PIMCO

2018

ESG Investing Report

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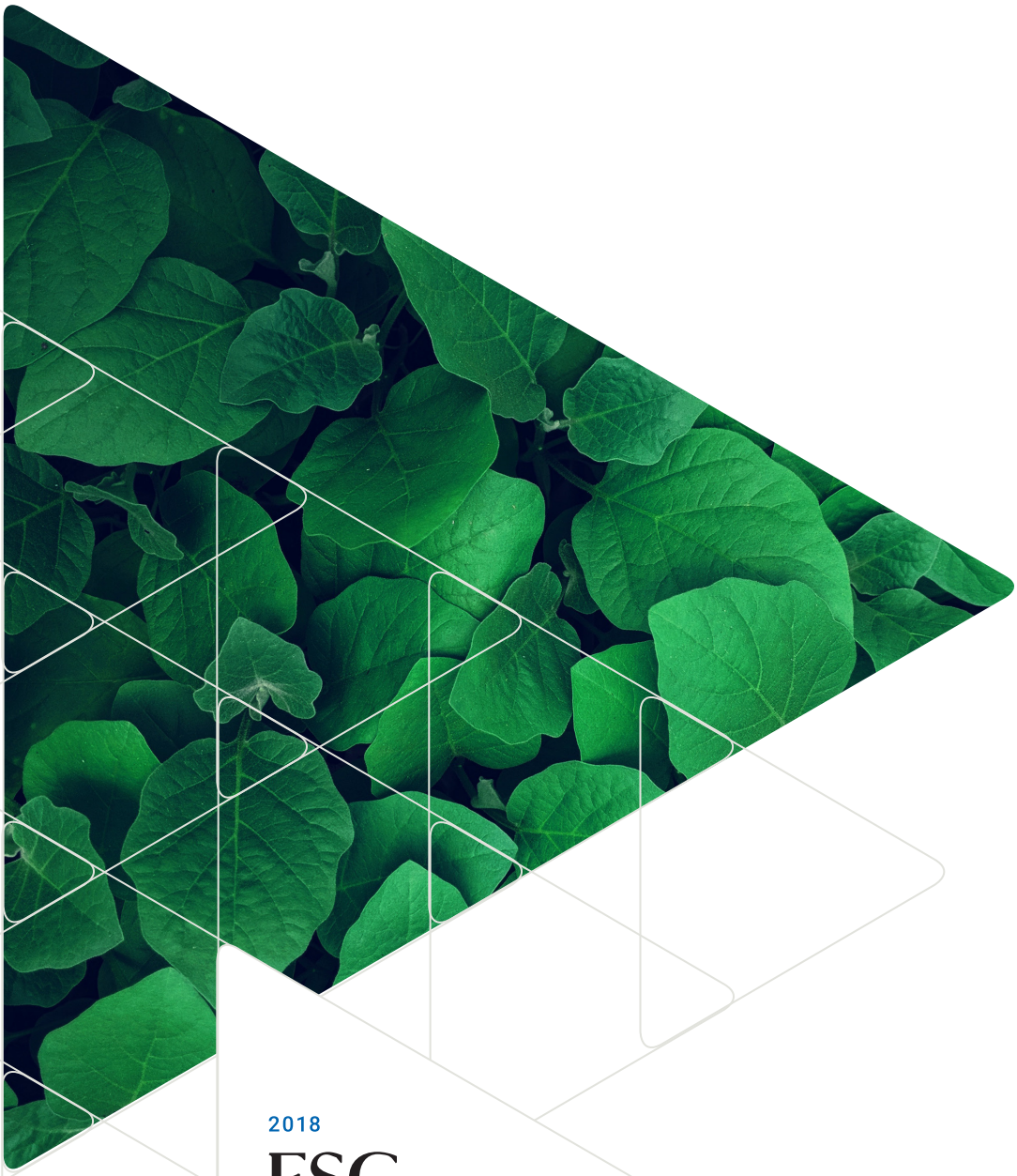

2018

ESG Investing Report

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Foreword

Emmanuel Roman
Managing Director
Chief Executive Officer

Scott Mather
Managing Director
Chief Investment Officer,
U.S. Core Strategies
CIO Responsible for
ESG Strategies

At PIMCO we are proudly pushing global bond markets toward financing a more sustainable future. This report details the significant advances to our environmental, social and governance (ESG) investment efforts over the past year – to benefit portfolios and broader society. Our recent efforts focused on three primary workstreams: 1) deepening and broadening our ESG analysis across major fixed income sectors, 2) enhancing our ESG product solutions, and 3) strengthening our teams with sustainable development and climate analysis experts.

From an investor perspective, client interest continues to mature from individual investors to consultants, from wealth managers to large institutional clients around the world. This year we engaged directly with global investment professionals hosting two important conferences focused on ESG investing: an ESG Investing Summit in London with leading industry experts, including UN Principles for Responsible Investment (PRI) President Fiona Reynolds, and a symposium co-hosted with the UN Global Compact at our Newport Beach headquarters on financing the UN's Sustainable Development Goals (SDGs).

As you will see in this report, our growing specialist teams have been busy improving, updating and enhancing ESG frameworks across the major sectors of the bond market. Importantly, we developed innovative frameworks to expand our ESG capabilities in municipal bonds and mortgage-backed securities – more in the ESG integration section. In terms of additional enhancements, this past year we focused on developing a climate risk strategy specific to fixed income, building tools to monitor our portfolios' alignment with the SDGs and the Paris Agreement. Our ESG engagement team focused on impact measurement, which is a critical element of ESG investing for clients and portfolio managers, though a very nuanced exercise. We continue to launch new ESG strategies, including a European product focused on ESG opportunities in global investment grade credit and are expanding our municipal bond ESG capabilities.

In efforts to drive a globally coordinated ESG voice, we continue to partner closely with key industry groups. For example, our close collaboration with the Investment Leaders Group at the Cambridge Institute for Sustainability Leadership continues to bear fruit, as does our work with the UN Global Compact to advance progress towards the SDGs. Our sovereign credit team has further collaborated with the PRI to develop a workstream linking ESG-based analysis across sovereign issuers.

ESG momentum within PIMCO – as well as within the broader fixed income investment community – remains solid and continues to flourish. We hope you get a sense for our progress and passion as you read our latest report.

Philosophy and Process

At over $100 trillion, global bond markets are essential to financing a sustainable future. As a leader in the industry, PIMCO is well-positioned to spearhead this positive change. Our approach to ESG investing rests on two pillars. First, we integrate ESG analysis in the firm's broad investment process. We do this because we believe it makes good investment sense, consistent with our goal of generating attractive risk-adjusted returns for clients. Second, for investors seeking greater ESG orientation in their portfolios, we built a platform of ESG-centered solutions that focus on delivering financial returns, while making positive environmental and social change.

HOW ARE ESG FACTORS INTEGRATED INTO PIMCO'S FIRMWIDE INVESTMENT PROCESS?

PIMCO's investment process emphasizes rigorous analysis of broad secular trends, which are at the core of both global sustainability and long-term asset returns. In addition, we employ proprietary ESG scoring frameworks for each of the major fixed income sectors to further enhance our security-specific considerations.

ESG is an integrated component of PIMCO's credit research – a core part of our portfolio construction process. Portfolio managers are able to access a variety of ESG information, depending on the degree of granularity required. For some, the ESG score may be all they need as a summary of the issuer's stance on ESG factors. For others, a deeper understanding can be gathered by reviewing a breakdown of the ESG score and its rationale.

> "PIMCO ESG portfolios utilize the three building blocks *exclude, evaluate* and *engage* to influence positive change."

HOW DO OUR DEDICATED ESG STRATEGIES WORK?

PIMCO ESG portfolios are founded on the belief that investors can achieve both financial returns and positive impact. Our ESG portfolios are managed in an effort to outperform their benchmarks (e.g., Bloomberg Barclays US Aggregate index) by tapping into PIMCO's time-tested investment process, utilizing our global resources and incorporating consistent macro risk factors, like duration, yield curve and credit positioning, as with other PIMCO portfolios. In addition, PIMCO ESG portfolios utilize three building blocks *exclude, evaluate* and *engage* to influence positive change.

- **Exclude:** PIMCO ESG portfolios exclude issuers fundamentally misaligned with sustainability principles. Core exclusions include issuers focused on tobacco manufacturing, the production of controversial weapons, pornographic material and the production or distribution of coal. These are supplemented by a dynamic list of issuers excluded due to business practices misaligned with ESG principles, a failure to demonstrate a willingness to improve practices or unresponsiveness to PIMCO's active engagement efforts.

- **Evaluate:** As well as seeking to exclude "worst-in-class" ESG issuers, PIMCO ESG portfolios emphasize "best-in-class" ESG issuers. These are identified through a proprietary ESG scoring system which considers how an issuer currently fares relative to its peers in the industry, and the issuer's ESG momentum. The result: Issuers already incorporating sound ESG practices are more likely to be candidates for our ESG portfolios.

Throughout this report, you'll see SDG icons highlighting how our ESG activity is aligned to help meet these goals.

- **Engage:** Our final building block is constructive and collaborative engagement with issuers to influence ESG practices over time. We believe that allocating capital toward issuers willing to improve the sustainability of their business practices can generate a greater impact than simply excluding issuers with poor ESG metrics and favoring those with strong metrics. As such, PIMCO ESG portfolios seek to overweight issuers that demonstrate a clear willingness to move toward better ESG-related practices, consistent with meeting the SDGs.

On September 25, 2015, the United Nations General Assembly adopted the 2030 agenda for Sustainable Development, which includes a set of 17 Sustainable Development Goals (SDGs) to end poverty, fight inequality and injustice, and tackle climate change by 2030. PIMCO is committed to helping facilitate industry engagement and to identifying ways to work creatively to have a positive societal impact.

Figure 1: PIMCO's three-step approach to building ESG portfolios

Source: PIMCO. For illustrative purposes only.

OUR COMMITMENT

PIMCO's view is that ESG-based analysis should be as natural a part of a fixed income investment process as the assessment of credit, duration, or other risk factors. We are committed to putting this into practice across our portfolios, both from a top-down perspective, where we see ESG analysis as consistent with our annual Secular Forum process, and from a bottom-up perspective, where we see ESG as an integrated component of our credit analysis through profiling and issuer scoring.

ESG Integration

PIMCO'S UN PRINCIPLES FOR RESPONSIBLE INVESTMENT ASSESSMENT REPORT

Reflecting the depth and breadth of our ESG integration as a firm, in 2018 PIMCO received an A+ rating (highest score) from our UN PRI Assessment Report, up from an A grade in 2017. We now score A+ across every single indicator, highlighting our evolution and strong improvement in sustainable investing.

in **2018**

PIMCO received an A+ rating (highest score) from our UN PRI Assessment Report.

Figure 2: PIMCO's 2018 UN PRI Assessment Report

UN Principles for Responsible Investment Assessment Report	2018	
	PIMCO	Median
Strategy & Governance	A+	A
Fixed Income - Sovereigns, Supranationals and Agencies (SSA)	A+	B
Fixed Income - Corporate Financial	A+	B
Fixed Income - Corporate Non-Financial	A+	B
Fixed Income - Securitized	A+	C

Source: UNPRI assessment report limited to asset managers signed up to the Principles for Responsible Investment (PRI) and based on how well ESG metrics are incorporated into their investment processes. UNPRI Transparency Reports 2018 are available at https://www.unpri.org/signatories/transparency-reports-2018/3350.article. For methodology, please refer to About PRI Assessment: https://www.unpri.org/signatories/about-pri-assessment.

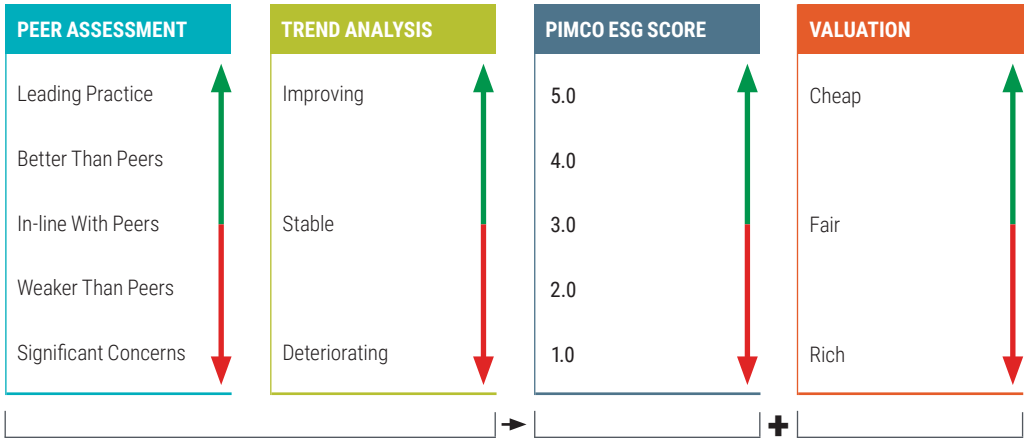
Past performance is no guarantee of future results.

INTEGRATING ESG IN CREDIT RESEARCH

PIMCO's team of 60+ credit research analysts (as of 31 December 2018) assesses the ESG profile of the issuers that they cover relative to peers with a goal of separating leaders from laggards. Using industry-specific ESG frameworks, analysts review their companies' ESG performance based on information available in public filings, recent ESG news and controversies, as well as through regular engagement with company management teams to assign separate scores for "E", "S" and "G". PIMCO's resulting assessments are proprietary and distinct from those provided by ESG rating providers.

As shown in Figure 3, scores distinguish between "Leading Practice" issuers and those that raise "Significant Concerns". They 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 ESG score in which the relative weighting of the E, S and G pillars, and the trend assessment, is based on the company's business profile and differences in industry dynamics. For example, the environmental pillar has the highest weight for issuers in extractive industries (e.g., oil, gas, and mining), the social pillar has the highest weight for pharmaceutical issuers, and the governance pillar has the highest weight for financial issuers.

Figure 3: PIMCO's ESG scoring system



Source: PIMCO. **For illustrative purposes only.**

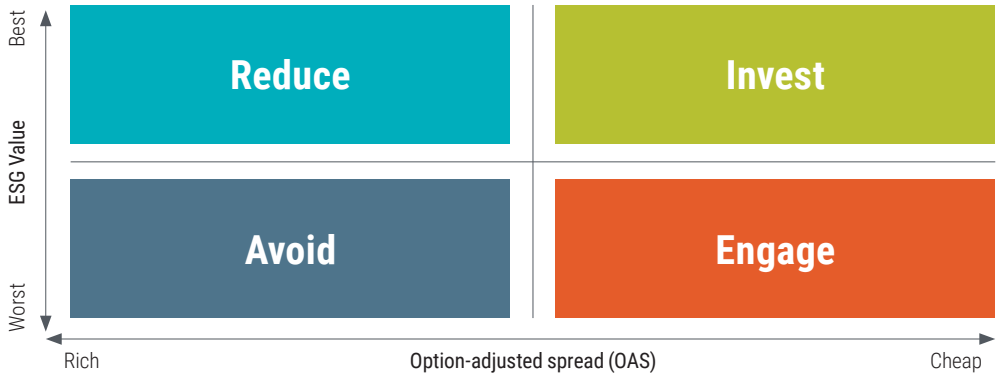
INTEGRATION IN PORTFOLIO MANAGEMENT

PIMCO credit analysts highlight ESG assessments in their credit research notes, alongside PIMCO's internal credit ratings and recommendations for portfolio managers to consider when they are evaluating investments for all PIMCO portfolios, including non-ESG-dedicated accounts. Analysts' ESG views include narrative assessments and rationales for material factors that have the potential to affect investment performance. These assessments can be relevant in shaping investments in our portfolios.

For example, a portfolio manager may decide to switch between two companies with similar fundamental risk profiles trading at comparable spread levels based on their relative ESG scores. The illustration in Figure 4 separates potential investments into four quadrants:

1. **Invest** in issuers trading at attractive valuations and with strong ESG profiles;
2. **Engage** with companies trading cheaply, but which have weaker ESG profiles;
3. **Reduce** exposures to companies trading at unattractive valuations despite strong ESG profiles; and
4. **Avoid**/sell companies with unattractive valuations and weak ESG profiles.

Figure 4: ESG relative valuation



Source: PIMCO. **For illustrative purposes only.**

ESG investing in corporate fixed income

Many issuers across the global corporate bond sector have embraced ESG investment principles and issued a range of debt instruments geared toward sustainability. PIMCO's ESG process integrates green, social and sustainability bonds that focus on advancing the global sustainability agenda under the framework of the United Nations Sustainable Development Goals (SDGs). We believe bond issuers, whether they are governments or companies, have an essential part to play by aligning debt issuance to specifically support the SDGs. As investors, we see bonds issued under the SDGs as a key part of the fixed income market in the years ahead, and we call on issuers to be at the forefront of this exciting opportunity.

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HOW DOES PIMCO'S CREDIT RESEARCH FOCUS ON GREEN, SOCIAL AND SDG BONDS?

Our proprietary framework assesses these 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** (see Figure 5).

Figure 5: Analyzing the potential impact of green, social and SDG bonds

	PIMCO's research	Example (positive)	Example (challenges)
Strategic fit	**Alignment** of the issuer's climate/environmental/ social strategies with the bond's objectives and use of proceeds	A green bond to support the issuer's step-up in renewable energy investments	Low targets and elusive links between a green bond and broader climate strategy (limited reporting, greenhouse gas emissions target may actually mean a net increase)
Impact assessment	Evidence of significant **positive outcomes** compared with "business as usual" by the issuer	A green bond to prop up a first-of-its-kind 2-degree alignment target for a loan portfolio, including the most demanding green buildings certification	Unclear definition of targeted and potential impact connected to operating expenses and broader aspects of corporate ESG performance
Red flags and reporting	Screening for possible "**red flags**" and **controversies** and analysis of **reporting** and **process** (e.g., misalignments with market standards such as the Green Bond Principles)	Inaugural issue of an SDG bond signaled the importance of the SDGs as a framework to bolster activities aligned with global sustainability goals	A green bond devoted to airport infrastructure whose indirect greenhouse gas emissions profile at a holistic level raises questions

PIMCO's Green, Social and SDG Bonds Impact Score

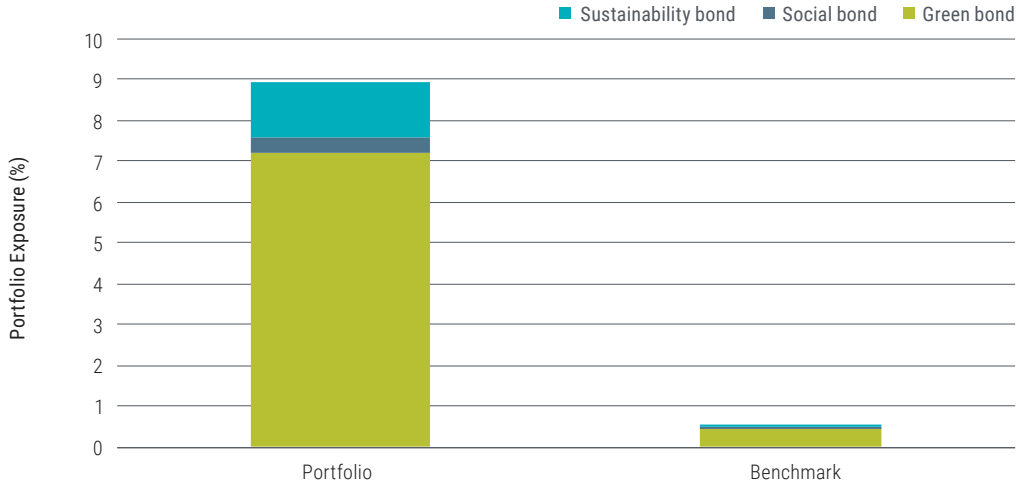
Source: PIMCO. For illustrative purposes only.

HOW HAVE IMPACT SCORES AFFECTED INVESTMENT STRATEGIES?

As one example from the financials sector, a major multinational bank issued its first green bond in 2018. Our ESG assessment determined the bond issue reflected mostly best practices in its impact criteria (e.g., top 10% of the local market in terms of energy efficiency for buildings) and its alignment with the recent strengthening of the bank's climate-related goals. This bank made a pioneering commitment in the second half of 2018 to align its lending portfolio with the Paris climate change agreement via lowering its exposure to carbon-intensive sectors and increasing its focus on renewables.

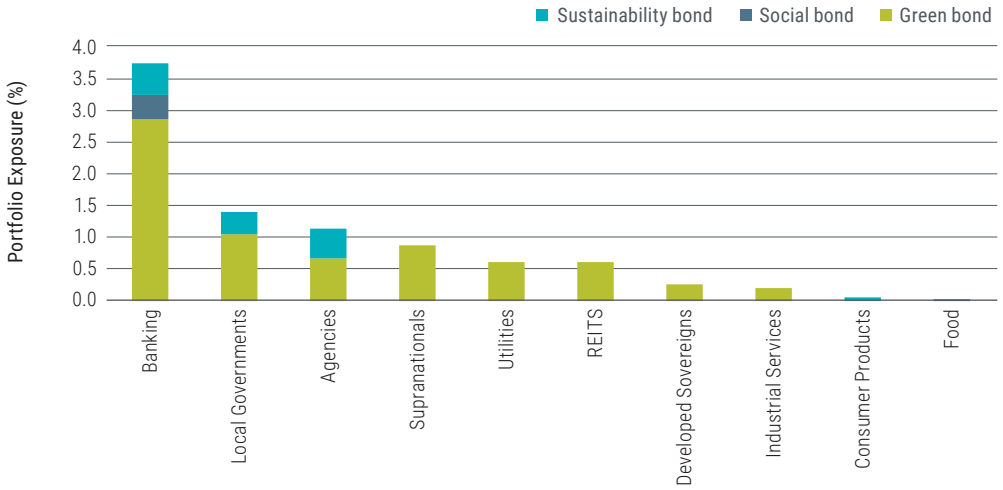
Improved practices in impact reporting are another potential benefit of green, social and SDG bonds, as this could help fine-tune the broader environmental and social impact assessments of bond investments. For example, some bonds issued by subsidiaries offer more granular data at the issuer level than the ultimate parent, and the systematization of SDG reporting in issuance documentation could potentially lead to a clearer and more quantifiable definition of the nexus between climate, social and broader environmental themes (e.g., carbon emissions and water and air quality).

Figure 6: Sample portfolio's exposure to green, social and sustainability bonds (portfolio versus benchmark)



Source: PIMCO as of 31 December 2018. **For illustrative purposes only.** Based on Bloomberg definitions that the issuer or underwriter must clearly and publically demonstrate in issuance documentation that 100% of all proceeds will be used to finance or refinance acceptable green projects or activities (including issuers that may not comply with the Green Bond Principles). Portfolio is an ESG global investment grade credit portfolio. Benchmark is the Bloomberg Barclays Global Aggregate Credit Index (USD Hedged). This Figure is provided for information purposes and should not be construed as a solicitation or offer to buy or sell any PIMCO or other securities or related financial instruments in any jurisdiction.

Figure 7: Sample portfolio's exposure to green, social and sustainability bonds (breakdown by sector)



Source: PIMCO as of 31 December 2018. **For illustrative purposes only**. Based on Bloomberg definitions that the issuer or underwriter must clearly and publically demonstrate in issuance documentation that 100% of all proceeds will be used to finance or refinance acceptable green projects or activities (including issuers that may not comply with the Green Bond Principles). Portfolio is an ESG global investment grade credit portfolio. This Figure is provided for information purposes and should not be construed as a solicitation or offer to buy or sell any PIMCO or other securities or related financial instruments in any jurisdiction.

CASE STUDY IN ESG INTEGRATION: REAL ESTATE INVESTMENT TRUSTS (REITS)

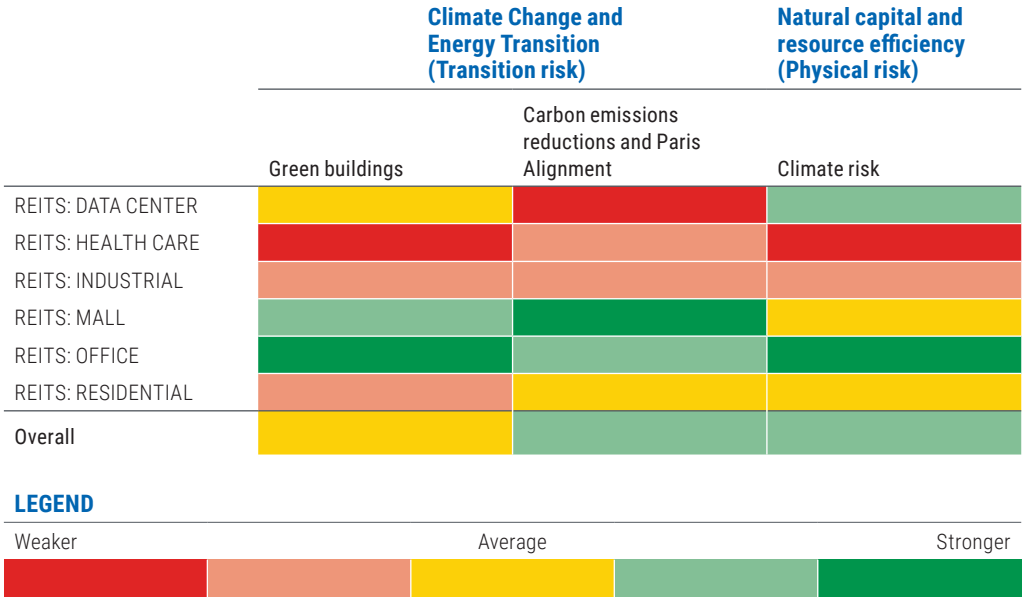
We believe the real estate sector is pivotal to help advance both the Paris Agreement and the UN SDGs, which implies in practice mounting pressure to step up energy efficiency improvements via more extensive upgrades of existing properties. Both regulatory and customer trends are converging toward that objective, while broader environmental and social leadership could bolster property values in the long run and ultimately create new and attractive investment opportunities.

Assessing the Environmental pillar specifically, our ESG framework for REITs examines practices in terms of green buildings, like-for-like carbon emissions intensity reductions, and physical risk assessment and mitigation at the portfolio level, which explores the potential impact of the rise in the intensity and frequency of extreme weather events on REIT issuers. Transition risks are business risks prompted by the energy transition, such as tighter regulations on carbon emissions, and physical risks are how climate change affects assets and natural resources upon which the issuer depends.

"We believe the real estate sector is pivotal to help advance both the Paris Agreement and the UN SDGs."

Looking across the REIT sector, our environmental heat map (Figure 8) highlights that malls and offices are currently the most advanced subsectors in their practices and trajectories.

Figure 8: REIT subsectors' progress toward key environmental criteria



Source: PIMCO. **For illustrative purposes only**. Based on assessments of 60 companies. Results are based on the average performance of each subsector; subsectors have varying degrees of representation and disclosure in our sample and this should not be seen as a representation of the global REITs subsectors' environmental performance. A different sample would provide different results

Out of our sample of 60 REITs, a growing minority (8%) pave the way for science-based greenhouse gas emissions targets aligned with the 1.5°C – 2°C temperature rise scenario, including (to varying degrees) carbon emissions scope 3 (indirect) emissions reduction. Our findings also underscore the emergence of tighter definitions of "green" buildings as well as more compelling quantitative physical risk scenario awareness and analysis, as evidence has grown regarding property value at risk under extreme temperature rise scenarios.

ESG investing in sovereign debt markets

HOW DOES PIMCO ANALYZE ESG RISK FACTORS FOR SOVEREIGN DEBT?

PIMCO's in-depth, bottom-up sovereign risk analysis assesses financial, macroeconomic and ESG variables. In addition to the traditional financial metrics used in sovereign credit analysis, we explicitly score the sovereign on each ESG component as shown in Figure 9.

Figure 9: Variables included in ESG sovereign credit score

E ENVIRONMENTAL	S SOCIAL	G GOVERNANCE
• Greenhouse gas emissions per capita • Fossil fuel usage • Renewable energy • Notre Dame Global Adaptation Initiative Country Index	• Life expectancy • Mortality rate • Gender equality • Gini coefficient (indicating wealth distribution) • Health score • Years of education • Years of higher education and training • Labor market indicators • Perception of corruption	• Political stability • Voice and accountability • Rule of law • Control of corruption • Government effectiveness • Regulatory quality

Source: PIMCO. **For illustrative purposes only.**

To enhance our ESG scoring framework, we've augmented our analysis and coverage of environmental factors. This includes:

- **Climate transition risk measures** include share of fossil fuels, share of renewable energy and CO2 emissions. Many countries with a large dependence on fossil fuels may experience budget pressures if climate-related legislation hampers the growth of specific sectors as well as tax resources.
- **Climate physical risk measures** include the Notre Dame Global Adaptation Initiative Country Index, which assesses the impact on the cost of capital for governments in vulnerable countries.
- **Environment and health indicators** include measures of air pollution (e.g., particulate matter concentrations) as exposure to air pollution is one of the main environmental threats to health.
- **Natural resources assessment indicators** consider longer-term environmental risks. These include the annual change in forest area (deforestation risk); the Ocean Health Index, which measures biodiversity decline, overfishing and ocean health deterioration; and freshwater variables covering water management and potential stress over water availability.

Together, these indicators enable us to take a more granular look at the environmental risks faced by individual sovereigns depending on their specific starting points.

WHAT IS A REAL-WORLD EXAMPLE OF ESG SOVEREIGN ANALYSIS?

We believe integrating ESG factors into traditional sovereign credit analysis has the potential to improve risk assessments and better shield portfolios from large downside risks.

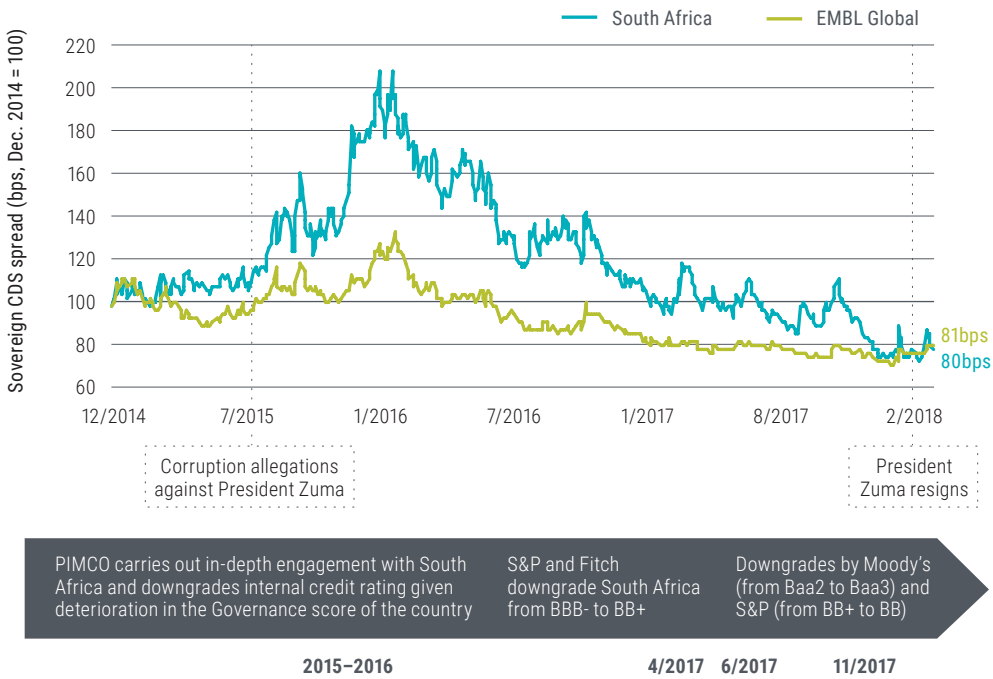
South Africa offers a case study: In July 2015, allegations of corruption emerged with regard to former South African President Jacob Zuma. A power struggle within the African National Congress (ANC) followed, resulting in a weakening of South Africa's institutional framework, with frequent changes of finance ministers, fiscal slippage and political turbulence.

When the allegations first surfaced, we initiated a reassessment of South Africa's political and governance risks, and a senior PIMCO team made a due diligence trip to the country. The objective was to understand the economic and institutional impact as well as the social consequences of the diversion of fiscal resources away from health and education.

Following in-depth discussions with government officials and a detailed analysis, we downgraded our internal credit rating for South Africa several quarters before the major rating agencies did (see Figure 10). The weight of the governance indicators within our sovereign ESG ratings, our assessment of the impact of weaker institutions on economic growth and on the country's debt burden, and our engagement with senior government officials all drove our decision to downgrade.

"We believe integrating ESG factors into traditional sovereign credit analysis has the potential to improve risk assessments and better shield portfolios from large downside risks."

Figure 10: ESG-focused sovereign credit assessment of South Africa helped PIMCO identify and manage risks



Sample for illustrative purposes only. Past performance is not a guarantee or a reliable indicator of future results.

Source: PIMCO, Bloomberg. Abbreviations: bps = basis points; CDS = credit default swaps; EMBI Global = J.P. Morgan Emerging Markets Bond Index Global

Our downgrade in turn led us to re-evaluate exposure to South African sovereign and quasi-sovereign risk, and led us to make a call to reduce exposure across PIMCO dedicated and non-dedicated ESG accounts.

From 2015–2017, we remained engaged with the government and key stakeholders in South Africa. This helped us to better understand the political dynamics and relay investors' concerns directly to decision makers. Today, under new leadership, South Africa is advancing reforms to improve governance and transparency, and to reduce corruption – promising signs that the country is finally on the long road to recovery.

ESG investing in the mortgage market

We believe mortgages are fundamentally aligned with responsible investing: A deep and liquid mortgage market helps millions of people own homes that otherwise wouldn't be able to afford this important long-term investment. Moreover, the housing industry, which benefits from a well-functioning mortgage market, is a critical part of the global economy.

While mortgages can be part of a responsible investing portfolio, the diversity of exposures across global mortgage markets means these investments offer varying degrees of positive social impact. With more detailed information on these securities, investors can target their impact by focusing on underserved communities along with high-integrity originators and service providers. The key is having the right data.

HOW DOES PIMCO'S MORTGAGE RESEARCH EMBRACE RESPONSIBLE INVESTING?

With PIMCO's access to vast loan-level mortgage data, we developed a proprietary responsible investing scoring model for mortgages, based on a scale from 1 (weakest) to 5 (best), consistent with other PIMCO ESG scoring frameworks used for corporate credits, sovereigns and others.

PIMCO's philosophy of responsible mortgage investing focuses on four objectives:

- **Support homeownership.** Homeownership is a key path to savings and wealth-building for many across the world. Connecting borrowers with capital markets is an established and efficient way to ease the path to homeownership. Not all mortgages are used for homeownership; some mortgages are used for vacation home purchases or investment properties.
- **Increase access for underserved communities.** PIMCO believes a focus on underserved communities and lower income borrowers is a way to magnify the social benefit of home lending without sacrificing on loan quality.
- **Promote responsible lending.** It's critical to focus on ensuring borrowers are not put at added risk of financial distress due to burdensome debt loads.
- **Discourage predatory lending.** A governance-focused way to encourage good lending practices is to penalize or exclude lenders and servicers who engage in practices that are detrimental to homeowners (and in many cases detrimental to bondholders as well).

Figure 11: PIMCO's philosophy of responsible mortgage investing

Source: PIMCO. For illustrative purposes only.

The mortgage market is not homogenous; there are agency mortgages and non-agency residential mortgages. We've built analytical frameworks for each part of the market.

For agency mortgage-backed securities (MBS), our ESG research model is based on pool-level characteristics and data we have collected over decades of studying mortgages. For non-government-guaranteed mortgages (non-agency MBS), our quantitative analysis is loan-level-based and again draws on a huge set of data PIMCO's mortgage team has gathered since before the financial crisis.

WHAT CHARACTERISTICS DRIVE PIMCO'S ESG SCORES FOR MORTGAGES?

Our research analysts scour a range of data points from across the mortgage market, using proprietary analytical tools to identify broad trends as well as unique or idiosyncratic risks and opportunities. To determine our ESG scores for mortgages, we focus on key attributes aligned with our four responsible investing objectives:

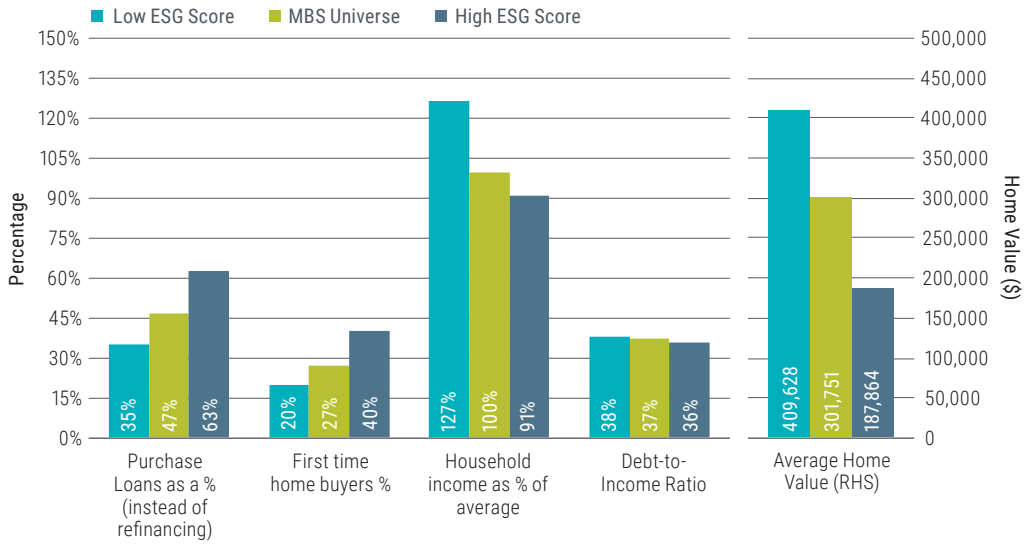
- **Homeownership:** Higher-scoring investments emphasize first-time homebuyers and starter homes rather than refinancing, and owner-occupied rather than investment or second homes
- **Underserved communities:** ESG scores take into account granular neighborhood information about income levels, employment, and homeownership rates
- **Responsible lending:** Responsibly sized loans for low credit score borrowers, minding the debt-to-income ratios, can garner higher ESG scores
- **Avoid predatory lending practices:** ESG investing means excluding lenders who "churn" borrowers

"The mortgage market is not homogenous; there are agency mortgages and non-agency residential mortgages. We've built analytical frameworks for each part of the market."

WHAT IS THE POTENTIAL IMPACT, IF ANY, ON PERFORMANCE?

At PIMCO, we believe investors can target financial performance objectives while driving positive social change. Mortgage investments with higher PIMCO ESG scores have differed not only from the overall investment universe of mortgages but also significantly differed from low-scoring bonds – see Figure 12 – and these different ESG profiles can contribute to return potential, perhaps in unanticipated ways.

Figure 12: Mortgage investments across different ESG profiles

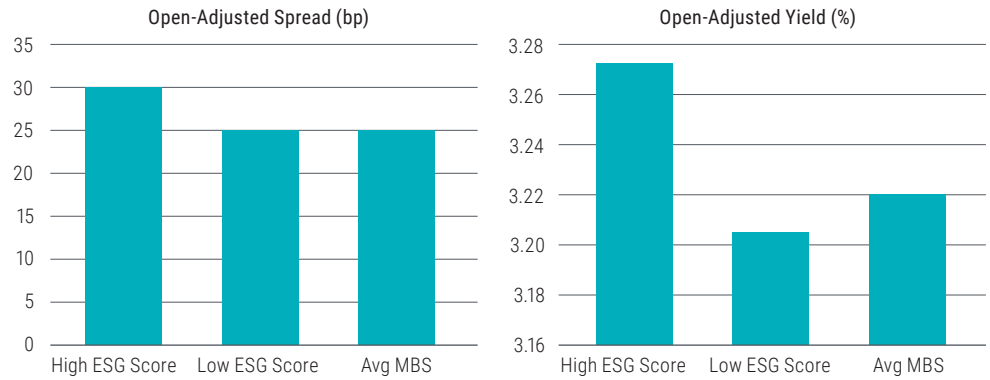


Source: PIMCO, Fannie Mae, Freddie Mac, Ginnie Mae. **For illustrative purposes only**. Based on outstanding MBS issued by Fannie, Freddie, and Ginnie.

Mortgage investments with a high PIMCO ESG score tend to be bonds with more attractive prepayment profiles relative to lower-scored ESG bonds or typical agency MBS. This is because many of the higher-scoring loans are relatively small and the incentive to refinance in a falling interest rate environment is lower than for large loans where the savings potential is greater.

A more mathematical approach to assess performance potential for ESG-oriented mortgages evaluates option-adjusted spread (OAS), which is the spread of a mortgage bond over swap rates adjusting for the embedded prepayment option. High-ESG-score bonds tend to have higher OAS versus both average MBS bonds as well as low-ESG-score bonds. Put differently, high-ESG-score bonds tend to have higher option-adjusted yield (OAY) and therefore higher return potential (see Figure 13).

Figure 13: Higher ESG-Score bonds have higher option adjusted spread, and yield



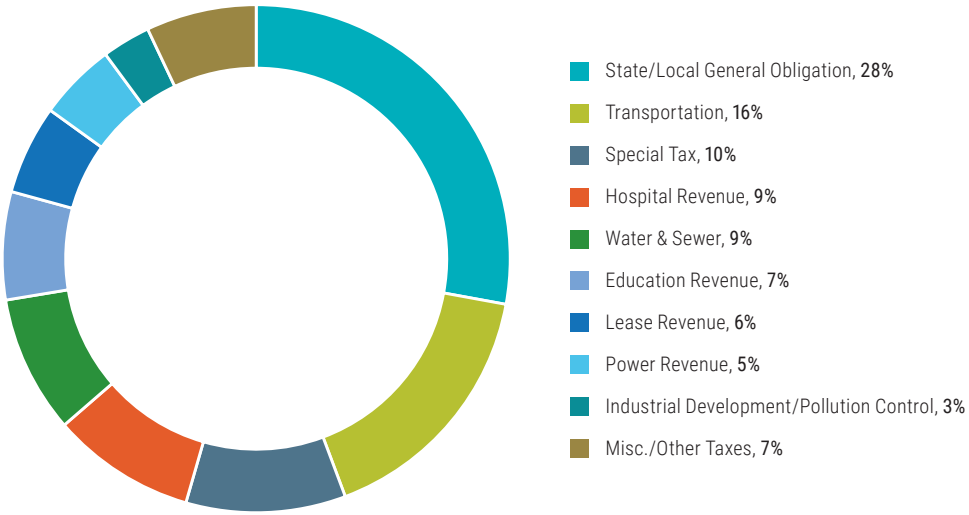
Source: PIMCO, Fannie Mae, Freddie Mac, Ginnie Mae. **For illustrative purposes only**. Based on outstanding MBS issued by Fannie, Freddie, and Ginnie.

ESG investing in the U.S. municipal bond market

Municipal bonds – or muni bonds – are debt securities issued by a U.S. state or local government or territory, or one of their agencies. The proceeds raised by issuing muni bonds are directed toward either general funding for the municipality or a specific project or purpose, such as construction of roads or schools. In the U.S. most muni bonds are exempt from federal and sometimes state and local taxes, making them an attractive option for many U.S. taxable investors.

From an ESG perspective, while the majority of tax-exempt municipal bonds earn their tax-exempt status due to some degree of social or public purpose (infrastructure, education, healthcare, etc.), not all municipal bonds have the same degree of sustainability characteristics. At PIMCO we consider issuer-level ESG factors across more than 50,000 muni bond issuers to better understand the risks, opportunities and social impact of our bond selections.

Figure 14: Municipal bond market sectors



Source: Bloomberg Barclays Municipal Bond Index as of 31 December 2018

We consider issuer-level ESG factors across more than

50,000

muni bond issuers to better understand the risks, opportunities and social impact of our bond selections.

HOW DO PIMCO'S MUNI ESG PORTFOLIOS SEEK TO DRIVE POSITIVE IMPACT?

PIMCO's proprietary ESG framework assesses the sustainability of municipal bonds across a range of factors, resulting in a PIMCO muni ESG score. We initially exclude certain sectors that do not meet our sustainability standards.

For sectors that are eligible for consideration, we rank each issuer relative to peers within that muni sector or industry across a range of environmental, social, and governance pillars (see Figure 15). PIMCO's municipal bond analysts assess each issuer's ESG merit through several factors, considering UN Sustainability Development Goals (SDGs). Each issuer is assigned separate numerical scores relative to peers within each of the three E, S, and G categories. These individual scores are weighted (weights will vary by industry) to create an overall proprietary ESG score for each individual credit; different bonds from the same issuer may have different ESG scores depending on the specific bond's use of proceeds.

Figure 15: ESG pillars of municipal bond investing

Source: United Nations. For illustrative purposes only.

This is an important distinction: While we believe municipalities (issuers) should be recognized for promoting positive ESG standards, adequate consideration should also be given to the specific issues and their projects (use of proceeds), along with the issue's and issuer's overall outlook across the three ESG pillars. With insights from an independent third party ESG specialist, and the consideration of both issuer characteristics and use of proceeds, PIMCO seeks to provide investors an optimal opportunity set to capture value across the municipal market while maintaining a commitment to an ESG focus.

In addition to sourcing public data to inform our proprietary ESG score, PIMCO incorporates a qualitative forward-looking trend factor based on an issuer's commitment to sustainability. As a major participant in the muni bond market, PIMCO has access to the leadership of many of the market's largest issuers. We strive to maintain a dialogue with these issuers to promote sustainable projects, and use these discussions as a qualitative assessment of the issuer's sustainability characteristics while seeking an attractive risk/reward profile for our investors.

ESG engagement process, activities and results

ANNUAL SUMMARY

This second annual engagement report for PIMCO's ESG strategies brings a solid uptick in our engagement activity. In 2018, we increased the number of corporate credit issuers we engaged with by more than 22%, while simultaneously increasing our engagement issuer response rate to 81% from 69% in 2017. We have further built a milestone system, COMET (Company Engagement Tracking), so that we can track year-on-year progress against objectives.

OVERVIEW OF PIMCO'S ENGAGEMENT PROTOCOL

PIMCO's ESG engagement with corporate credit issuers is a critical initiative that supplements our investment analysis. Default and spread widening are dominant risks in corporate debt investing. Avoiding potential losers and taking an active approach to identifying potential winners is one of the most significant factors in portfolio management. Our engagement dialogue is an important input to our forward-looking ESG trend assessment, which seeks to identify corporate issuers whose performance is improving or deteriorating. While an ESG scoring profile is based on historical behavior, engagement enables us to evaluate how the issuer is likely to address risk factors going forward, as well as the company's direction and aspirations.

At a firmwide level, PIMCO's analysts and portfolio managers spend a significant amount of time conducting calls and in-person meetings with issuers' senior management. In addition to financial matters, they may also focus on material ESG issues such as how risk management and business strategy address conduct risk, product safety or carbon risk. We have found this regular dialogue across multiple touchpoints to be a highly effective method of communicating and engaging on ESG issues.

PIMCO has incorporated many of the factors now material to ESG investing, particularly governance factors, into investment decisions for decades to better analyze issuer risks. PIMCO's investment process combines rigorous analysis of broad secular trends, which are at the core of both global sustainability and long-term asset returns, and bottom-up research to understand material risks related to ESG themes.

HIGHLIGHTS

147

engagements in 2018, more than 250 since 2017

Development of

34

industry templates

Strong response with

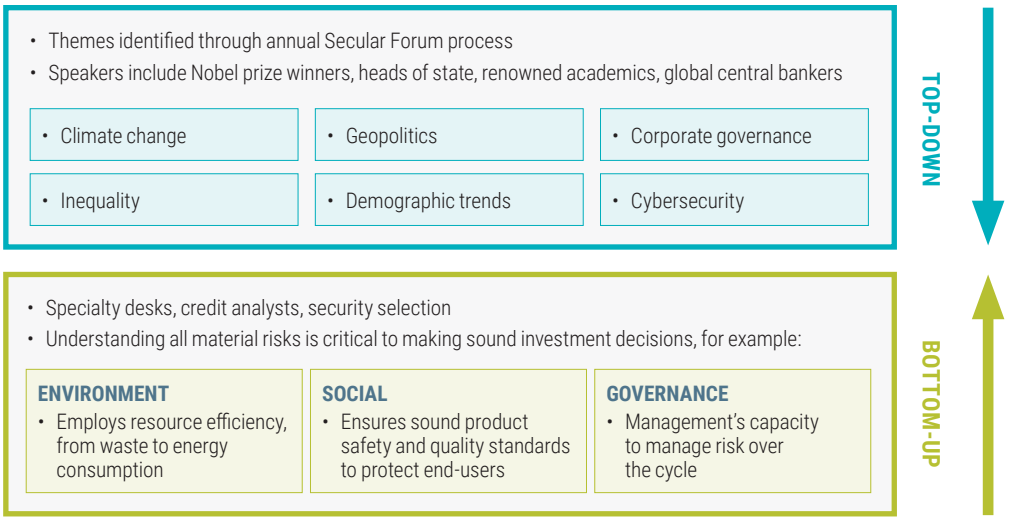
81%

of issuers providing detailed input

COMET

a proprietary milestone system to track engagement progress

Figure 16: ESG factors integrated at PIMCO



Source: PIMCO. **For illustrative purposes only.**

Within PIMCO's ESG investment strategies, a dedicated specialist identifies and engages with issuers that we believe have the potential and willingness to improve ESG-related practices. This approach enables us to assign a higher weight to companies we believe have improving ESG performance, and to incorporate sustainability-related themes such as positive impact into our ESG strategies.

There are two primary objectives of this interaction with companies: to collect ESG information aimed at fine-tuning PIMCO's proprietary ESG rating, and to influence a firm's business practices. We further encourage increased transparency and alignment with emerging global standardized frameworks such as the Sustainability Accounting Standards Board (SASB) and recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD), and movement toward science-based targets.

Figure 17: PIMCO's engagement protocol for ESG strategies is guided by three principles

Source: PIMCO. **For illustrative purposes only.**

ENGAGEMENT ACTIVITY BY GEOGRAPHY, INDUSTRY AND THEME

In 2018 we engaged with 147 issuers (120 in 2017) of investments held in PIMCO's ESG strategies, whom we contacted via multiple touchpoints including investor relations, CFOs, treasurers, and sustainability and origination desks. Engagement may include in-person meetings with company management, regular conference calls and questionnaires based on material ESG issues specific to each industry. In total, 119 issuers provided detailed input to our ESG engagement (81% of issuers engaged, up from 69% in 2017).

BREAKDOWN BY REGION AND INDUSTRY

Figure 18: Overall response rate
We engaged with 147 companies in 2018: 119 provided detailed input (Y) and 28 did not respond, often due to poor disclosure

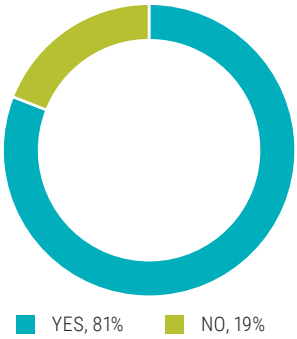


Figure 19: Response rate by region
12 companies (100%) in Asia-Pacific engaged, 51 (96%) in Europe, and 56 (68%) in North America

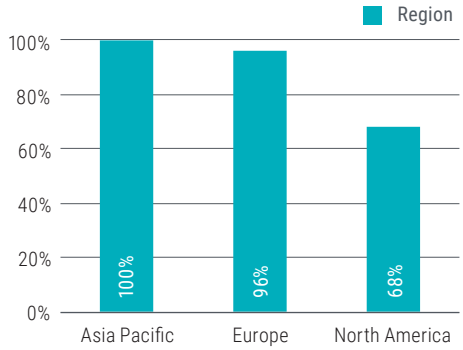


Figure 20: Response rate by industry

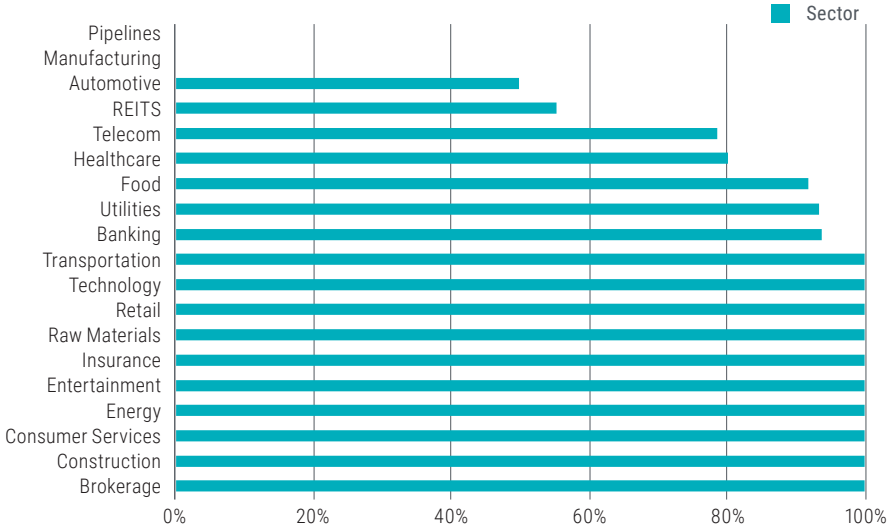


Figure 21: Overall regional breakdown of engagement activity

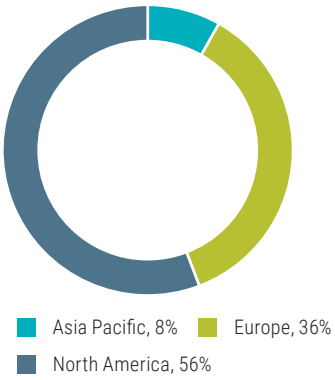
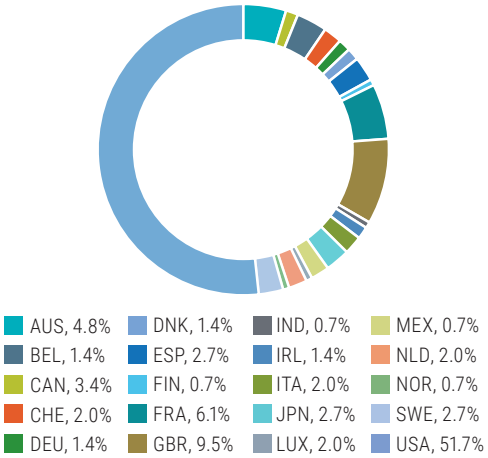


Figure 22: Country breakdown of engagement activity



Source: PIMCO. As of 31 December 2018.

BREAKDOWN BY THEME

Figure 23: Engagement activity by ESG and positive impact pillars

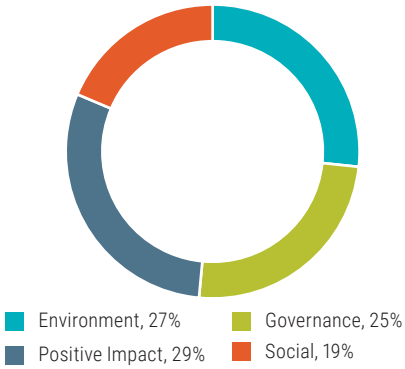


Figure 24: Breakdown of environmental themes

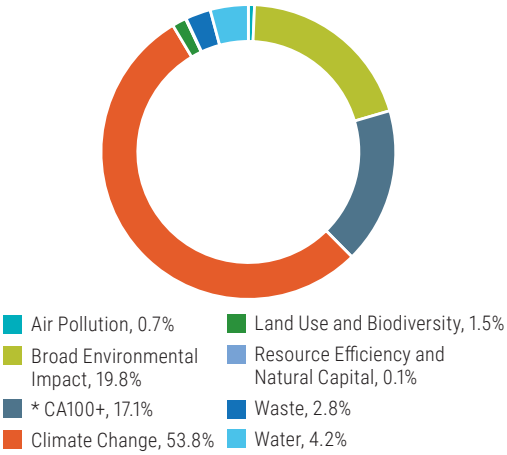


Figure 25: Breakdown of social themes

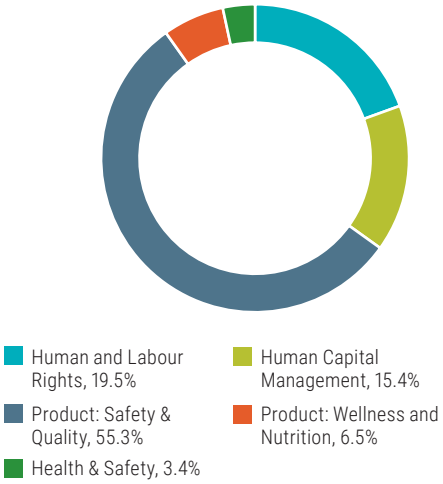


Figure 26: Breakdown of governance themes

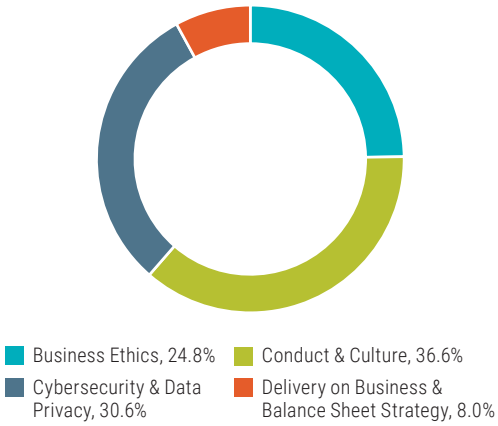
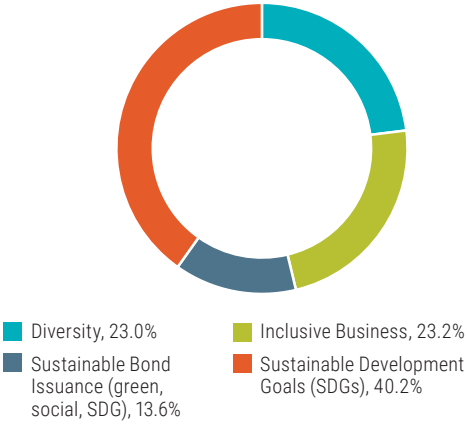


Figure 27: Breakdown of positive impact themes



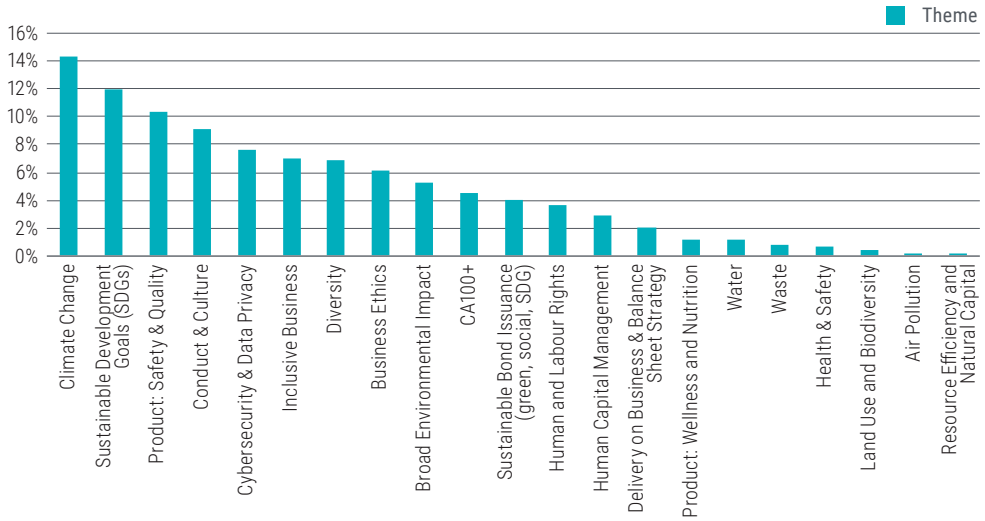
* CA100+ is not a PIMCO theme, and is covered under climate change, but we distinguish it here to highlight collaborative engagement with other investors.

Source: PIMCO. As of 31 December 2018.

PIMCO'S ENGAGEMENT THEMES ALIGN TO THE SDGS

Below is a summary of our key engagement themes from the past year selected from PIMCO's wider ESG taxonomy, which is applied to both integration and engagement. Climate change (including the investor-led initiative Climate Action 100+) and the SDGs were a particular engagement focus this past year.

Figure 28: PIMCO's ESG Themes in 2018



Source: PIMCO. As of 31 December 2018. CA100+ is not a PIMCO theme, and is covered under climate change, but we distinguish it here to highlight collaborative engagement with other investors.

ENVIRONMENTAL PILLAR AND RELATED SDGS

In 2018, 27% of key performance indicators we assessed as part of our engagement process related to environmental issues. Engagement is focused on adding forward-looking information on the issuers' management of these factors. Good resource management – from waste and water to energy consumption – reduces not just a firm's pollution, but also its production cost and in our view is another indicator of superior management quality.

Climate change

If the internationally agreed 1.5°–2°C limit for global warming is to be met, high carbon intensity sectors will be at increasing risk from tougher climate policies and higher carbon prices. Measuring and managing those risks is critical, and we expect companies to evaluate climate risks and opportunities for the business and, as needed, to develop a climate policy and strategy.

We also evaluate issuers' management of climate adaptation and physical risks, in particular water risk. One of the main negative effects of increased carbon emissions warming our planet is on the hydrological cycle – increasing the incidence and intensifying the severity of drought or flood.

> "Good resource management - from waste and water to energy consumption - reduces not just a firm's pollution, but also its production cost and in our view is another indicator of superior management quality."

Our climate change engagement objective is to encourage several developments:

- Improved Scope 3 disclosure, TCFD reporting that includes scenario analysis covering transition and physical risk, and a Paris Agreement-aligned (science-based) greenhouse gas emissions reduction target. The Greenhouse Gas Protocol defines Scope 3 emissions as all indirect emissions in the value chain of a company not captured in Scope 1, direct emissions from owned or controlled sources, or Scope 2, indirect emissions from the generation of purchased energy.
- Collaborative investor initiatives to address this critical global sustainability issue. PIMCO is an active participant in Climate Action 100+, a five-year initiative to engage systematically and influence the world's largest corporate greenhouse gas emitters.
- Management of exposure to water risk, including setting ambitious reduction and recycling targets, and action to address any conflicts with local stakeholders concerning freshwater resources.

Broad environmental impact

Beyond PIMCO's climate focus, we looked for evidence of best practices in relation to issuers improving performance in areas such as pollution control, recycling and managing toxic substances, including developing eco-friendly products and raising customer awareness. It adds value to our ESG score if a company's environmental management system (EMS) is certified by international standards.

SOCIAL PILLAR AND RELATED SDGS

In 2018, 19% of key performance indicators we assessed as part of our engagement process related to social issues. In PIMCO's ESG strategies we seek to identify issuers that have robust oversight systems in place to address potential product risks, prioritize fair and safe working conditions, and manage ESG factors in the supply chain.

Product safety and quality

Litigation can be a significant credit risk, and product liability is material for a wide range of industries from pharmaceuticals (e.g., opioid litigation), to the food industry (e.g., contamination or substances of concern), to financial product safety (e.g., conduct risk). Safety and quality ESG efforts also relate to the impact an issuer's products may have on consumers' health and wellbeing, such as addressing substance abuse and reducing the number of road accidents via auto design testing and recalls.

Our engagement objectives for product safety and quality look for evidence of these factors:

- Robust processes and systems to monitor safety and quality, including systematic internal and external third party audits, disclosure on root cause analysis of any incidents, together with corrective actions and follow-up. Best practice is certification of production sites and facilities to recognized product safety and quality standards.

- Strong supply chain management (SDG 12), as often these risks do not manifest within the company itself but rather in their supply chain. Suppliers are inextricably linked to the product the company makes, so issuers need comprehensive supplier policies, audits and training.

Human and labor rights, human capital management

We evaluate issuers' adherence to recognized labor standards such as the International Labor Organization (ILO) conventions. While good workforce data can be hard to come by, there is evidence that companies with stronger human capital practices tend to have better productivity and reduced turnover and recruitment costs. We structure our engagement with the aim of encouraging better disclosure and measurement of the value of human capital management, focusing on a few high-level questions: How does the company benchmark human capital development and what are its future targets? What metrics does the company use to measure success? How does the company analyze the relationship between these metrics and performance?

GOVERNANCE PILLAR AND RELATED SDG

In 2018, 25% of key performance indicators we assessed as part of our engagement process related to governance issues. While governance represents a significant portion of our overall ESG research framework, it actually represents a small share of our engagement process due to the volume of important environmental, social and impact-related themes that are often underreported by issuers.

For bondholders, it often comes down to a question of trust: Can we trust this company to pay us back? Questions on the 'right way to run a business' are therefore inherent in our issuer engagement on governance.

> "For bondholders, it often comes down to a question of trust: Can we trust this company to pay us back?"

Conduct and culture, and business ethics

Culture is what creates a cohesive organization from a group of individuals; it provides a framework for behaviors and business practices. It is relatively simple to stipulate what a culture should prohibit, such as activities that could lead to improper or illegal activity, anticompetitive practices, bribery and corruption, and violation of consumer rights. The much more difficult and significant challenge is to define the values and conduct standards of a firm. Ethical choices are relevant to every decision and action within the business, and must be led by example from the top and cascaded throughout the organization.

Our engagement objective for conduct and culture and business ethics is to look for signals of these key factors:

- A robust culture framework that reinforces business values and expected behaviors – a theme that ranges from workplace safety in heavy industries, to marketing controls in sectors like pharmaceuticals and alcoholic beverages, to conduct risk in financial services.

- Integrity in actions and decision-making throughout the business. Companies that perform well tend to demonstrate procedures for oversight, including policies (e.g., codes of conduct), as well as processes (e.g., training) and controls (e.g., integration into compensation frameworks) to ensure appropriate decision-making and behaviors.

Cybersecurity and data privacy

This is an increasingly important theme that provides insight into a company's governance practices. Our engagement objective is to understand board oversight as well as clarification on the resources dedicated to this risk, including headcount and budget. Given the generally poor disclosure on cybersecurity risk industrywide, we ask companies to explain how they identify and manage their data vulnerabilities and to describe their action plan when it comes to detecting and responding to a threat. In safeguarding sensitive data, best practice is for certification to a recognized standard such as ISO/IEC 27001.

POSITIVE IMPACT PILLAR AND RELATED SDGS

In 2018, 29% of our issuer engagements focused on positive impact. Here our focus is on factors that, although not primarily viewed within the lens of credit risk, are areas where we believe PIMCO can influence positive change.

Reporting on the UN Sustainable Development Goals

In particular, we encourage issuers to align sustainability reporting to the SDGs, articulate how business strategies link to the SDGs, prioritize the goals in areas most relevant to their business, and set quantitative targets where the greatest societal impact can be made.

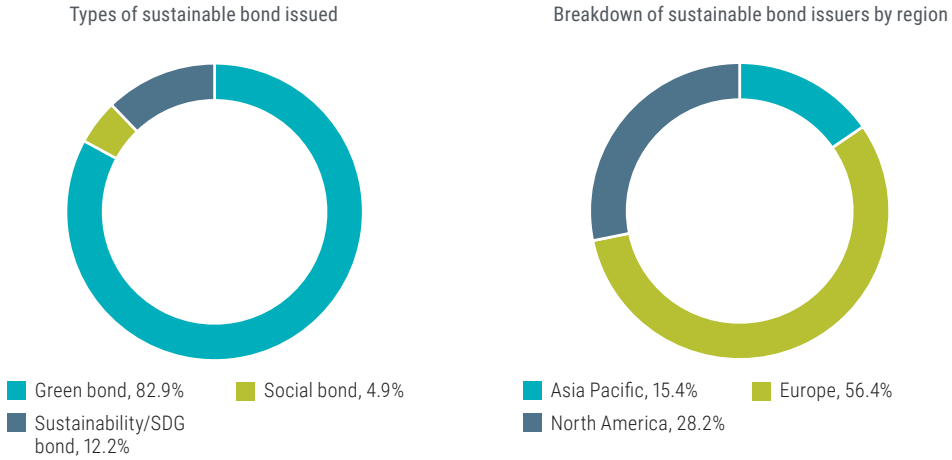
PIMCO has further identified issuers that we find are the most advanced on the SDG mapping process, and we're specifically approaching these companies to discuss the potential for SDG bond issuance. Indeed, our engagement with two U.S. banks resulted in the issuance of SDG-mapped bonds in early 2019.

Our engagement objectives in relation to the SDGs encompass several actions:

- Encourage issuers to consider SDG bonds. Fixed income capital is an important financing mechanism for the realization of the SDGs, and investors like PIMCO stand ready to provide financing and support for attractive, risk-managed issues. SDG bonds give issuers an opportunity to align debt issuance to support this global sustainability vision. In 2017, the world's first sustainable development SDG bond was issued, followed by a further two issuers developing an SDG bond framework during 2018 under which they may issue in the future, as well as a number of sustainable bonds that we classify as "Sustainability/SDG bonds" as they map use of proceeds to the global goals. Figure 29 shows the proportions of green, social and sustainability/SDG bonds issued across regions by the 27% of companies within our engagement universe.

"PIMCO has further identified issuers that we find are the most advanced on the SDG mapping process, and we're specifically approaching these companies to discuss the potential for SDG bond issuance."

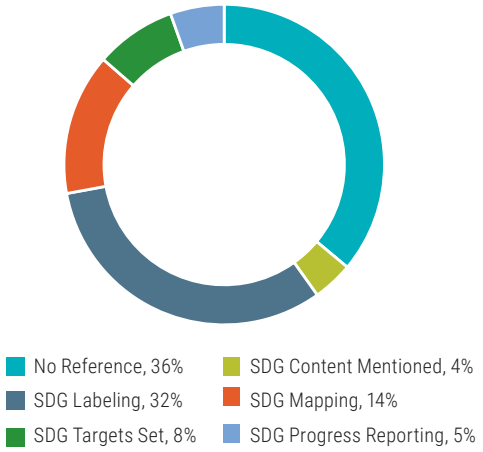
Figure 29: Sustainable bonds - 27% (39) of the 147 companies we engaged during 2018 have issued sustainable bonds



Source: PIMCO. As of 31 December 2018.

- Understand how a firm's activities align with the SDGs in order to identify sustainable and competitive long-term business models. As shown in Figure 30, of the 147 issuers that we engaged during 2018, 64% are on the pathway to considering how their business can contribute to the advancement of the SDGs.

Figure 30: SDG reporting status (147 companies engaged with in 2018)

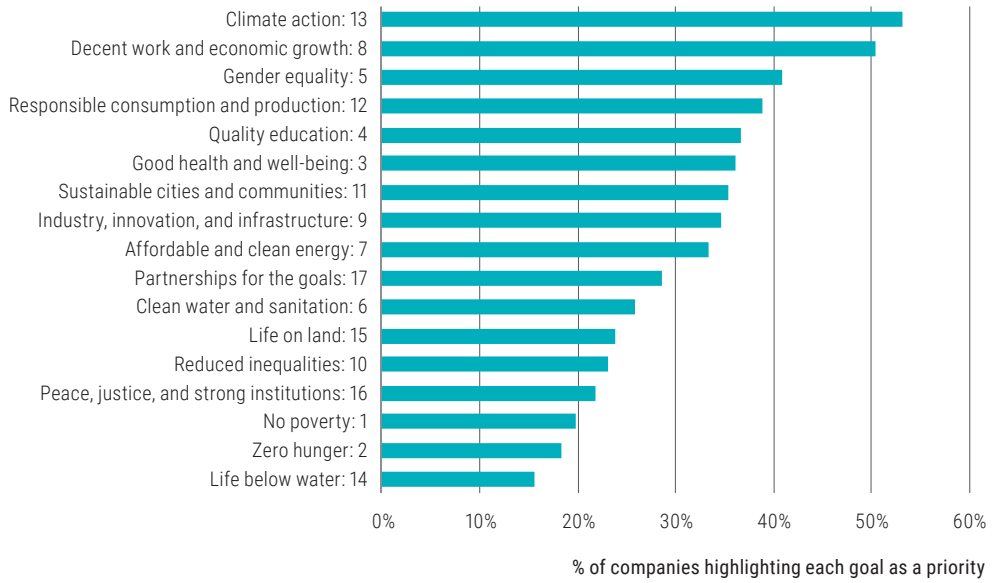


Source: PIMCO. As of 31 December 2018.

- Identify inclusive businesses. The focus of our engagement here is to explore how the products and services offered by companies deliver societal value and help achieve the SDGs. This could include digital inclusion for technology-related businesses and sustainability-driven growth from areas such as health and wellness for companies. On the gender diversity theme, a number of studies have shown that a high proportion of women (employees, management and board) can correspond to superior business performance, particularly in industries where skills are at a premium and there is competition for talent.

- Measure and report on the impact of capital allocation within PIMCO's ESG strategies. Many of the issuers we contacted are mapping the 17 SDGs to their business activity, while some have moved to the next stage and identified priority SDGs where they can have the greatest potential impact. Figure 31 illustrates how this mapping exercise can serve as a tool for PIMCO to assess our ESG strategies' exposure to advancing the SDGs.

Figure 31: Frequency of SDG focus across all sectors



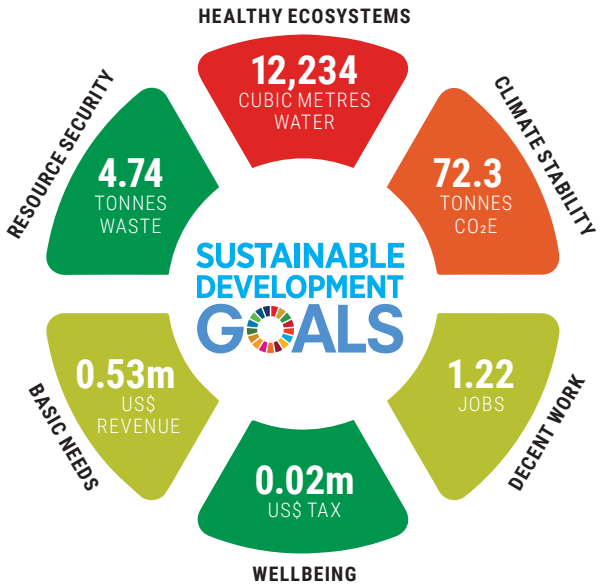
Source: PIMCO. As of 31 December 2018.

PIMCO is a member of the Investment Leaders Group (ILG), convened by the University of Cambridge Institute for Sustainability Leadership (CISL). Since 2015, the ILG has been developing a framework for measuring the alignment of investment funds with the United Nations Sustainable Development Goals (SDGs). Released in January 2019, the updated framework enables investors to make simple and practical measurements across six themes spanning the key dimensions of the SDGs. Each theme comprises a 'base' metric driven by data which are easily available to investors today; and a theoretically stronger 'ideal' metric for which data are either lacking or unavailable at scale across financial markets. Results generated from the base metrics may be considered crude proxies for the more ideal measures which, as data improve, can be refined over time. When combined across the six themes, they provide a quick 'dashboard' or readout on the sustainability of a fund.

Figure 32 illustrates the results for PIMCO's Global Investment Grade Credit ESG Strategy (an actively managed credit portfolio that seeks total returns and positive environmental and social benefits). The numbers in the six segments are derived from raw data disclosed by the assets in the fund (accessed via Bloomberg). The colours represent relative performance against a benchmark (in this case, the Bloomberg Barclays Global Aggregate Credit Index (USD Hedged)), with dark green being very positive (top quintile), red being very negative (bottom quintile), and respective shades in between.* The results illustrate how impact measurement can be extended beyond carbon to estimate the wider social and environmental effects of a fund at a point in time. To avoid any misinterpretation, the limitations of the results are stated clearly in the published methodology.

* When some assets in a fund do not report the necessary social and environmental data, fund averages are calculated based on assets which do report. In the current example, only one asset in the fund reports on water performance (the proxy for healthy ecosystems). This distorts the fund average significantly as that one asset accounts for 90% of total water use in the fund. The remedy is for investors (and governments) to encourage greater disclosure of social and environmental data from assets.

Figure 32: PIMCO Global Investment Grade Credit ESG Strategy - sustainability results



Impact per US$ 1 million invested

Source: PIMCO, based on CISL (2019). In search of impact: Measuring the full value of capital. Update: The Cambridge Impact Framework, Cambridge, UK.As of 31 December 2018. **For illustrative purposes only.** This Figure is provided for information purposes and should not be construed as a solicitation or offer to buy or sell any PIMCO or other securities or related financial instruments in any jurisdiction.

Figure 33: Summary of the six ideal and base metrics of the framework

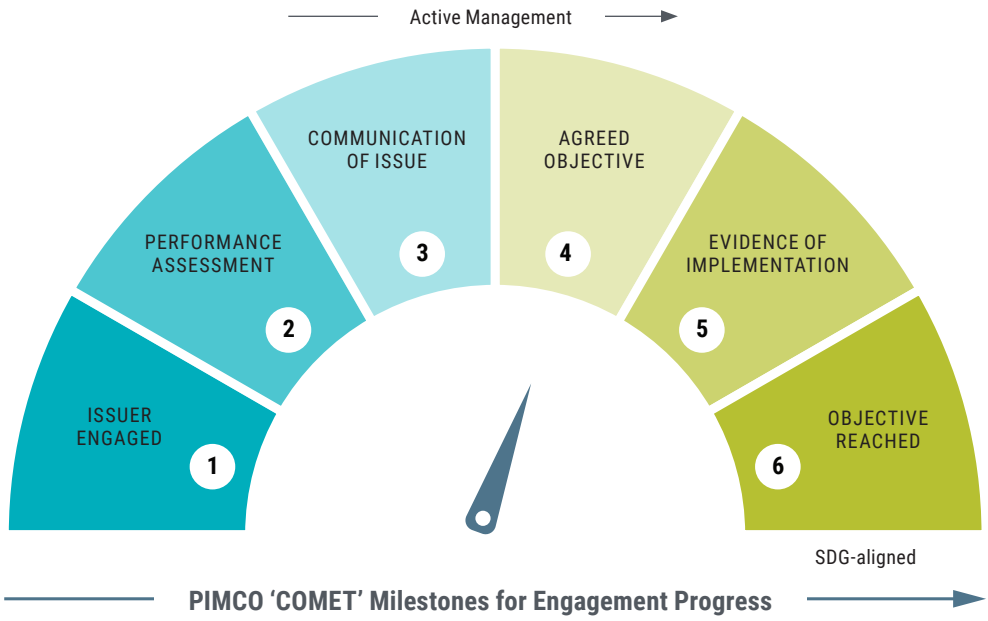
Theme	What is the ideal measure? *Absolute performance with respect to SDGs* *Whole value chain focus*	What can be measured today? *Relative performance with respect to benchmark* *Operational focus (value chains not appraised)*
Basic needs	Total revenue from products and services addressing the basic needs of low-income groups, adjusted by PPP-weighted International Poverty Line Unit: US$	Total revenue from goods and services from clothing, communications, education, energy, finance, food, healthcare, housing, sanitation, transport and water Unit: US$
Wellbeing	Total tax contribution (comprising taxes on profits, people, production, property and environment but not sales) by country, adjusted by national corruption and spending effectiveness Unit: US$	Total tax contribution Unit: US$
Decent work	Total number of open-ended employment contracts excluding jobs below 60% median wage (living wage) and jobs in poor working conditions (health & safety, discrimination, rights of association), adjusted by national employment rate Unit: number of jobs	Total number of employees based on full time equivalent (FTE) workers Unit: number of FTEs
Resource security	Hard commodities: Virgin material content of end products (adjusted by scarcity) plus waste lost to the environment (adjusted by toxicity) Soft commodities: Non-sustainably certified content of end products plus waste not specifically returned to nature Unit: metric tonnes (t)	Total net waste (total waste arising – total waste recycled) Unit: metric tonnes (t)
Healthy ecosystems	Area of land utilised by an asset in degraded form Unit: hectares (ha)	Fresh water use (surface water plus groundwater plus municipal water) Unit: cubic metres (m3)
Climate stability	Alignment to future warming scenario based on consumption of global carbon budget Unit: degrees Celsius (˚C)	Total greenhouse gas (GHG) emissions (Scope 1 and 2) Unit: tonnes (t) carbon dioxide equivalent (CO2e)

Source: Cambridge ILG

Tracking engagement momentum: COMET

PIMCO's proprietary Company Engagement Tracking (COMET) tool and process enables us to document outcomes that reduce credit risk and effect positive change, while tracking progress over time. Specific milestones are used to measure progress on ESG engagement, with varying levels of concern ("criticality") and engagement objectives.

Figure 34: COMET (company engagement tracking) tool



Source: PIMCO. For illustrative purposes only.

Milestone 1: Issuer engaged

PIMCO's ESG desk works with members of the portfolio management team to develop a harmonized ESG integration and engagement framework for industry segments, which helps ensure that our ESG analysis reflects the sector-specific risks most relevant to each issuer. At this stage of engagement, the focus is to add forward-looking information on the issuers' management of these factors, while also supporting the fine-tuning of their PIMCO ESG rating.

Milestone 2: Performance assessment

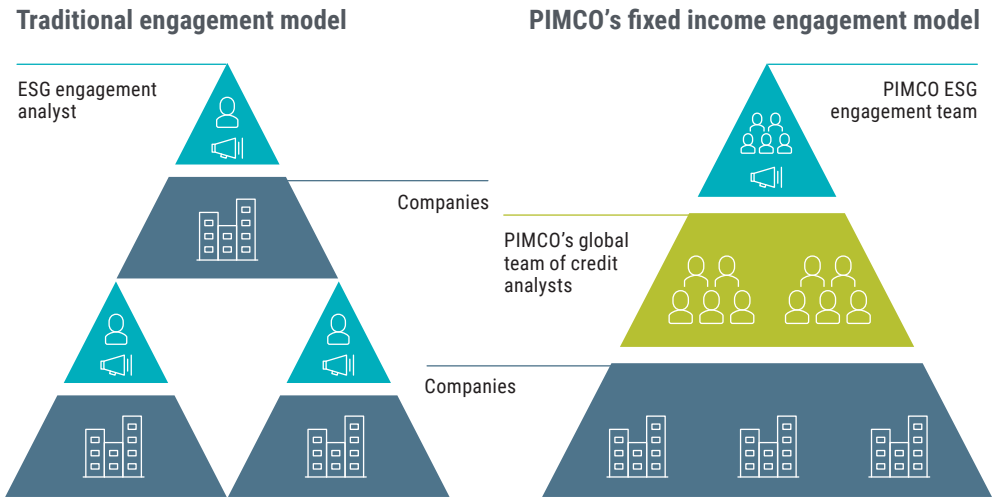
Next, the ESG team benchmarks issuers versus industry peers, evaluating performance on each key indicator to form a relative engagement score. The ESG performance assessment not only serves to identify areas of potential credit risk such as underperformance versus sector peers, but also helps us communicate feedback that could improve credit quality or highlight opportunities to advance positive change.

These first two milestones are an important foundation of PIMCO's engagement process, providing a two-dimensional materiality framework that measures an issuer's exposure to industry-specific risks and how it is managing those risks.

Milestone 3: Communication of issue

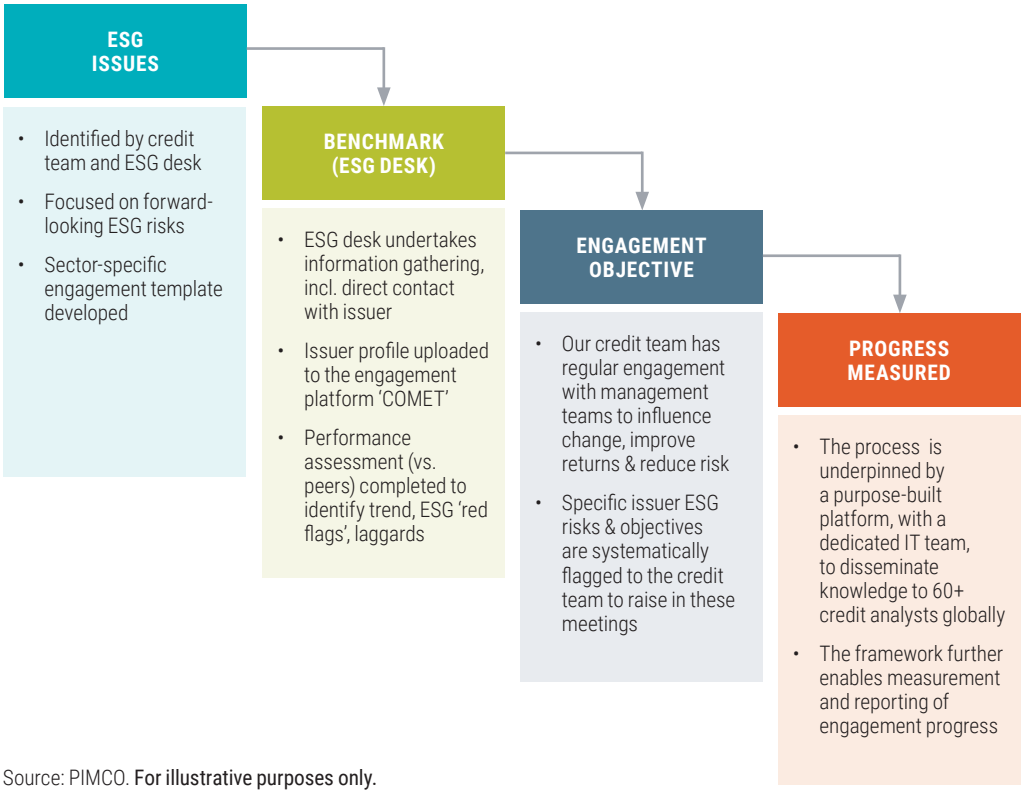
At this stage, ESG and traditional credit discussions often occur concurrently, consistent with our view that ESG is an integrated part of the credit research process. Our ESG engagement analysts empower credit analysts to engage directly with issuers, for greater efficiency and impact. Once an ESG risk or opportunity for positive impact is identified, our credit research team is involved in these conversations because we view these ESG considerations as important drivers of credit quality and our investment decisions.

Figure 35: PIMCO's fixed income engagement model



Source: PIMCO. For illustrative purposes only.

Figure 36: ESG engagement: Multiplier model leverages the global credit research team



Source: PIMCO. For illustrative purposes only.

Milestone 4: Agreed objective

We see successful engagement as based on collaboration, including a productive dialogue and mutual agreement on objectives. Here we are looking for a credible plan and/or targets set by the issuer to address credit risk concerns. If there are no "red flags" for an issuer, the focus of our engagement is on positive impact, potentially including discussions around the issuance of SDG bonds.

Milestone 5: Evidence of implementation

What progress has the company made? This can be demonstrated in a number of ways, including ongoing discussions that deepen our understanding of management practices at an issuer, by specific action undertaken to mitigate risk, or through improvements in disclosure. For example, on the latter, in relation to two of our key ESG engagement themes for corporate issuers during 2018 – climate disclosure aligned to TCFD recommendations and developing impact metrics that support the SDGs – we will be reviewing upcoming annual reporting to evaluate progress.

79%

of these issues related to four themes: climate change, conduct and culture, product safety and quality, and the SDGs

Milestone 6: Objective reached

Reaching this milestone concludes a continuum of outcomes and timelines. In some instances, engagement is communication with the company that enhances our understanding of its management of ESG-related factors, others bring about a change of behavior at a company. On timeframes, we recognize that any action we request will take time to be embedded into a company's business process, and therefore we assess the progress made by companies from one year to the next.

Finally, while we measure and monitor progress on all engagements, as illustrated here, not all engagements are given equal priority – this is a function of the severity of ESG concerns, capacity to change and our level of influence with the issuer. Ultimately, we aim to prioritize engagement that has the largest impact, both on the health of our clients' assets, and where we can seek to ensure good ESG outcomes.

SDG ALIGNMENT

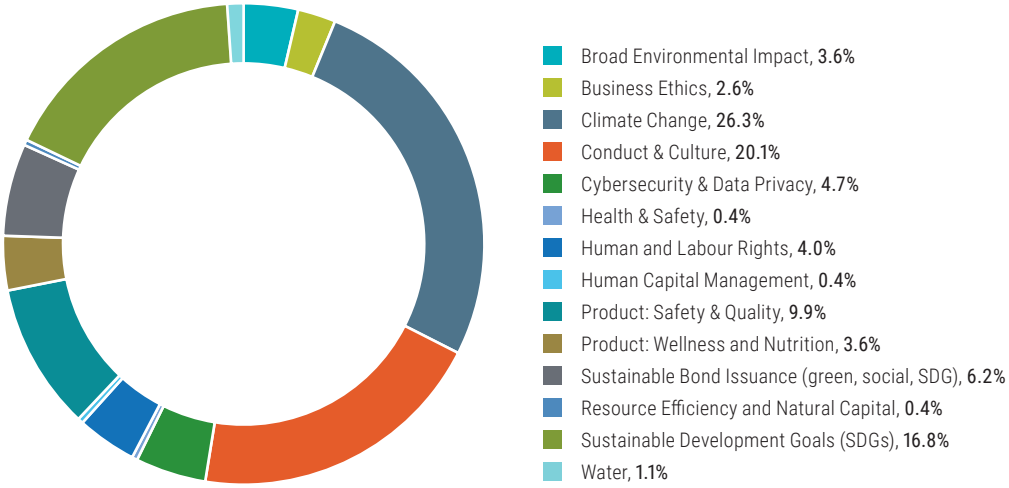
The SDGs are important to investors as they can provide a framework for measuring impact in ESG (environmental, social, governance) investment strategies. But for this to work, investors need to be able to quantify and compare the contributions of each issuer to the achievement of the SDGs. To enable investors to make informed decisions and direct capital towards positive impact, companies need to publish relevant SDG performance data. Unfortunately, current corporate environmental and social disclosures make this difficult to do. As part of PIMCO's commitment to sustainable investing, a key objective of our engagement includes encouraging corporate issuers to establish strategies and targets for how the business can best apply its skills and capabilities, including products and solutions, to advance these global goals.

Milestone status: issues and objectives

After the initial performance assessment (milestone 2) of the 119 issuers that PIMCO successfully engaged with during 2018, thereafter we identified 274 ESG-related issues to raise with these companies for clarification and deeper understanding.

As illustrated in Figure 37, the primary focus (79%) of these issues related to four themes: climate change, conduct and culture, product safety and quality and the SDGs (including sustainable bonds).

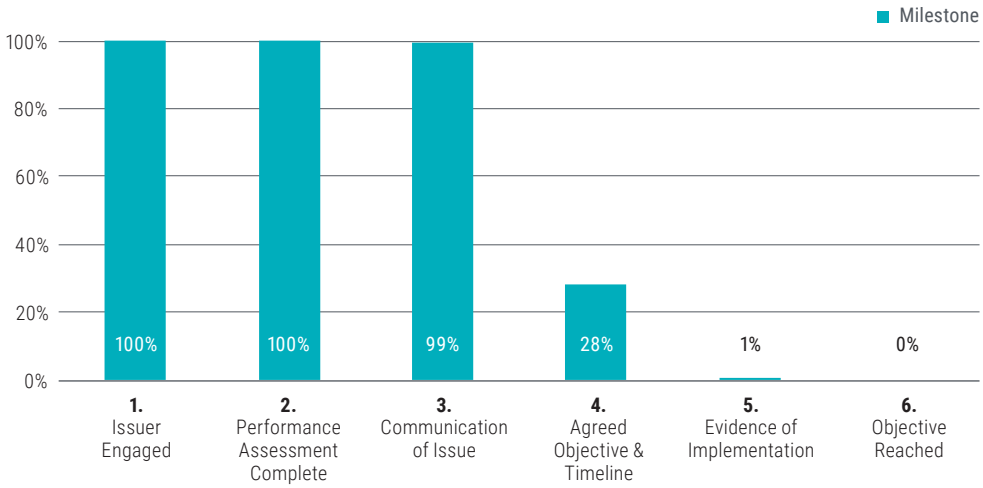
Figure 37: Breakdown of issues per theme



Source: PIMCO. As of 31 December 2018.

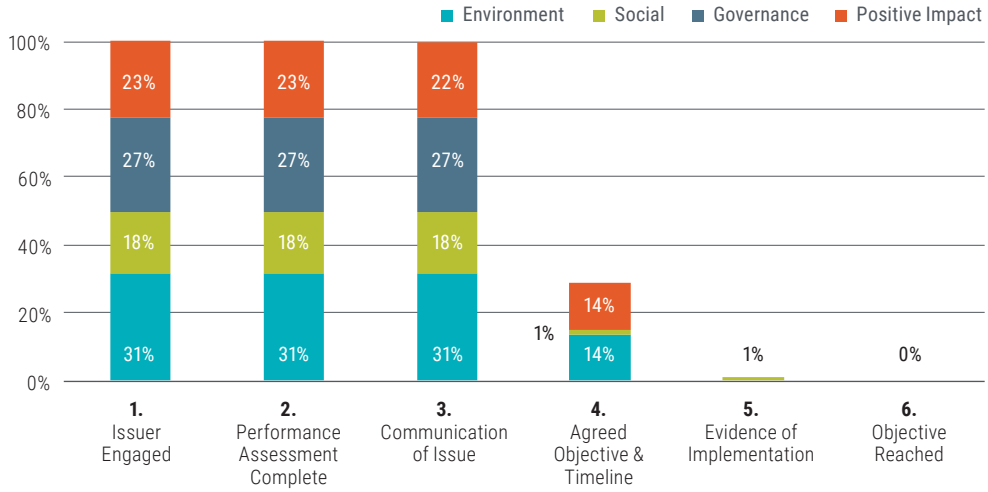
We further set engagement objectives for 39 companies, related to 76 issues, with varying timelines. For example, in relation to banks, our engagement objective is short term in that we encouraged TCFD- and SDG-aligned reporting for 2018 (expected to be published in 1H 2019), whereas a realistic health and safety objective may take a couple of years to deliver evidence of implementation.

Figure 38: Milestone status: issues and objectives (accumulative)



Source: PIMCO. As of 31 December 2018.

Figure 39: Milestone status: issues and objectives (by pillar)



Source: PIMCO. As of 31 December 2018.

Industry Topic: Climate Change

PIMCO'S INVESTMENT STRATEGY FOR CLIMATE CHANGE

Climate change entails an array of financial risks and also opportunities, which PIMCO's investment strategy seeks to manage and harness on behalf of our clients. We view the energy transition and global temperature rise as of utmost importance for fixed income investors, considering the ever-growing evidence of meaningful economic impacts and credit risks. In 2018 alone, markets saw the consequences of climate-related catastrophes including deadly wildfires, hurricanes, typhoons and other anomalies across the globe.

PIMCO's climate change framework is integrated into our investment process through PIMCO's ESG assessments. We use a proprietary methodology and analysis that reflect fixed income's specific features, and we actively engage with issuers on climate change mitigation and readiness. In PIMCO's ESG portfolios, we embed climate change into our three-step approach of exclusion, evaluation and engagement.

> "We view the energy transition and global temperature rise as of utmost importance for fixed income investors."

Figure 40: Overview of PIMCO's climate change strategy

PIMCO'S THREE-STEP APPROACH TO BUILDING ESG PORTFOLIOS

EXCLUDE	EVALUATE			ENGAGE
'BROWN' BONDS	**CARBON INTENSITY**	**'GREEN' BONDS**	**ESG INTEGRATION**	**ENGAGEMENT AND OUTREACH**
• PIMCO ESG portfolios exclude issuers who derive more than 10% of revenues from **thermal coal** activities	• We measure and monitor portfolios' **carbon intensity**, absolute emissions, exposure to fossil fuels, and the **alignment with the Paris Agreement**	• PIMCO ESG portfolios actively seek to invest in green bonds that we assess via our proprietary '**Green bond impact score**'	• We examine the **economic** and **credit risk impacts** of climate change • We assess **issuer's readiness** and **alignment** via our '**Climate scores**', under the Environmental and, when pertinent, the Governance analysis, and Credit view	• We carry out engagement to both **bolster issuers' climate alignment** and **improve** their **management** of the underlying credit risks • We are **part of the Climate Action 100+** (investor-led climate-engagement coalition)

CLIMATE IMPACT ⟷ CREDIT RISK

Optimize portfolios' alignment with the global climate goals
How can Fixed Income help achieve 1.5 °C?

Minimize portfolios' exposure to Transition and Physical financial risks
What does 1.5 °C mean for Fixed Income?

Source: PIMCO. For illustrative purposes only.

Climate change could touch all fixed income

Corporate credit is all too often the sole focus for climate risk analysis. However, we believe that climate-related factors may have material impacts on issuers' credit quality (now and over the long term), affecting the full range of fixed income and related asset classes e.g. mortgage-backed securities, corporate credit, sovereigns and municipalities. The investment implications of climate change, in both the short and long term, stem primarily from two main types of risks: transition risks and physical risks (See Figure 41).

Figure 41: Two kinds of climate-related investment risks could significantly affect key fixed income sectors

	Transition Risk	Physical Risk
Examples	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)	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 P&C, Utilities, Refining
Sovereign	Fossil fuels-exporting and energy-intensive sovereigns, depending on their fiscal positions and savings	Developing countries, especially those that are tiny and lacking diversification
Munis	Coal-fired generation among utilities	Significant risks of water shortages for U.S. water utilities connected with regional and local governments
Mortgages and Asset-backed securities	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

PIMCO, Moody's, Task Force on Climate-related Financial Disclosures (TCFD). **For illustrative purposes only.**

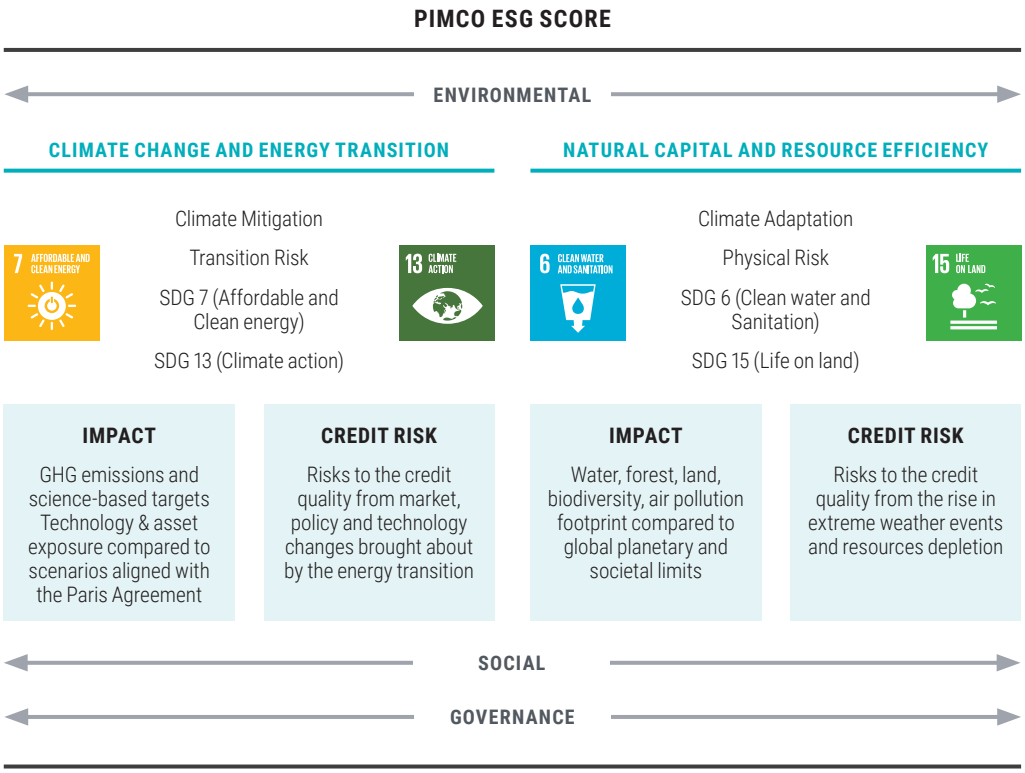
ESG integration: impact of climate change on credit risks and PIMCO's ESG ratings

In corporate credit, our ESG assessment covers climate change risks for all relevant sectors and issuers, under the environmental and when pertinent the governance analysis, along with the overall credit ratings.

We distinguish transition risks, which we assess under our "Climate Change and Energy Transition" category (e.g., business risks prompted by the energy transition, such as tighter regulations on carbon emissions) from physical risks, which are explored under the "Natural Capital and Resource Efficiency" section (e.g., how climate change affects natural resources upon which the issuer depends) – see Figure 42.

In the auto sector, for example, we explore climate change in the broader context of stricter legislation covering air pollution, while for the food and agriculture sectors, carbon risks should not, in our view, be disentangled from issues associated with commodities' water or land footprint. We endorse the SDGs as the holistic reference framework to assess these wide-ranging risks.

Figure 42: Assessing transition risks and physical risks related to climate change



Source: PIMCO, UN. For illustrative purposes only.

Though climate-related regulatory trends vary significantly across jurisdictions, environment-related issues are increasingly pressuring carbon-intensive issuers' credit risks across the board. This includes sectors that have remained relatively less exposed despite their profile, such as the shipping industry, which recently set long-term greenhouse gas (GHG) emissions reduction goals.

Consequently, our transition risk scores are typically favorable for the most carbon-efficient issuers and for those proactively seeking to align with the Paris Agreement, the global accord to limit the global temperature rise by 2100 to 1.5°C – 2°C above preindustrial levels. This includes companies reporting in line with the recommendations of the TCFD, which was created by the Financial Stability Board (FSB) to foster best practices.

Our sector-based and bottom-up analysis involves a focus on issuers' carbon emissions intensity using production-based metrics, such as emissions per barrel equivalent for oil and gas companies. A lifecycle methodology enables some comparison within the sector and over time, as well as in relation to climate scenarios and our forward-looking view.

For instance, PIMCO's fundamental analysis of credits in the energy sector closely examines companies' exposure to different types of energy sources, 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 (see Figure 43).

Ultimately, we look to map the extent to which long-term climate risks are reflected in our credit views and bond prices, and, if they are not, what this could mean for issuers' credit quality considering bond characteristics (e.g., duration) over time. For portfolio construction, we evaluate credits based on attractive valuations and strong climate scores.

Figure 43: Credit analysis through a climate lens

	PIMCO's screening	Rationale for inclusion	Example (positive)
Carbon footprint	**GHG emissions:** absolute, and intensity (expressed in terms of sales and, whenever relevant, production metrics such as MWh for utilities, square meter for REITs or km for autos)	Carbon emissions intensity including a lifecycle methodology enables some comparison within the sector and over time, as well as in relation to climate scenarios (e.g., based on the Sectoral Decarbonisation Approach that converts GHG emissions reductions pledges made in the context of the Paris Agreement into appropriate benchmarks)	**Oil major:** A handful presently stand out due to the inclusion of scope 3 emissions linked to their products (bulk of their carbon footprint) into their GHG emissions reductions target
	Across the entire value chain (including **scope 3**, i.e., supply chain, product emissions)		
	Science-based target: carbon emissions reduction target consistent with the pathways enabling to keep global temperature increase below 2 degrees Celsius compared to preindustrial level	These indicators also help capture the bulk of emissions (embedded e.g., in the product use) and potential financial risks prompted by reduced demand	
Product, technology and asset exposure	**Business breakout** by source of energy (e.g., fossil fuels, renewables) or relevant sector-specific criteria (e.g. electric vehicles for auto or green buildings for REITs), including forward looking metrics (e.g. capex, R&D, outlook)	The outlook regarding issuer's exposure helps capture the likely alignment with the decarbonisation pathways consistent with the Paris Agreement, the extent to which GHG emissions commitments are consistent and the main transition risks to watch out for	**Utility:** Incumbent company periodically releases the share of capex linked to renewables that represent the majority and coincide with phase-out of coal assets
Climate scenarios and strategy	Comprehensive and quantitative **scenario analysis**, with conclusions covering the potential financial impact on the company under such scenarios, **strategic implications**, and with reference to transition risk, e.g., policy shift towards 1.5-2°C temperature rise scenario, and physical risks, e.g. rise in frequency of extreme weather events	The assessment is shifting from 'box ticking' (e.g., disclosure level, or expression of support to the FSB TCFD) to the exploration of companies' assumptions, findings and trajectory based on their objectives (i.e., their ambition) in order to better grasp issuer's readiness	**Refiner:** Company publishes a detailed review of the impact on various units, e.g., refining, renewables, midstream, via a proprietary model whose assumptions are disclosed, and leading to a recognition of the most significant risks (e.g., a decrease in consumer demand for liquid transportation fuels)

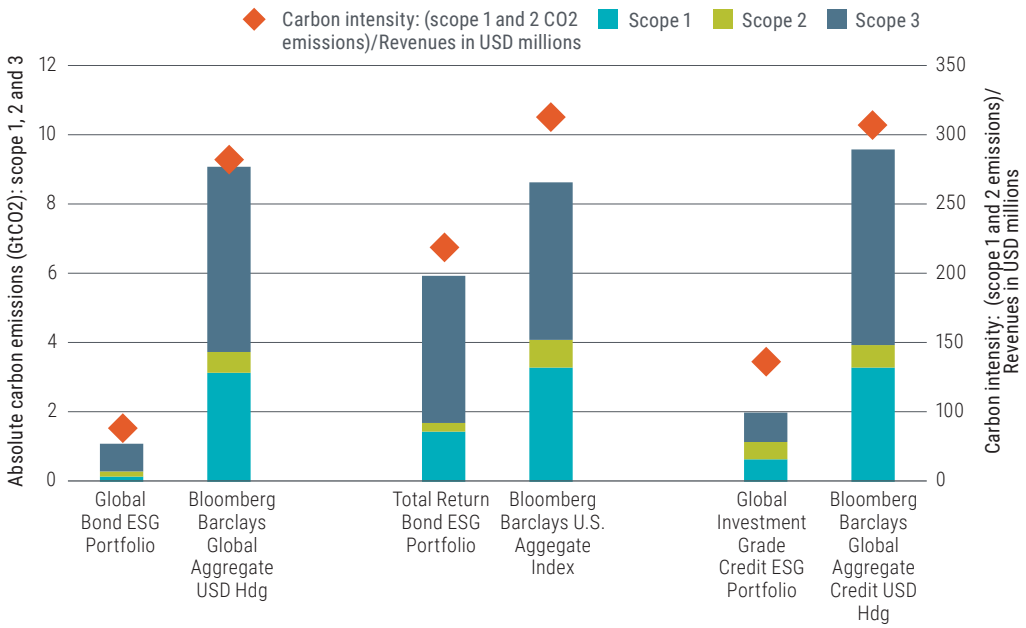
PIMCO Climate (Transition) Score

Source: PIMCO. For illustrative purposes only.

Carbon intensity: from sector- and company-level analysis to a broad portfolio view

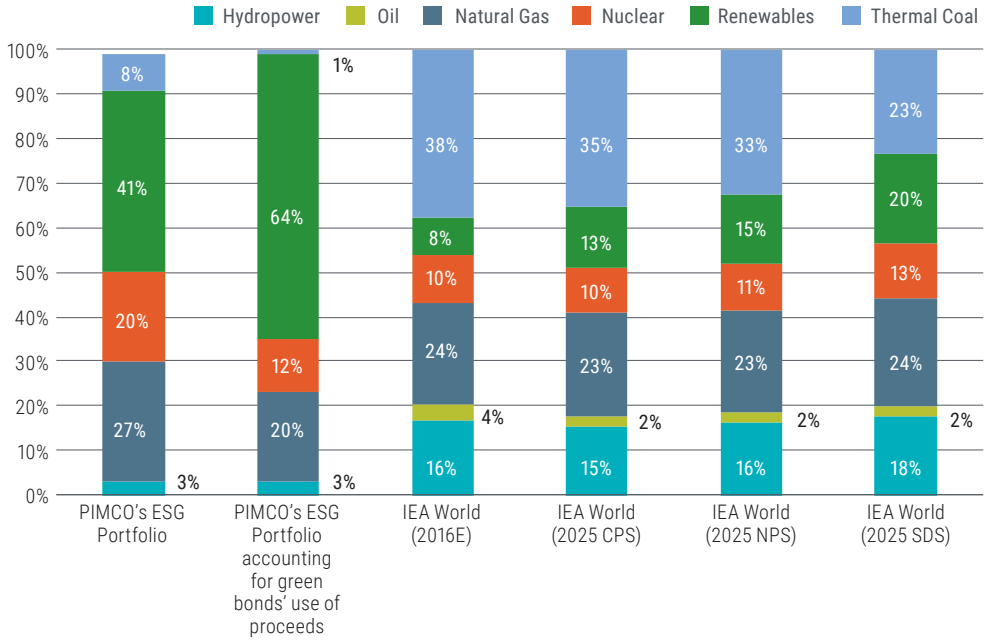
We complement our sector-based analysis with a portfolio tool that monitors the carbon impact of our corporate holdings and seeks ways to mitigate emissions beyond exclusion screens (see Figure 44). We have developed high-level portfolio screens based on the weighted average sum of both direct GHG emissions and GHG 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)). Our screens also look at the average technology and energy mix compared with global energy scenarios modelled by the International Energy Agency or IEA (including the possible impact of green bonds, considering their specific environmental features and issuer-level data) – see for example Figure 45.

Figure 44: Carbon intensity in sample PIMCO ESG portfolios



Source: PIMCO, MSCI as of 31 December 2018. **For illustrative purposes only.** This Figure is provided for information purposes and should not be construed as a solicitation or offer to buy or sell any PIMCO or other securities or related financial instruments in any jurisdiction.

Figure 45: PIMCO's sample ESG Portfolio energy mix compared to the current global energy mix and to different IEA scenarios for 2025



Note: "PIMCO's ESG Portfolio" refers to the current weighted average energy mix of the 4 sample portfolios following the Total Return Bond ESG Strategy, Low Duration Bond ESG Strategy, Global Bond ESG Strategy and Global Investment Grade Credit ESG Strategy. "PIMCO ESG Portfolio, accounting for green bonds' use of proceeds" adjusts green bond issuer data to reflect the energy mix of the use of proceeds. IEA CPS refers to the Current Policy Scenario (no changes in policies from today, i.e., business as usual), IEA NPS to New Policies Scenario (including pledges and commitments made by countries) and IEA SDS to Sustainable Development Scenario (aligned with the UN Sustainable Development Goals and 2°C trajectory). For corporate bonds only. Data coverage for carbon intensity: c. 92% of the Corporate PMV (Percentage Market Value) of the funds. This Figure is provided for information purposes and should not be construed as a solicitation or offer to buy or sell any PIMCO or other securities or related financial instruments in any jurisdiction.

Source: PIMCO, MSCI and IEA data from the World Energy Outlook 2017. All rights reserved. www.iea.org/statistics. License: www.iea.org/t&c. As of 31 December 2018, unless otherwise indicated.

For illustrative purposes only.

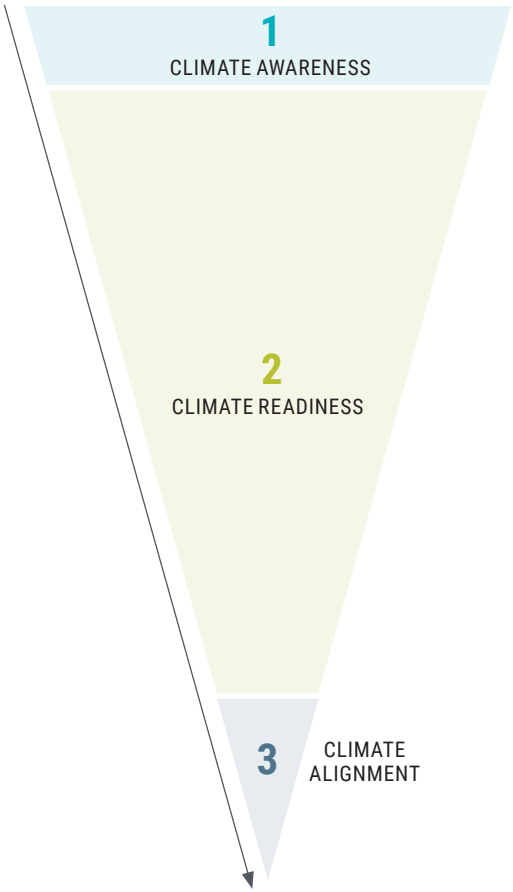
Engaging: spearheading bondholders' influence on climate change

We engage with bond issuers both to bolster their Paris Agreement alignment and to help them improve their management of the underlying credit risks, moving from an awareness of the theme to readiness, and ultimately commitment to be consistent with global climate goals. Figure 46 illustrates some of the questions and engagement efforts linked to each step.

PIMCO is part of the investor collaborative engagement group Climate Action 100+.

Figure 46: Engaging with issuers on climate issues

Recognition	Does the company **recognize climate change as a significant issue** for the business and has it developed a policy?
Emissions reporting	Does the company **report both its absolute and relative carbon emissions across the entire value chain** (including scope 3), including carbon intensity based on relevant production metrics (e.g. MWh for utilities, km for auto)?
Emissions target	Has the company **set a GHG emissions reduction target**?
Scenario analysis	Does the company **carry out and disclose a comprehensive and quantitative scenario analysis**, with conclusions covering the potential financial impact on the company under such scenarios and with reference to transition risk, e.g. policy shift towards 1.5-2°C temperature rise scenario, and physical risks, e.g. rise in frequency of extreme weather events (Y/N, metric, details)?
	Does the company **use an internal price of carbon** for its most relevant value chain impact (e.g. scope 3 for oil and gas, and auto) and factor it in to business planning and investment decisions?
Strategic alignment	Has the company set a **Paris Agreement-aligned (science-based) GHG emissions reduction target**?
	Does the company **report evidence that its business plan is aligned with the Paris Agreement** (e.g. capex, R&D, technology, revenues, profit exposure outlook, lobbying)?



Source: PIMCO, Transition Pathway Initiative (TPI). For illustrative purposes only.

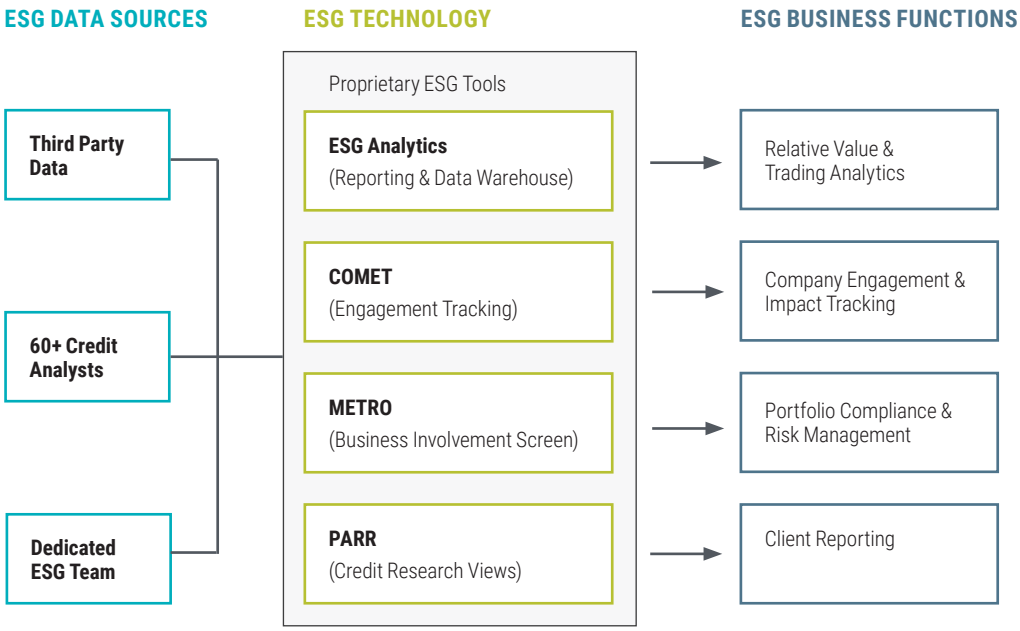
Industry Topic: Technology for ESG Investing

Access to reliable data historically has been one of the biggest challenges to ESG investing. While financial statements have been ubiquitous for decades, reliable ESG data is only just now being reported by the largest companies. Unlike rules-based GAAP and IFRS financial statements, ESG data is often qualitative and often not comparable (or simply not reported) across issuers.

That said, the volume, quality and comparability of ESG data has improved rapidly over the past several years, and PIMCO has been investing in the team and the technology to incorporate this nascent ESG data into our investment process. Technology is critical to analyze, synthesize and act on this ESG data, so we have built a dedicated team of seven ESG technology developers who work with portfolio managers to deliver solutions that integrate ESG information throughout our investment process. These developers are adept at understanding the nuances of both ESG data and corporate credit capital structures.

The ESG technology team has developed a process to address the unique data and reporting challenges of fixed income investing. The process utilizes curated data from third party providers, augmented with our own credit and ESG analysis, particularly in a case where ESG information from the data providers is missing or incomplete, which is often the case for private, high yield and emerging market issuers. Our independent analysis often provides a differentiated ESG view among corporate subsidiaries, in turn helping us to invest in (or avoid) issuers that may have dramatically different ESG profiles than their corporate parent. For example, the U.S.'s largest renewable power generation company has a corporate parent that generates nearly 30% of revenues from coal.

Figure 47: ESG Technology Process



Source: PIMCO

This technology process also enables our portfolio management and compliance teams to track the business involvement of corporate, sovereign and municipal issuers to ensure that issuers with problematic exposures are not available to ESG portfolios with specific exclusion thresholds. For example, an issuer with 8% of revenues from nuclear power might be eligible for one portfolio, but not for another with more restrictive guidelines.

Figure 47 provides an overview of the four proprietary tools that our ESG Technology team has developed to integrate third party ESG data and proprietary PIMCO ESG views into a robust fixed income ESG platform.

Here are the key elements of each platform:

- **ESG ANALYTICS (Data Warehouse)** centralizes the vast amount of ESG data that we receive from third party providers and our other proprietary applications, and maps the data to the issuer/bond level. This tool enables portfolio managers and analysts to conduct relative value analysis for individual bonds or entire portfolios, facilitates highly customizable reporting for PIMCO's clients, disseminates ESG data across the firm, and enables the integration of ESG as a core part of our investment process.
- **ESG COMET (Company Engagement Tool)** captures the latest information on issuers' forward-looking strategy to manage ESG and positive impact factors. COMET also provides aggregated reporting on ESG engagement priorities. Working with the credit research team, the ESG desk uses COMET to track the progress of our engagement efforts (e.g., industry-specific questionnaires, company calls and in-person meetings) based on ESG themes and the UN Sustainable Development Goals (SDGs), including progress milestones and follow-ups. COMET is launching an electronic notification system that will send the credit team an aggregated summary of the specific ESG engagement priorities for their coverage, including a criticality assessment of issues linked to deadlines for action, and an interface that allows analysts to input notes on their activities.
- **ESG METRO (Business Involvement Screen)** tracks the ESG-related business involvement of corporate, sovereign and municipal issuers – e.g., the percentage of revenues derived from coal production or coal power generation and the sale or manufacture of civilian firearms or tobacco. METRO allows credit analysts to assign business involvement metrics at an issuer/subsidiary level to create a more granular view of ESG exposures than we receive from third party vendors, often in a more timely manner. METRO also maintains PIMCO's dynamic exclusion list as well as an inventory of issuers that have been approved specifically for ESG portfolios.
- **PARR (PIMCO Analyst Research and Recommendations)** tracks the credit views of PIMCO's credit team, including PIMCO's proprietary ESG scores. When evaluating potential investments, portfolio managers can see PIMCO's ESG views and latest research reports on a specific issuer by entering an ISIN or issuer name.

Looking ahead, our ESG Technology team is focused on enhancing existing ESG tools to incorporate additional asset classes, such as municipal bonds and securitized credit, as well as tools that better quantify the impact of our clients' investments, including that of green and SDG bonds.

> "Our independent analysis often provides a differentiated ESG view among corporate subsidiaries, in turn enabling us to invest in (or avoid) issuers that may have dramatically different ESG profiles than their corporate parent."

Corporate Responsibility

PIMCO's core mission is to deliver attractive investment returns, solutions and service to our clients; to accomplish this mission we strive to foster a high performance culture – one in which we live our values, continuously develop our talent, adeptly navigate change and responsibly manage our business.

To responsibly manage our business, we believe we must invest actively and think sustainably – on behalf of our clients, our employees and the world. As one of the premier fixed income managers, we are aiming to lead the way in ESG fixed income investing by encouraging global bond markets to embrace the goals needed to finance a sustainable future. And as a leader, we have an obligation not just to demand more of others, but also to demand more of ourselves – with a deliberate focus on our own corporate responsibility.

While ESG investment policies and practices are imperative to deliver on many of our clients' objectives, our internal practices and community impact are also critical facets of our corporate footprint. Broadly speaking, our corporate responsibility platform therefore extends into three major areas:

1. Investment policies and practices
2. Internally focused processes and procedures
3. Philanthropy and community engagement

Internally, the mission of PIMCO's Inclusion, Diversity & Culture effort is to heighten employees' appreciation for diverse perspectives and skills. Our belief is that such efforts allow us to better collaborate, connect with our clients in more meaningful ways, and better attract, develop, retain and engage with top talent.

We've activated our Purpose at PIMCO platform to drive impact alongside our nonprofit partners in line with the U.N. Sustainable Development Goals (SDGs). The platform consists of three pillars:

- **PIMCO Gives**: We donate to those we deem high performing nonprofit partners to support critical on-the-ground services and innovative projects around the globe.
- **PIMCO Acts:** We invest our time, skills and expertise to drive meaningful impact in the communities where we work and live.
- **PIMCO Advocates:** We aim to take leadership within our industry as thought leaders and strategic partners to create solutions and advocate for change.

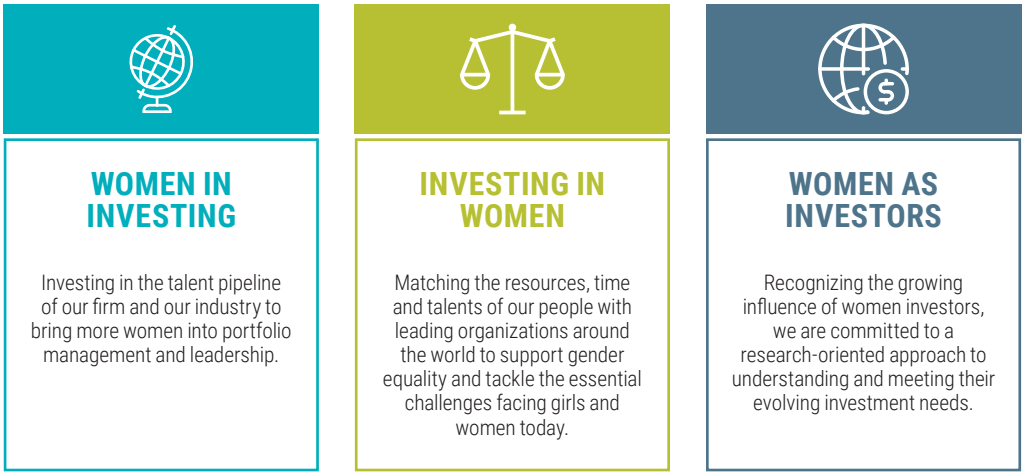
PIMCO focuses a majority of our giving and resources on two global issues aligned with the 17 SDGs: hunger (#2) and gender equality (#5). We believe that ending world hunger and growing gender equality are fundamental to human development and sustainable worldwide economic growth.

We recognize our commitment to all of these efforts must be ongoing and thoughtful. At PIMCO, we seek to not only demand more from our investments, but also from ourselves to make a difference in the world in which we work and live.

SPOTLIGHT: GENDER EQUALITY

Our gender equality program is designed to advocate for gender equality in our industry and the communities where we live and work, and to educate our clients on how to best partner with women investors. In collaboration with non-profit organizations, industry partners and our colleagues, we seek to influence positive change across the following dimensions:

Figure 48: PIMCO's approach to gender equality (SDG #5)



Source: PIMCO. **For illustrative purposes only.**

Learn more about our efforts:

- PIMCO ESG Insights:
  https://global.pimco.com/en-gbl/insights/esg
- Inclusion, Diversity & Culture:
  https://global.pimco.com/en-gbl/our-firm/inclusion-diversity-culture
- Purpose at PIMCO:
  https://global.pimco.com/en-gbl/our-firm/purpose
- Women & Investing:
  https://global.pimco.com/en-gbl/our-firm/diverse-perspectives

Figure 49: Examples of SDG and ESG metrics assessed in 2018

	Environmental	Social	Governance
SDG Priority Level			
Primary considerations			
Secondary considerations			
Portfolio level considerations			
	Climate change: Carbon intensity and absolute emissions Energy mix compared to climate scenarios Green, Social and Sustainability bonds exposure **Water:** Fresh water use **Waste:** Total net waste	**Human capital management:** Total number of employees based on full time equivalent (FTE) workers **Inclusive business:** Total revenue from goods and services from clothing, communications, education, energy, finance, food, healthcare, housing, sanitation, transport and water	**Strong institutions:** Total tax contribution
Asset class considerations			
Corporates	**Climate change:** - REITs: Net leasable area covered by green building certifications, risk from extreme weather events - Energy: Lifecycle carbon intensity, climate scenario analysis - Banks: Targets for climate-related financing activity, coal financing policies, impact of exposure to green vs. brown credit on the share of non-performing loans **Water:** - Food & Beverage: Exposure to regions under water stress, strategy to minimize resulting disruptions and cost increases - Energy: Processes and standards to mitigate fracking externalities - REITs: Water intensity within the portfolio, water use reduction targets, exposure to water stress	**Human capital management:** - Telecoms: Training hours per employee, effectiveness of training programs - Utilities: Duration of work stoppages, employee turnover, workforce retention policies **Human and labor rights:** - Food & Beverage: Supplier auditing for fair labor standards, % of employees earning national living wage or above - Telecoms: Conflict minerals policies, human rights impact assessments, transparency reporting	**Business ethics:** - Telecoms: Completion rates for ethics training, country-by-country taxation disclosures - REITs: Annual employee training/attestation of a Code of Conduct **Conduct and culture:** - Utilities: Linkage of management pay to carbon risk metrics/ targets and health & safety performance - Banks: Leadership development programs specific to culture, process for testing for the desired culture

	Environmental	Social	Governance
Sovereigns	Climate change: GHG emissions per capita, GDP per energy input, % of fossil fuels vs. renewable energy, Notre Dame Global Adaptation Initiative Country Index, Yale Environmental Indicator	Health and safety: Life expectancy (at birth and beyond age 65), mortality rate, health score Human capital management: Gini coefficient, WEF Higher Education & Training Score, WEF Labour Market Score	Strong institutions: Political stability, government effectiveness, corruption control, rule of law
Munis	Water: Drinking water contamination/treatment/ recycling, water intensity (consumption per revenue), recharge protocol Climate change: Carbon intensity per capita, EPA consent decrees, % of renewable energy	Human capital management: Graduation rates, unemployment rate, population composition trends, availability of affordable housing Health and safety: Poverty rate	Strong institutions: Accreditation issues, pension funding discipline, constitutional protection against impairment of pensions, prohibitions on taxing authority Delivery on balance sheet strategy: Budget impasses, accounting deficiencies, reporting violations
Securitized	Climate change: Specialty lending in solar panels and electric vehicles	Human capital management: Homeownership rates, access for underserved communities	Conduct and culture: Responsible lending standards

Source: PIMCO. **For illustrative purposes only.**

Partnerships & Affiliations

- Cambridge Institute for Sustainability Leadership – Investment Leaders Group (ILG) Member
- Carbon Disclosure Project (CDP) Signatory
- Climate Action 100+ Signatory
- Principles for Responsible Investment (PRI) Signatory
- PRI Bondholder Engagement Working Group Member
- PRI Fixed Income Advisory Committee Member
- PRI Sovereign Working Group (SWG) Member
- PRI Sustainable Development Goals Advisory Committee Member
- Sustainability Accounting Standards Board – Investor Advisory Group (IAG) Founding Member
- UN Global Compact SDG Finance Lab Member
- UN Global Compact Member and co-host of the Global Impact Symposium in February 2018

Publications

- *Corporate Reporting on the SDGs: Mapping a Sustainable Future*
  BY MIKE AMEY, NIAMH WHOOLEY (DECEMBER 2018)
- *SDG Bonds: Creating a World of Opportunity for Issuers and Investors*
  BY MIKE AMEY (SEPTEMBER 2018)
- *United Nations: Creating a New Hub for Sustainable Investment Deals*
  BY GAVIN POWER (AUGUST 2018)
- *ESG Integration and Engagement: South Africa Sovereign Credit*
  BY LUPIN RAHMAN (AUGUST 2018)
- *ESG Investing and Fixed Income: The Next New Normal?*
  BY MIKE AMEY, GAVIN POWER (JUNE 2018)
- *UN Sustainable Development Goals: Measuring Performance Through Impact*
  BY NIAMH WHOOLEY (MAY 2018)
- *Issuer Engagement Is Crucial to the Future of Sustainable Investing*
  BY MIKE AMEY, NIAMH WHOOLEY (MARCH 2018)
- *Applying ESG Analysis to Sovereign Bonds*
  BY LUPIN RAHMAN (JANUARY 2018)

All data is as of 31 December 2018, unless otherwise noted.

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