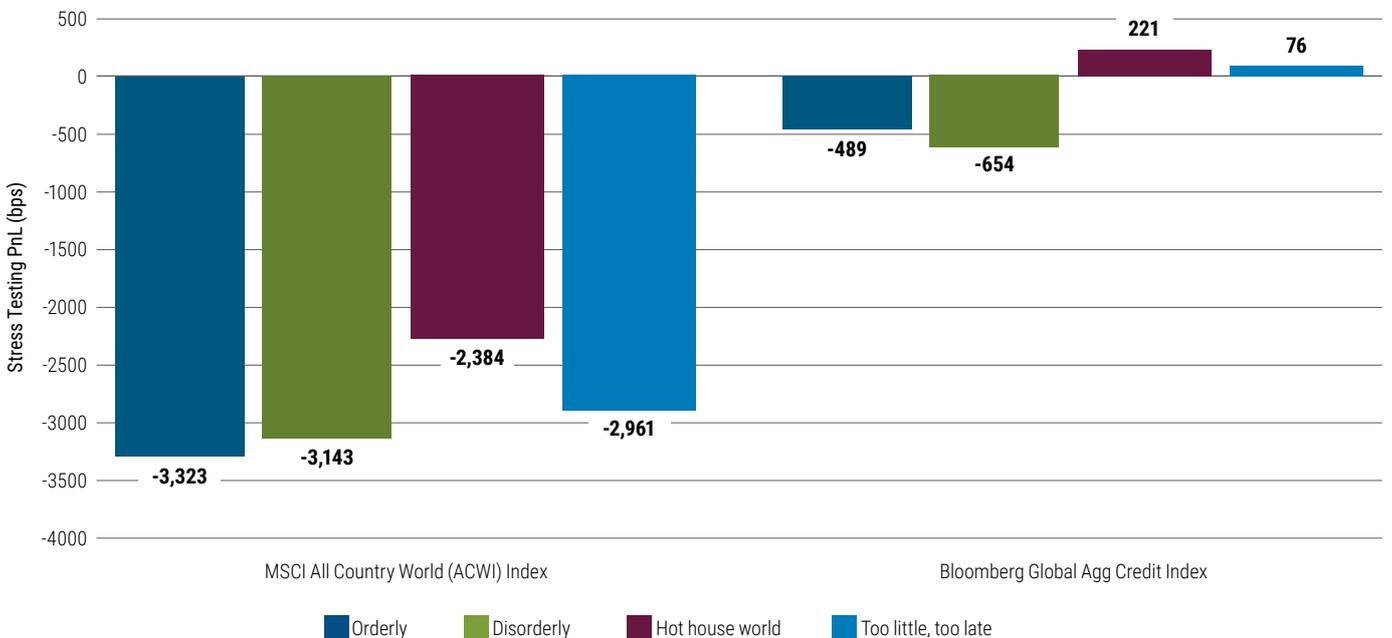
The following section expands further on these models and demonstrates how considering different climate scenarios enables PIMCO to have a more holistic assessment of the resilience of its investment strategies in relation to climate-related risks.

TOP-DOWN MODEL

We have created a PIMCO model which uses empirical data to capture the main mechanisms linking climate change to the global economy, such as changes in environmental taxes, impacts of rising temperatures, etc. With this model we can simulate the cumulative impact climate change could have on real GDP for the world, the U.S., and Europe over the years 2020-2050 under the different scenarios designed by the Network for Greening the Financial System (NGFS) - *More information on the top-down model and the NGFS Scenarios can be found in the Appendix.*

To determine the impact of climate scenarios on asset prices, we map the loss in real GDP onto real equity returns and real rates. Detailed below are the PIMCO model results (‘climate value-at-risk [VaR]’) for a global fixed income index (Bloomberg Global Aggregate Credit Index) and a global equity index (MSCI All Country World (ACWI) Index).

PIMCO top-down model implied impact on benchmark returns by scenario



As of 31 December 2023. Source: Burke and Tanutama (2019), Bloomberg, BP, IMF, OECD, Our World in Data, PIMCO. **For illustrative purposes only.**¹²

¹² Source: PIMCO Proteus model output as of 31 December 2023 for the MSCI ACWI Net Total Return USD Index. For illustrative purposes only. The top-down macro model maps a NGFS climate scenario to two types of outputs: macroeconomic and risk factor. The outputs are a panel with country and time dimensions. The time series dimension is annual over the same horizon as the input scenario. We assume the climate scenario affects the macroeconomic outputs through two channels: 1) Physical risks: Loss in productivity due to human-driven increase in global temperature; 2) Transition risks: Increased inflation and loss in growth from taxing carbon and subsidizing renewable investment. These macroeconomic shocks flow through to asset prices which we capture using a set of risk factors. The risk factor outputs are then plugged into PIMCO’s risk model (Proteus) and then applied to the desired account, index or security to generate the final return impact of the climate scenario. Given the uncertainties linked to climate models and data, this work inherently includes a host of assumptions and is exploratory and iterative. Scenarios are not forecasts or predictions. Sources: NGFS, IMF, OECD, BloombergNEF, World Bank, FRED, Our World in Data, Burke and Tanutama (2019).

In the orderly and disorderly scenarios, the implementation of a carbon tax causes lower real GDP and higher inflation. Based on our mapping to asset prices, this implies that equities fall and rates rise. For the Bloomberg Global Aggregate Credit index, we find the negative return on equity also means credit spreads widen.

The disorderly scenario features a delayed transition and larger losses in real GDP due to transitioning later, and also larger inflation causing a more negative return for the fixed income benchmark compared to the orderly scenario.

The too little, too late scenario, introduced by the NGFS in 2023, sees the implementation of a smaller carbon tax which does not meaningfully reduce physical risk and negatively impacts the economy, in our view. In this scenario, we find real GDP growth falls due to both physical and transition risk,

and inflation is positive but small. Mapping these impacts to asset prices, we find that both equities and rates fall. For the Bloomberg Global Aggregate Credit index, we find a return impact close to zero due to the opposing effects of falling rates and widening credit spreads.

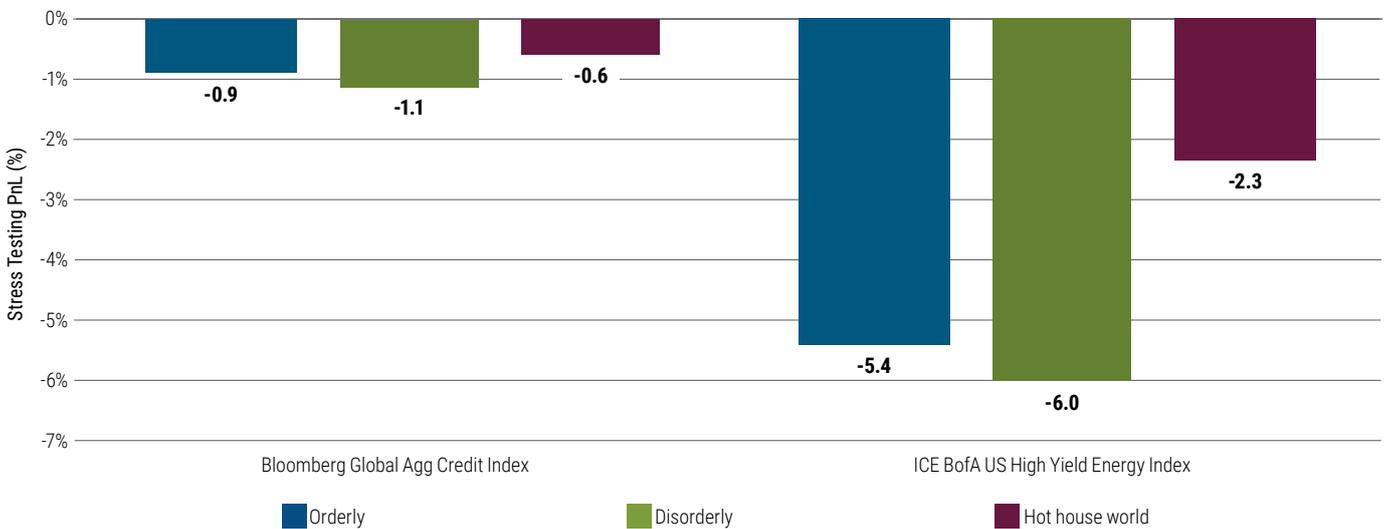
In the hot house world scenario, there is no inflation to offset the large losses in real GDP due to physical risk. As a result, equities and rates fall leading to losses in the equity benchmark and gains in the fixed income benchmark due to duration. While this simplified modelling inherently does not capture the specific impacts on fixed income sectors and securities given their characteristics and respective vulnerability to climate risks, it is useful as a first step to shed light on the potential connections between climate-induced GDP shocks and portfolio returns, all else equal.

BOTTOM-UP MODEL

PIMCO has developed a bottom-up sector stress-testing model using a distinct set of assumptions separate from those of the top-down approach. This model builds upon internal research and central bank stress testing exercises to determine equity price shocks for material sectors.¹³ These shocks incorporate both physical and transition risks across the 2021 NGFS’s six scenarios.¹⁴ PIMCO then translates these equity shocks into fixed income shocks and can apply them to corporate bonds in a portfolio.¹⁵

The charts below illustrate the impact climate change could have on two different corporate credit benchmarks, the Bloomberg Global Aggregate Credit Index and the ICE BofAML US High Yield Energy Index. Portfolios with a higher allocation to materially exposed sectors (e.g. energy), can increase the severity of losses across scenarios. The disorderly scenario can produce the most severe outcomes, as the world’s abrupt transition materially affects the equity valuations of high carbon-emitting sectors.

PIMCO's bottom-up model impact on benchmark returns per scenario type



As of 31 December 2023. Source: Bank of England, NGFS, PIMCO. **For illustrative purposes only**^{15,16}

¹³<https://www.bankofengland.co.uk/stress-testing>

¹⁴<https://www.ngfs.net/ngfs-scenarios-portal/> version 2.0

¹⁵Source: PIMCO bottom-up model output as of 31 December 2023 for the Bloomberg Global Aggregate Credit USD hedged index and ICE BofAML US High Yield Energy index. Output represents the impact on corporate bonds for both transition and physical risk. **For illustrative purposes only.** This model draws on a simplified method suggested by the Bank of England to assess the potential corporate sector shocks (equity and bond prices change under each climate scenario), for climate-relevant sectors, including both transition and physical risk. These sectors are then mapped to their equivalent subsectors. The Bank of England’s three climate scenarios (Orderly, Disorderly, and Hot House) are expanded to include the three new NGFS scenarios released in 2021. Each new scenario is calculated as a change compared to the original three scenarios. Expansion from three to six scenarios is accomplished by using multipliers for transition and physical risk. The transition risk multiplier is based on the NGFS carbon price for a given base and new scenario. The physical risk multiplier is based on temperature differences under each scenario. Bond price impact is estimated to be 15% of equity impact. Given the uncertainties linked to climate models and data, this work inherently includes a host of assumptions and is exploratory and iterative. Sources: NGFS, Bank of England, Merrill Lynch.

¹⁶Source: PIMCO bottom-up model output as of 31 December 2023 for the ICE BofAML US High Yield Energy index. Output represents the impact on corporate bonds for both transition and physical risk. For illustrative purposes only.

While the model does not account for a company's specific dynamics, which we address via a complementary bottom-up research approach, it provides insights into sector selection that can help structure more climate-resilient portfolios.

Climate resilience of PIMCO

In general, preliminary data produced by these models suggest a moderate impact of climate scenarios on PIMCO. However, limitations of stress-testing methodologies and data described in the appendix (page 46), alongside the areas for improvement we focus on, warrant great caution.

To help address these risks, we focus on two types of risk mitigation levers:

1. PIMCO's business model and investments diversification in terms of asset classes, credit quality, sectors and geographies.

Climate-related risks have the potential to impact the value of our assets under management (AuM), which would affect our future profitability. PIMCO's exposure to climate-related risks is predominantly via the financial assets we manage on behalf of our clients; our business model offers us a certain degree of flexibility and agility to adapt our exposure

depending on the realized climate scenario, in order to effectively mitigate such risks.

Moreover, our portfolios are broadly diversified across a number of asset classes and geographies; a large portion of our assets is invested in high-quality, highly liquid instruments of the fixed income market including investment grade corporate credit, government and government-related securities, and cash equivalents. Climate risk-driven expected losses for bonds are typically smaller in magnitude compared to other asset classes (such as equities); diversification helps avoid unwanted concentrations towards economies that are geographically and/or structurally more vulnerable to climate change.

2. Our climate risk integration and management process, described in other sections, most notably in the Risk Management section.

PLANS FOR TRANSITIONING TO A LOW-CARBON ECONOMY

As an organization that operates in jurisdictions with greenhouse gas (GHG) emissions reduction commitments, our firm is closely monitoring the implications for its clients and portfolios but has not set universal GHG emissions targets as an organization. However, as detailed throughout

this report and in the next section, we are taking various actions to have leading capabilities to support the transition, for example, as it relates to investment solutions for clients with decarbonization objectives or our engagement with issuers and various organizations on best practices.

Collaboration to advance climate risk measurement and management

As a leading global asset manager, PIMCO helps define global climate metrics for investment purposes, and encourages greater climate-related disclosure from issuers. Below is a select list of our industry leadership with third-party sponsored partnerships that are involved with improving global climate-related practices with regards to investment analysis and diligence. This includes a range of industry initiatives that are linked to the implementations of the TCFD, such as the Bank of England's Climate Financial Risk Forum's (CFRF) scenario analysis working group. In recent years, the CFRF published a series of guides to climate-related financial risk management.

THE PARTNERSHIP FOR CARBON ACCOUNTING FINANCIALS (PCAF)

PCAF is a global partnership of financial institutions that work together to develop and implement a harmonized approach to assess and disclose the greenhouse gas (GHG) emissions associated with their loans and investments. This subsequently helps asset owners obtain more consistent and meaningful carbon data from asset managers, which may help achieve different objectives (e.g., assess carbon-related financial risks).

PIMCO's Involvement: In 2023, PIMCO became a member of PCAF's Core Team, which governs the Global GHG Accounting and Reporting Standard for the financial industry and all its updates and expansions. It has the ultimate goal of harmonizing GHG accounting and reporting across the financial industry.

Progress to Date: The PCAF Core Team has announced four priority areas for standard development in 2024: transition finance and green finance; fluctuations in absolute GHG inventory; additional insurance products; and securitized and structured products. PIMCO is the Core Team Sponsor for the securitized products working group and a co-chair of the transition finance and green finance working group.

These guides aim to help financial firms understand the risks and opportunities that arise from climate change, and provides support for how to integrate them into their risk, strategy, and decision-making processes. Here, a PIMCO case study is provided in the Climate Solutions Chapter of the latest session (released in December 2022), demonstrating PIMCO's leadership and commitment to engaging with issuers on the global transition to a net zero economy. In addition, we contributed to the sovereign section of the CFRF online climate scenario analysis narrative tool that was updated in 2023.

CALIFORNIA GREEN BOND MARKET DEVELOPMENT COMMITTEE (CGBMDC)

Established in 2019, the CGBMDC works to expand financing for climate-friendly infrastructure through green bonds. The Committee has also held training events for market participants, targeted events for specific sectors such as municipal utilities, participated in ongoing efforts to improve the green bond market and has served as a catalyst for promoting linkages between climate solutions and finance.

PIMCO's Involvement: PIMCO participated as a member of a subcommittee aimed at creating a straightforward recommended approach to municipal green bond disclosure.

Progress to Date: In 2023, the Committee's Municipal Green Bond disclosure document was finalized and released. The purpose of the paper is to provide municipal bond issuers with concise, easy-to-follow guidance about what investors look for when evaluating the environmental attributes of a green bond issue. In turn, this may increase the quality and quantity of green bonds that investors may purchase.

RISK MANAGEMENT

Framework to Identify,
Assess and Manage
Climate Risks



Processes for identifying, assessing and managing climate-related risks

Risk management is a major focus at PIMCO and has been a cornerstone of the firm's investment philosophy since inception. PIMCO believes that successful risk management demands constant reassessment of the investment landscape in order to anticipate future market events and evolutions in potential risk frameworks.

The identification and assessment of relevant climate-related risks in our portfolios starts with our in-house investment research team. PIMCO's climate research is led by credit/research analysts – experts in their market sectors – who build on the structure of our broader ESG Research Analysts for coordination and consistency. Where applicable, climate risk features in our credit recommendations and our proprietary ESG scores for the issuers we evaluate. In this way,

PIMCO leverages the expertise of our analyst teams, while harmonizing climate risk analysis across asset classes and sectors where applicable. Importantly, our ESG scores inform the risk analysis applied to broad PIMCO portfolios, not only portfolios with specific sustainability objectives. Material ESG factors may include but are not limited to: climate change risks (both transition and physical risks); nature-related risks; shifting consumer preferences; and other factors associated with the concept of a Just Transition¹⁷; or human rights (e.g. supply chain risks). PIMCO's ESG scores have been developed based on proprietary frameworks and methodologies relevant to various fixed income sectors, such as: CLOs; corporate credit; covered bonds and Danish mortgages; municipal debt; and sovereign- or government-related debt, such as local authorities, supranational issuers and development banks.

¹⁷ According to the International Labour Organization (ILO), a Just Transition, "involves maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labor principles and rights".

Please see below an illustration of select ESG indicators and examples of sector-specific metrics used by PIMCO's analysts to assess corporate issuers' exposure to ESG risks as well as practices to mitigate those risks.

	Theme	Issue	Key Performance Indicators & Topics
Environmental	Climate Change	Greenhouse Gas Emissions	<ul style="list-style-type: none"> Carbon and GHG Emissions Energy Management, Mix and Reserves Transition risks (Market, Policy, Technology) Climate strategy, for risk mitigation
		Physical Risks and Resilience	<ul style="list-style-type: none"> Extreme weather impacts Adaptation and mitigation
	Natural Capital	Water	<ul style="list-style-type: none"> Water security & scarcity Water use, recycling & efficiency
		Land use and Biodiversity	<ul style="list-style-type: none"> Agriculture, Forestry, Land use change Soft commodities sourcing and production, including restoration costs
		Waste	<ul style="list-style-type: none"> Materials Efficiency & Process Mass Intensity Waste recycling, Hazardous waste management Critical incidents, environmental remediation & fines
		Air Pollution	<ul style="list-style-type: none"> Air quality
Social	Human Capital	Human Capital Management	<ul style="list-style-type: none"> Employee training, development, & engagement Attraction and retention & pay equity Diversity, equity & inclusion
		Human & Labor Rights and Health & Safety	<ul style="list-style-type: none"> Occupational health and safety incident rates Organized labor policies and relationships Supplier policies on worker rights, health, safety and compulsory labor
		Community & Stakeholder Relationships	<ul style="list-style-type: none"> Community engagement & relationship management Conflict minerals sourcing Involvement in controversial projects
	Product Health, Quality, Safety & Innovation	Product Safety & Quality	<ul style="list-style-type: none"> Product safety & lifecycle management, Recall track record Product liabilities, controversies and fines User data policies, data security
		Product Innovation & Wellness	<ul style="list-style-type: none"> Products & services tied to secular sustainability trends Innovation and intellectual capital, dedicated R&D Social/Inclusive business models ("triple bottom line")
Governance	Corporate Governance	Board, Management & Ownership	<ul style="list-style-type: none"> Qualifications, Characteristics and Oversight & Effectiveness, Remuneration & Succession Shareholder profiles (majority, family, government, activist), voting rights & proxy access Conflicts of interest and/or related party transactions
		Business Ethics, Conduct & Culture	<ul style="list-style-type: none"> Bribery & Corruption, Litigation, Anti-Competitive Practices & Tax Transparency Regulatory capture and political influence Code of ethics, Corporate behavior & Conflicts of Interest Treatment of customers and Key stakeholders, Reputation
		Delivery on Business & Balance Sheet Strategy	<ul style="list-style-type: none"> Track record in achieving guidance and targets Controls over capital allocation, Share buybacks and distributions Acquisitions, asset sales, divestitures or other transactions
	Risk Management & Transparency	Risk Management	<ul style="list-style-type: none"> Climate / Critical Incident / Systemic / Cyber Enterprise Risk Management Susceptibility to headline risks
		Transparency & Reporting	<ul style="list-style-type: none"> ESG data disclosure, Accounting practices & Audit quality Internal controls and reporting (timeliness and accuracy) Communication with key stakeholders (customers, employees, clients, investors)

To help analysts evaluate climate risk, PIMCO's ESG specialists designed various proprietary tools (see full list in graphic below), drawing on our decades of experience in fixed income analysis. The insights these tools provide are intended to help portfolio managers with managing and mitigating climate-related credit risks – as always, working within specific portfolio objectives and guidelines.

Insights from PIMCO's climate tools along with general ESG-related analysis are incorporated into PIMCO's proprietary ESG scores, as well as asset class and sector views where applicable. These assessments are subsequently made available to portfolio managers firmwide in order to account for and manage relevant ESG risks and opportunities within investment strategies. For portfolios that do not follow any sustainability strategy²⁰, the management of climate risks involves evaluating if we are sufficiently compensated for such risks over the investment horizon.

Further, for our portfolios that follow sustainability strategies¹⁸, management of climate risks often involves actively optimizing portfolios in order to avoid positions most exposed to climate risks and tilting to issuers best suited to take advantage of the identified climate opportunities. Our ESG Research Analysts provide relevant portfolio managers with ESG reports on a periodic basis to actively monitor and manage these risks. Quarterly fund reviews also take place for our PIMCO ESG funds that follow sustainability strategies and guidelines¹⁸ to update Portfolio Managers regarding various trends, including engagement progress or issuers' climate-related performance and controversies. In addition, ESG risk reports have been made available to our Portfolio Management team to provide additional details on a portfolio's exposure to carbon-sensitive sectors, climate solutions, and issuers' alignment with the Paris Agreement or our proprietary climate risk score.

The first three tools, the Climate Macro Tracker, Climate Risk Heat Map, and Issuer Climate Risk Score (Tools 1-3), seek to assess and reduce portfolio exposure to material financial risks due to climate change. The Climate Macro Tracker monitors broad momentum in climate change across key themes and scenarios, and measures the gap between the real-world metrics and global climate goals. Our Climate Risk Heat Map seeks to provide a high-level overview of exposure to climate risk among relevant sectors and assets. Finally, our Issuer Climate Risk Score assesses climate change risks for a wide range of relevant sectors and issuers, drawing on metrics such as the issuer's current and future carbon emissions. Use of these tools are generally not required; they serve as a discretionary resource to aid in the investment process at the election of portfolio management. These tools are used in client portfolios that maintain investment guidelines and restrictions related to sustainability matters.

Alongside the tools that are integrated into broad investment decisions, PIMCO's subsequent three climate tools (Tools 4-6) aim to reduce carbon emissions in sustainable investment portfolios. The Energy and Technology Mix looks to reduce portfolio exposure to activities contributing to global warming. Carbon Intensity Analysis seeks to provide insight on how to improve a portfolio's carbon profile. Finally, PIMCO's Green Bond Score assesses ESG-labelled debt, both prior to and after issuance, mapping them across a spectrum based on strategic fit, potential impact, red flags and reporting.

Finally, engagement is a significant tool for PIMCO as we seek to engage with relevant issuers to, among others, bolster their Paris Agreement alignment and to help them improve their management of the underlying credit risks, moving from awareness to readiness and, ultimately, alignment.

¹⁸ Sustainable Strategies are strategies with client-driven sustainability requirements. For these strategies, PIMCO actively incorporates sustainability principles (i.e. excluding issuers fundamentally misaligned with sustainability factors, evaluating issuers using proprietary and independent ESG scoring) consistent with those strategies and guidelines. Further information is available in PIMCO's Sustainable Investment Policy Statement. For information about funds that follow sustainability strategies and guidelines, please refer to the fund's prospectus for more detailed information related to its investment objectives, investment strategies, and approach to sustainable investment.

PIMCO’s seven climate tools for risk analysis and management

Integrating material climate risk into broad investment decisions

Objective	Tool #	Focus	PIMCO Tool Name	Key Question
Lower Credit Risk	1	Economic Impacts (Top-down)	Climate Macro Tracker	How to assess and decrease portfolio exposure to financial risks brought about by climate change
	2	Credit Risk Impacts (Bottom-up)	Portfolio Climate Risk Heat Map	
	3		Issuer Climate Risk Score	
Reduce Carbon Emissions	4	Brown Bonds	Energy and Technology mix compared with the Paris Agreement (IEA Scenarios)	How to reduce portfolio exposure to activities contributing to global warming
	5	Carbon Intensity	Portfolio Carbon Intensity Analysis	How to reduce portfolio's carbon footprint
	6	Green Bonds	Green Bonds Score	How to increase portfolio exposure to activities that help mitigate global warming
Both	7	Engagement	Expectations toward issuers on climate change	How to influence companies' strategy

Tools / Analytics to support construction of sustainability portfolios

As of 31 December 2023. Source: PIMCO. For illustrative purposes only.

ENCOURAGING BETTER DISCLOSURE AND PRACTICES RELATED TO CLIMATE RISKS

We engage with issuers for enhanced corporate disclosure on climate change and transition plans.

We evaluate the evidence of issuers’ activities in relation to the points highlighted in the table further below (illustrative), acknowledging issuers are at various stages, and the importance of the direction of travel and momentum. These expectations build on several frameworks, including the TCFD, Science-Based Targets initiative, or International Sustainability Standards Board.¹⁹

1	Climate Awareness	Recognition	I	<ul style="list-style-type: none"> Recognize climate change as a significant issue Develop a policy
2	Climate Readiness	Reporting	I	<ul style="list-style-type: none"> Report absolute and relative carbon emissions across entire value chain Report carbon intensity based on relevant metrics
		Target	II	<ul style="list-style-type: none"> Set a greenhouse gas (GHG) emissions reductions target
3	Climate Alignment	Scenarios	I	<ul style="list-style-type: none"> Implement comprehensive qualitative scenario analysis
			II	<ul style="list-style-type: none"> Factor an internal price of carbon into business decisions
			III	<ul style="list-style-type: none"> Address potential financial impacts of transition and physical risks
		Strategy	I	<ul style="list-style-type: none"> Set a Paris Agreement-aligned (science-based) GHG emissions reductions target
			II	<ul style="list-style-type: none"> Report business alignment with Paris Agreement and potential climate adaptation needs
III	<ul style="list-style-type: none"> Set a net zero commitment detailing interim targets, emissions covered, and any absorption or offset mechanisms 			

As of 31 December 2023. Source: PIMCO. For illustrative purposes only

PIMCO continues to view stewardship and engagement as a long-term and dynamic process that evolves over several years. While changes may take time to materialize (e.g. issuer’s implementation of the TCFD recommendations or development of science-based targets often take at least two to three years), PIMCO analysts reinforce and follow up on ESG engagement objectives as part of their periodic interactions with issuers.²⁰

19 Exposure draft named 'IFRS S2 Climate-related Disclosures'.

20 For more details on our ESG engagement and escalation approach, including on how this may affect investment decisions (e.g. purchasing hold or divestment consideration), see PIMCO’s UK Stewardship Report (e.g. page 76) - <https://www.pimco.com/gb/en/documents/9f93dbb0-6af0-4faf-9226-60f12ffd4040?id=1452292699174>

ENGAGEMENT CASE STUDIES



CASE STUDY 1

Issuer: European industrial real estate company and a repeat green bond issuer.

Topics: Greenhouse gas emissions target's ambition (Science-Based Targets validation) and Climate Risk Readiness

Engagement: PIMCO engaged with the issuer for several years on its green buildings, greenhouse gas emission reduction targets and strategy, and climate risks. We had encouraged it to align its strategy, ambition and disclosure with globally recognized climate reporting frameworks and benchmarks for target validation concerning alignment with the Paris Agreement.

Developments: In 2023, the issuer responded to the Carbon Disclosure Project (climate) questionnaire for the first time, formally indicating it has started the process of aligning its emission reduction goals with the methodologies developed by the Science-Based Targets initiative. Additionally in 2023, it clarified how it implements the recommendations of the TCFD (Task Force on Climate-related Financial Disclosures) in its latest 2022 Sustainability report. These steps may help the company cope with regulatory and consumer trends linked to the decarbonization of the real estate sector (e.g., tightening energy efficiency standards, increased demand for more environmentally friendly buildings) and the EU's sustainability disclosure rules, and thereby reduce the corresponding credit risks (e.g., increased costs of compliance).



CASE STUDY 2

Issuer: European auto parts company, considered a climate leader due to its ramp-up in electric vehicles and low-carbon solutions, while simultaneously implementing purchased power from renewables and energy efficiency targets to move towards carbon neutrality.

Topics: Greenhouse gas emissions target's ambition (Science-Based Targets validation) and electric vehicles ambition.

Engagement: PIMCO has engaged with the issuer several times in recent years discussing a range of sustainability topics, including greenhouse gas emissions, electric vehicles, physical risks and resilience as well as ESG-labelled bonds. PIMCO discussed its climate/EV strategy with senior management, as well as recommended setting science-based targets, reporting Scope 3 emissions in line with other auto part companies, and battery electric vehicle sales disclosure. More recently, following its sustainability-linked bond issuance, PIMCO provided best practice

guidance for future SLB issuance, such as including Scope 3 emissions targets in the issuance.

Developments: Following progress made in 2022, the issuer had its carbon emissions reduction target validated by the Science-Based Targets initiative (SBTi) in 2023. The target is aligned with a 1.5°C trajectory, which is the most ambitious level. Further, the target includes a commitment to reduce absolute Scope 1 and 2 GHG emissions by 90% by 2030 from a 2019 baseline, as well as purchased goods and services, fuel- and energy-related activities, and upstream transport and distribution (Scope 3 emissions) by 25% within the same timeline. These steps may help the company cope with regulatory and consumer trends linked to the decarbonization of the automotive sector (e.g., CO2 performance standards and increased demand for lower-emitting vehicles) and the EU's sustainability disclosure rules, and thereby reduce the corresponding credit risks (e.g., increased costs of compliance).

The examples above are presented for illustrative purposes only, as a general example of PIMCO's ESG research and engagement capability and is not intended to represent any specific portfolio's performance or how a portfolio will be invested or allocated at any particular time. PIMCO's ESG processes may yield different results than other investment managers' and a company's ESG rankings and factors may change over time. All data is as of 31 December 2023, unless otherwise stated.



CASE STUDY 3

Issuer: Indian renewable energy independent power producer.

Topics: Carbon footprint reduction across the value chain (Scope 3 emissions) and green bond environmental impact.

Engagement: PIMCO has engaged the issuer extensively over the years, including top management, with a focus on ESG-labelled bond issuance and GHG emissions, among other topics. The issuer is a repeat green bond issuer and we recommended the impact disclosure on these bonds be aligned with best practices, including public details on emissions factors, public disclosure, verification and methodology disclosure. We had also encouraged it to show leadership for Scope 3 emissions reduction and broader sustainability issues such as responsible sourcing.

Developments: In 2023, the issuer published its green bond report as part of its broader sustainability report. The report included a description of the methodology for measuring the impact of its green bonds and external validation which allows PIMCO to incorporate these data in our fund's measurement and reporting. Additionally, the recent sustainability report included a science-based emission reduction target including net zero (90% reduction across the entire value chain by FY2040 from a FY2022 base year), and a TCFD section, detailing exposures to physical risks – which were welcomed by PIMCO. These actions may help the company reap intangible benefits linked to higher-quality green bonds (e.g., improved reputation) and increase its readiness to cope with the rise in the intensity and frequency of extreme weather events in India²¹.

The examples above are presented for illustrative purposes only, as a general example of PIMCO's ESG research and engagement capability and is not intended to represent any specific portfolio's performance or how a portfolio will be invested or allocated at any particular time. PIMCO's ESG processes may yield different results than other investment managers' and a company's ESG rankings and factors may change over time. All data is as of 31 December 2023, unless otherwise stated.

TAKING A HOLISTIC APPROACH TO CLIMATE RISKS

We explore and engage on climate change in the context of broader sustainability risk and are supportive of the Sustainable Development Goals (SDGs) as the reference framework to assess these wide-ranging risks, e.g. biodiversity, water scarcity, Just Transition, human and labor rights.

Further, deforestation – an important topic from both a biodiversity and Just Transition perspective – has been a particular area of thematic focus for our engagement, as halting and reversing land degradation is crucial to limiting global warming and mitigating a wide variety of risks, such as

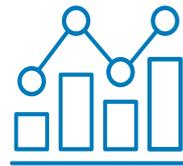
biodiversity loss and human rights violations. On this front, while our direct exposure to forest-risk commodities was limited, we engaged companies across sectors, including food manufacturers, retailers, and banks, on their commitment to eliminating deforestation in their value chain.

In terms of portfolio screener and issuer level evaluation, we have explored the use of tools that help evaluate the impact and dependence of our portfolio holdings on nature using publicly available data such as ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure).

²¹ https://climateknowledgeportal.worldbank.org/sites/default/files/country-profiles/15503-WB_India%20Country%20Profile-WEB.pdf

METRICS AND TARGETS

Climate-focused
Investment Exposure of
Sample PIMCO Portfolios



Metrics and targets used to assess and manage relevant climate-related risks and opportunities

At PIMCO, we believe that running a successful and sustainable company entails incorporating material environmental and social factors into strategy, operations and culture, as well as confirming that the necessary governance, business continuity, technology, and supply chain capabilities and processes are in place. PIMCO recognizes the need to examine our operations, resource use, and impacts in an effort to mitigate negative

environmental impacts and find ways to contribute positively to environmental challenges and solutions. As it relates to the operations' impact on the climate, we take a scientific approach to measuring and managing our carbon footprint. In 2023, for example, PIMCO undertook its first firmwide GHG emissions inventory covering Scope 1, Scope 2, and relevant Scope 3 categories – setting 2019 as a baseline.

CLIMATE-FOCUSED INVESTMENT EXPOSURE OF SAMPLE PIMCO PORTFOLIOS

Investments within the sample PIMCO portfolios are exposed to a share of the carbon emissions within the broader global bond market. This section shows for sample PIMCO portfolios, representative of the assets that fall under PIMCO, and benchmarks, selected metrics linked to the recommendations of the Task Force on Climate-Related Financial Disclosures and similar disclosure frameworks. This is a shortlist as there is a broader range of metrics we monitor and report in selected contexts. We have continued to refine and expand our carbon measurement, data reporting, and portfolio optimization capabilities based on guidance from ESG-focused financial institutions, such as the Partnership for Carbon Accounting Financials (PCAF), and the Science-Based Targets initiative (SBTi).

Our reporting tools cover an ever-broader range of perspectives (e.g., financed emissions, portfolio alignment, climate solutions, or the exposure to both transition and physical risks), asset classes (e.g., sovereign bonds further to the publication of the guidance on carbon measurement for sovereign debt by the Partnership for Carbon Accounting Financials in 2022) and instrument types (e.g., green and sustainability bonds). This helps our clients better understand key climate and carbon metrics in their portfolios. Importantly, these figures consist of ESG-optimized portfolios as well as those that do not follow a sustainability strategy²². Therefore, although these metrics may be optimized in portfolio construction for mandates that follow sustainability strategies and guidelines²², they are not optimized on aggregate across all of our portfolios. Our obligation as an asset manager and fiduciary is seeking to deliver on our clients' investment objectives, which vary across portfolios depending on investor preference.

SUMMARY TABLE FOR PIMCO PORTFOLIOS

This table includes the aggregated value for PIMCO portfolios for selected climate-related metrics based on the recommendations of the TCFD and other initiatives providing guidance on carbon measurement and reporting from financial institutions (e.g. Partnership for Carbon Accounting Financials or PCAF, Science-Based Targets initiative or SBTi).

This includes:

- A data quality score to give a sense of the degree of external verification of the underlying data.

- Both data for the latest reporting year and 2022, which suggests several trends, e.g., relative stability of key carbon emissions metrics such as weighted average carbon emissions or carbon footprint.
- Data on the coverage per indicator: as mentioned in the Appendix, Corporates IG and HY represent less than a third of PIMCO's assets, which indicates that a material share of assets are not covered by carbon metrics presented here.

²² Sustainable Strategies are strategies with client-driven sustainability requirements. For these strategies, PIMCO actively incorporates sustainability principles (i.e. excluding issuers fundamentally misaligned with sustainability factors, evaluating issuers using proprietary and independent ESG scoring) consistent with those strategies and guidelines. Further information is available in PIMCO's Sustainable Investment Policy Statement. For information about funds that follow sustainability strategies and guidelines, please refer to the fund's prospectus for more detailed information related to its investment objectives, investment strategies, and approach to sustainable investment.

Corporate Credit

Metric type	Metric	Asset class covered ²³	Units	2023 Value PIMCO ²⁴	2023 Value Benchmark ²⁵	Diff Over Index	2022 Value PIMCO ²⁶	2022 Value benchmark ²⁷	2023 PIMCO Coverage ²⁸	2022 PIMCO Coverage ²⁸	
Financed emissions	Weighted Average Carbon Intensity (Scope 1 and 2 emissions)	Corporates	tCO2e / \$M USD Sales	257	227	13.3%	274	248	90.5%	89.8%	
	Definition: Portfolios' exposure to carbon-intensive companies (Scope 1 absolute emissions + Scope 2 absolute greenhouse gas emissions)/issuer's revenues in \$M USD (weighted based on Market Value).										
	Total Carbon Emissions (Scope 1 and 2 emissions)	Corporates	tCO2e	52,843,677	52,747,041	+0.2%	54,925,825	54,788,756	89.2%	88.7%	
	Definition: Proxy for the carbon emissions that the position in the security is responsible for. Total GHG emissions for portfolios (Scope 1 and 2 emissions). Based on enterprise value including cash.										
	Carbon Footprint (Scope 1 and 2 emissions)	Corporates	tCO2e / \$M USD invested	94	89	5.8%	102	97	89.2%	88.7%	
	Definition: Total GHG emissions for a portfolio normalized by the market value of the corporates in the portfolio with Scope 1+2 GHG emissions data, expressed in tons CO2e/\$M invested. Based on enterprise value including cash.										
	Weighted Average Carbon Intensity (Scope 3 emissions)	Corporates	tCO2e / \$M USD Sales	521	495	5.2%	646	611	88.7%	88.7%	
	Definition: Portfolios' exposure to carbon-intensive companies (Scope 3 absolute emissions)/issuer's revenues in \$M USD (weighted based on Market Value).										
	Total Carbon Emissions (Scope 3 emissions)	Corporates	tCO2e	176,661,935	245,482,537	-28.0%	190,175,461	217,417,672	90.7%	88.7%	
	Definition: Proxy for the carbon emissions that the position in the security is responsible for. Total GHG emissions for portfolios (Scope 3 emissions). Based on enterprise value including cash.										
	Carbon Footprint (Scope 3 emissions)	Corporates	tCO2e / \$M USD invested	309	408	-24.3%	356	389	90.7%	88.7%	
	Definition: Total GHG emissions for a portfolio normalized by the market value of the corporates in the portfolio with Scope 3 GHG emissions data, expressed in tons CO2e/\$M invested. Based on enterprise value including cash.										
	Data Quality Score (Scope 1 and 2)	Corporates	–	1.71	1.60	0.11	–	–	–	–	
Definition: Data Quality score (1 to 3 – 1: best, 3: worst) that takes into account if the emissions are reported or estimated and if there is existence of assurance audits for the emissions data.											
Data Quality Score (Scope 3)	Corporates	–	1.80	1.69	0.11	–	–	–	–		
Definition: Data Quality score (1 to 3 – 1: best, 3: worst) that takes into account if the emissions are reported or estimated and if there is existence of assurance audits for the emissions data.											

23 Corporates refer to Corporate Bonds, Commercial Paper, Certificate of Deposit, Time Deposit, Bankers' Acceptance. This is repeated across all the charts and tables in this section.

24 PIMCO's aggregate value is based on PIMCO accounts as of 31 December 2023, subject to data availability.

25 Benchmark value is based on Bloomberg Global Agg Credit Index as of 31 December 2023, subject to data availability. The Bloomberg Global Agg Credit Index serves as a proxy for the corporate credit market.

26 PIMCO's aggregate value based on PIMCO accounts as of 31 December 2022, subject to data availability

27 Benchmark value is based on Bloomberg Global Agg Credit Index as of 31 December 2022, subject to data availability. The Bloomberg Global Agg Credit Index serves as a proxy for the corporate credit market.

28 Coverage metrics represent the share of securities with data as a % of the corporate market value of assets under management.

Metric type	Metric	Asset class covered ²³	Units	2023 Value PIMCO ²⁴	2023 Value Benchmark ²⁵	Diff Over Index	2022 Value PIMCO ²⁶	2022 Value benchmark ²⁷	2023 PIMCO Coverage ²⁸	2022 PIMCO Coverage ²⁸	
Portfolio Alignment Metrics	Share of issuers with a Science-Based Target set	Corporates	%	22.3%	29.4%	-6.9 p.p.	20.1%	24.6%	—	—	
	Definition: % of Corporate Market Value of portfolios invested in issuers with a Science Based Target set.										
	Weighted Average Temperature Score (WATS)	Corporates	Centigrade Degrees	2.45	2.28	7.4%	—	—	—	—	
	Definition: The respective weighting of companies' implied temperature rise is the invested value in a company divided by the total value of the portfolio.										
	Share of Corporate Market Value potentially aligned with a well below 2 degrees Scenario (incl. 1.5-degree)	Corporates	%	46.4%	53.3%	-6.9 p.p.	—	—	—	—	
Exposure to carbon-related assets	Share of Corporate Market Value potentially aligned with a 1.5-degree Scenario	Corporates	%	27.2%	33.2%	-6 p.p.	—	—	—	—	
	Definition: Based on an estimate of the global temperature rise associated with the greenhouse gas emissions of each company (source: TPI, SBTi, Trucost). It incorporates current GHG emissions or other data and assumptions to estimate expected future emissions associated with the entity. Then the estimate is translated into a projected increase in global average temperature (in °C) above preindustrial levels that would occur if all companies in corresponding sectors had the same carbon intensity as the selected asset(s).										
Exposure to carbon-related assets	Share of Carbon-Sensitive Sectors	Corporates	%	35.3%	36.8%	-1.5 p.p.	27.2%	30.3%	—	—	
	Definition: % of Corporate Market Value of portfolios invested in sectors deemed particularly sensitive to risks brought about by the energy transition (Energy; Materials and Buildings; Transportation; Food and Agriculture; Forest products).										

All data as of 31 December 2023. Sources: MSCI, PIMCO, TCFD, PCAF, SBT. For illustrative purposes only. Calculations for carbon metrics are based on the guidance developed by the TCFD and the Partnership for Carbon Accounting Financials (PCAF). Carbon data reflects the last level of emissions reported by the company, although in some instances it can reflect emissions data that had been disclosed before 2023 (e.g. 2022 and 2021), subject to availability.

Targets used by the organization to manage climate-related risks and opportunities and performance against targets

PIMCO does not employ any universal targets on the assets managed on behalf of our clients. Our objective as an asset manager is to deliver on investment objectives driven by our clients, the asset owners. Currently, the extent to which we employ carbon-related targets in portfolios on behalf of clients consists of relative targets, where portfolios seek to have a better carbon intensity compared to relevant benchmarks, or targets related to a reduction in portfolio's financed emissions over time.

²³ Corporates refer to Corporate Bonds, Commercial Paper, Certificate of Deposit, Time Deposit, Bankers' Acceptance. This is repeated across all the charts and tables in this section.

²⁴ PIMCO's aggregate value is based on PIMCO accounts as of 31 December 2023, subject to data availability.

²⁵ Benchmark value is based on Bloomberg Global Agg Credit Index as of 31 December 2023, subject to data availability. The Bloomberg Global Agg Credit Index serves as a proxy for the corporate credit market.

²⁶ PIMCO's aggregate value based on PIMCO accounts as of 31 December 2022, subject to data availability.

²⁷ Benchmark value is based on Bloomberg Global Agg Credit Index as of 31 December 2022, subject to data availability. The Bloomberg Global Agg Credit Index serves as a proxy for the corporate credit market.

²⁸ Coverage metrics represent the share of securities with data as a % of the corporate market value of assets under management.

APPENDIX



Scope of this report

Data refer to assets under management (AuM) for PIMCO.

Climate data

GENERAL NOTE

Alongside the core metrics recommended by the TCFD, we endeavored to include additional content that seeks to provide a more comprehensive overview of our approach. This content is informed by similar voluntary frameworks, recommendations or proposals developed by various related initiatives (e.g. CDP, ISSB, PCAF, CFRE, UK Transition Plan Taskforce (TPT)). This inherently involves methodologies and data that are at various degrees of development, quality and acceptance, notably as it relates to greenhouse gas emissions accounting, asset classes beyond corporate credit, and forward-looking assumptions. For example, certain metrics such as portfolios' climate value at risk or implied temperature rise²⁹, are subject to particularly significant limitations. In the future, regulators, investors' own constituents, academics,

and non-governmental organizations could have different interpretations and expectations for GHG accounting and climate risk disclosure in portfolios. There is no representation that data presented in this report will suffice to draw conclusions linked to investment decisions or make a positive or negative environmental impact claim. Past environmental performance and available proxies for the potential future performance is no guarantee of future results.

In this section, we share details on methodology considerations (including uncertainties and broader limitations) and the room for improvement identified as we continuously look at ways of enhancing our ESG evaluation and disclosure, while increasing our transparency.

²⁹ 'In addition to a baseline of core metrics, we proposed that firms make 'best efforts' to disclose additional, mostly forward-looking, metrics (climate value-at-risk [VaR]), portfolio alignment metrics, and any other metrics that they would consider decision-useful to disclose). We recognized that methodologies are still developing but considered that these metrics represent the direction of travel of the industry and are likely to be decision-useful to clients and consumers.' (source: FCA, [Enhancing climate-related disclosures by asset managers, life insurers and FCA-regulated pension providers](#)).

Methodology

Category	Use case	Metric type	Metric	TCFD Reference	Definition	Use case	Strengths	Weaknesses
Impact of the firm on climate change	Portfolio decarbonization	Financed emissions	Weighted Average Carbon Intensity	TCFD Implementation Guidance: Cross-Industry, Climate-Related Metric Categories (page 80), and others.	Portfolios' exposure to carbon-intensive companies (Scope 1 absolute emissions + Scope 2 absolute greenhouse gas emissions)/ issuer's revenues in \$M USD (weighted based on Market Value).	Proxy for the portfolio's efficiency in terms of emitting less carbon considering a certain level of activity.	Factors in company's size. Enables some comparison over time and between portfolios. Easier to manage than absolute carbon emissions. Helps assess carbon (transition) risks but is far from equating it.	Coverage of Carbon Emissions of issuers (especially for Scope 3) remains the biggest challenge when calculating carbon performance metrics such as Weighted Average Carbon Intensity, Total Carbon Emissions or Carbon Footprint. Carbon metrics including Scope 3 data are considering only issuers that have all the Scopes populated (Scope 1, 2 and 3). It is worth noting that even when Scope 3 emissions are reported, sometimes they only include a few categories (emissions from use of sold products often lacking). To cover this gap, we are using estimated Scope 3 emissions provided by MSCI when the issuer is not reporting Scope 3 data. For the sake of a fair comparison in Total Carbon Emissions, the market value of the benchmark has been rescaled to match the market value of the portfolio. Total Carbon Emissions and Carbon Footprint are linked to volatility, notably due to biases linked to EVIC changes and changes in the equity/debt structure. Difficult to determine appropriate capital structure of private issuers. Weighted Average Carbon Intensity use revenues as a denominator, which introduces bias. Not a proxy for the portfolio's contribution to global warming. The quality gap between the highest and lowest Data Quality Scores is significant. Lacks additional buckets to further differentiate company data that is estimated.
Impact of the firm on climate change	Portfolio decarbonization	Financed emissions	Total Carbon Emissions	TCFD Implementation Guidance: Cross-Industry, Climate-Related Metric Categories (page 80), and others.	Proxy for the carbon emissions that the position in the security is responsible for. Total GHG emissions for portfolios (scope 1 and 2 emissions). Based on enterprise value including cash.	Proxy for the portfolio's contribution to global warming.	Can be linked to the absolute impact and a portfolio's total contribution to GHG emissions.	
Impact of the firm on climate change	Portfolio decarbonization	Financed emissions	Carbon Footprint	TCFD Implementation Guidance: Cross-Industry, Climate-Related Metric Categories (page 80), and others.	Total GHG emissions for a portfolio normalized by the market value of the corporates in the portfolio with Scope 1+2 GHG emissions data, expressed in tons CO ₂ e/\$M invested. Based on enterprise value including cash.	Proxy for the portfolio's efficiency in terms of emitting less carbon considering a certain level of investment.	Can be linked to the absolute impact and a portfolio's total contribution to GHG emissions.	
Impact of the firm on climate change	Portfolio decarbonization	Financed emissions	Data Quality Score	PCAF – Global GHG Standard for Financed Emissions (page 57), and others.	Data Quality score (1 to 3 – 1: best, 3: worst) that takes into account if the emissions are reported or estimated and if there is existence of assurance audits for the emissions data.	Proxy for the portfolio's carbon data quality.	Directly comparable across companies regardless of size. Provides a general indication of the degree of advancement in company's carbon reporting.	

Category	Use case	Metric type	Metric	TCFD Reference	Definition	Use case	Strengths	Weaknesses
Impact of the firm on climate change	Portfolio decarbonization	Portfolio alignment metrics	Share of issuers with a Science-Based Target set	Summary of Changes to Guidance, October 2021 (page 6, 47, 48), and others.	% of Corporate Market Value of portfolios invested in issuers with a Science-Based Target set.	Proxy for the exposure to issuers with more advanced decarbonization strategies. Proxy to map alignment of the Portfolio with the objectives of the Paris Agreement.	Forward looking. Only publicly available initiative that verifies decarbonization targets based on a transparent process and methodologies.	Limitations to SBTi's coverage and methods, e.g., sectors are covered to varying degrees.
Impact of the firm on climate change	Portfolio decarbonization	Portfolio alignment metrics	Share of issuers aligned with the Paris Agreement	Summary of Changes to Guidance, October 2021 (page 6, 47, 48), and others.	% of Corporate Market Value of portfolios invested in issuers aligned with the Paris Agreement climate targets.	Proxy for the exposure to issuers with more advanced decarbonization strategies. Proxy to map alignment of the Portfolio with the objectives of the Paris Agreement.	Forward looking. Uses a waterfall logic leveraging sources such as SBTi, TPI, Trucost and MSCI to address data gaps.	It is not a standardized metric (e.g. no standard methodology to calculate it). The use of a waterfall logic means that the value might be driven by different data sources which carry different assumptions.
Impact of the firm on climate change	Portfolio decarbonization	Portfolio alignment metrics	Implied Temperature Rise	TCFD Implementation Guidance (page 48, page 5 – footnote 7), and others.	% of Corporate Market Value of portfolios invested in issuers with an Implied Temperature Rise aligned with the objectives of the Paris Agreement.	Proxy for the exposure to issuers with more advanced decarbonization strategies. Proxy to map alignment of the Portfolio with the objectives of the Paris Agreement.	Forward looking. Granular, as it is calculated at company level and later aggregated at portfolio level.	High dispersion in the results depending on the methodology to evaluate the warming potential of an entity and how to aggregate those at portfolio level.

Additional limitations and areas under development

BESIDES STRENGTHS AND WEAKNESSES MENTIONED IN THE PREVIOUS TABLE, WE NOTE THAT:

- **The coverage of carbon emissions of issuers**

(especially for Scope 3) remains the biggest challenge when calculating carbon performance metrics such as Weighted Average Carbon Intensity, Total Carbon Emissions or Carbon Footprint. Carbon metrics including Scope 3 data consider only issuers that have all the Scopes populated (Scope 1, 2 and 3). We are using both reported and estimated Scope 3 emissions provided by MSCI. There are significant limitations associated with each approach (reported or estimated). It is worth noting that even when Scope 3 emissions are reported, sometimes they only include a few Greenhouse Gas Protocol categories (e.g. emissions from use of sold products often lacking) and may omit the most material ones. Issuers' disclosure on the types and sources of data as well as methodology to calculate these emissions may also be partial while the heterogeneity of practices, together with uncertainties associated with these calculations, hamper the comparison over time or between issuers. Besides, MSCI's methodology uses various assumptions and proxies (e.g. estimating emissions based on sectoral revenues and intensities) that may make these values materially different from actual emissions. There are also inherently some double counting issues associated with both Scope 2 and Scope 3 (the same ton of carbon is counted several times within a portfolio).

For the sake of a fair comparison for Total Carbon Emissions, the market value of the benchmark has been

rescaled to match the market value of PIMCO AuM. As explained individually in the "Definition" column, metrics representing a share of market value have been adjusted for data coverage (e.g. calculating the share only within the corporate universe with data available). Metrics using weights (e.g. for Weighted Average Carbon Intensity) have used a weighting system which calculates the weight based on the market value universe of corporates with carbon data populated.

- **Asset classes in scope:** Carbon emissions covered in this report focus on corporate issuers, in line with the initial focus of the TCFD recommendations. We are still evaluating data availability and quality issues for sovereign debt (covered by PCAF's Global GHG Accounting and Reporting Standard since December 2022). Most other asset classes relevant to PIMCO are not yet covered by PCAF.
- **Use of proceeds bonds:** All data on carbon emissions are in this report at issuer level, i.e. without applying any assumptions regarding green bonds that fund low-carbon projects such as renewable energy.
- **The 'as of date':** Data reflect our portfolios' holdings at the end of last year. However, given the time lag in issuer's disclosure and vendors making these data or their revised estimates available to us, the carbon data correspond to previous years.

Scope 3 data: In our 2022 TCFD report we reported Scope 1,2,3 emissions on an aggregate basis. In this report, Scope 3 emissions are reported on a standalone basis for both the 2022 and the 2023 values.

Scenario analysis covered in Strategy section

METHODOLOGY DETAILS

Below we show more illustrative results and background information from two different models taking a top-down macroeconomic approach to climate scenario analysis, examining fixed income markets' resiliency to future climate risks. The first is an off-the-shelf model developed by the Network for Greening the Financial System (NGFS), a coalition of central banks dedicated to assessing the impact of climate change³⁰. Their approach tries to capture all the major components of the global economy including government policy, labor and capital markets, and trade flows.

The second is the PIMCO model used in the scenario analysis of the strategic section, a reduced form approach using empirical data to capture the main mechanisms linking climate change to the global economy. This bespoke approach abstracts away from modelling all components of the economy and chooses instead to focus on the key mechanisms that are linked to climate change. The PIMCO top-down macro model maps the NGFS climate scenarios to two types of outputs: macroeconomic and risk factor. The outputs are a panel with country and time dimensions. The time series dimension is annual over the same horizon as the input scenario. We assume the climate scenario affects the macroeconomic outputs through two channels: 1) Physical risks: Loss in

productivity due to human-driven increase in global temperature; 2) Transition risks: Increased inflation and loss in growth from taxing carbon and subsidizing renewable investment. These macroeconomic shocks flow through to asset prices which we capture using a set of risk factors. The risk factor outputs are then plugged into PIMCO's risk model (Proteus) and then applied to the desired account, index or security to generate the final return impact of the climate scenario.

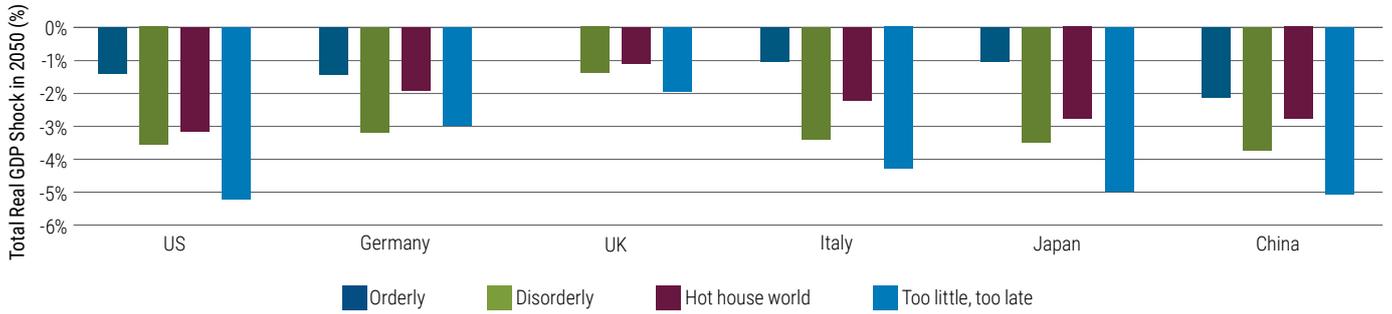
Using the two models, we can simulate the cumulative impact climate change could have on real GDP or equity for the world, the U.S., and Europe over the years 2023-2050 under three different scenarios (designed by the NGFS³¹):

- I. Orderly transition: Net zero (medium transition risks, low physical risks).
- II. Disorderly: Delayed transition (high transition risks, medium physical risks).
- III. Hot house world: Continuation of current policies (low transition risks, very high physical risk).
- IV. Too little, too late: delayed action and high emission (high transition risks, high physical risk).

³⁰ The model combines "REMIND," an integrated assessment model, and "NIGEM," a large global macroeconomic model. NGFS home page is <https://www.ngfs.net/en>. MAGIC home page is <http://www.magicc.org/>. NIGEM home page is <https://www.niesr.ac.uk/nigem-macroeconomic-model>.

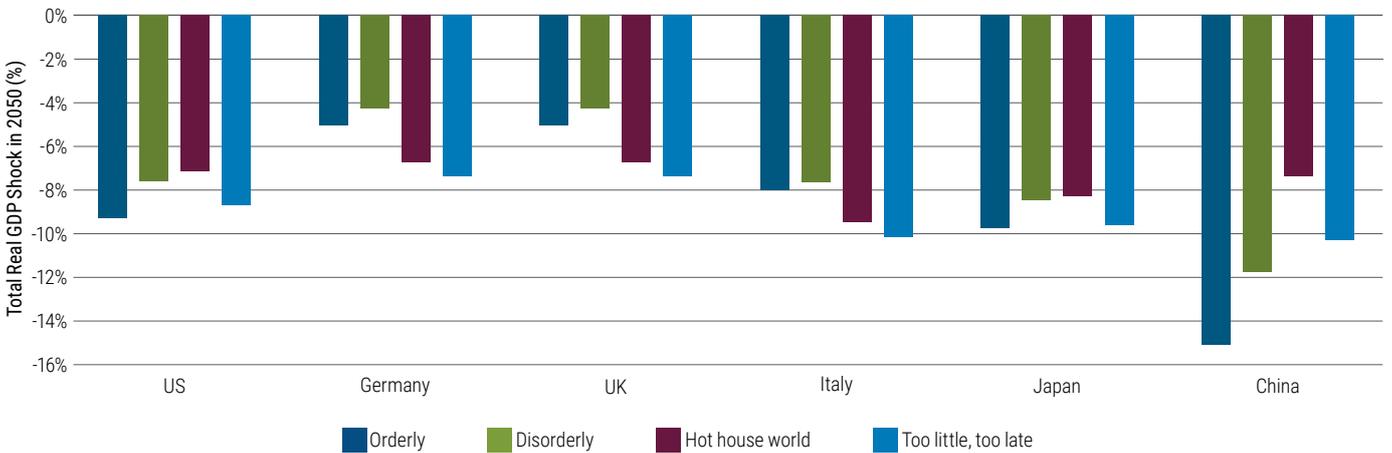
³¹ Orderly scenarios assume climate policies are introduced early and become gradually more stringent. Disorderly scenarios explore higher transition risk due to policies being delayed or divergent across countries and sectors. Hot house world scenarios assume that some climate policies are implemented in some jurisdictions, but globally efforts are insufficient to halt significant global warming. The scenarios result in severe physical risk including irreversible impacts, such as sea-level rise. https://www.ngfs.net/sites/default/files/medias/documents/ngfs_climate_scenarios_for_central_banks_and_supervisors_.pdf.pdf.

NGFS model predictions for real GDP shocks per region and scenario³²



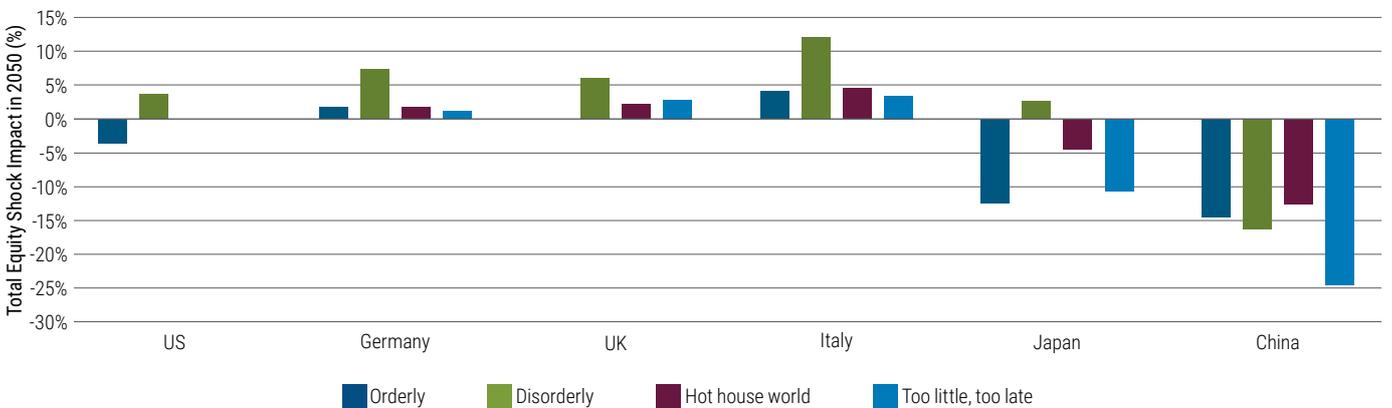
As of 31 December 2023. Source: NGFS, PIMCO. For illustrative purposes only

PIMCO model predictions for real GDP shocks per region and scenario



As of 31 December 2023. Source: Burke and Tanutama (2019), Bloomberg, BP, IMF, OECD, Our World in Data, PIMCO. For illustrative purposes only

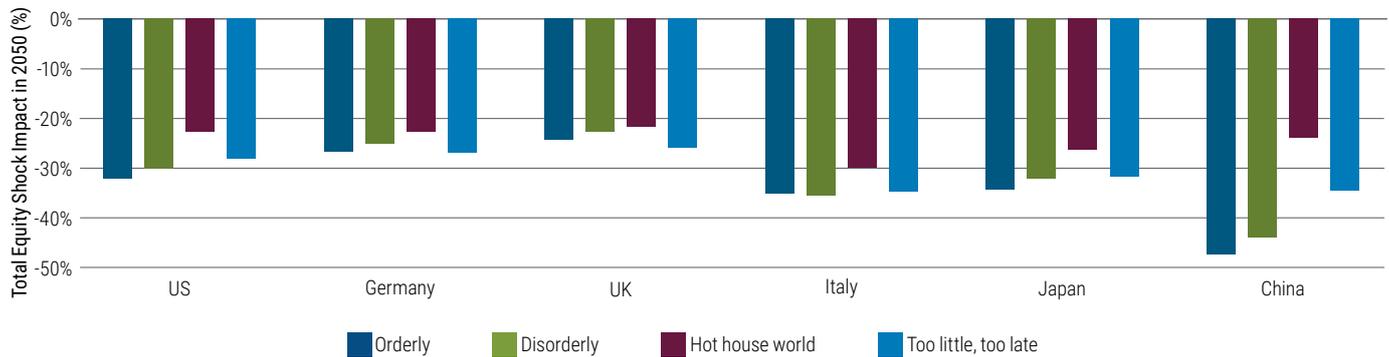
NGFS model predictions for equity shocks per region and scenario



As of 31 December 2023. Source: NGFS, PIMCO. For illustrative purposes only

32 For illustrative purposes only. Represents NIGEM|Gross Domestic Product (GDP) figures for the NGFS’s REMIND-MAGPIE 2.1-4.2 inputs model. Source: NGFS Phase 4 data set, V4.1, November 2023.

PIMCO model predictions for equity shocks per region and scenario



As of 31 December 2023. Source: Burke and Tanutama (2019), Bloomberg, BP, IMF, OECD, Our World in Data, PIMCO. **For illustrative purposes only.**

Both the NGFS and PIMCO models predict a negative cumulative impact on real GDP across scenarios. For the orderly and disorderly scenarios, the negative impact is driven by transition risk. Carbon taxes help the world to transition to a greener economy, however they cause a negative impact on real GDP along the way. Here, it is important to note that our projections are by 2050, as the time horizon is crucial for climate shock predictions, as a climate transition can be expected to have a first phase where mostly costs of the transition are paid, and a second phase where benefits are reaped. For the hot house world scenario, the loss in GDP comes from physical risk; increasing temperatures impact output through losses in productivity and increased disaster risk. For the too little, too late scenario, both transition risk and physical risk cause losses in real GDP.

The NGFS model predicts that early climate action is better than late climate action. This effect is driven by how a late transition in the disorderly scenario causes larger and more sudden increases in carbon policy. An orderly transition is less disruptive, causing less deadweight loss and less inflation. The models diverge in their predictions of magnitude and relative ordering. The GDP projections of the NGFS differs from the PIMCO model. Two key assumptions may differ between our models. First, the NGFS may assume that the physical damage

from a delayed transition (e.g. natural catastrophes) will have a greater negative impact on GDP by 2050. This may stem from a more punitive damage function, which links each extra degree of temperature to more extreme catastrophes. Second, the NGFS may assume that the reinvestment of the collected carbon tax will be more beneficial to GDP, when compared to the PIMCO model assumption, and that these benefits offset the increased cost of energy on growth. This may be the case if we assume, for example, breakthroughs in renewable energy that would not have been possible without these reinvestments, whose impact manifests by 2050. In the PIMCO model, more pronounced negative equity shocks in the fast transition scenarios are the result of negative GDP shocks due to high carbon taxes. However, a strong correlation between economic growth and equity returns in our macroeconomic regression leads all scenarios to produce negative equity shocks.

It is important to note the worst of climate change is anticipated to occur after 2050 if temperatures continue to rise and the effects of sustained carbon concentration begin to appear. The results suggest that between 2020-2050 the immediate effect of climate change may be moderate, which implies that it is crucial to pay attention to climate change now, before damages in the future become irreversible and much more severe.

LIMITATIONS AND AREAS UNDER DEVELOPMENT (ILLUSTRATIVE)

- **Asset class coverage:** Data and methods are at a very early stage besides corporate credit and sovereign credit.
 - The interplay between transition and physical risks is hard to model.
- **Top-down versus bottom-up:** The illustrative scenarios addressed in this report evaluate separately the impact on macroeconomic parameters (top-down model) from the impact on corporate credit (bottom-up model).
 - The nexus with broader environmental and social factors add to the complexity. For example, energy prices and economic disruptions associated with fossil fuels are not factored in.
- **Country-specific climate change-related macroeconomic effects** are difficult to quantify (whether in terms of transition risk or physical climate risk), and their time horizon is challenging to predict.
- **Physical risks:** Estimates used to model physical climate risks are based on historical data and chronic, not acute climate physical risks, and may thus underestimate future climate shocks.
- **Nature of the shock and complexity:**
 - Future climate pathways are inherently uncertain and non-linear and historical data cannot apply.
 - Second order effects, negative feedback loop and irreversible tipping points, migration, low probability high impact events together are not taken into account.
 - None of these models calculates the GDP endogenously by adding the activity in individual sectors. The effects of the mitigation policies on GDP are calculated at the macro level, by taking into account the overall changes in the costs of energy, not the increasing or decreasing activity in individual sectors.
- **Input macro variables:** the impact on other key macroeconomic variables (currency changes versus USD) is not addressed.
- **Time horizon:** Physical risks materialize far in time across scenarios. The scenarios deviate more in the second half of the century.
- **Issuer, policy and market reactions:** There are no 'dynamic' assumptions regarding the actions taken by issuers, policy makers or the market (e.g. based on their commitments, policies or adaptive capacity).
- **Capital Market Assumptions (CMAs) and Strategic Asset Allocation (SAA):** the output of this climate scenario analysis can be connected to the existing models and infrastructure used for CMA.

GLOSSARY

Term	Description
Adaptation	Actions that minimize or remove the negative impacts of global warming or climate change. Adaptation takes different forms depending on how well the potential damage is understood, and the type of damage it is designed to prevent.
Avoided Emissions	Emission reductions that the financed project produces versus what would have been emitted in the absence of the project (the baseline emissions).
Bank of England Climate Financial Risk Forum (CFRF)	The CFRF is an initiative to build capacity and share best practice across industry and financial regulators to advance our sector's responses to the financial risks from climate change.
Biodiversity	The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.
Carbon Dioxide	A naturally occurring gas, CO ₂ is also a by-product of burning fossil fuels (such as oil, gas and coal), of burning biomass, of land-use changes (LUC) and of industrial processes (e.g., cement production).
Carbon Disclosure Project (CDP)	The CDP is an organization that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts.
Carbon Footprint	Total carbon emissions for a portfolio normalized by the market value of the portfolio, expressed in tCO ₂ e/USDmm invested.
Carbon Price	The price for avoided or released carbon dioxide (CO ₂) or CO ₂ -equivalent emissions. This may refer to the rate of a carbon tax, or the price of emission permits. In many models that are used to assess the economic costs of mitigation, carbon prices are used as a proxy to represent the level of effort in mitigation policies.
Climate Bonds Initiative (CBI)	CBI is a leading organization focused on fixed income and climate change solutions.
Climate Risk Score	Assesses climate change risks for a wide range of relevant sectors and issuers.
Ecosystem	A network of relationships between organisms, their environment, and other organisms. An ecosystem is usually defined by its primary environment (e.g. a desert ecosystem, or a freshwater ecosystem). Ecosystems include living components (e.g. plants and animals) and non-living components (e.g. weather, water, rocks).
Enterprise Value Including Cash (EVIC)	The sum of the market capitalization of ordinary shares at fiscal year end, the market capitalization of preferred shares at fiscal year end, and the book values of total debt and minorities' interests.
Environmental Degradation	Reductions in the health and resilience of the environment (or an ecosystem) from human activity. Environmental degradation is also referred to as 'ecological degradation'. Environmental degradation includes the depletion and pollution of resources (e.g. soil, water, air), habitat destruction, and the extinction of species.
FAIRR	FAIRR is a global collaborative investor network that raises awareness of the environmental, social and governance (ESG) risks and opportunities brought about by intensive livestock production, with over \$23 trillion in member AuM.
Global Mean Surface Temperature	Estimated global average of near-surface air temperatures over land and sea-ice, and sea surface temperatures over ice-free ocean regions, with changes normally expressed as departures from a value over a specified reference period. When estimating changes in GMST, near-surface air temperature over both land and oceans are also used.
Global Warming	The estimated increase in global mean surface temperature (GMST) averaged over a 30-year period, or the 30-year period centered on a particular year or decade, expressed relative to pre-industrial levels unless otherwise specified.
Green Bonds	Portfolio exposure (%MV) to green bonds – bonds issued with use of proceeds devoted to environmental projects.
Green Bonds Score	We assess green bond instruments both prior to and after issuance, mapping them across a spectrum based on strategic fit, potential impact, red flags, and reporting, resulting in PIMCO's impact score for green, social, or SDG bonds.
Greenhouse Gas (GHG) Emissions	The seven gases mandated under the Kyoto Protocol and to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC)—carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF ₆), and nitrogen trifluoride (NF ₃).

Term	Description
Greenhouse Gases	A naturally occurring gas, CO ₂ is also a by-product of burning fossil fuels (such as oil, gas and coal), of burning biomass, of land-use changes (LUC) and of industrial processes (e.g., cement production).
Greenium	Pricing differential between green bonds (issues where proceeds are used to finance or re-finance environmentally sustainable projects) and conventional non-green fixed income securities.
Institutional Investors Group on Climate Change (IIGCC)	The IIGCC is a leading investor coalition on climate change with more than 170 members across 13 countries, with over €23 trillion in assets.
Integrated Assessment Model (IAMs)	Integrated assessment models (IAMs) integrate knowledge from two or more domains into a single framework. They are one of the main tools for undertaking integrated assessments. One class of IAM used in respect of climate change mitigation may include representations of: multiple sectors of the economy, such as energy, land use and land-use change; interactions between sectors; the economy as a whole; associated GHG emissions and sinks; and reduced representations of the climate system. This class of model is used to assess linkages between economic, social and technological development and the evolution of the climate system. Another class of IAM additionally includes representations of the costs associated with climate change impacts, but includes less detailed representations of economic systems.
Intergovernmental Panel on Climate Change (IPCC)	The IPCC is a United Nations intergovernmental body that assesses and synthesizes the body of scientific knowledge regarding climate change.
Interim Target	Refers to a short-term milestone between the organization's medium- or long-term target and current period.
International Capital Markets Association (ICMA)	ICMA is an association that promotes building internationally accepted standards of best practice in markets through the development of appropriate, broadly accepted guidelines, rules, recommendations, and standard documentation. In order to maintain and enhance the framework of cross-border issuing, trade, and investing in debt securities.
Investor Group on Climate Change (IGCC)	The IGCC is a collaboration of Australian and New Zealand institutional investors focused on the impact of climate change on investments.
Issuers Engaged on Net Zero	Net zero engagement topics includes: environment, greenhouse gas emissions, transparency and reporting, land use and biodiversity, physical risks and resilience and ESG bonds.
Just Transition	Involves maximizing the social and economic opportunities of climate action, while minimizing and carefully managing any challenges – including through effective social dialogue among all groups impacted, and respect for fundamental labor principles and rights.
Mitigation	Actions that minimize or remove the processes that cause global warming or climate change. Mitigation involves minimizing greenhouse gas emissions and/or maximizing greenhouse gas sequestration.
Nationally Determined Contribution	A term used under the United Nations Framework Convention on Climate Change (UNFCCC) whereby a country that has joined the Paris Agreement outlines its plans for reducing its emissions. Some countries' NDCs also address how they will adapt to climate change impacts, and what support they need from, or will provide to, other countries to adopt low-carbon pathways and to build climate resilience.
Net Zero	Achieving an equal balance between GHG emissions produced and GHG emissions removed from the atmosphere.
Network for Greening the Financial System (NGFS)	The NGFS is a coalition of central banks dedicated to assessing the impact of climate change. Their approach tries to capture all the major components of the global economy including government policy, labor and capital markets, and trade flows.
New Energy Vehicles (NEV)	NEV includes Battery Electric Vehicles or BEV and Plug-in hybrid electric vehicles (PHEV).
One Planet Asset Management Initiative	Initiative created following the 2015 Paris Agreement to collectively mitigate the effects of climate change. Aims to help Sovereign Wealth Funds foster a shared understanding of key principles, methodologies, and indicators related to climate change; identify climate-related risks and opportunities in their investments.
Paris Agreement	The Paris Agreement, adopted within the UNFCCC in December 2015, commits participating countries to limit global temperature rise to well-below 2°C above preindustrial levels and pursue efforts to limit warming to 1.5°C, adapt to changes already occurring, and regularly increase efforts over time.
Partnership for Carbon Accounting Financials (PCAF)	An industry-led initiative enabling financial institutions to measure and disclose greenhouse gas (GHG) emissions of loans and investments.

Term	Description
Physical Risk	<p>Physical risks from climate change broadly include risk to facilities and infrastructure, impact on operations, water and raw material availability and supply chain disruptions.</p> <p>Physical risks affect the economy in two ways:</p> <ul style="list-style-type: none"> • Acute impacts from extreme weather events can lead to business disruption and damages to property. Historically these impacts were considered transient but this will change with increased global warming. These events can increase underwriting risks for insurers and impair asset values. • Chronic impacts, particularly from increased temperatures, sea level rise and precipitation, may affect labor, capital and agriculture productivity. These changes will require a significant level of investment and adaptation from companies, households and governments.
Portfolio Carbon Intensity Analysis	<p>Consists of high-level portfolio screens that allow comparison of carbon intensity of different portfolios and benchmarks, for example based on the weighted average sum of both direct greenhouse gas emissions and greenhouse gas emissions due to purchases of electricity, heating, and cooling (i.e., Scope 1 + Scope 2 emissions in tonnes of carbon dioxide equivalent, or tCO₂e / revenues in USD (weighted based on percentage of market value)).</p>
Portfolio Climate Risk Heat Map	<p>Gives a high-level overview of exposure to climate risk (both transition and physical) among relevant sectors and assets. It illustrates a "heat map" of select corporate sectors' exposure, from low risk (green) to high risk (red), along with examples of relevant climate risks within each sector.</p>
Scenario Analysis	<p>A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g., rate of technological change, prices) and relationships.</p>
Science Based Target initiative (SBTi)	<p>The Science Based Targets initiative is a collaboration between the CDP, the United Nations Global Compact, World Resources Institute and the World Wide Fund for Nature.</p>
Scope 1 Emissions	<p>Corporate: Direct GHG emissions that occur from sources owned or controlled by the reporting company – i.e., emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.</p> <p>Sovereign: Domestic GHG emissions from sources located within the country territory.</p>
Scope 2 Emissions	<p>Corporate: Indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company. Scope 2 emissions physically occur at the facility where the electricity, steam, heating, or cooling is generated.</p> <p>Sovereign: GHG emissions occurring as a consequence of the domestic use of grid-supplied electricity, heat, steam and/or cooling which is imported from another territory.</p>
Scope 3 Emissions	<p>Corporate: All other indirect GHG emissions (not included in Scope 1 and 2) that occur in the value chain of the reporting company. The 15 Scope 3 GHG Protocol categories consist of:</p> <ul style="list-style-type: none"> • Purchased Goods and Services. • Capital Goods. • Fuel and Energy-related Activities (Not included in Scope 1 and 2). • Upstream Transportation and Distribution. • Waste Generated in Operations. • Business Travel. • Employee Commuting. • Upstream Leased Assets. • Downstream Transportation and Distribution. • Processing of Sold Products. • Use of Sold Products. • End of Life Treatment of Sold Products. • Downstream Leased Assets. • Franchises. • Investments. <p>Sovereign: Emissions attributable to non-energy imports as a result of activities taking place within the country territory.</p>
Shared Socioeconomic Pathways (SSPs)	<p>Based on five narratives, the SSPs describe alternative socio-economic futures in the absence of climate policy intervention, comprising sustainable development (SSP1), regional rivalry (SSP3), inequality (SSP4), fossil-fueled development (SSP5) and middle-of-the road development (SSP2).</p>

Term	Description
Sovereign Consumption Emissions	Reflect the demand side of sovereign emissions and account for consumption patterns and trade effects. This metric provides a broader view of a sovereign's GHG emissions and tackles the issue of carbon leakage that arises due to production shifts from countries where goods and services are actually consumed later.
Sovereign Production Emissions	Emissions attributable to emissions produced domestically and include domestic consumption and exports. This definition follows the territorial emissions approach adopted by UNFCCC for annual national inventories and is typically referenced by sovereigns in their Nationally Determined Contributions (NDCs).
Stranded Assets	Assets that turn out to be worth less than expected as a result of changes associated with the energy transition
Sustainable Development Goals (SDGs)	A collection of seventeen interlinked objectives designed to serve as a "shared blueprint for peace and prosperity for people and the planet, now and into the future".
Total Carbon Emissions	The absolute greenhouse gas emissions associated with a portfolio, expressed in tons CO ₂ e.
Transition Pathway Initiative (TPI)	TPI is a global asset owner-led initiative (including clients and investment consultants) that assesses companies' preparedness for the transition to a low-carbon economy.
Transition Risks	Transitioning to a lower-carbon economy can entail extensive policy, legal, technology and market changes to address mitigation and adaptation requirements related to climate change. Transition risks will affect the profitability of businesses and wealth of households, creating financial risks for lenders and investors. They will also affect the broader macroeconomy through investment, productivity and relative price channels, particularly if the transition leads to stranded assets.
Unlabelled Green Bonds	Portfolio exposure (%MV) to unlabelled green bonds – issuers fundamentally aligned to low-carbon products and services, including renewable energy pure plays.
Weighted Average Carbon Intensity	Portfolio's exposure to carbon-intensive companies, expressed in tCO ₂ e/USDmm sales.

As of 31 December 2023. Source: PIMCO, IPCC, PCAF, NGFS, TCFD

The information contained herein is as of December 31, 2023 unless otherwise noted.

This report contains examples of the firm's internal ESG engagement and research capabilities. The data contained within the report may be stale and should not be relied upon as investment advice or a recommendation of any particular security, strategy or investment product. In selecting case studies, PIMCO considers multiple factors, including, but not limited to, whether the example illustrates the particular investment strategy being featured and processes applied by PIMCO to making investment decisions. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed.

Environmental ("E") factors can include matters such as climate change, pollution, waste, and how an issuer protects and/or conserves natural resources. Social ("S") factors can include how an issuer manages its relationships with individuals, such as its employees, stakeholders, customers and its community. Governance ("G") factors can include how an issuer operates, such as its leadership, pay and incentive structures, internal controls, and the rights of equity and debt holders.

Sustainable Strategies are strategies with client-driven sustainability requirements. For these strategies, PIMCO actively incorporates sustainability principles (i.e. excluding issuers fundamentally misaligned with sustainability factors, evaluating issuers using proprietary and independent ESG scoring) consistent with those strategies and guidelines. Further information is available in PIMCO's Sustainable Investment Policy Statement. For information about funds that follow sustainability strategies and guidelines, please refer to the fund's prospectus for more detailed information related to its investment objectives, investment strategies, and approach to sustainable investment.

There is no assurance that the socially responsible investing strategy and techniques employed will be successful.

Green Bonds: are a type of bond whose proceeds are used to finance or re-finance new and existing projects or activities with positive environmental impact. Eligible project categories include: renewable energy, energy efficiency, clean transportation, green buildings, wastewater management and climate change adaptation. **Social Bonds:** are a type of bond whose proceeds are used to finance or re-finance social projects or activities that aim to address or mitigate a specific social issue or seek to achieve positive social outcomes. Social project categories include providing and/or promoting: affordable basic infrastructure, access to essential services, affordable housing, employment generation, food security, or socioeconomic advancement and empowerment. **Sustainability Bonds:** are a type of bond whose proceeds are used to finance or re-finance a combination of green and social projects or activities. Sustainability bonds with strict accountability of the use of proceeds towards activities that advance the UN Sustainable Development Goals or SDGs may be labeled as SDG Bonds. **Sustainability-linked Bonds:** are bonds which are structurally linked to the issuer's achievement of certain sustainability goals, such as through a covenant linking the coupon of a bond to specific environmental and/or social goals. Progress, or lack thereof, toward the forementioned goals or selected key performance indicators results in a decrease or increase in the instrument's coupon. In contrast to the green, social and sustainability bonds described above, sustainability-linked bonds do not finance particular projects but rather finance the general functioning of an issuer that has explicit sustainability targets that are linked to the financing conditions of the bond.

All investments contain risk and may lose value. Investing in the **bond market** is subject to risks, including market, interest rate, issuer, credit, inflation risk, and liquidity risk. The value of most bonds and bond strategies are impacted by changes in interest rates. Bonds and bond strategies with longer durations tend to be more sensitive and volatile than those with shorter durations; bond prices generally fall as interest rates rise, and low interest rate environments increase this risk. Reductions in bond counterparty capacity may contribute to decreased market liquidity and increased price volatility. Bond investments may be worth more or less than the original cost when redeemed. Investing **in foreign denominated and/or domiciled securities** may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in emerging markets. **Mortgage and asset-backed securities** may be sensitive to changes in interest rates, subject to early repayment risk, and their value may fluctuate in response to the markets perception of issuer creditworthiness; while generally supported by some form of government or private guarantee there is no assurance that private guarantors will meet their obligations. **High-yield, lower-rated, securities** involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. Structured products such as Collateralized Debt Obligations (CDOs), Constant Proportion Portfolio Insurance (CPPI), and Constant Proportion Debt Obligations (CPDOs) are complex instruments, typically involving a high degree of risk and intended for qualified investors only. Use of these instruments may involve derivative instruments that could lose more than the principal amount invested. The market value may also be affected by changes in economic, financial, and political environment (including, but not limited to spot and forward interest and exchange rates), maturity, market, and the credit quality of any issuer. **Equities** may decline in value due to both real and perceived general market, economic, and industry conditions. **Derivatives** may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Investing in derivatives could lose more than the amount invested. **Diversification** does not ensure against loss. **Management risk** is the risk that the investment techniques and risk analyses applied by an investment manager will not produce the desired results, and that certain policies or developments may affect the investment techniques available to the manager in connection with managing the strategy.

ESG investing is qualitative and subjective by nature, and there is no guarantee that the factors utilized by PIMCO or any judgment exercised by PIMCO will reflect the opinions of any particular investor, and the factors utilized by PIMCO may differ from the factors that any particular investor considers relevant in evaluating an issuer's ESG practices. In evaluating an issuer, PIMCO is dependent upon information and data obtained through voluntary or third-party reporting that may be incomplete, inaccurate or unavailable, or present conflicting information and data with respect to an issuer, which in each case could cause PIMCO to incorrectly assess an issuer's business practices with respect to its ESG practices. Socially responsible norms differ by region, and an issuer's ESG practices or PIMCO's assessment of an issuer's ESG practices may change over time. There is no standardized industry definition or certification for certain ESG categories, for example "green bonds"; as such, the inclusion of securities in these statistics involves PIMCO's subjectivity and discretion. There is no assurance that the ESG investing strategy or techniques employed will be successful. Past performance is not a guarantee or reliable indicator of future results.

PIMCO's credit research analysts assess the Environmental, Social, and Governance ("ESG") profile of corporate, municipal, and sovereign issuers relative to peer issuers with a goal of separating leaders from laggards. Using industry-specific ESG frameworks, analysts review issuers' ESG performance based on information available in public filings, recent ESG news and controversies, as well as through engagement with company management teams. Analysts assign three separate numerical scores from 1 to 5 (with 5 being the highest) to their environmental, social and governance-based business practices. The score in each category is related to an issuer's rank relative to industry peers, and the relative weights of the E, S, and G scores in the composite score vary based on industries, as each industry is assigned a different factor weight. For example, the environmental category has the greatest weight for issuers in extractive industries (e.g., oil, gas, and mining), the social category has the greatest weight for pharmaceutical issuers, and the governance category has the greatest weight for financial issuers. Analysts also include a forward-looking ESG trend assessment, which recognizes companies whose ESG performance is significantly improving or deteriorating. These factors are combined to create a proprietary composite ESG issuer score.

PIMCO's credit research analysts also assess green, social, sustainability, and sustainability-linked bonds (collectively "ESG bonds") at an issuance level, including prior to and after issuance. Utilizing PIMCO's proprietary ESG Bond Framework assessment, credit analysts evaluate such instruments starting with the strategic fit, assessing the alignment of the issuers' ESG-related strategies with the bond's objectives and use of proceeds, key performance indicators (KPIs), and the evidence of significant positive impact of the activities compared to "business as usual". We continuously screen for "red flags" and controversies through this process and also assess the degree of reporting by the issuer to analyze misalignment with key market standards, such as the Green Bond Principles. These factors result in a proprietary ESG bond score ranging from 1 to 5 (with 5 being the highest). PIMCO does not score all ESG bonds. Unassessed ESG bonds receive a default score of 3. ESG bonds holdings in PIMCO portfolios are then assigned a score that combines the issuer's ESG score and the ESG bond score. Specifically, an ESG bond holding receives the ESG issuer score plus an adjustment ranging from 0 up to 1.0 point, depending on the type of ESG bond (use of proceeds or sustainability-linked) and the quality of the ESG bond according to PIMCO's proprietary assessment. Holdings of securitized ESG bond issuances (asset-backed securities, collateralized loan obligations, collateralized mortgage obligations, collateralized debt obligations, and mortgage pass through securities) receive the ESG issuer score and are not adjusted.

We use MSCI and other third-party ratings for reference but make our own assessment based on our own, independent analysis of the industry and relevant ESG factors. PIMCO's resulting assessments are proprietary and distinct from those provided by ESG rating providers. Inclusion of a proprietary PIMCO ESG rating creates a conflict of interest because PIMCO and its affiliates benefit when PIMCO assigns a particular security a high score, or assigns a benchmark index or security a low score.

Statements concerning financial market trends or portfolio strategies are based on current market conditions, which will fluctuate. There is no guarantee that these investment strategies will work under all market conditions or are appropriate for all investors and each investor should evaluate their ability to invest for the long term, especially during periods of downturn in the market. Outlook and strategies are subject to change without notice. Investors should consult their investment professional prior to making an investment decision.

The issuers referenced are examples of issuers PIMCO considers to be well known and that may fall into the stated sectors. References to specific issuers are not intended and should not be interpreted as recommendations to purchase, sell or hold securities of those issuers. PIMCO products and strategies may or may not include the securities of the issuers referenced and, if such securities are included, no representation is being made that such securities will continue to be included.

Stress testing involves asset or portfolio modeling techniques that attempt to simulate possible performance outcomes using historical data and/or hypothetical performance modeling events. These methodologies can include among other things, use of historical data modeling, various factor or market change assumptions, different valuation models and subjective judgments.

While PIMCO has not made a firmwide **net zero** commitment, at PIMCO we are committed to providing industry leading advice and solutions for clients on a range of sustainability and ESG issues, including climate change and reducing greenhouse gas emissions to net zero.

Weighted Average Carbon Intensity is intended to reflect how an issuer's greenhouse gas (GHG) emissions (expressed as tonnes of CO₂ equivalent (tCO₂e)) compares to its overall revenues. The carbon intensity of the securities portfolio is defined as the weighted average carbon emissions (Scope 1 + Scope 2 emissions tCO₂e)/Revenues in USD of corporate bond holdings only in the portfolio (for issuers with available data). Absolute carbon emission analysis takes the total emission per issuer into consideration. PIMCO applies emissions values of the parent to subsidiaries where MSCI data is not available. As defined by the U.S. Environmental Protection Agency (EPA), Scope 1 emissions are direct GHG emissions that occur from sources owned or controlled by a company (for example, company vehicles and facilities), and Scope 2 emissions are indirect GHG emissions from the purchase of electricity, steam, heating or cooling. Data used by PIMCO to calculate carbon intensity is (i) sourced from MSCI based on data reported by companies, a company specific model, or an industry specific model (MSCI's methodology is available here: <https://www.msci.com/index-carbon-footprint-metrics>), or (ii) estimated by PIMCO for "use of proceeds" bonds not covered by MSCI (green and sustainability bonds). PIMCO's estimates generally apply absolute emissions of the issuer's

parent company/companies to its subsidiaries.

Carbon Discounting Methodology: In its calculation of carbon metrics for ESG labeled bonds, PIMCO applies a proprietary carbon discounting methodology which generally can include the consideration of: i) publicly available information disclosed by an issuer/ company, ii) third-party data sources, and/ or iii) internal proprietary assessments, as applicable. Green bonds and sustainability bonds issued by select electric utility companies adjust a company's carbon metrics by subtracting at a proportion equal to the contribution of eligible renewable energy projects to the proceeds allocation (i.e. the portion allocated to renewable energy projects are treated as having zero carbon emissions and, therefore, zero carbon intensity). For green or sustainability bonds where proceeds are allocated to eligible green or social projects other than renewable energy or are issued by companies in nonelectric utility sectors, carbon metrics are directly passed through from the company level to these bonds with no adjustments. To the extent possible, PIMCO utilizes an issuer's public disclosure, such as post-issuance allocation report, when calculating the allocation of proceeds to renewable energy projects. In some cases, PIMCO may leverage third party data to source such information. In the case of absent or incomplete disclosure, PIMCO uses several assumptions to estimate the allocation of proceeds to renewable energy projects for the respective utility sector, such as the potential allocation split across eligible green projects communicated by the issuer or the average allocation to renewable energy

for the industry. PIMCO climate and carbon metrics and methodologies may change over time and may not be comparable to prior period metrics reported. The firm's proprietary methodologies are not verified by a third-party and may vary from other independent carbon methodologies.

Carbon Footprint refers to the calculation of the total GHG emissions (scope 1 and scope 2) of corporates in the portfolio normalized by the bond exposure of corporates in the portfolio and expressed as a carbon dioxide equivalent.

It is not possible to invest directly in an unmanaged index

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