

Implementing Net-Zero: A Guide for Asset Owners



A Guide for Asset Owners

Foreword

Preventing the worst effects of climate change will require society to limit the rise in average global temperatures this century to 1.5 degrees Celsius (about 2.7 degrees Fahrenheit) above preindustrial levels. Keeping warming within that threshold demands immediate action to drive the amount of carbon dioxide and other greenhouse gases (GHG) that we put into the atmosphere to net-zero.¹



Asset owners and other capital-markets participants have a critical, catalytic role to play in the transition to a net-zero world by channeling capital toward less emissions-intensive investments and green solutions in line with broadly accepted climate scenarios and their investment mandates.

This guide to implementing net-zero for asset owners addresses a question many asset-owner clients ask us, which is how they can put climate ambition into practice. The guide aims to provide a road map by referencing both climate science and the frameworks designed to enable asset owners to move climate change to the forefront of their financial decision-making. It notes where analytical tools that we deliver are designed to help investors take climate change into account and build more resilient portfolios.

As a founding member of the Net Zero Financial Service Providers Alliance, we are committed to aligning our products and services with global climate goals. To promote transparency, we make our Implied Temperature Rise tool and corporate climate-target scorecards publicly available for thousands of companies, funds and MSCI indexes. We publish a quarterly Net-Zero Tracker that shows the collective progress of listed companies toward reducing or eliminating greenhouse gas (GHG) emissions from their businesses. We also are taking concrete steps to reduce our own emissions to net-zero before 2040.

Climate change represents both an existential threat and a world-changing opportunity. The task of reducing emissions will require investors, companies, policymakers and stakeholders across society to balance competing obligations in the present while working toward sustainable growth. But with the right mix of incentives, investment and action, net-zero can be a reality.

Linda-Eling Lee

Global Head of ESG and Climate Research
MSCI ESG Research

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Executive summary

This guide is designed to help pension funds, sovereign wealth funds, endowments, insurance companies and other institutional owners of capital take climate change into account and align their portfolios with the goal of a net-zero economy. It highlights key steps for aligning portfolios with net-zero outcomes and offers insights and tools for reducing portfolio emissions and addressing climate-related financial risks and opportunities.

The guide aims to help the growing number of asset owners who have committed to net-zero confront climate-related risks and enhance the resiliency of their portfolios amid the shift to a low-carbon economy. It can help members of the U.N.-convened Net-Zero Asset Owner Alliance (NZAOA) follow that framework as well as asset owner who are committing to climate action pursuant to one or more of a series of financial industry climate initiatives.

This guide features a checklist of the core steps for implementing net-zero commitments portfolio-wide. The checklist covers:

- » **Net-zero basics**
- » **Measuring your portfolio's carbon footprint**
- » **Setting net-zero targets**
- » **Aligning portfolios with climate targets**
- » **Making climate change part of risk management**
- » **Climate engagement**
- » **Climate-related financial reporting**

In short, the guide helps asset owners pull together the actions for aligning with net-zero. As the guide shows, reaching net-zero will require a clear plan that outlines the need for immediate action. It requires setting year-on-year target reductions or completely eliminating GHG emissions portfolio-wide (a process known as decarbonization), the use of shareholder engagement to spur emissions reductions in companies that lag, participation in the setting of climate policies, and benchmarking that provides clear direction and a reference point.

Every asset owner has a potential role to play in reaching net-zero by encouraging portfolio companies to map out and pursue credible plans to transform their businesses for a net-zero world. While any specific course of action will depend on an asset owner's mandate, those who aim to replicate the performance of financial markets can influence companies through engagement and stewardship. Asset owners following a rules-based investing strategy can leverage stewardship and reorient their investments by choosing to use benchmarks that align with global climate goals.

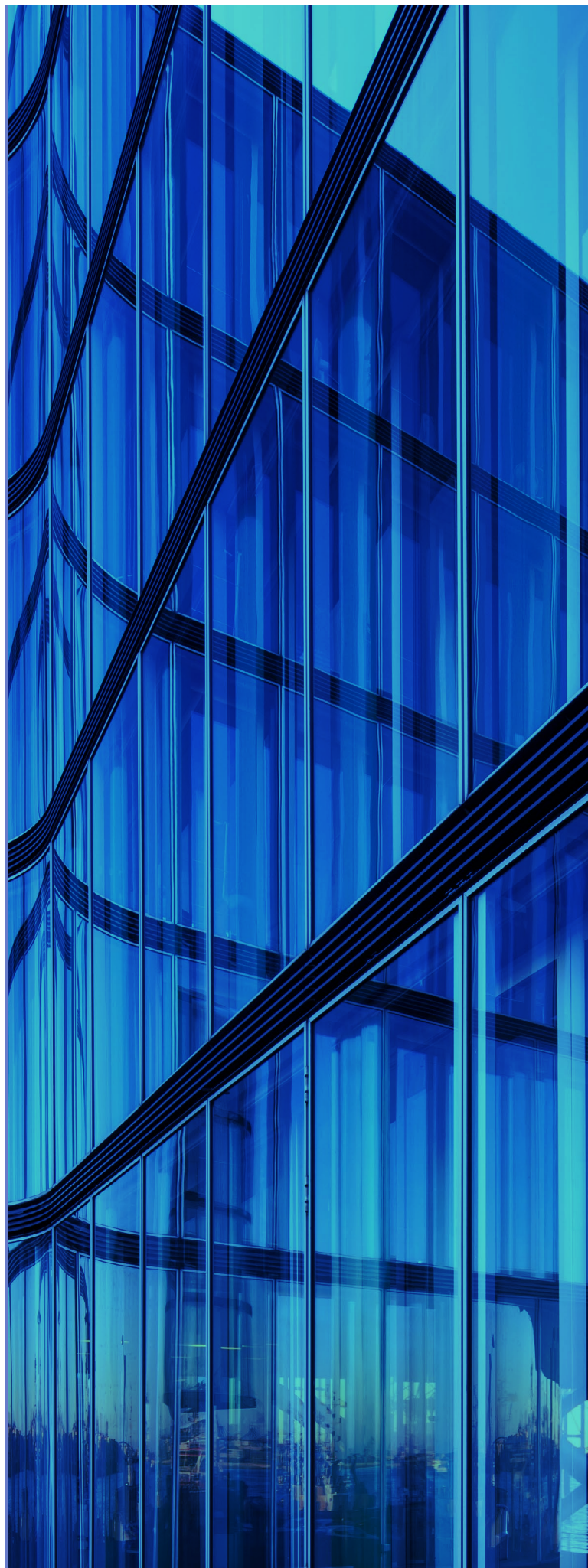


Still other asset owners may be neither fully indexed nor fully active but can back companies that have credible plans to reduce their emissions and pursue climate engagement while also relying on climate-focused indexes or exchange-traded funds that are designed to reduce their emissions footprint over time.

While capital can be a tremendous force for incentivizing companies to decarbonize and spurring development of green solutions, the measure of climate action is not the decarbonization of investment portfolios but the elimination of GHG emissions from the global economy.² Asset owners need not — and cannot — navigate to net-zero alone. The NZAOA and the varied industry alliances that form the Glasgow Financial Alliance for Net Zero (GFANZ) bring together representatives from the financial sector with the goal of funding the advent of a net-zero economy at the speed and on a scale that countering climate change will require.



2 See “Target Setting Protocol, Second Edition,” UN-convened Net-Zero Asset Owner Alliance, available at <https://www.unepfi.org/net-zero-alliance/resources/target-setting-protocol-second-edition/>



Implementing net-zero:

A checklist for asset owners

How can asset-owner investors pursue their objectives for net-zero investing? The following checklist covers potential key steps for reducing financed emissions in portfolios and in the real economy, in line with the NZAOA's requirements for its members.

1. Brief yourself on the basics

- ☐ The basics of climate science
- ☐ Emissions budgets 101
- ☐ What net-zero investing means
- ☐ Net-zero pathways
- ☐ Why asset owners are responsible for the GHG emissions of their investments
- ☐ How asset owners can drive decarbonization

2. Assess your portfolio's carbon footprint

- ☐ Measure your financed emissions
- ☐ Untangle corporate climate pledges

3. Set portfolio-wide net-zero targets

- ☐ Set targets for Scope 1 and 2 emissions for your holdings – together with targets for Scope 3 emissions wherever possible – that align with the overall goal of reaching net-zero emissions by 2050
- ☐ Develop short- and mid-term targets
- ☐ Set targets for impact investments and green solutions
- ☐ Set targets for engagement
- ☐ Set targets for policy advocacy

4. Align your portfolio with your climate target

- ☐ Decide on an approach for constructing your net-zero-aligned portfolio
- ☐ Transition to an investment policy benchmark that aligns with your climate target

5. Make climate change part of risk management

- ☐ Understand the drivers of climate risk in financial portfolios
- ☐ Use scenario analysis to inform understanding of climate risk
- ☐ Monitor your portfolio's exposure to carbon-intensive assets
- ☐ Use practical approaches for managing climate risk more actively

6. Use engagement, proxy voting, divestment and policy advocacy to spur reductions in emissions

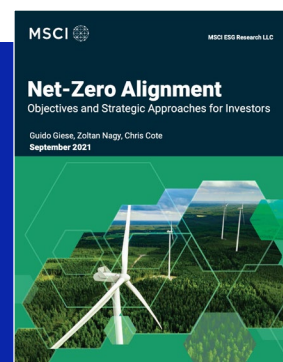
- ☐ Define your engagement strategy and identify companies for engagement
- ☐ Pursue engagement individually and in concert with other asset owners
- ☐ Use proxy voting to hold companies accountable for progress toward addressing climate change
- ☐ Develop guidelines to inform decisions on whether to divest where engagement fails
- ☐ Advocate for national policies designed to speed the transition to a net-zero economy

7. Commit to climate-related financial reporting

- ☐ Avail yourself of the Task Force on Climate-related Financial Disclosures (TCFD) reporting framework
- ☐ Report the key information the TCFD recommends for each of its pillars

This guide summarizes potential steps for aligning with net-zero for asset owners. It is neither investment advice – see our disclaimer – nor a substitute for the protocols and frameworks developed by the varied investor-led initiatives referenced in this guide.

For more from MSCI ESG Research on aligning institutional investment portfolios with global climate goals, please refer to our [Net-Zero Alignment series](#), which explores in detail approaches for implementing net-zero investing.



Net-zero initiatives of note for asset owners*

	Net-Zero Asset Owner Alliance	IIGCC Paris Aligned Investment Initiative	Transition Pathway Initiative	Climate Action 100+	Science Based Targets initiative	Partnership for Carbon Accounting Financials	International Sustainability Standards Board	TCFD
Mapping out 1.5°C pathways	•	•	•		•			
Measuring your portfolio's emissions footprint	•	•				•		•
Setting both near-term and net-zero portfolio targets	•				•			
Aligning portfolios with climate targets	•	•	•		•			
Making climate change part of risk management								•
Engagement and stewardship	•	•		•	•			
Climate-related financial reporting	•					•	•	•

*Asset owners should consult the initiatives for the specifics of membership and support.

An aerial photograph of a container ship's deck, showing a dense arrangement of multi-colored shipping containers (blue, red, yellow, and white). The ship's white superstructure, including a bridge and various railings, is visible on the right side. A large plume of white smoke or steam rises from a stack on the right. The entire image is covered with a semi-transparent teal color overlay.

1. Brief yourself on the basics

The basics of climate science

Climate change refers to the alterations in climate that result from the warming of the planet.

- » Rising levels of carbon dioxide (CO₂) and other greenhouse gases in the atmosphere trap heat that produces the warming.
- » The impacts of climate change vary. Some places may become hotter or drier, while others may become wetter or experience only small changes in temperature.
- » The Greenhouse Gas Protocol, which establishes global standards for measuring and managing GHG emissions, lists seven gases covered by the Kyoto Protocol: CO₂, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and nitrogen trifluoride.³ The climate impact of these gases vary. To improve comparability, they are expressed in terms of CO₂ equivalents.

Science shows we're running out of time to prevent the worst effects of climate change.

- » Average temperatures are already 1.1°C warmer than preindustrial levels.⁴
- » Climate change is exacerbating the severity of heat waves, drought, storms and other extremes of weather.⁵ If the rise in temperatures continues on its current trajectory, the world economy stands to lose an estimated 10% of its value by 2050.⁶
- » Sea levels are 15-20 centimeters (6-8 inches) higher than a century ago.⁷ Coastal flooding could rise by nearly 50% by 2100, threatening assets worth as much as 20% of global GDP.⁸ Absent climate action, 2050 droughts could affect more than three-quarters of the world's population by 2050.⁹
- » Extreme weather and other effects of a changing climate are substantially damaging ecosystems and biological diversity, as well threatening communities and reducing food and water security in regions around the world.¹⁰
- » "Without immediate and deep emissions reductions across all sectors, limiting global warming to 1.5°C is beyond reach," the Intergovernmental Panel on Climate Change (IPCC), a body of scientists convened by the United Nations, reported in April.¹¹

- » The science shows it is still possible to reduce the rise in global warming, but only if society acts immediately to reduce emissions to net-zero before midcentury.
- » Putting the right policies, infrastructure and technology in place to enable change to our lifestyles and behavior could reduce GHG emissions between 40% and 70% by 2050, the IPCC found.

Emissions budgets 101

An emissions budget (also known as a carbon budget) is the cumulative amount of GHG emissions that society can continue to put into the atmosphere to stay within a certain temperature threshold.

- » The IPCC has estimated the world's remaining carbon budget to be 400 gigatons (Gt) of cumulative CO₂ to maintain a 67% chance of limiting the rise in average global temperatures to 1.5°C and 1,150 Gt of cumulative GHG emissions to limit warming to 2°C.
- » Listed companies' share of the global budget for limiting temperature rise to 1.5°C is about 51.2 gigatons.¹²
- » Without any change to their current emissions of more than 11 gigatons a year, listed companies would deplete their remaining emissions budget in less than five years.

3 "The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard," available at <https://ghgprotocol.org/corporate-standard>

4 "State of the Global Climate 2021, WMO Provisional Report," World Meteorological Organization, available at <https://public.wmo.int/en/our-mandate/climate/wmo-statement-state-of-global-climate>

5 "Mapped: How climate change affects extreme weather around the world," Carbon Brief, Feb. 25, 2021, available at <https://www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world/>

6 "The economics of climate change," Swiss Re, April 22, 2021, available at <https://www.swissre.com/institute/research/topics-and-risk-dialogues/climate-and-natural-catastrophe-risk/expertise-publication-economics-of-climate-change.html>

7 "Climate Change: Global Sea Level," National Oceanic and Atmospheric Administration, April 19, 2022, available at <https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level>

8 "Projections of global-scale extreme sea levels and resulting episodic coastal flooding over the 21st Century," Scientific Reports, July 30, 2020, available at <https://www.nature.com/articles/s41598-020-67736-6>

9 World 'at a crossroads' in drought management, up 29% in a generation and worsening, says UN," May 11, 2022 UN Convention to Combat Desertification, available at <https://www.unccd.int/news-stories/press-releases/world-crossroads-drought-management-29-generation-and-worsening-says-un>

10 "Climate Change Impacts, Adaptation and Vulnerability," IPCC, Feb. 28, 2022, available at <https://www.ipcc.ch/report/ar6/wg2/>

11 Climate Change 2022: Mitigation of Climate Change, IPCC, April 4, 2022, available at <https://www.ipcc.ch/working-group/wg3/>

12 "MSCI Net-Zero Tracker," June 2022, available at <https://www.msci.com/research-and-insights/net-zero-tracker>

What net-zero investing means

Net-zero investing means implementing a decarbonization pathway for a portfolio that sets an emissions budget, then using its emissions budget to achieve a temperature scenario of 1.5°C.

- » A net-zero portfolio is one in which the portfolio's holdings are balanced between the amount of GHG emissions produced and the amount of such emissions removed from the atmosphere.
- » Carbon offsets are generally expected to compensate for residual emissions; that is, any unavoidable portfolio emissions that remain after an investor has aligned fully with net-zero.

Net-zero pathways

Net-zero pathways refer to the pace and trajectory of reductions in GHG emissions, whether for companies in an investment portfolio or for the global economy.

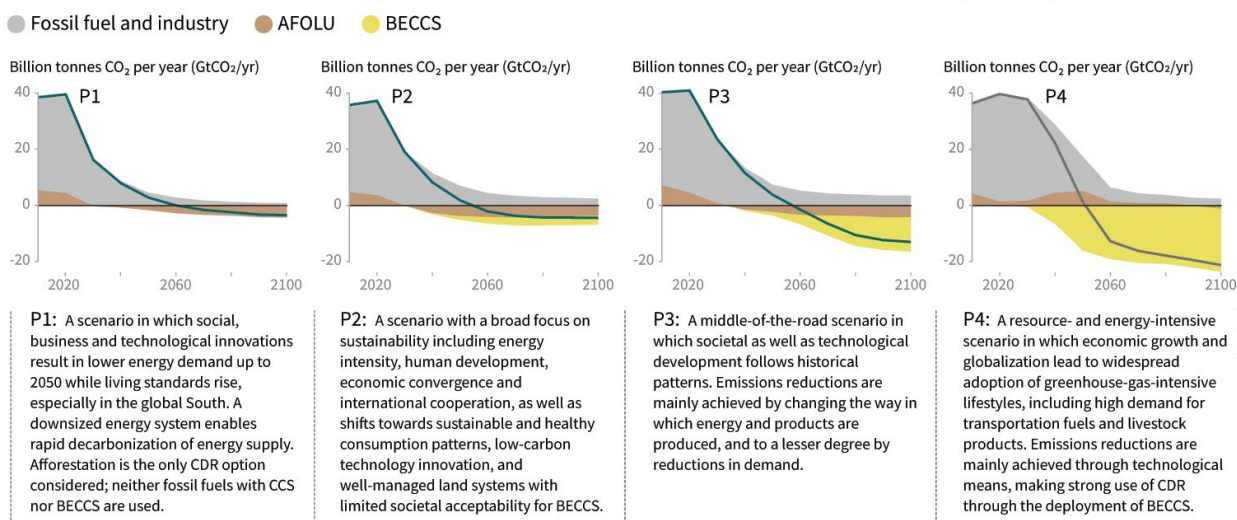
- » Scientists have developed climate scenarios to illustrate potential pathways for the global economy to move toward net-zero.
- » The pathways include assumptions on policy, technology and market shifts, among other factors.
- » The NZAOA expects members to anchor their portfolio emissions reductions in three climate scenarios developed by the IPCC that limit global warming to 1.5°C with no or limited overshoot (P1, P2 and P3 at below).
- » Asset-owner investors can help influence the direction of companies through capital allocation and active ownership, thereby impacting companies' decarbonization pathways, which contribute to the reduction of GHG emissions both at the portfolio level and in the global economy.

Characteristics of four illustrative model pathways

Source: Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5°C

Different mitigation strategies can achieve the net emissions reductions that would be required to follow a pathway that limits global warming to 1.5°C with no or limited overshoot. All pathways use Carbon Dioxide Removal (CDR), but the amount varies across pathways, as do the relative contributions of Bioenergy with Carbon Capture and Storage (BECCS) and removals in the Agriculture, Forestry and Other Land Use (AFOLU) sector. This has implications for emissions and several other pathway characteristics.

Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways



What GHG emissions are the responsibility of asset owners

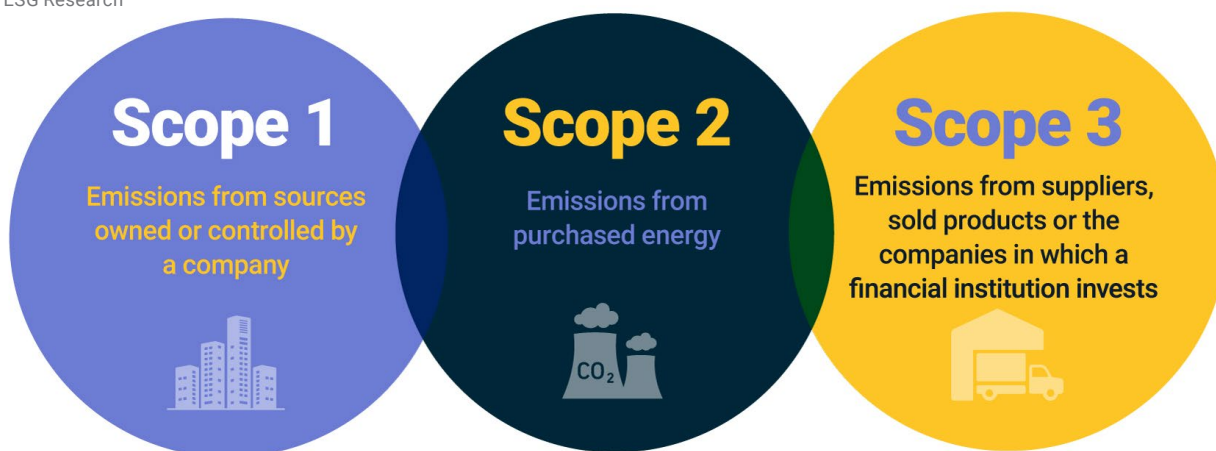
The logic of GHG accounting holds that investors own their share of the emissions of companies they finance.

- » The Greenhouse Gas Protocol classifies a company's GHG emissions into three scopes.¹³
 - Scope 1 emissions are direct emissions from sources owned or controlled by a company.
 - Scope 2 emissions are indirect emissions from the generation of purchased energy.
 - Scope 3 emissions are indirect emissions not included in Scope 2 that occur from the company's value chain, including emissions of suppliers or from sold products.
- » Emissions from investments become part of the investor's Scope 3 emissions, according to the Greenhouse Gas Protocol, which divides financial investments into four types: equity investments, debt investments, project finance, and managed investments and client services.¹⁴

How asset owners can drive toward net-zero

There are three categories of corporate greenhouse gas emissions

Source: MSCI ESG Research



Asset owners have four main strategic levers at their disposal to accelerate companies' decarbonization.

1. Capital reallocation: Limiting capital allocated to high-carbon emission entities.
2. Climate solutions: Directing financing of low-carbon projects and technology through private markets, corporate lending, investing in green bonds or impact investment strategies.
3. Stewardship and engagement: Using voting and engagement targeted to encourage net-zero outcomes.
4. Policy advocacy: Advocating for policies that put a price on carbon and encourage an orderly net-zero transition.

¹³ See "FAQ," Greenhouse Gas Protocol, available at https://ghgprotocol.org/sites/default/files/standards_supporting/FAQ.pdf

¹⁴ See "Category 15: Investments," Greenhouse Gas Protocol, available at https://ghgprotocol.org/sites/default/files/standards_supporting/Chapter15.pdf

For more on net-zero basics and objectives, see "Net-Zero Alignment: Objectives and Strategic Approaches for Investors, MSCI ESG Research, available at <https://www.msci.com/documents/10199/27525018/Net-Zero-Investing-Framework-Report-1.pdf>

A large industrial facility, likely a steel mill or refinery, is shown at night. The scene is dominated by a tall smokestack on the left emitting a thick plume of white smoke that rises into the dark sky. In the foreground, a complex network of pipes, walkways, and structural steel is illuminated by artificial lights. A bright orange flame or fire is visible in the center of the facility. To the right, there are large storage tanks and more industrial structures. In the background, a body of water reflects the ambient light, with some distant structures visible on the horizon. The overall color palette is dark with highlights from the industrial lights and the white smoke.

2. Assess your portfolio's carbon footprint

Measure your financed emissions

Measuring financed emissions gives asset owners a baseline for net-zero alignment. The Global GHG Accounting & Reporting Standard for the Financial Industry developed by the Partnership for Carbon Accounting Financials (PCAF) details asset class-specific methodologies for calculating financed emissions.¹⁵

The PCAF reporting standard is designed to help investors measure financed emissions for three types of climate impact:

- » Generated emissions – The volume of GHG emissions financed by an investor.
- » Emissions removal – The volume of GHG emissions financed by an investor that are removed from the atmosphere and stored.
- » Avoided emissions – Investments in renewable energy and energy efficiency that reduce emissions compared with what would have been emitted in the absence of the project.

The PCAF standard, which currently covers six asset classes, is designed to support the objectives of the TCFD by providing investors with methodologies to measure financed emissions and a total value for the absolute emissions associated with their portfolios. The standard does not yet provide guidance on methods to calculate financed emissions for, among other asset types: sovereign debt, green bonds, securitized loans or derivatives.

PCAF currently covers six asset classes

Source: Partnership for Carbon Accounting Financials



¹⁵ "The Global GHG Accounting and Reporting Standard for the Financial Industry," Partnership for Carbon Accounting Financials, available at <https://carbonaccountingfinancials.com/standard>

Methodology to measure financed emissions by asset classes

Source: "The Global GHG Accounting & Reporting Standard for the Financial Industry," Partnership for Carbon Accounting Financials

	PCAF supplies guidance	Guidance not yet standardized
Listed equity and corporate bonds	✓	
Business loans and unlisted equity	✓	
Project finance	✓	
Commercial real estate	✓	
Mortgages	✓	
Motor vehicle loans	✓	
Sovereign debt		×
Securitized loans		×
Exchange-traded funds		×
Derivatives		×
IPO underwriting		×

Example: Calculating and reporting financed emissions for listed equity

PCAF instructs investors to measure and report portfolio companies' absolute Scope 1 and 2 emissions across all sectors, as well Scope 3 emissions for the oil, gas and mining sectors, with additional sectors to be phased in starting in 2024.

To calculate the financed emissions of a portfolio company, multiply the attribution factor by the emissions of the respective company.

$$\text{Financed emissions} = \sum_c \text{Attribution factor}_c \times \text{Company emissions}_c$$

(with c = borrower or investee company)

- » The attribution factor represents the investor's proportional share of the company, as measured by the ratio of the investor's outstanding amount of shares to enterprise value including cash (EVIC).

$$\text{Financed emissions} = \sum_c \frac{\text{Outstanding amount}_c}{\text{Enterprise Value Including Cash}_c} \times \text{Company emissions}_c$$

Source: Partnership for Carbon Accounting Financials

Attribution factor

- » PCAF delineates three different options to calculate the financed emissions from listed equity, depending on the emissions data used:
 - Reported emissions, where such emissions are reported by the company or collected indirectly via verified third-party data providers such as CDP and then allocated to the investor using the attribution factor.
 - Physical activity-based emissions, where such emissions are estimated by the investor based on primary physical activity data (e.g., tons of steel produced) collected from the company and then allocated to the investor using the attribution factor.
 - Economic activity-based emissions, where such emissions are estimated by the investor based on economic activity data (e.g., revenue) and then allocated to the investor using the attribution factor.
- » PCAF prefers either reported or physical activity-based emissions over economic activity-based emissions because the former provide more accurate results.

Intensity metrics

In addition to measuring financed emissions in absolute terms, asset owners may use normalization to compare the emissions of companies, sectors or portfolios with one another. For comparability, asset owners should translate absolute financed emissions into a measure of emissions intensity; that is, emissions per a specific unit (see table below). The NZAOA, for example, calls on members to set targets on the basis of either absolute carbon emissions or emissions intensity. (The alliance's ambition for 2050 is absolute net-zero emissions.)

Investors can use different intensity metrics for different purposes. The TCFD recommends that asset owners use weighted average carbon intensity for each fund or investment strategy, where data and methodologies allow, calculated in line with the standard developed by PCAF. The TCFD further recommends that asset owners consider reporting other carbon footprinting metrics they believe are useful for decision-making.

- » The TCFD's latest guidance on implementing its recommendations details formulas, methodologies and key advantages and disadvantages for common carbon footprinting and exposure metrics.¹⁶
- » "TCFD-Aligned Climate Risk Reporting Using MSCI Data and Metrics" from MSCI ESG Research offers practical guidance on the use of MSCI ESG Research data to calculate financed emissions.¹⁷
- » "Carbon Footprinting 101" from MSCI ESG Research offers a practical guide to understanding and applying carbon metrics.¹⁸

Carbon Emissions	What is my portfolio's <u>normalized</u> carbon footprint per million dollars invested?
Total Carbon Emissions	What is my portfolio's <u>total</u> carbon footprint?
Carbon Intensity	How <u>efficient</u> is my portfolio in terms of emissions per unit of output?
Weighted Average Carbon Intensity	What is my portfolio's <u>exposure</u> to carbon-intensive companies?

16 See "Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures," Task Force on Climate-related Financial Disclosures, October 2021, available at https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing_Guidance.pdf

17 See "TCFD-Aligned Climate Risk Reporting Using MSCI Data and Metrics, A Practical Guide for Institutional Investors," MSCI ESG Research, July 2022, available at <https://www.msci.com/www/research-paper/tcfd-aligned-climate-risk/03306029396>

18 See "Carbon Footprinting 101: A Practical Guide to Understanding and Applying Carbon Metrics," MSCI ESG Research, September 2015, available at <https://www.msci.com/documents/10199/2043ba37-c8e1-4773-8672-fae43e9e3fd0>

Untangle corporate climate pledges

Companies' climate trajectories depend on their decarbonization plans. To understand and compare them, it helps to look at three features of every target: comprehensiveness, ambition and feasibility.

- » **Comprehensiveness:** How much of the company's emissions are covered? Does the target cover all scopes, operations and locations?
- » **Ambition:** How much has the company committed to reduce emissions? Over what time frame?
- » **Feasibility:** How much confidence a company can have that a net-zero target will be achieved.

Investors may want to explore whether a company engages with external parties as part of its climate-transition strategy. Questions to ask may include:

- » Has the company submitted its target to the Science Based Targets initiative for approval?
- » Is the company a member of an industry organization that aims to decarbonize that industry?
- » Is the company a member of a cross-industry organization that aims to decarbonize specific parts of companies' footprint, such as committing to switch to 100% renewable energy usage or an all-electric vehicle fleet?

Three dimensions for assessing decarbonization targets

MSCI ESG Research

Analytical Framework	Descriptions	Key Components
Comprehensiveness	Does the target focus on the majority of a company's emissions?	- Type - Unit - Target scopes - Target coverages - Percentage of company footprint covered by targets
Ambition	How much and how quickly does a target aim to reduce emissions?	- Remaining emission reduction - Normalized reduction per year - Target year - Projected target emissions against net-zero trajectory in 2030 - Projected target emissions against net-zero in 2050
Feasibility	How feasible is a given target, and how much confidence can investors have in its achievement?	- Track record of meeting previous targets - Progress on active targets - Intention to use carbon offsets - Revenue from climate change solutions - Decarbonization strategy per scope and category

How MSCI can help

Asset owners can use climate metrics from MSCI to measure their financed emissions and deepen insight into the emissions pathways and targets for both listed and unlisted companies.

» **MSCI's Total Portfolio Footprinting** equips investors to measure their financed emissions. The solution draws on the depth of MSCI's industry-leading climate data to help investors calculate and report the carbon emissions of their investments across asset classes in alignment with PCAF.

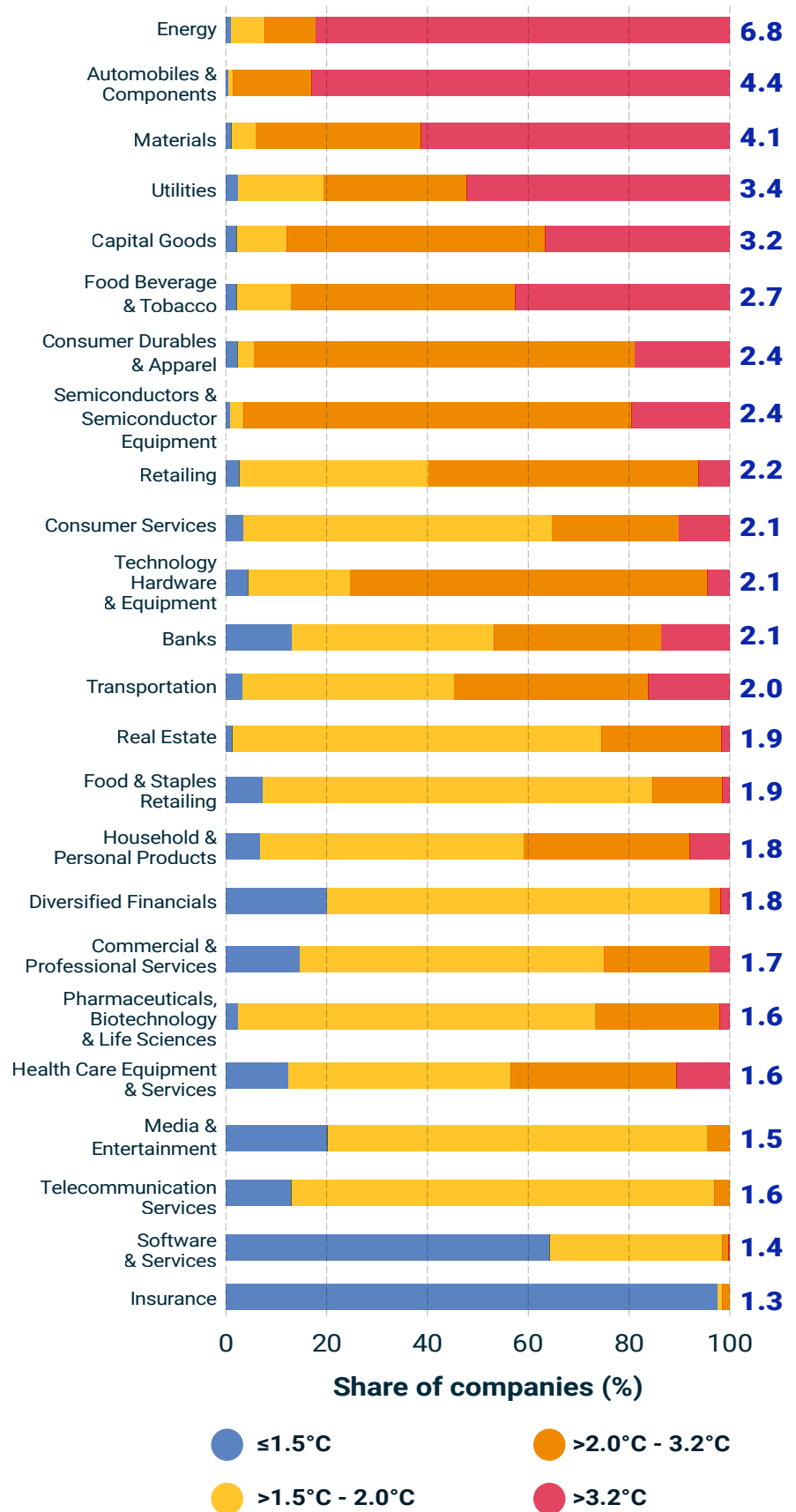
» **MSCI's Implied Temperature Rise** can help asset owners supplement their portfolio's temperature alignment with the use of forward-looking data, expressed in degrees Celsius, that show the alignment of listed companies, portfolios and funds with global temperature goals.

- Investors might use Implied Temperature Rise, for instance, to define a net-zero pathway for each sector they invest in to reach a full portfolio implied temperature rise of 1.5°C by 2050 or to identify companies in each sector that are lowering their emissions.
- MSCI ESG Research has made the Implied Temperature Rise of nearly 3,000 listed companies publicly available. You can [search by company name or ticker](#) to see the company's implied temperature rise and decarbonization target.

Implied temperature rise by GICS® industry group

Source: MSCI ESG Research

As of May 31, 2022



» Our **Climate Target and Commitments data set** provides a snapshot of a company's decarbonization target and main drivers of carbon emissions.

- The data, depicted in a Climate Target Scorecard, is designed to help investors evaluate and compare corporate climate commitments based on their comprehensives, ambition and feasibility.
- The scorecard, which also shows the drivers of a company's emissions, can help investors untangle corporate decarbonization pledges, compare commitments by listed companies, inform climate engagement and facilitate reporting.

» **Carbon Footprinting of Private Equity and Debt Funds from MSCI ESG Research and Burgiss Data** can help investors measure and monitor GHG emissions within private equity portfolios.

- Includes emissions estimates for more than 15,000 unlisted companies and nearly 4,000 active private equity and debt funds.

Target scorecard for hypothetical company

Source: MSCI ESG Research

Drivers of Carbon Emissions

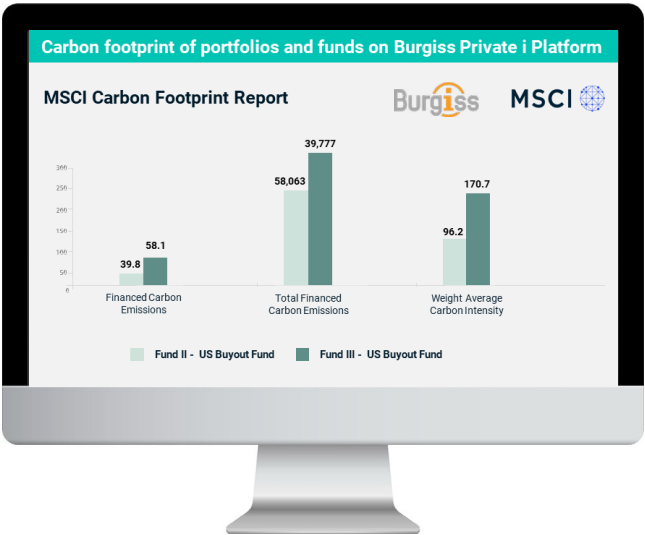
Type	Emissions (Mega tCO2e)
Scope 1 (Reported, 2020)	0.04
Scope 2 (Estimated, 2020)	0.18
Scope 3 (Estimated, 2020)	12.47
Scope 3 (Reported, 2020)	11.17
Estimated Ratio of reported vs total estimated emissions*	88%

* Reported Emissions/Total estimated emission
 Total estimated emission: This is the sum of Scope 1 and 2 reported emissions if available (if not, estimated) and estimated Scope 3 emissions.
 If the figure is above 100%, this means that the reported Scope 3 Footprint is larger than the estimated footprint.

Target Scorecard

COMPREHENSIVENESS		AMBITION	
100%		3.77% p.a.	
% of company footprint covered by target		Projected reduction per year to meet stated target	
Comprehensiveness			
Type	Absolute + Intensity		
Unit	tCO2		
Target scopes	1	2	3
Scope 3 upstream categories	1	2	3 4 5 6 7 8
Scope 3 downstream categories	9	10	11 12 13 14 15
% of company footprint covered by target	100%		
Ambition			
Target year	2030		
Projected reduction per year to meet stated target	3.77% p.a.		
Intention to use carbon offsets	No		

** Projected reduction per year: This figure indicates the reduction per year of absolute emissions if the target is fully met. A positive number corresponds to a decrease in absolute emissions (for example 5% is an annual reduction of 5% per year). A negative figure corresponds to an increase in absolute emission. This can be caused by targets which do not cover all emissions or are intensity based and therefore do not lead to a reduction of absolute emissions.



Explore **MSCI's Climate and Net-Zero Solutions**

The background image shows a coastal town with a prominent stone clock tower in the foreground. The tower has two clock faces and is surrounded by other buildings. A large wave is crashing against a sea wall in the foreground, creating a large splash of water. The sky is overcast and the overall tone is somewhat somber.

3. Set portfolio-wide **net-zero** targets

The NZAOA requires that members set emissions-reduction targets for their investment that encompass a series of near-and long-term net-zero goals.

» **Set targets for Scope 1 and 2 emissions for your holdings — together with targets for Scope 3 emissions wherever possible — that align with the overall goal of reaching net-zero emissions by 2050.**

- Identify the most financially relevant sectors in your portfolio on an owned-emissions basis. **See “Measure your financed emissions” on p.14**
- Identify available carbon emissions metrics for the relevant sector.
- Select a decarbonization pathway to be applied to each sector and apply a target based on the carbon metric you choose.

» **Develop short- and mid-term year targets that incorporate increasingly ambitious reductions in emissions.**

- Long-term targets keep the focus on the ultimate goal. Short- and medium-term targets help to ensure steady progress is being made.
- Short-term targets include targets between now and 2025.
 - Short-term targets are generally on a five-year timescale (e.g., 2020-2025), in keeping with the five-year cycle of increasingly ambitious climate action called for by the Paris Agreement.
- Medium-term targets generally address the decade from 2026 to 2035.
- Long-term targets generally cover the period from 2036 to 2050.

» **Set allocation targets for climate solutions.**

- The NZAOA defines climate solutions as investments in economic activities considered to contribute substantially to climate change mitigation or adaptation.
 - Climate change mitigation includes solutions for substantially reducing GHG emissions by avoiding or removing emissions or by sequestering CO2 already in the atmosphere.
 - Climate change adaptation includes activity that substantially contributes to enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change.

» **Set targets for engagement**

- Identify companies for engagement based on their contribution to your portfolio's owned emissions
- Align proxy voting with your net-zero commitment
- Establish criteria for the selection and monitoring of asset managers in connection with your climate targets
- Outline actions to take if company engagement is not producing useful results

» **Set targets for policy advocacy**

- Targets may include engaging governments to increase ambition on decarbonization, to align national emissions targets with net-zero goals and to introduce mandatory corporate climate change disclosures.

NZAOA members pledge to reduce portfolio emissions 22% -32% by 2025, 49%-65% by 2030 and to net-zero by 2050 consistent with a maximum temperature rise of 1.5° C, based on the best available scientific knowledge. These ranges are based on the decarbonization pathways that align with the P1, P2 and P3 scenarios highlighted on p.12. The alliance discarded the P4 scenario, which requires less emissions reduction but relies heavily on the use of carbon offsets to limit the rise in temperatures to 1.5° C. The targets cover four categories.

- 1** Sub-portfolio targets that cover asset classes where credible methodologies and sufficient data coverage exist as of the data of the target's publication.
 - To date, the NZAOA expects members to set targets across their listed equity and corporate bonds, real estate holdings and infrastructure investments. Targets should strive to reduce GHG emissions for Scope 1 and 2 emissions of portfolio companies, and track Scope 3.¹⁹
- 2** Sector targets that define average GHG-reduction targets for key high-emitting sectors; members of the NZAOA commit to have sector targets in place by 2025 that cover at least 70% of total owned emissions.
- 3** Engagement targets for a minimum of 20 companies in their portfolio with a focus on those responsible for a combined 65% of owned emissions.

- 4** Transition targets for investments in solutions that avoid, remove or sequester GHG emissions or that advance climate adaptation, consistent with asset owners' obligations to see the maximum risk-adjusted returns on their investments.
 - While alliance members can decide whether to report a target for transition finance publicly, the NZAOA expects them to report to the alliance on climate solutions investments annually.

Alliance members agree to publish targets within 12 months of joining the alliance.²⁰ The NZAOA encourages members to go beyond the protocol by setting more aspirational ambitions.



Source: Net Zero Asset Owner Alliance Target Setting Protocol, Second edition

¹⁹ Though the NZAOA notes that Scope 3 data is not robust enough to be used by members for target-setting, it encourages members who believe they can set targets on Scope 3 emissions to do so.

²⁰ Unless the end of the reporting cycle is within three months of joining, then members should submit and publish targets within no more than 15 months.

Characteristics of effective targets

Climate-related targets should include several characteristics to ensure their specificity and completeness, according to the TCFD. Targets should:

- » Align with strategy and risk management goals, informed by scenario analysis and climate science and supported by appropriate metrics.
- » Link to defined metrics in order to measure and track progress.
- » Be quantified and measurable.

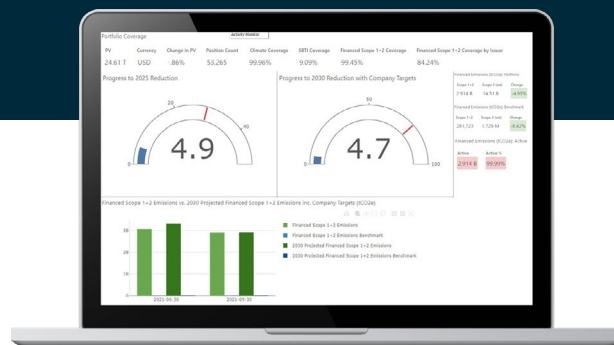
Examples of quantified targets that align with industry frameworks such as the NZAOA

Source: Task Force on Climate-related Financial Disclosures, Guidance on Metrics, Targets and Transition plans

Metric category	Sample climate-related target
GHG emissions	Reduce net Scope 1, Scope 2 and Scope 3 GHG emissions to zero by 2050, with an interim target to reduce emissions by 70% relative to a 2015 baseline by 2035
Transition risks	Reduce percentage of asset value exposed to transition risk by 30% by 2030, relative to a 2019 baseline
Physical risks	» Reduce percentage of asset value exposed to acute and chronic physical climate-related risks by 2050. » Ensure at least 60% of flood-exposed assets have risk mitigation in place in line with the 2060 projected 100-year floodplain

How MSCI can help

MSCI's Climate Lab Enterprise combines a comprehensive set of climate data and analytics with powerful forecasting tools to help investors measure, monitor and manage climate risk and the shift to sustainable growth consistently across companies, portfolios and enterprises. Investors can use Climate Lab Enterprise to set medium- and long-term decarbonization targets, monitor progress toward net-zero targets and identify strategies that may be contravening their climate goals.



Learn more about **Climate Lab Enterprise**

4. Align your portfolio with
your climate
target

For most asset owners, there are too few companies currently aligned with 1.5° C to meet their investment needs or build up a net-zero portfolio. Meeting a net-zero target therefore requires a short-to-long term process.

Decide on an approach for constructing your target net-zero aligned portfolio.

- » Asset owners may pursue one of several approaches for constructing net-zero portfolios. Each has advantages and disadvantages.

1 Tilt toward low emitters

- Advantage: Requires only periodically updated historical GHG emissions data per investment and a portfolio construction methodology that at each rebalancing date shifts more capital from high emitters to low emitters to achieve the desired annual decarbonization target.
- Disadvantage: May concentrate a portfolio's assets in certain sectors while failing to shift capital toward companies that improve their emissions over time, such as a utility that is decarbonizing via investments in wind and solar.
 - In the extreme, a strategy of tilting toward low emitters could lead to a divergence between the net-zero portfolio and both the broad market and the real economy.
 - Imposing limits on exposure to sectors (without changing the weight of the respective sectors) may lessen that risk but could also lead to portfolios that diverge from the market by tilting increasingly toward each sector's emissions leaders.

2 At each portfolio rebalance, shift capital toward companies that have ambitious emissions-reduction targets and strong track records of achieving them.

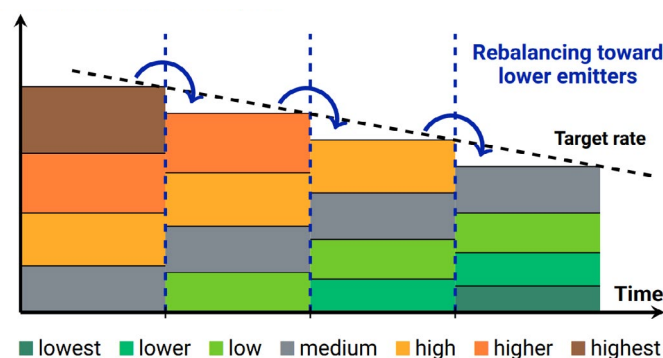
- Advantage: Reduces concentration risk and aligns with the idea of driving companies toward net-zero over time.
- Disadvantage: May be challenging to implement because it assumes that a sufficiently large number of companies decarbonize. Also relies on companies reducing GHG emissions significantly over time. Less than a quarter of the world's listed companies have reduced their emission by at least 10% per year, though this may change over time.

3 Tilt toward "emissions improvers" but supplement as needed with allocations to lower emitters.

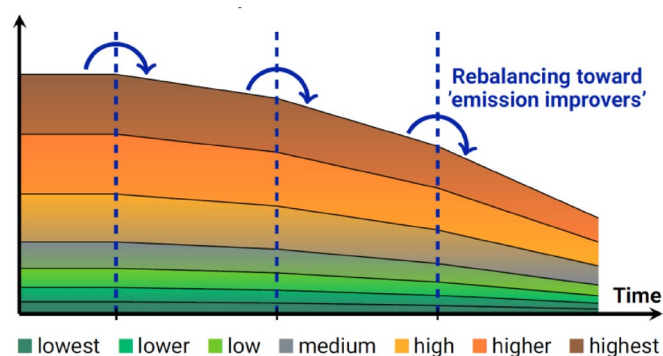
- Advantage: Helps to protect portfolios against the risk that some companies fail to decarbonize fast enough.
- Disadvantage: The effective rate of decarbonization would depend on the number of high emitters compared with the number of emitters that are successfully decarbonizing. This could create problems of portfolio concentration if more companies do not begin to successfully decarbonize their operations.

Total market carbon footprint

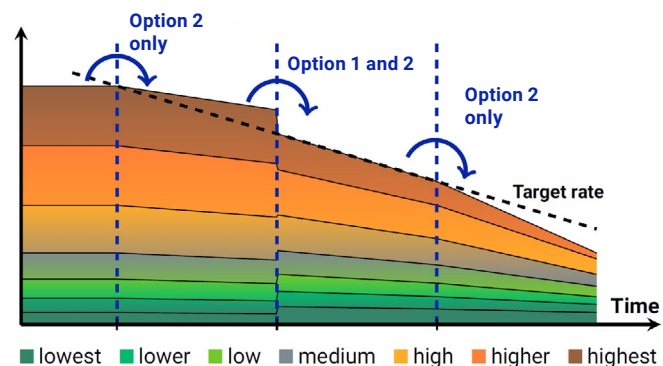
MSCI ESG Research



Total market carbon footprint



Total market carbon footprint



In this hypothetical example, the first rebalancing shown is toward emissions improvers; the second rebalancing is toward emissions improvers and toward lower emitters, as some companies that are expected to improve their emissions fail to realize their targets; the third rebalancing is again toward emissions improvers, as the remaining companies continue to improve and more companies set ambitious and feasible climate targets.

How practical is building a net-zero portfolio today?

Limiting the investment universe to only those companies that currently align with a 1.5°C temperature-rise scenario may be impractical for many asset owners. A hypothetical portfolio constructed solely of companies aligned with a 1.5°C temperature-rise scenario would have lost 89% of the constituents in the MSCI ACWI Index, as of Aug. 31, 2021.

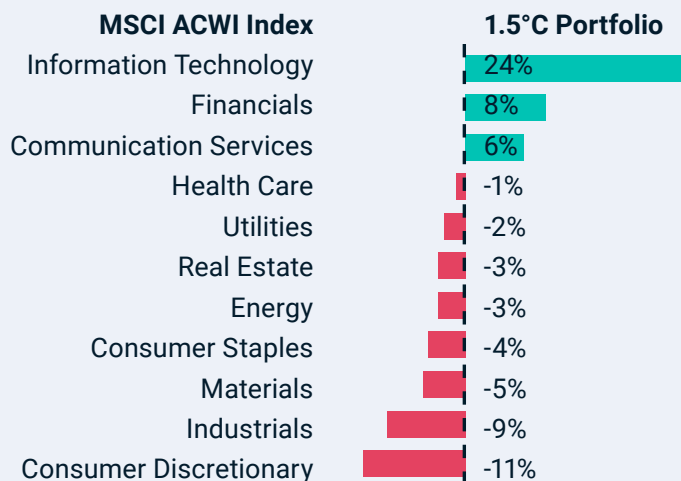
In a 1.5°C portfolio, the top three sectors (information technology, financials and communication services) would have represented over 80% of the portfolio, as of Aug. 31, 2021. Building a portfolio that is 1.5°C-aligned at the outset would have dramatically shifted sector weightings and would have more than doubled the allocation to information technology companies, causing a significant tracking error from the benchmark without contributing to decarbonization of the real economy.

Investors who wish to adopt a net-zero portfolio construction approach may therefore decide they will consider achieving carbon neutrality in the long term. One way to achieve this could be to implement an annual self-decarbonization objective, by considering the pathway to reduce the carbon footprint and the target year by which the portfolio would be considered net-zero. Thus, the transition would occur over time.

Selecting securities from a larger pool of companies and gradually decarbonizing portfolios also gives investors the opportunity to engage with companies. To avoid having the investable pool shrink over time, investors could pursue a dual approach: They could create a pathway to net-zero for their portfolios while engaging with companies to get them to reduce their emissions faster. Engagement could help companies evolve their

Active sector weight in a hypothetical 1.5°C-aligned portfolio

MSCI ESG Research



Relative to MSCI ACWI Index, as of Aug. 31, 2021

business models as they transition to a low-carbon economy and reduce their carbon footprints. Investors also could employ sector decarbonization targets for highly carbon-intensive sectors like energy and utilities, as recommended by the NZAOA. These targets would complement annual decarbonization objectives.

For more on approaches to aligning your global equities portfolio with a net-zero pathway, see “Net Zero Alignment: Portfolio Construction Approaches for Investors,” MSCI ESG Research, available at <https://www.msci.com/www/research-paper/net-zero-alignment-portfolio/02884300659>

How MSCI can help

MSCI's climate change indexes are designed to decarbonize at rates that could help achieve investors' climate goals. Asset owners can use climate change indexes from MSCI as a policy benchmark, to evaluate the performance of investment strategies, for asset allocation or for overweighting firms that may benefit from climate opportunities.

MSCI has calculated the required rate of decarbonization needed by 2025 and 2030 for varied indexes to align with an implied temperature rise of 1.5°C by 2050.

Climate indexes require less decarbonization by design. The top six indexes in shaded in gray and white in the table below would need only to reduce their emissions footprint by 12% to 20% to align with a 1.5°C scenario in 2025; a rate of decarbonization that puts them ahead of targets developed by the NZAOA. The seven indexes shaded in blue would need to decarbonize from 22% to 32% by 2025 to align with a 1.5°C scenario, in line with ranges proposed by the NZAOA.

Decarbonization trajectories of MSCI Climate Indexes

MSCI ESG Research

Region	Index	2025 Decarbonization target [%] (1.5°C)	2030 Decarbonization target [%] (1.5°C)
Self-decarbonizing	ACWI Climate Paris Aligned	12%	28%
	ACWI EU PAB Overlay	14%	34%
	ACWI Climate Change	17%	39%
	ACWI Low Carbon Target	20%	44%
	ACWI SRI	20%	44%
	ACWI ex Fossil-fuels	20%	44%
Indexes that are "ahead" of the Net Zero Asset Owner Alliance's recommendations	ACWI ESG Leaders	22%	49%
	ACWI ESG Focus	25%	53%
	ACWI ESG Universal	25%	53%
	ACWI Sustainable Impact	25%	53%
	ACWI (IMI)	27%	57%
	ACWI Enhanced Value	32%	64%
	ACWI Momentum	32%	64%

In line with ranges proposed by Net Zero Asset Owner Alliance
2025: 22% to 32%
2030: 49% to 65%

An aerial photograph of a large industrial facility, possibly a refinery or chemical plant, taken at dusk or dawn. The facility features numerous large white storage tanks, complex piping systems, and several industrial buildings. A tall distillation column is prominent on the right side. The site is surrounded by green fields and a clear sky. The text "5. Make climate change part of risk management" is overlaid in white, with the word "risk" in bold.

5. Make climate change part of **risk** management

Understand the drivers of climate risk in financial portfolios

- » Drivers of physical risk, which includes extremes of weather caused by climate change, can be categorized into acute and chronic physical risks.
- » Drivers of transition risk include policy, technological and market changes due to a transition to a low-carbon economy.

Climate-related risk drivers

Source: Basel Committee on Banking Supervision

Physical-risk drivers	Transition-risk drivers
Drivers of acute physical risk such as tropical cyclones, floods and wildfires.	Climate policies and measures taken to reduce emissions and transition to a low-carbon economy that could impact valuations.
Drivers of chronic physical risk such as rising sea levels and shifts in precipitation patterns.	Technology innovation related to low-carbon economy and resilience against climate change.
	Changing investor sentiment , with increasing focus on climate-aware investing.
	Consumer sentiment and behavior, which could shift to more climate-friendly alternatives.

Use scenario analysis to inform understanding of climate risk

Use scenario analysis to explore and develop an understanding of how the physical and transition risks and opportunities of climate change might plausibly impact your portfolio over time.

- » Select scenarios to model.
 - A scenario is a hypothetical construct that highlights central elements of a possible future.
 - To understand the potential impacts of climate risk in its varied dimensions, consider selecting at least one scenario from each of the following four categories, which summarize categories of climate-related risks and opportunities that the TCFD recommends investors consider when applying scenario analysis:²¹
 - Shifts in the market and technology, such as:
 - Reduced demand for higher-carbon products/commodities
 - Increased demand for energy-efficient, lower-carbon products and services
 - New technologies that disrupt markets
 - Changes in laws and policies that can:
 - Increase operating costs for carbon-intensive activities
 - Threaten the securing of license to operate carbon-intensive businesses
 - Changes in expectations of customers, investors and other stakeholders, including:
 - Opportunities to enhance reputation and brand value
 - Risk of loss of trust and confidence in management
- » Consider the key parameters, assumptions and analytical choices you use.
- » Document the process.
 - Be prepared to disclose the use of scenario analysis and other analytical tools that you use to assess the impact of climate-related risks on your portfolio.

“Stress Testing Portfolios for Climate-Change Risk,” by MSCI ESG Research illustrates the use of scenario analysis for climate stress testing. See Appendix.

²¹ See “The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities,” TCFD, June 2017, available at <https://www.tcfddhub.org/scenario-analysis/>

The Network for Greening the Financial System, a group of central banks and supervisors, has developed a set of six scenarios for climate change that align with the recommendations by the TCFD.²²

- » The scenarios cover varying severity of physical risks (from hothouse-world scenarios to scenarios with lower physical impacts) and varying degrees of transition risk (from an orderly transition to a delayed and disorderly transition).
- » They comprise:
 - Net-Zero 2050, which limits global warming to 1.5°C through stringent climate policies and innovation, reaching net-zero CO2 emissions around 2050.
 - Below 2°C, which increases the stringency of climate policies, with a 67% change of limiting global warming to below 2°C.
 - Divergent Net-Zero, which reaches net-zero by 2050 but with higher costs due to divergent policies introduced across sectors and a quicker phaseout of fossil fuels.
 - Delayed Transition, which assumes global annual emissions do not decrease until 2030, followed by strong policies to limit warming to below 2°C.
 - National Determined Contributions (NDC), which includes all pledged policies, even if not yet implemented.
 - Current Policies, which assumes that only currently implemented policies are preserved, leading to high physical risks.
- » The scenarios are designed to serve as a starting point for asset owners to standardize scenario analysis for climate-related risks and opportunities.

Financial supervisors in some jurisdictions have incorporated the NGFS scenarios into their supervision. The Bank of England, for example, has incorporated two NGFS scenarios into the two pathways to net-zero GHG that form the BOE's 2021 Climate Biennial Exploratory Scenario, which is designed to explore the resilience of the largest U.K. banks and insurers to climate change risks.²³

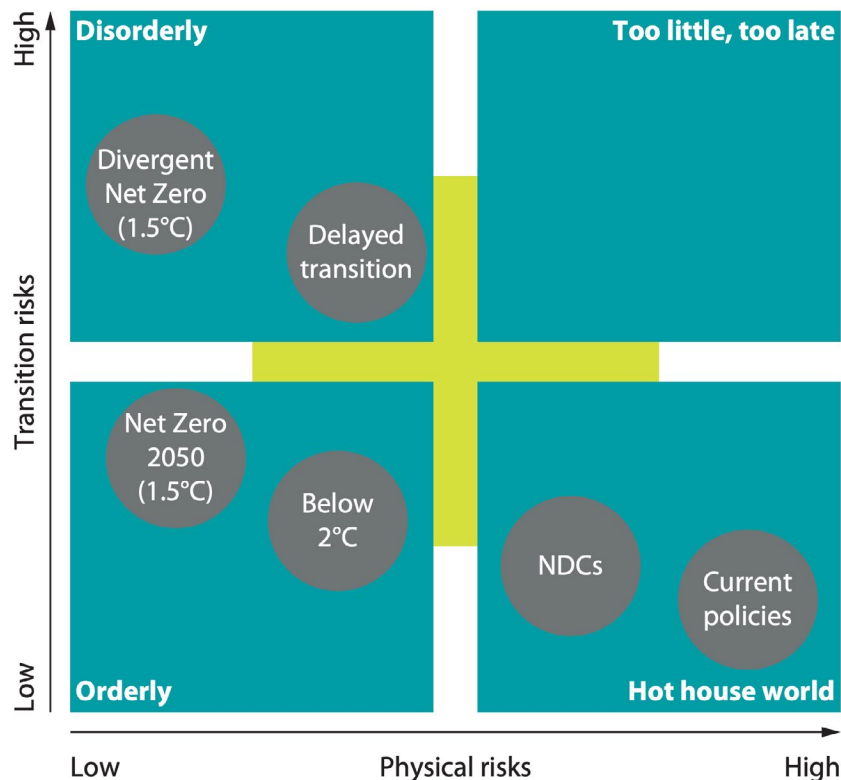
NGFS scenarios framework

Source: "NGFS Climate Scenarios for central banks and supervisors," Network for Greening the Financial System, June 2020

Positioning of scenarios is approximate, based on an assessment of physical and transition risks out to 2100.

²² See "NGFS Climate Scenarios for central banks and supervisors," Network for Greening the Financial System, available at https://www.ngfs.net/sites/default/files/media/2021/08/27/ngfs_climate_scenarios_phase2_june2021.pdf

²³ "Key elements of the 2021 Biennial Exploratory Scenario: Financial risks from climate change," Bank of England, June 8, 2021, available at <https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change>



Monitor your portfolio's exposure to carbon-intensive assets

- » Carbon emissions may emerge as a systematic driver of equity risk and return as more investors make climate change part of their investment strategies.
 - More carbon-efficient companies in developed markets outside the U.S. experienced stronger performance compared with other companies in their sector over a seven-year period that ended Jan. 31, 2021, according to an analysis by MSCI ESG Research, which found that companies' earnings growth and stock performance were directly related to their GHG emissions²⁴

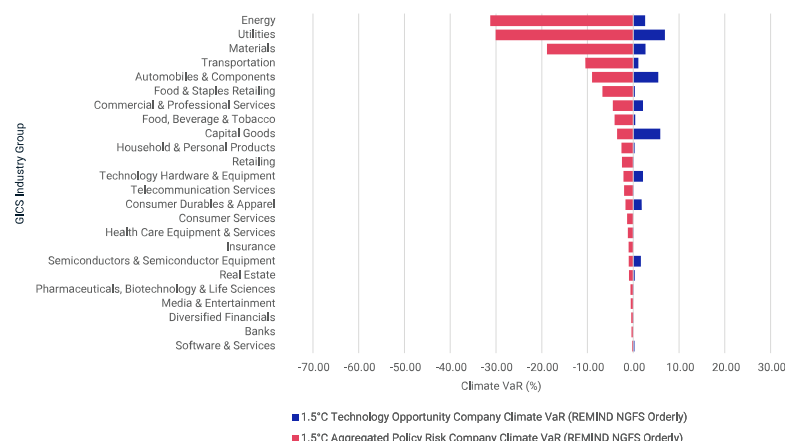
An example of using scenario analysis to measure climate risk

The average energy company could lose nearly a third (31%) of its total value if policymakers take decisive action to limit global warming to 1.5°C by midcentury but could lose twice as much if the transition were delayed, according to a scenario analysis by MSCI ESG Research that illustrates how investors can stress test portfolios for climate risk using scenarios developed by NGFS.²⁵

- » Waiting to cut emissions until 2030 could double (to 61%) the loss in value for a company, which in a delayed transition may confront the need to cut more carbon emissions in less time if policymakers imposed limits on emissions in line with the goal of limiting warming to 2°C.
 - The so-called net-zero 2050 scenario assumes that the planet limits global temperature rise to 1.5°C through a combination of strict policies and innovation, and that the U.S., EU and Japan reach net-zero emissions for all greenhouse gases.
 - The delayed transition assumes annual emissions do not fall until 2030, followed by policies that cut emissions with the goal of keeping temperature rise to 2°C; a scenario in which risks of the transition could impact companies more suddenly.
- » The analysis examines changes in value for a hypothetical portfolio in both an early and late transition, which are among the six scenarios developed by NGFS.
 - The average software company risks losing less than 1% of its value in a net-zero 2050 scenario, which the analysis suggests might lead to a rise in value for technology hardware, semiconductors and other less-carbon-intensive businesses.
 - The delayed transition carries risk for emissions-intensive companies, but it carries risks for companies in other sectors as well.
 - A delayed transition could see food and staples retailers lose as much as 33% of their value, up from 6.7% in an early transition, with the added risk coming mainly from the need for abrupt cuts in emissions tied to their electricity consumption.

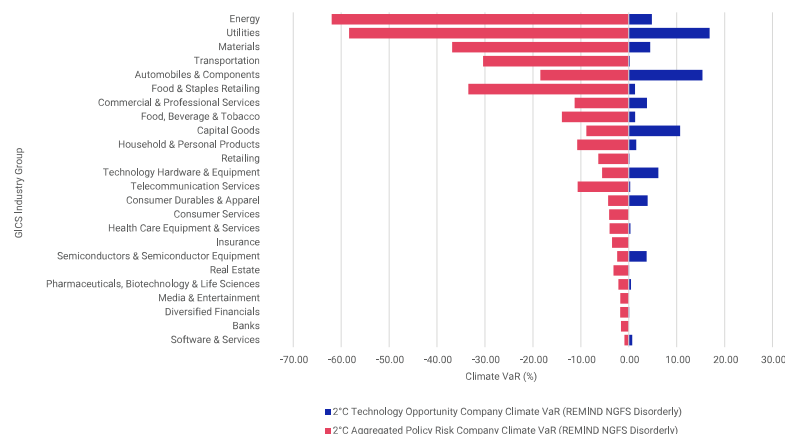
Early action risks cluster in energy and utilities

Source: MSCI ESG Research



Late action carries highest price tag

Source: MSCI ESG Research



²⁴ See, "Foundations of Climate Investing: How Equity Markets Have Priced Climate-Transition Risks," MSCI ESG Research, Sept. 1, 2021

²⁵ Stress Testing Portfolios for Climate-Change Risk, MSCI ESG Research, Oct. 7, 2021, available at <https://www.msci.com/www/blog-posts/stress-testing-portfolios-for/02785189682>

Use practical approaches for managing climate risk more actively

Potential strategies for asset owners to consider include:

- » Engagement that encourages companies to align with net-zero emissions based on a 1.5°C temperature-rise scenario
 - That includes putting in place policies and transition plans that commit companies to net-zero GHG emissions across their value chains by no later than 2050.
- » Divestment from companies with stranded assets
 - Asset stranding could result from regulation, shift of social norms and the falling costs of clean solutions that could replace emission-heavy technologies.
 - A potential risk-mitigation strategy is to exclude fossil fuel companies exposed to such potential losses, although there might be practical limits to how much an investor wants to deviate from a broad market portfolio.
- » Exclusion of bottom-percentile companies by emissions from the portfolio
 - By filtering out underperforming companies based on climate-risk measures such as MSCI's Climate Value-at-Risk or Low Carbon Transition Score.
- » Tilting toward low emitters
 - By increasing the weight of companies positively exposed to a potential low-carbon transition and decreasing the weight of companies that could potentially be exposed to greater risks in the event of a low-carbon transition, while maintaining the broad market exposure of the portfolio.
- » Portfolio optimization targeting reduced levels of transition risk and limited tracking-error risk
 - Asset owners could also use optimization techniques to rebalance portfolios, where the goal is to reduce the portfolio's climate risk while taking into consideration a tracking-error budget and other potential constraints such as constraints on portfolio duration or sector allocation.

See: "Net-Zero Alignment: Managing Portfolio Risk Along the Net-Zero Journey," MSCI ESG Research, April 2022.



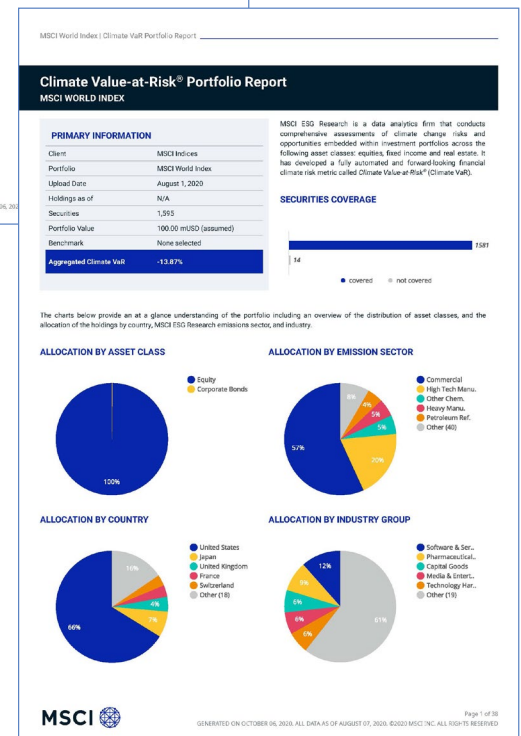
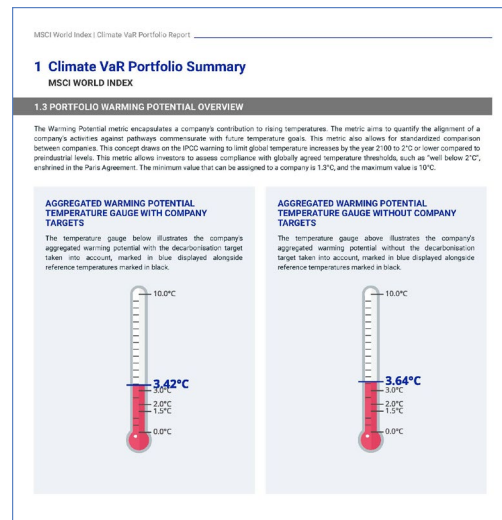
How MSCI can help

Climate Value-at-Risk (Climate VaR)

from MSCI ESG Research is designed to help asset owners link scenario analysis to portfolio impact by delivering a forward-looking, return-based metric on listed companies and their publicly traded securities. Asset owners can use Climate VaR to inform risk management by exploring the effect of climate change on risk, return and valuation.

» **MSCI's Real Estate Climate Value-at-Risk** is designed to provide a forward-looking and return-based valuation assessment to measure climate related transition and physical risk in commercial real estate portfolios.

MSCI's Low Carbon Transition Data enables investors to assess current and potential exposure to climate transition risks and opportunities through companies' operations and business models. Asset owners can use the data to gauge the vulnerability of companies' operations and business models based on their Scope 1, 2 and 3 emissions, as well as companies' exposure to clean solutions and their ability to transition to a low-carbon world.



For more on managing climate risk in investment portfolios, see "Net-Zero Alignment: Managing Portfolio Risk Along the Net-Zero Journey," MSCI ESG Research, April 2022, available at <https://www.msci.com/www/research-paper/net-zero-alignment-managing/03147524351>

Explore **MSCI's Climate and Net-Zero Solutions**

An aerial photograph of a large industrial complex, possibly a steel mill or refinery, with numerous smokestacks emitting thick white smoke. In the foreground, a large yellow and red crane is visible. The entire image has a blue color overlay.

6. Use engagement,
proxy voting,
divestment
and policy
advocacy to **spur
reductions in
emissions**

Among the critical levers that asset owners can use to align their investments with net-zero is to attempt to influence portfolio companies to align with their net-zero commitment as called for by NZAOA.²⁶ That includes acting to effect change through shareholder engagement and proxy voting.

Members of the NZAOA commit to set targets to conduct engagement in at least two of the following forms:

- » Corporate engagement, either directly with portfolio companies or through coalitions such as Climate Action 100+.
- » Sector and value chain engagement, in which asset owners engage numerous companies and stakeholders from the same sector or value chain.
- » Position-paper contribution, in which the asset manager either individually or in collaboration with others endorses or publishes position papers on pertinent climate topics in line with NZAOA ambitions.

Asset manager engagement to assess the manager's efforts to mitigate climate risk and management of climate risk and opportunities, as well as the manager's stewardship and public messaging on climate change.

Identify companies for climate engagement

- » Consider using forward-looking metrics to differentiate among companies in each sector based on their climate trajectories and develop priorities for engagement accordingly.
 - Members of the NZAOA commit to identifying either 20 companies that generate the highest emissions in their portfolios or companies responsible for 65% of owned emissions and to ensuring those companies are covered by either direct, collaborative or their asset manager's engagement activities.
 - Among the requests to companies in such engagement are that companies immediately put into place policies and transition plans that commit the company to net-zero GHG emissions across their value chains no later than 2050 and to support the transition to a net-zero world.

Investors should develop an engagement strategy that supports their overall net-zero strategy, with the goal of driving real-economy decarbonization, according to GFANZ, which has proposed a series of recommended engagement topics that include:

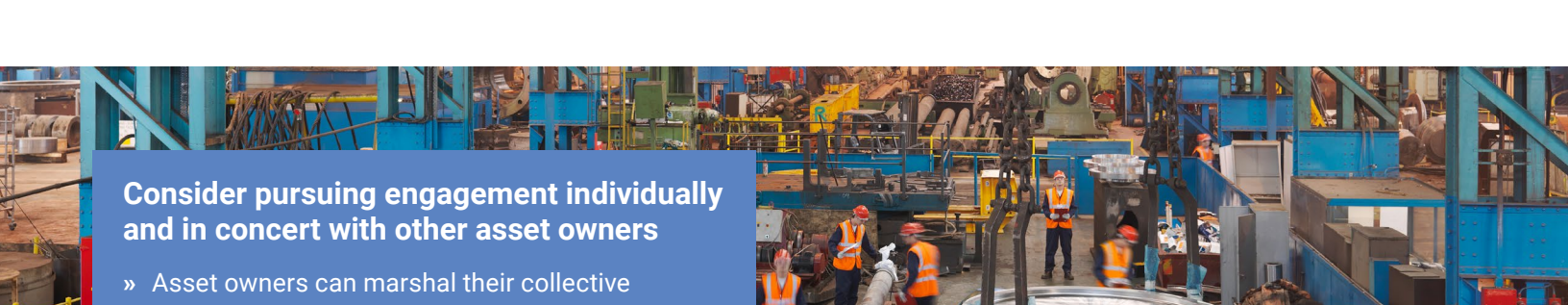
- » Collection and/or disclosure of improved transition-related data.
- » Encouraging net-zero commitments and development of transition plans.
- » Monitoring and supporting actions pursuant to net-zero transition plans.

In addition, asset owners can discuss expectations and provide feedback to portfolio companies in the appropriate governance or leadership forums, as well as include requirements in requests for proposals on asset managers' net-zero activities, including climate-related proxy voting, engagement approaches and methodologies to assess carbon exposures, GFANZ notes.

For the complete list of examples and recommendations from GFANZ, see "Financial Institution Net-zero Transition Plans, Recommendations and Guidance," GFANZ, June 2022.

Members similarly pledge to engage asset managers to conduct climate engagement with portfolio companies, cast proxy votes on directors and climate resolutions, and publicly commit to support the transition to net-zero by 2050 in line with no- or low-overshoot scenarios for limiting the rise in average temperatures to 1.5°C.

²⁶ "The Future of Investor Engagement: A call for systemic stewardship to address systemic climate risk," UN-convened Net-Zero Asset Owner Alliance, April 2022, available at https://www.unepfi.org/wordpress/wp-content/uploads/2022/03/NZAOA_The-future-of-investor-engagement.pdf



Consider pursuing engagement individually and in concert with other asset owners

- » Asset owners can marshal their collective influence via coalitions such as Climate Action 100+, an investor initiative aimed at ensuring the largest corporate GHG emitters act to address climate change.²⁷
- Participants in Climate Action 100+ agree to ask portfolio company boards and senior management to:
 - Implement a strong governance framework for climate change risk.
 - Act to reduce GHG emissions across the value chain, consistent with the goal of limiting temperature rise to 1.5°C, by moving toward net-zero emissions by 2050 at the latest.
 - Strengthen climate-related financial disclosures, in line with the TCFD

Engagement has yet to be successful at a large scale to drive decarbonization across a broad investment universe, according to an analysis by MSCI ESG Research of climate proposals at companies in the U.S. energy and utilities industries over the four years that ended in 2021.

While asset owners have succeeded in influencing companies' climate policies in specific cases, the evidence suggests that engagement may prove more productive when pursued by investors in concert. The 38 U.S. companies targeted by Climate Action 100+ included in their proxy statements an average of 8.3 climate-related shareholder proposals over the four years that ended in December 2021.²⁸ That compares with an average of 3.9 climate proposals for the 506 U.S. companies that had a least one shareholder proposal.

The average market capitalization of the 38 companies (USD 99.9 billion) was somewhat higher than the larger control group (USD 68.3 billion). While this may not prove causality, it shows that U.S. companies on the Climate Action 100+ list experienced a higher frequency of shareholder engagement on climate.

If engagement plateaus, consider using proxy voting to hold companies accountable for progress toward addressing climate change.

- » Consider support for shareholder proposals that are aligned with your net-zero goals and long-term shareholder interests.
 - That may include resolutions reasonably designed to drive better carbon disclosures, encourage more credible climate strategies, enhance shareholder engagement and drive adoption of credible net-zero strategies in line with science-based 1.5°C scenarios.
 - Climate Action 100+, for example, flags shareholder proposals and other votes for investors to consider during proxy season.
 - Consider encouraging companies to hold follow-up votes designed to help shareholders assess their efforts to eliminate or reduce GHG emissions over time.

Develop guidelines to inform decisions whether to divest in instances where engagement fails

- » Consider divestment as a last resort in an engagement strategy that does not produce the change requested, such as recommended by NZAOA.
 - NZAOA members agree to consider dropping companies in instances where engagement fails and to sell, by 2025, their shares of companies that have ties to either thermal coal or oil sands.

²⁷ See "How We Work," Climate Action 100+, available at <https://www.climateaction100.org/approach/how-we-work/>

²⁸ See "Net-Zero Alignment: Objectives and Strategic Approaches for Investors," MSCI ESG Research, September 2021

How investors are approaching coal divestment

Asset owners who consider divesting from fossil fuels face a range of considerations, including whether to divest fully or partially, or whether to divest only certain asset classes. The table below summarizes some of the criteria developed by institutional investors to guide divestment of coal and tar sands. The data suggests both the scope of the task of divesting and the potential to inform decision-making that developing such criteria can offer.

Frequently used criteria for coal divestment

See coalpolicytool.org for comparisons of coal divestment policies, as well as coalexit.org for coal expansion data.

	Financing of coal mines, plants and infrastructure projects	Development of new coal plants	Coal share of revenue or power production	Annual thermal coal production (megatons) or total coal-based installed capacity (MW)	Coal phaseout commitment expectations
Examples of exclusion thresholds	End project finance	Ban if adding >300 MW to the grid	Ban if >20%	Ban if production >10MT or installed capacity >10MW	2030 for OECD and EU 2040 for rest of world

Set targets for policy engagement

Consider advocating for national policies designed to speed the transition to a net-zero economy.

- » Both individually and in concert with other asset owners, consider urging governments to incentivize investment and advance climate action by:
 - Strengthening national net-zero targets that include credible decarbonization strategies for varied sectors.
 - Curbing the ability of carbon-intensive companies to pollute at other companies' expense, such as through policy-based mechanisms for pricing the externalities of carbon emissions.
 - Eliminating subsidies for fossil fuels, requiring companies to internalize the costs of carbon emissions and tightening standards for energy efficiency.
 - Putting a price on carbon.
 - Continuing to introduce decision-useful climate disclosures for both listed and unlisted companies.
 - Incentivizing investment in renewable energy and storage, carbon capture and storage, and other green solutions.

- Acting to protect forests and other carbon sinks and to preserve biological diversity.
- Incentivizing investment in adaptation that protects communities most at risk from the effects of a changing climate.

Members of the NZAOA agree to contribute to advocacy that aims to align national climate commitments with net-zero by 2050, to promote policies designed to eliminate fossil-fuel subsidies and speed the achievement of net-zero across carbon-intensive sectors, and to require mandatory climate reporting pursuant to the TCFD.

- » The alliance encourages members to engage politicians and policymakers, attend UN-sponsored climate talks, leverage U.N. platforms such as GFANZ, and pursue climate advocacy via, among other things, delivering messages via the news media.
- » GFANZ recommends that investors conduct internal audits of direct and indirect policy positions to ensure their alignment with the investor's net-zero commitments and the overall transition to a net-zero economy.²⁹

²⁹ See "Financial Institution Net-zero Transition Plans, Recommendations and Guidance," GFANZ, June 2022, available at https://assets.bbhub.io/company/sites/63/2022/06/GFANZ_Recommendations-and-Guidance-on-Net-zero-Transition-Plans-for-the-Financial-Sector_June2022.pdf

An aerial photograph of a large offshore oil rig in the middle of a rough sea. The rig is a complex of metal structures, including a central platform and several large derrick-like structures extending outwards. Several support vessels, including tugboats and supply ships, are positioned around the rig. The water is dark and turbulent, with white foam from the waves. The overall color palette is dominated by dark blues and greys, with some highlights from the rig's structures and the white foam of the waves.

7. Commit to climate- related financial reporting

Avail yourself of the TCFD reporting framework

- » Report climate-related financial information according to the TCFD's four pillars annually.
 1. Governance: Disclose the company's governance and climate-related risks and opportunities.
 2. Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material.
 3. Risk management: Disclose how the company identifies, assesses and manages climate-related risks.
 4. Metrics and targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.
- » Members of the NZAOA agree to report on their progress toward intermediate targets annually, both internally to the alliance and publicly.
 - The report should include the emissions profiles of portfolios and reductions in emissions achieved.

Report the key information the TCFD recommends for each of its pillars

» Governance

- Disclose governance around climate-related risks and opportunities.
 - Describe board-level oversight of climate-related risks and opportunities.
 - Describe management's oversight.

» Strategy

- Disclose the actual and potential impacts of climate-related risks and opportunities on businesses, strategy and financial planning where such information is financially relevant.
 - Describe the climate-related risks and opportunities the company has identified over the short, medium and long term.
 - Describe the likely impact of those risks.
 - Describe the resilience of the company's strategy under varied climate scenarios.



» Risk management

- Disclose how your organization identifies, assesses and manages climate-related risks.
 - Describe the company's processes for identifying and assessing climate-related risks.
 - Describe the process for managing those risks.
 - Describe how the company integrates climate-related risk into its overall risk management.

» Metrics and targets

- Disclose the metrics and targets you use to assess and manage relevant climate-related risks and opportunities where such information is financially relevant.
- Disclose the metrics the company uses to assess climate-related risks and opportunities.
- Disclose the company's GHG emissions.
- Describe the company's climate targets.

"TCFD-based Reporting: A Practical Guide for Institutional Investors" is designed to support investors in reporting their climate-related risk management processes according to the TCFD's recommendations. View it [here](#).

How MSCI can help

Investors also can use Climate Risk Reporting from MSCI to streamline climate risk management processes within existing workflows and to align with the recommendations of the TCFD. Climate Risk Reports are available via either self-service or as a managed service.



Standard Templates

Standard best-practice MSCI ESG reporting templates that meet different use cases



Self-Service Reporting

Generate ESG portfolio reports **on demand using Excel and ESG Manager**



Batch Reporting

Automate your portfolio report generation and delivery across tens or thousands of portfolios



Customization

Customize analytics, reports and formulas based on client requirements



Do it Yourself

Use MSCI ESG **data feeds, APIs** and portfolio **aggregation methodology** to build your own

Managed Service

[Learn more about how MSCI can help you streamline climate risk reporting](#)

An aerial photograph of a river meandering through a verdant landscape. The river, appearing as a dark, winding ribbon, cuts through a series of terraced fields that are planted in rows of crops, likely rice. The fields are a vibrant green, and the overall scene is bathed in a soft, golden light, suggesting either early morning or late afternoon. The river's path is irregular, with several sharp turns and loops. In some areas, the river flows straight, while in others, it forms a wide, gentle curve. The terraced fields are meticulously arranged, showing a clear pattern of agricultural planning. The background is a mix of more fields and some denser, darker green areas that could be forests or uncultivated land. The overall composition is a harmonious blend of natural and human-made elements.

Appendix

I. The Paris Agreement and the Glasgow Pact

The Paris Agreement is an international climate accord. The agreement, which was adopted in December 2015 and took effect the following November, aims to reduce global GHG emissions in an effort to limit the rise in average temperatures this century to well below 2°C, preferably no more than 1.5°C, above preindustrial levels.

The accord includes commitments by nearly 200 countries to a series of increasingly ambitious cuts in greenhouse gas emissions; countries agree to ratchet up the steps they will take to reduce emissions, known as nationally determined contributions, every five years. It also includes a framework for developed nations to assist developing countries with climate mitigation and adaptation.

The agreement adopted at the COP26 climate conference in Glasgow reaffirms the temperature thresholds of the Paris Agreement but accelerates the timetable for addressing climate change by calling for action “in this critical decade” and for countries “to revisit and strengthen” their 2030 emissions-reduction targets by the end of this year.

The Glasgow pact specifically:

- » Addresses the gap between countries’ current climate commitments and the goal of keeping warming to 1.5 °C, noting that implementation of all submitted nationally determined contributions is estimated to be 13.7% above the 2010 levels in 2030.
- » Calls for accelerating efforts toward the phase-down of unabated coal power and inefficient fossil fuel subsidies, recognizing the need for support toward a just transition.
- » Recognizes commitments from both the public and private sectors to work together to accelerate sectoral action by 2030.
- » Calls for multilateral development banks, other financial institutions and the private sector to deliver the scale of resources needed to achieve climate plans.
- » Reiterates the USD 100 billion-per-year financing commitment by developed countries to support developing countries in dealing with climate impacts and calls for significantly increasing such funds.
- » Urges developed countries to at least double their collective provision of climate finance to help developing countries mitigate and adapt to the effects of climate change.
- » Emphasizes the importance of protecting, conserving and restoring nature and ecosystems, including forests and other ecosystems that act as natural carbon sinks.

II. The regulatory landscape

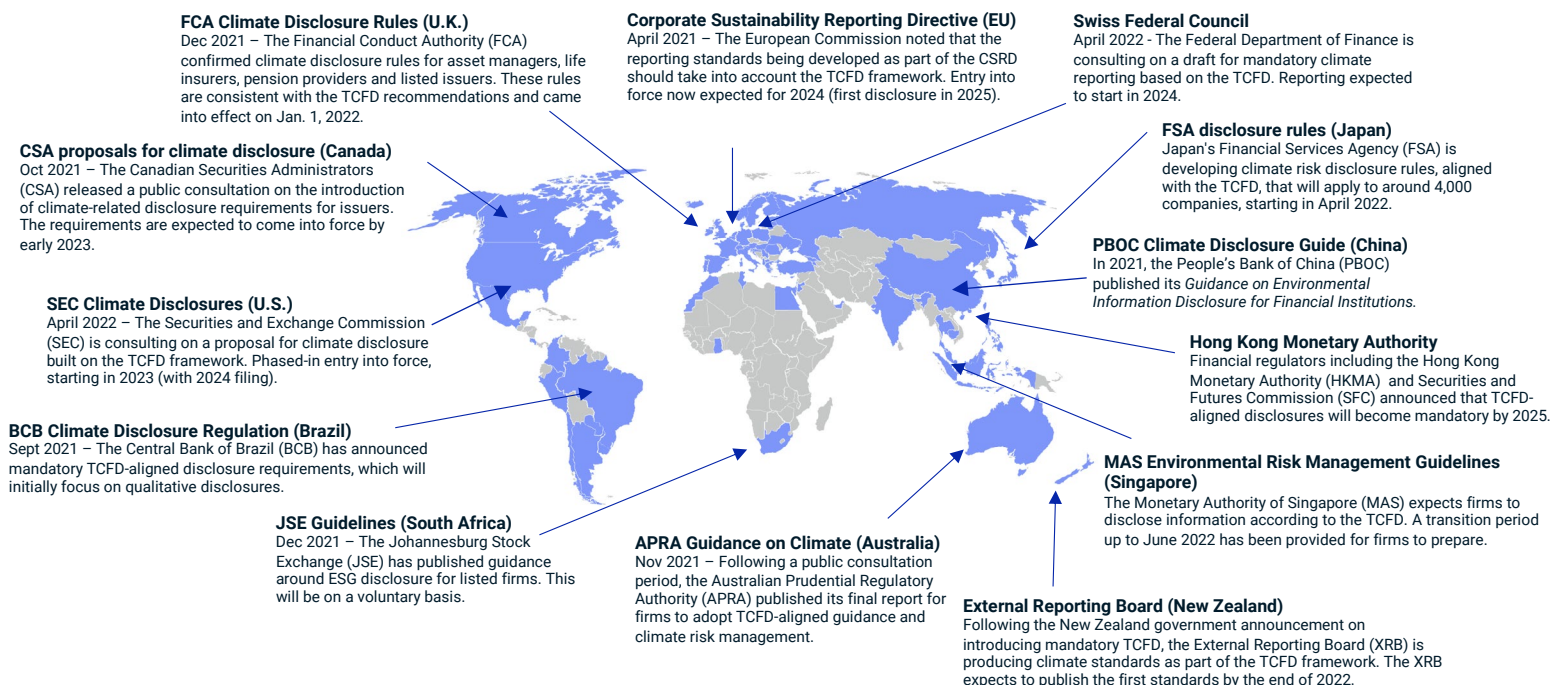
Financial regulators in every region are intensifying their focus on helping investors assess how climate-related risk may affect a company's financial performance, strategy and business. Regulators are focusing on the physical risks of climate change such as extreme weather and the risks to companies from the transition to a net-zero economy. Broadly speaking, regulators are addressing climate change on several fronts.

- » **Disclosure.** Financial regulators in at least 10 major economies are introducing climate change disclosure rules for listed companies, large firms, financial institutions or firms that fall within some combination of these categories. Financial regulators and standard-setting organizations such as the International Sustainability Standards Board (ISSB) are harmonizing around the TCFD, which is designed to elicit decision-useful, forward-looking information from corporate climate change disclosures. Though the rules vary in their proposed details, companies will be increasingly required to disclose how they take climate change into account in their governance, risk management and strategy, as well as their plans to achieve any climate targets or commitments they have set.
- » **Transparency.** The EU has introduced a series of requirements to enhance the transparency of methodologies for climate and ESG-related benchmarks, including those designed to align with the goals of the Paris Agreement.
- » **Systemic risk.** Central banks and finance ministers across the world are calling on banks and other financial institutions under their supervision to use climate-related scenario analysis to stress-test their portfolios for climate physical and transition risk, and to report on their exposure.

TCFD-aligned rules coming online in 2022

Source: MSCI ESG Research

January-February	March-April	May-June	July-August	September-October	November-December
U.K. Financial Conduct Authority rules on TCFD come into force Singapore Requirements for issuers to adopt climate reporting by the SGX comes into force	U.S. Securities and Exchange Commission publishes its climate disclosure rule for public comment Switzerland Initiates consultation on ordinance on climate reporting by large companies Japan Financial Services Agency will require prime-segment listed companies to disclose against TCFD	India Requirement for largest listed issuers to disclose their business-sustainability reports become mandatory for fiscal year 2022-2023	Hong Kong The Securities and Futures Commission requires all large fund managers to disclose their climate-related risks	EU First set of reporting standards for the Corporate Sustainability Reporting Directive will be adopted	New Zealand The External Reporting Board will publish first set of climate reporting standards Brazil The Central Bank of Brazil's regulation on climate-risk disclosures will come into force



Regulatory authority is a member of the Network for Greening the Financial System (NGFS)

In March 2022, the ISSB proposed draft standards for both climate- and sustainability-related disclosure that the organization has said it aims to finalize this year.³⁰

Mapping climate change disclosures to proposed regulatory requirements in Europe, the United Kingdom and the U.S.

Financial regulators in nearly every region are increasingly using the TCFD as a baseline for investment-relevant climate disclosures. The information that follows summarizes disclosure frameworks under development in Europe, the U.K. and U.S.

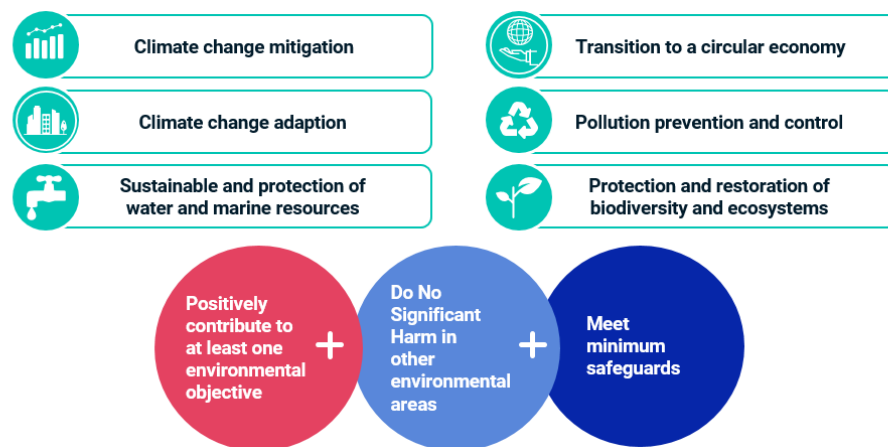
Europe

The EU's Corporate Sustainability Reporting Directive (CSRD),³¹ which is expected to take effect in 2023 (with first disclosures in 2024), would require listed companies to publish climate-related information in three main areas:

- » GHG emissions across all emissions scopes (Scopes 1, 2 and 3) together with the intensity of such emissions (as expressed by such measures as emissions against revenue);

EU green taxonomy environmental objectives

Source: MSCI ESG Research



³⁰ See "Exposure Draft and comment letters: General Sustainability-related Disclosures," IFRS Foundation, available at <https://www.ifrs.org/projects/work-plan/general-sustainability-related-disclosures/exposure-draft-and-comment-letters/>

³¹ Corporate sustainability reporting, European Commission, available at https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en

- » Decarbonization targets and implementation, presented as a pathway to net-zero; and
- » Strategy, including the effects of climate change on their business model and strategy, the resilience of their business model and strategy toward climate-related risks, and the impacts of their business model and strategy on climate change.

The CSRD, which would replace the EU's Non-Financial Reporting Directive (NFRD), marks an effort by the European Commission to improve the comprehensiveness of environmental, social, governance and sustainability disclosures and to standardize such disclosures for the benefit of investors. CSRD disclosures, which would need to be audited, would be required to be presented in a machine-readable format.

The EU also has developed a classification system known as a green taxonomy, which establishes criteria for economic activities that make a substantial contribution to the EU's climate and environmental objectives. Financial institutions will have to report how their financing activities align with the taxonomy and companies falling under the CSRD (or NFRD currently) will have to report taxonomy eligibility, followed by full reporting in 2023. While there is still more work in progress to, potentially, allow for intermediate activities (greener but not yet green) to be financed, companies can use the current structure to plan and communicate their climate and environmental transition activities.

U.K.

The U.K.'s Sustainability Disclosure Requirement would require companies to disclose their sustainability risks, opportunities and impacts.³² The framework, which regulators are finalizing to take effect either next year or in 2024, will build on measures already taken or underway to implement disclosure rules aligned with the recommendations of TCFD while expanding the scope to cover wider sustainability topics beyond climate change. The U.K. is also developing its own version of a green taxonomy that would create a framework for investments that can be defined as environmentally sustainable.³³

U.S.

The Securities and Exchange Commission (SEC) has proposed climate change disclosure rules that would require listed companies to disclose climate-related risks, including their:³⁴

- » GHG emissions consistently, comparably and in a timely manner;
- » Direct and indirect emissions footprint, together with emissions throughout their value chain, or Scope 3, if material, or if the company has set an emissions-reduction target that includes such emissions;
- » How they intend to meet climate-related targets; and
- » Certain climate-related financial metrics in their audited financial statements.

The SEC's proposal would require climate change disclosure by the largest companies to be audited. The agency has said it intends to finalize the proposed rules, which would take effect starting with financial reports for 2023, later this year.

32 "Sustainability Disclosure Requirements (SDR) and investment labels," Discussion Paper DP21/4, Financial Conduct Authority, November 2021, available at <https://www.fca.org.uk/publication/discussion/dp21-4.pdf>

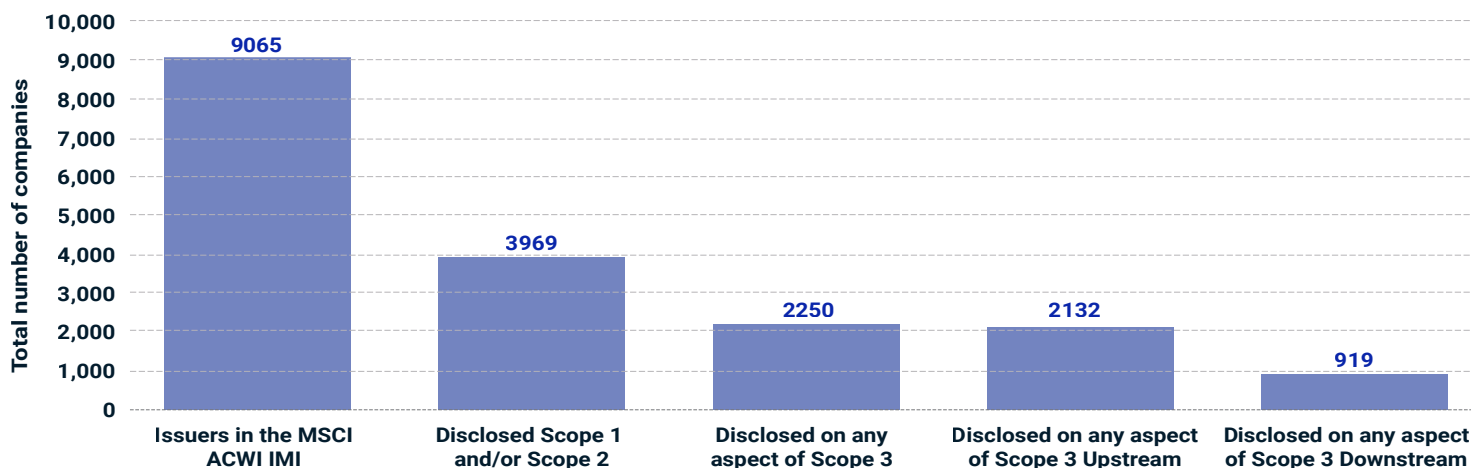
33 "Independent expert group appointed to advise Government on standards for green investment," HM Treasury, June 9, 2021, available at <https://www.gov.uk/government/publications/independent-expert-group-appointed-to-advise-government-on-standards-for-green-investment>

34 "The Enhancement and Standardization of Climate-Related Disclosures for Investors," Securities and Exchange Commission, March 21, 2022, available at https://www.sec.gov/rules/proposed/2022/33-11042.pdf?campaign_id=4&emc=edit_dk_20220322&instance_id=56372&nl=dealbook®i_id=67782774&segment_id=86186&te=1&user_id=a559844308bfbfd10cda8948a1fc49d2

As the chart below shows, more than half (57%) of the world's listed companies have yet to disclose any of their carbon emissions. Fewer still report emissions for their value chain. There also is little evidence that companies consider climate-related matters when preparing their financial statements, according to data compiled by Carbon Tracker, a nonprofit group that focuses on climate change.³⁵

Companies are providing less than the full picture of their carbon footprint

Source: MSCI ESG Research
Data as of Dec. 31, 2021



III. Carbon removal and offsets

Carbon offsets compensate for the release of emissions by reducing or preventing CO₂ in the atmosphere. Companies and investors can offset emissions in a variety of ways. They include planting trees, investing in renewables and capturing greenhouse gases like methane. One key question is whether the offset actually mitigates emissions: Buying renewable power is not an offset, but building a wind farm that would not be built but for the offset investment could, in fact, offset production of power from fossil fuels.

Though there is currently no global standard for carbon offsets or credits (a credit gives the holder the right to emit one ton of carbon), countries agreed at COP26 to implementation rules that hold the promise to create one. The mechanism would enable countries to link their emissions-trading systems, so that a company that is legally required to offset its emissions in one country could purchase a credit from a company in another country that emits less than its allowance in that country's national scheme. The buyer could use the credit for complying with its own emissions-reductions obligation. Markets for the trading of voluntary carbon credits – credits that allow polluters to neutralize their emissions footprint – may develop in parallel. In addition to national frameworks, the International Investors Group on Climate Change also has developed guidelines for the use and disclosure of offsets.

Depending on how developments play out, asset owners could begin to see the development of credible standards for offsets and a functional marketplace for carbon that contributes meaningfully to driving emissions toward net-zero and the preservation of nature. This includes carbon offsets that actually deliver on the promise of reducing GHG emissions by removing carbon from the atmosphere, such as by planting trees, or, for example, by replacing the burning of coal or other fossil fuels with wind turbines. With a growing number of companies coming under emissions-trading systems and demand for both carbon allowances and quality offsets growing, carbon credits themselves also are emerging as an investable asset that has the potential to contribute to capital formation for clean-energy companies.

³⁵ "Flying blind: The glaring absence of climate risks in financial reporting," Carbon Tracker, Sept. 16, 2021, available at <https://carbontracker.org/reports/flying-blind-the-glaring-absence-of-climate-risks-in-financial-reporting/>

IV. Financial industry climate alliances and initiatives

Capital-markets participants are committing to transition their portfolios to net-zero emissions by 2050. They are also forming alliances to enshrine commitments, deepen industry insight, share best practices and marshal their collective influence to address the risks and opportunities of climate change.

The Glasgow Financial Alliance for Net Zero (GFANZ).

A coalition of the COP26 Private Finance Hub, U.N. Framework Convention on Climate Change, Race to Zero Campaign and COP26 presidency that unites a series of net-zero initiatives from across the financial system to speed the transition to net-zero emissions by 2050 at the latest. Owners and managers of roughly 40% of the world's financial assets have pledged through GFANZ to align their portfolio with net-zero.

Race to Zero Campaign. A U.N.-led alliance of cities, regions, businesses, investors and higher-education institutions across the world that are committed to achieving net-zero emissions by 2050. Collectively, its members cover nearly 25% of global CO₂ emissions.

Net-Zero Asset Owner Alliance. A U.N.-convened international group of institutional investors who represent USD 9.3 trillion in assets and aim to align their portfolios with a 1.5°C scenario by 2050.

Net Zero Asset Managers Initiative. An international group of asset managers representing USD 57 trillion in assets under management who are committed to supporting investing in line with a 1.5°C scenario.

Net Zero Financial Service Providers Alliance. A global group of financial service providers who are committed to ensuring their products and services support a net-zero transition that aligns with a 1.5°C scenario.

Net Zero Investment Consultants Initiative. An international group of investment consultants who are committed to supporting their clients in achieving the goal of global net-zero emissions by 2050 or sooner in line with a 1.5°C scenario.

Net-Zero Banking Alliance. A U.N.-convened group of more than 55 banks from 28 countries with more than USD 37 trillion in assets who are committed to aligning their lending and investment portfolios with net-zero emissions by 2050.

Net-Zero Insurance Alliance. A U.N.-convened group of seven global insurance companies that believe their industry can play a key role in accelerating the transition to a net-zero economy, in line with the 1.5°C target of the Paris Agreement.

Building a Private Finance System for Net Zero. A strategy and voluntary framework for ensuring that financial decisions take climate change into account, led by Mark Carney, the U.N. special envoy and adviser to the U.K. prime minister for COP26.

The Net Zero Investment Framework. Developed by Institutional Investors Group on Climate Change (IIGCC), the framework offers a comprehensive series of actions for net-zero investing. Thirty-eight institutional asset owners and managers with a combined USD 8.5 trillion in assets are using the framework to commit to aligning with a 1.5°C net-zero target by 2050.

Network for Greening the Financial System. A global network of central banks and financial supervisors that aims to accelerate the scaling-up of green finance and develop recommendations for central banks' role for climate change.

Partnership for Carbon Accounting Financials. An initiative to develop a global accounting standard for GHG emissions that facilitates financial-industry alignment with the Paris Agreement.

Climate Action 100+. An investor-led coalition representing owners and managers of USD 68 trillion in assets that aims to ensure the world's largest corporate greenhouse gas emitters act on climate change.

Science Based Targets initiative. A partnership among CDP, United Nations Global Compact, World Resources Institute and World Wide Fund for Nature that is developing sector-specific net-zero targets in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement.

Paris Aligned Investment Initiative. An initiative led by the Institutional Investors Group on Climate Change that aims to help owners and managers of assets align their portfolios to the goal of the Paris Agreement by providing a common set of recommended actions, metrics and methodologies through which investors can align their portfolios with net-zero by 2050 or sooner.

Transition Pathway Initiative. An initiative led by owners and managers of more than USD 40 trillion that uses publicly disclosed company information to help asset owners assess listed companies' management of their GHG emissions and the risks and opportunities of the transition to a net-zero economy.

— V. Resources and further reading

Industry resources

- » [U.N.-convened Net-Zero Asset Owner Alliance Target Setting Protocol \(second edition\)](#). Details the actions members must take to enable a real-economy transition to net-zero in line with a 1.5°C pathway.
- » [The Global GHG Accounting and Reporting Standard for the Financial Industry](#). The financial industry reference for measuring financed GHG emissions.
- » [Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures, October 2021](#). Information for implementing the TCFD's recommendations.
- » [Task Force on Climate-related Financial Disclosures, Guidance on Metrics, Targets and Transition Plans, October 2021](#). Information for disclosing decision-useful metrics, targets and transition plan information and linking those disclosures with financial impacts.
- » [Financial Institution Net-zero Transition Plans, Recommendations and Guidance, GFANZ, June 2022](#). Introduces GFANZ's proposed global, across-sector recommendations and provides voluntary guidance on net-zero transition plans for financial institutions.
- » [Introductory Note on Expectations for Real-economy Transition Plans, GFANZ, June 2021](#). Introduces the work of GFANZ to support and accelerate the development of real-economy transition plans.

Resources from MSCI ESG Research

- » [Net-Zero Alignment: Objectives and Strategic Approaches for Investors](#). An overview of strategies for accelerating companies' decarbonization.
- » [Net-Zero Alignment: Portfolio Construction Approaches for Investors](#). A guide to building net-zero-aligned investment portfolios.
- » [Net-Zero Alignment: Managing Portfolio Risk Along the Net-Zero Journey](#). An overview of approaches to climate risk management in investment portfolios.
- » [TCFD-Aligned Climate Risk Reporting](#). How investors can use data and metrics from MSCI ESG Research to support reporting on the TCFD's recommendations.
- » [TCFD-Based Reporting: A Practical Guide for Institutional Investors](#). Support for investors who intend to follow the TCFD's recommendations in reporting their climate-related risk management processes.
- » [Foundations of Climate Investing: How Equity Markets Have Priced Climate-Transition Risks](#). An analysis by MSCI ESG Research of the relationship between the performance of companies and their carbon intensity over a seven-year period that ended Jan. 31, 2021.

- » [Breaking Down Corporate Net-Zero Targets.](#) An analytical framework to help investors untangle corporate decarbonization commitments.
- » [Stress Testing Climate Change Scenarios.](#) How companies in the MSCI Europe Index could be impacted by climate change.
- » [Stress Testing Portfolios for Climate Change Risk.](#) An example of scenario analysis using two of the six scenarios developed by the NGFS.
- » [Net-Zero in Practice: Unpacking the Net-Zero Asset Owner Alliance's Target-Setting Protocol.](#) Practical guidance on how to set targets at both the asset class and sector levels, together with an introduction to the target-setting protocol from the director of the United Nations Environment Programme Finance Initiative's investment leadership program and experts from both AXA and MSCI.
- » [Carbon Footprinting 101.](#) A practical guide to understanding and applying carbon metrics.

Equities

- » [How Equity Markets Have Priced Climate-Transition Risks.](#) An examination of the financial impact of climate-transition risk in global equity markets.
- » [Managing Climate Risk in Equity Portfolios: A Case Study.](#) How climate-related risks affected an actively managed portfolio, with a focus on different types of risks arising from the transition to a low-carbon economy and physical climate change.

Fixed income

- » [Managing Climate-Transition Risk in Credit Portfolios.](#) An examination of two approaches to reducing the exposure of credit portfolios to climate-transition risk.
- » [How Climate Change Could Impact Credit Risk.](#) How different climate scenarios could impact the five-year default probability of a large sample of dollar- and euro-denominated bond issuers.
- » [Climate Transition and Bonds: Risk or Opportunity?](#) An analysis of transition risk of investment-grade corporate-bond benchmarks and portfolios under a climate-policy scenario designed to limit the increase in temperature to 1.5°C.

- » [Why Is Climate-Transition Risk High in High Yield?](#) An analysis of transition risk of select U.S. corporate-bond and equity benchmarks under a climate-policy scenario designed to limit the increase in global temperature to 1.5°C.
- » [In Transition to a New Economy Corporate Bonds and Climate Change Risk.](#) An analysis of the financial materiality of climate-change risk for developed-market corporate bonds.

Private Assets

- » [Understanding Carbon Exposure in Private Assets.](#) An overview of climate-transition risk in private companies.
- » [Understanding Private Capital's Exposure to Carbon-Intensive Sectors.](#) An examination by MSCI ESG Research and Burgiss of estimated Scope 1 and 2 emissions of 1,625 unlisted companies in the energy, materials and utilities sectors.

Real estate

- » [Measuring Climate Risk in Real Estate Portfolios.](#) An analysis of climate transition and physical risks.
- » [Understanding Private Capital's Exposure to Carbon-Intensive Sectors.](#) Explores private equity's exposure to companies in the energy, materials and utilities sectors.
- » [Five Misconceptions About Climate Change Risk in Real Estate.](#) A look at misperceptions of how climate risk impacts the asset class.

Analytical tools and data

- » [MSCI Total Portfolio Footprinting.](#) A solution for measuring financed emissions that provides a comprehensive view of GHG emissions across asset classes.
- » [MSCI Implied Temperature Rise.](#) An introduction to this forward-looking metric for measuring portfolio alignment with climate targets.
- » [MSCI Climate and Net-Zero Solutions.](#) A set of tools to help investors understand how climate change could affect their portfolios, identify low-carbon investment opportunities, and set net-zero targets.

- » [MSCI Climate and Net-Zero Solutions Guide](#). Information for integrating and using our climate and net-zero solutions.
- » [Understanding MSCI Climate Indexes](#). A guide to using climate indexes from MSCI to build a consistent framework for integrating climate risk portfolio-wide.

Net-zero investing

- » [The MSCI Net-Zero Tracker](#). A quarterly report that indicates the collective climate progress of the world's listed companies.
- » [The Role of Capital in the Net-Zero Revolution](#). How investors can drive the transformation of the global economy that will be needed to prevent the perils of a warming planet.



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