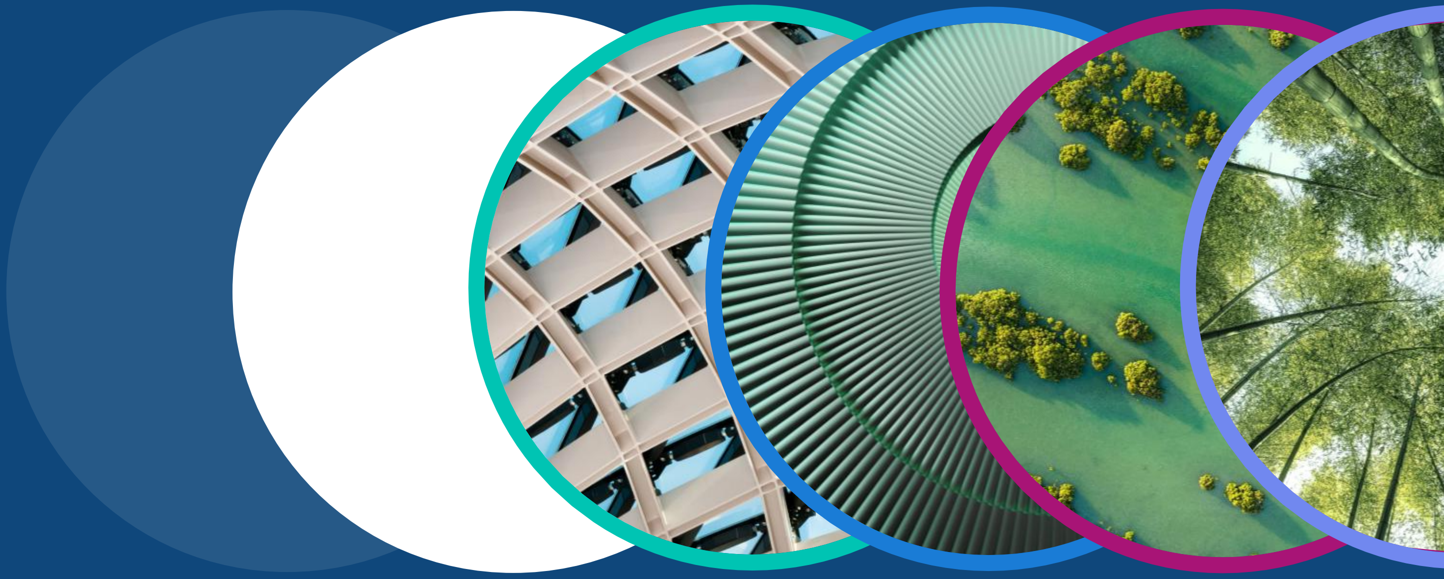
Transition Finance Tracker

A quarterly report on financing the shift to a low-carbon economy



Fourth quarter 2025

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Sections

Foreword

The 2026 World Cup will mark nearly six weeks of nonstop soccer this summer, crisscrossing 16 scenic locations across the U.S., Canada and Mexico. The breadth of geographies also offers a reminder of the multiplicity of physical hazards that communities across North America now face.

As this analysis shows, each of the 16 cities that will host the games confronts a mix of near- and long-term physical hazards. We've ranked them for each of the stadiums, not to forecast the weather but to show location-specific exposure to such hazards. The data won't tell you how to dress for the match (if you're fortunate enough to get tickets), but it — and much more granular data like it — could help you analyze the physical risks to your investment if you were in the market to finance a stadium or other infrastructure.

The report also takes a snapshot of two other topics on investors' radar. One is wonky: how should technology giants account for their energy purchases — a carbon-accounting question that is timely given community concerns over power-hungry data centers. The other is wonkier: calculating a ratio to illuminate how much low-carbon versus fossil-fuel energy is financed through corporate bond portfolios.

Along the way, we look at some of the latest data on the investment performance of climate funds (up in 2025) and the setting of corporate climate targets (also up). We highlight demand for carbon credits (up as well) by companies that are using them to both meet decarbonization commitments and, increasingly, satisfy compliance obligations.

Taken together, the data echoes the outlook by our colleagues, who note in their latest annual look at sustainability and climate trends that for the right technologies, declining costs are reinforcing competitiveness and driving the transition beyond any single policy cycle.

In short, there remains more than one energy transition, and capital continues to be guided by opportunity and risk, creating momentum of their own.

Linda-Eling Lee
Founding Director,
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Highlights

1. **AT&T Stadium and SoFi Stadium, Levi's Stadium and Hard Rock Stadium** top the list of 2026 World Cup locations based on their exposure to heat waves, rain-induced flooding and lightning, respectively, according to our analysis using MSCI GeoSpatial Asset Intelligence. Lincoln Financial Field, which opened in 2003 (hosting a soccer match between Manchester United and FC Barcelona), has the highest exposure among World Cup locations to subsidence, a long-term risk for that site.

2. **Listed climate-themed funds had a median return of 12.2% last year,** up from 5.2% in 2024. Assets in these funds reached USD 652 billion as of Dec. 31, 2025, up 16.4% from a year earlier.

3. The use of emissions credits obtained via power-purchase agreements has enabled tech giants such as Amazon, Alphabet, Microsoft and Meta to match against the overwhelming share of their reported emissions from purchased energy (Scope 2). That could change: A pending proposal by the Greenhouse Gas Protocol (GGP) would tie Scope 2 reporting more tightly to the times and locations where companies' energy consumption occurs.

4. **Investors in corporate bonds can have a wide range of exposure to financing low-carbon energy relative to fossil-fuel energy.** A hypothetical portfolio tracking an index designed to decarbonize in line with the goals of the Paris Agreement can finance USD 2.57 of low-carbon energy for every dollar of fossil-fuel energy it supports, while one that tracks an emerging-market bond index finances USD 0.03 for every dollar.

5. **Nearly one-fifth (19%) of listed companies had a climate target validated by the Science Based Targets initiative (SBTi) as of Dec. 31, 2025,** up from 14% a year earlier. Almost a third (32%) of companies have set a net-zero emissions target, though not necessarily one validated by the SBTi, roughly unchanged from a year earlier.

6. **An estimated 79% of listed companies disclosed their Scope 1 and/or Scope 2 emissions as of Dec. 31, 2024,** up from 76% a year earlier. A majority (56%) of companies reported at least some of their Scope 3 emissions, up from 51% over the same period.

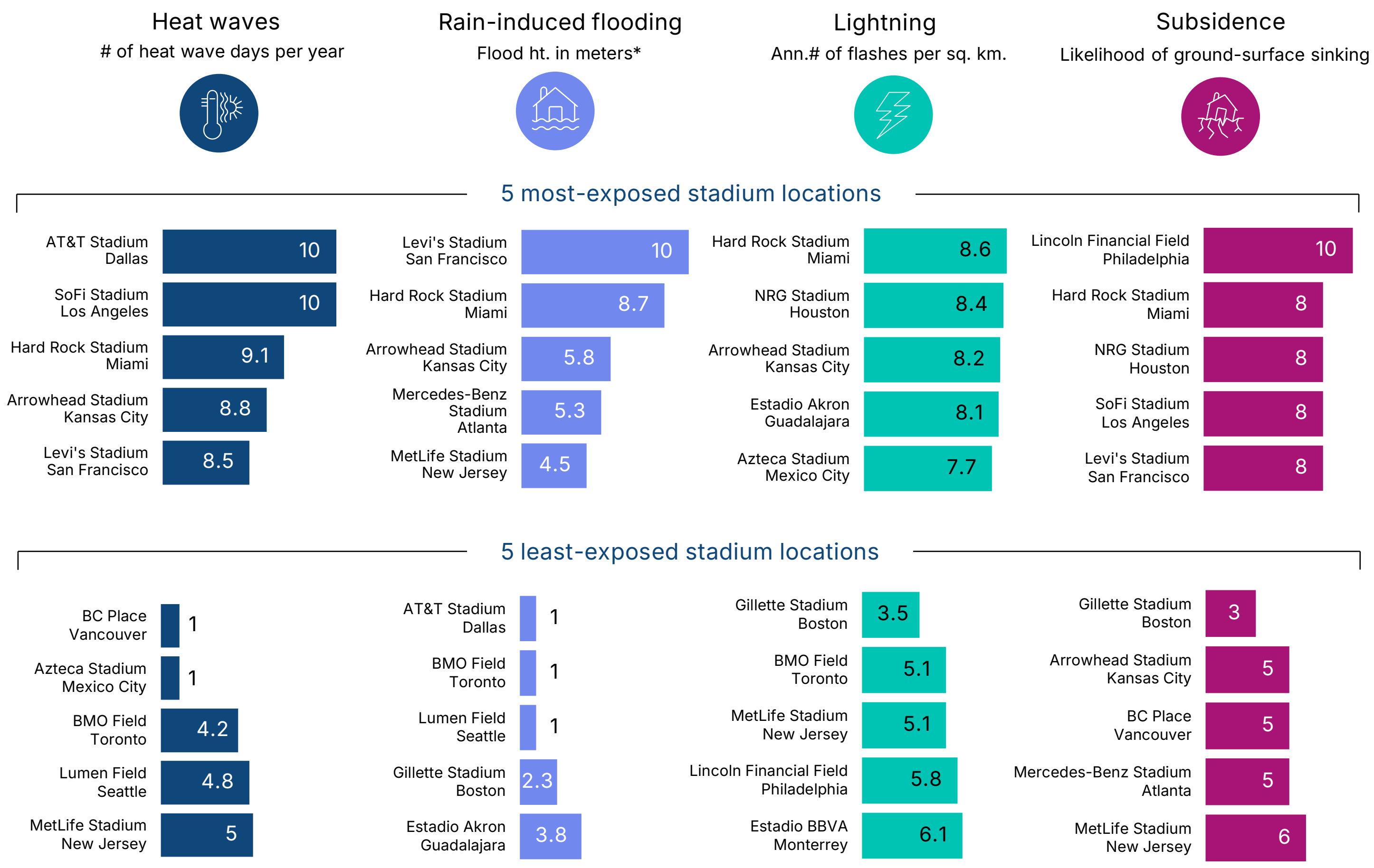
7. **Companies retired carbon credits totaling 202 million tonnes of CO2-equivalent (MtCO2e) emissions in 2025, the fourth consecutive year of growth and the highest total since 2021.** Shell retired 10.4 MtCO2e of carbon credits last year, the most of any company globally and the oil major's third consecutive year leading global carbon-credit retirements.

8. **The emissions trajectories of the world's listed companies imply warming of 3°C (5.4°F) above preindustrial levels this century,** based on their aggregate emissions, sector-specific carbon budgets and climate targets as of Dec. 31, 2025.

What can physical hazard data tell us about the 2026 World Cup?

- The 2026 World Cup kicks off June 11 at 16 stadiums across the U.S., Canada and Mexico, showcasing the diversity of local soccer cultures and natural beauty across the continent. Each venue's location also highlights something else: vast differences in their exposure to physical hazards.
- The scorecards rank stadiums slated to host the games by current exposure to three acute hazards: heat waves, rain-induced flooding and lightning, using MSCI GeoSpatial Asset Intelligence, which investors use to assess location-specific physical risk globally.[1] (Hazard intensity values are normalized to each hazard type and expressed on a scale of 1 to 10, with 1 indicating very low exposure and 10 very high exposure.) We also show exposure to subsidence, which estimates the long-term potential for ground-surface sinking and, like all chronic hazards, is slow to manifest.
- For investors, location-specific exposures of assets to physical risk are becoming a piece of critical market intelligence that is especially relevant to valuing infrastructure and other real assets. If you're financing a stadium, you may want to quantify the value of investing in heat-resistant materials, for example, or know the likelihood that the facility could sink over time.

Physical exposure by stadium location (normalized by hazard, 1-10)



* Return period of 100 years

Source: MSCI Sustainability & Climate Research, using MSCI GeoSpatial Asset Intelligence – Physical Risk - Hazard Exposure data as of Dec. 31, 2025. MSCI Sustainability & Climate products and services are provided by MSCI Solutions LLC in the United States and MSCI Solutions (UK) Limited in the United Kingdom and certain other related entities.

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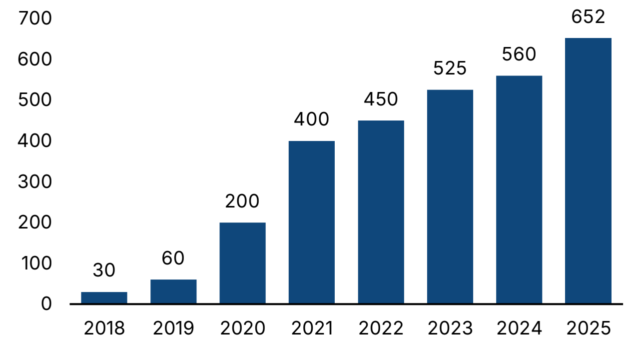
1. MSCI's physical-risk module evaluates assets exposure to 29 hazards: 11 chronic hazards and 18 acute hazards at more than three million asset locations globally.

How have climate funds performed?

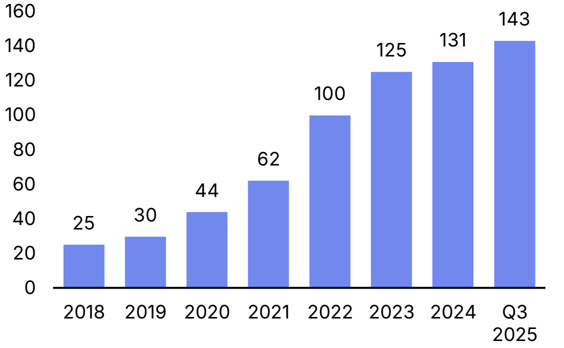
- Investor backing for technologies such as alternative energy, energy efficiency, batteries and smart grids has held up, even as governments have pulled back support from climate policies.
- Listed climate-themed funds had a median return of 12.2% last year, up from 5.2% in 2024. Assets in listed climate-themed funds reached USD 652 billion as of Dec. 31, 2025, up 16.4% from a year earlier.
- In addition to the listed universe, there were about 227 climate-named private-capital funds globally — including private equity, private credit, infrastructure and venture capital — with combined capitalization of about USD 143 billion, as of Sept. 30, 2025.

Capital in climate funds (USD billion)

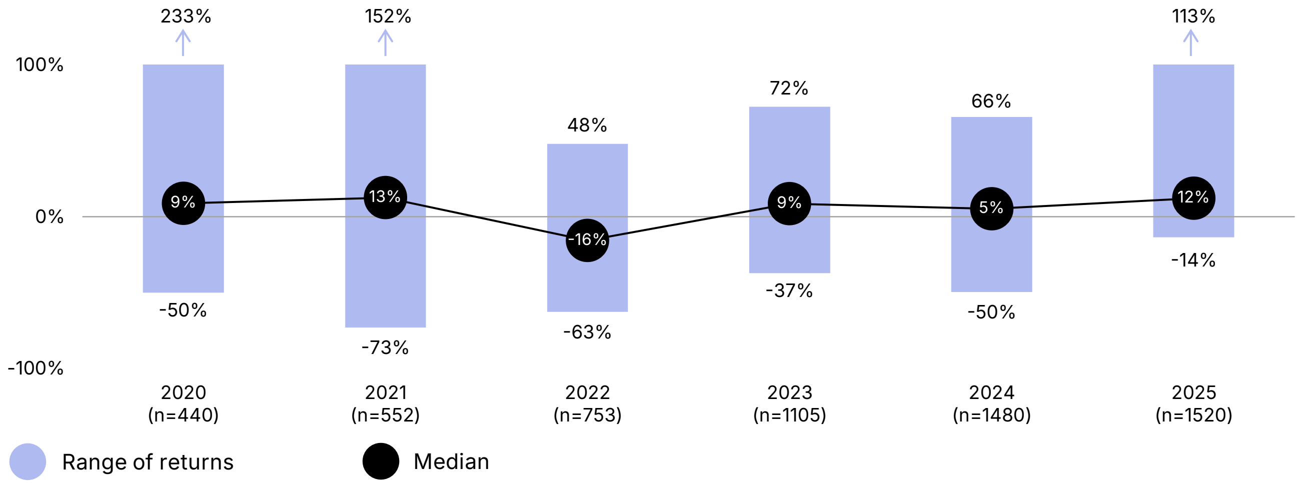
Publicly traded climate funds (assets under management)



Private climate funds (cumulative capital raised)



Publicly traded climate (distribution of calendar year returns)



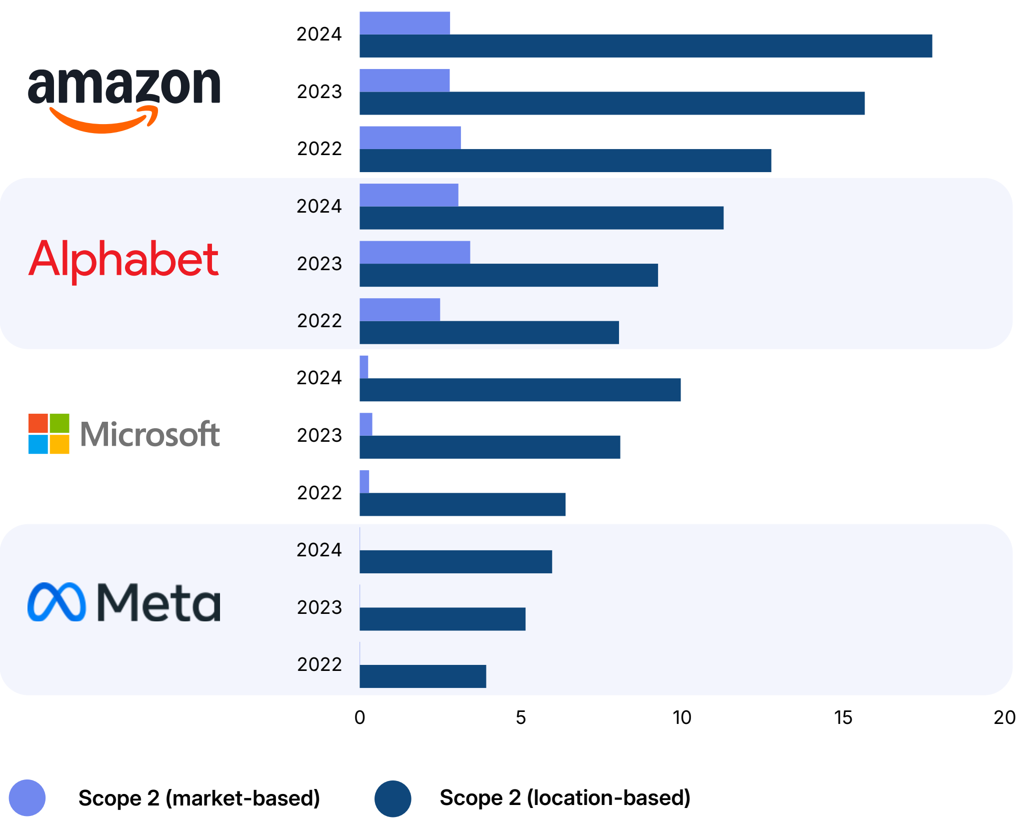
Source: MSCI Sustainability & Climate Research and MSCI Private Capital Universe. Public funds data as of Dec. 31, 2025. Private funds data as of Sept. 30, 2025. Public funds include equity, fixed income and multi-asset ETFs and mutual funds. Private funds include private equity, private credit, and private real assets funds.

How do tech giants' energy-related emissions compare?

- Companies have become used to the practice of reporting lower emissions of their fossil-fuel-based electricity if they purchase renewable energy such as through renewable-energy certificates or power-purchase agreements tied to solar, wind or hydropower generation.
- That practice might change, however, with potentially significant implications for companies' reported carbon footprints. A pending proposal from the GGP, the leading setter of carbon-accounting standards, would require Scope 2 emissions reporting to align more closely with the physical location and timing of electricity generation.[1] The aim: to ensure that reported reductions in Scope 2 emissions more accurately reflect actual declines in grid-level emissions.
- The proposed change would have an impact on Scope 2 reporting for technology companies that operate power-hungry data centers. As the chart indicates, contractual renewable-energy instruments such as power-purchase agreements currently account for most of the difference between location- and market-based Scope 2 emissions reported by Amazon, Alphabet, Microsoft and Meta, as of Dec. 31, 2024.

1. "GHG Protocol Opens Public Consultations on Scope 2 and Electricity Sector Consequential Accounting," GGP, Oct. 20, 2025. The consultation is currently slated to close on Jan. 31, 2026.

Location-versus market-based calculations of Scope 2 emissions (million metric tons CO2e)



Source: MSCI Sustainability & Climate Research, based on company-reported data as of Dec. 31, 2024.

How much low-carbon energy relative to fossil-fuel energy are bond investors financing?

- Banks in recent years have started to publish an "energy supply ratio," which some shareholders have demanded to measure how much low-carbon energy supply each bank finances for every dollar of fossil-fuel energy supply it supports.[1] Here we adapt the concept to analyze investor financing of corporate borrowing through bond purchases.
- The table compares financed exposure to low-carbon-energy revenue and fossil-fuel-energy revenue in six hypothetical fixed-income portfolios, which we represent here using MSCI fixed-income indexes. We divide the aggregate revenue that bond issuers in the hypothetical portfolios generate from low-carbon businesses by their aggregate revenues generated from fossil-fuel energy businesses. A rate of 1 means the aggregate revenues from low-carbon businesses equal those from fossil-fuel energy businesses.
- The portfolio represented by MSCI's Emerging Markets Corporate Bond Index had the lowest rate at USD 0.03 of low-carbon energy finance per dollar of fossil-fuel energy finance, while the one represented by MSCI's USD Investment Grade Paris Aligned Corporate Bond Index had the highest, at USD 2.57 of low-carbon energy finance per dollar of fossil-fuel energy finance, as of Dec. 31, 2025.

Financed exposure (low-carbon revenue divided by fossil-fuel revenue)

Portfolio	Low-carbon finance rate (USD)
MSCI USD Paris Aligned Corporate Bond Index	2.57
MSCI EU Paris Aligned Corporate Bond Index	1.29
MSCI EUR Investment Grade Corporate Bond index	0.22
MSCI USD Investment Grade Corporate Bond Index	0.11
MSCI CAD Investment Grade Corporate Bond Index	0.10
MSCI Emerging Markets Corporate Bond Index	0.03

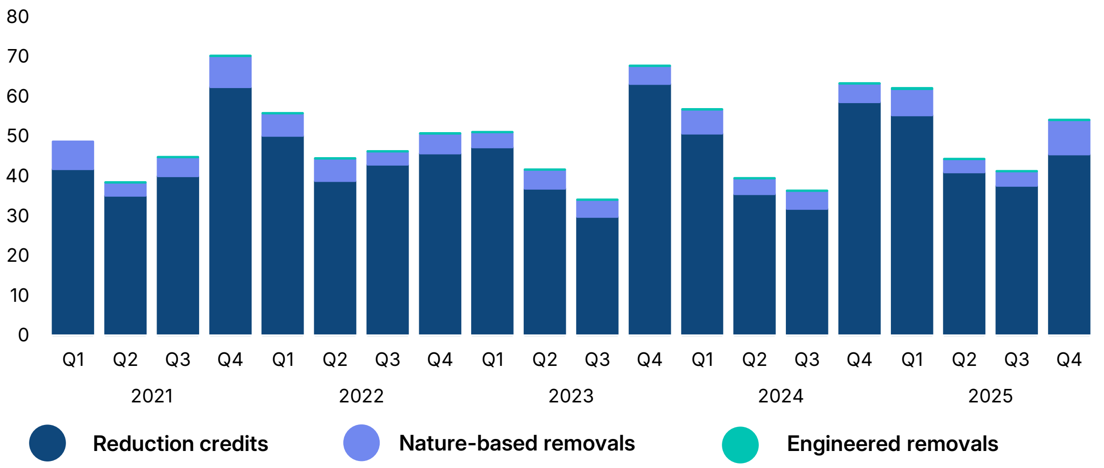
Source: MSCI Sustainability & Climate Research, data as of Dec. 31, 2025. Low-carbon revenue refers to revenue from activities in the low-carbon energy sector, including generation, storage, transmission, and distribution infrastructure. Fossil-fuel revenue refers to revenue from activities in the exploration, extraction, production, transportation, distribution, refining or retailing of oil, gas and coal. For complete definitions, see "Financial Institutions Net-Zero Standard. Version 1.0," SBTi, July 2025, esp. p.30 and Table 2 therein.

1. "New York City Retirement Systems 2025 Shareholder Initiatives – Postseason Report," New York City Comptroller, Dec. 8, 2025. See also, "Energy Supply Financing Ratio Methodology," J.P. Morgan Chase & Co. The SBTi, an arbiter of corporate climate targets, directs financial institutions to assess their exposure to clean energy relative to fossil-fuel energy. See "Financial Institutions Net-Zero Standard. Version 1.0," SBTi, July 2025, p.30.

How much are companies investing in carbon credits?

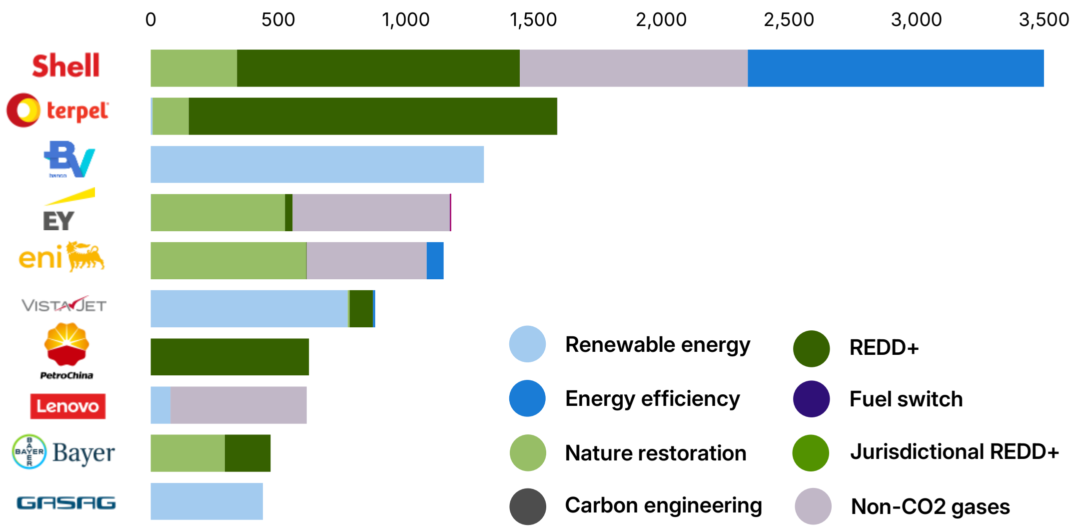
- Companies retired 202 MtCO2e of carbon credits in 2025, the fourth consecutive year of growth and the highest total since 2021. (Retiring credits removes them from circulation once emissions reductions are claimed, indicating demand.)
- Retirements were either voluntary as part of climate strategies or transferred for compliance obligations. Q4 2025 retirements totaled 54 MtCO2e, up 32% from Q3 but down 18% year-over-year.
- Nearly 90% of Q4 retirements came from emissions-reduction projects rather than removal projects. Among removal credits, the vast majority were nature-based; engineered removals remained under 1% of total retirements.
- Shell, Colombian refiner Terpel, and Brazil's Banco BV retired the most voluntary carbon credits in Q4. Shell's Q4 retirements brought its 2025 total to 10.4 MtCO2e, the most of any company, marking the oil major's third consecutive year leading global carbon-credit retirements.

Amount of carbon credit retirements disclosed quarterly, by type (MtCO2e)



Source: MSCI Carbon Markets, data as of Dec. 31, 2025, based on data from ACR, ART, BioCarbon, CAR, Cercarbono, Climate Forward, CDM (NDC eligible credits only), GCC, Gold Standard, Plan Vivo, Puro Earth and Verra.

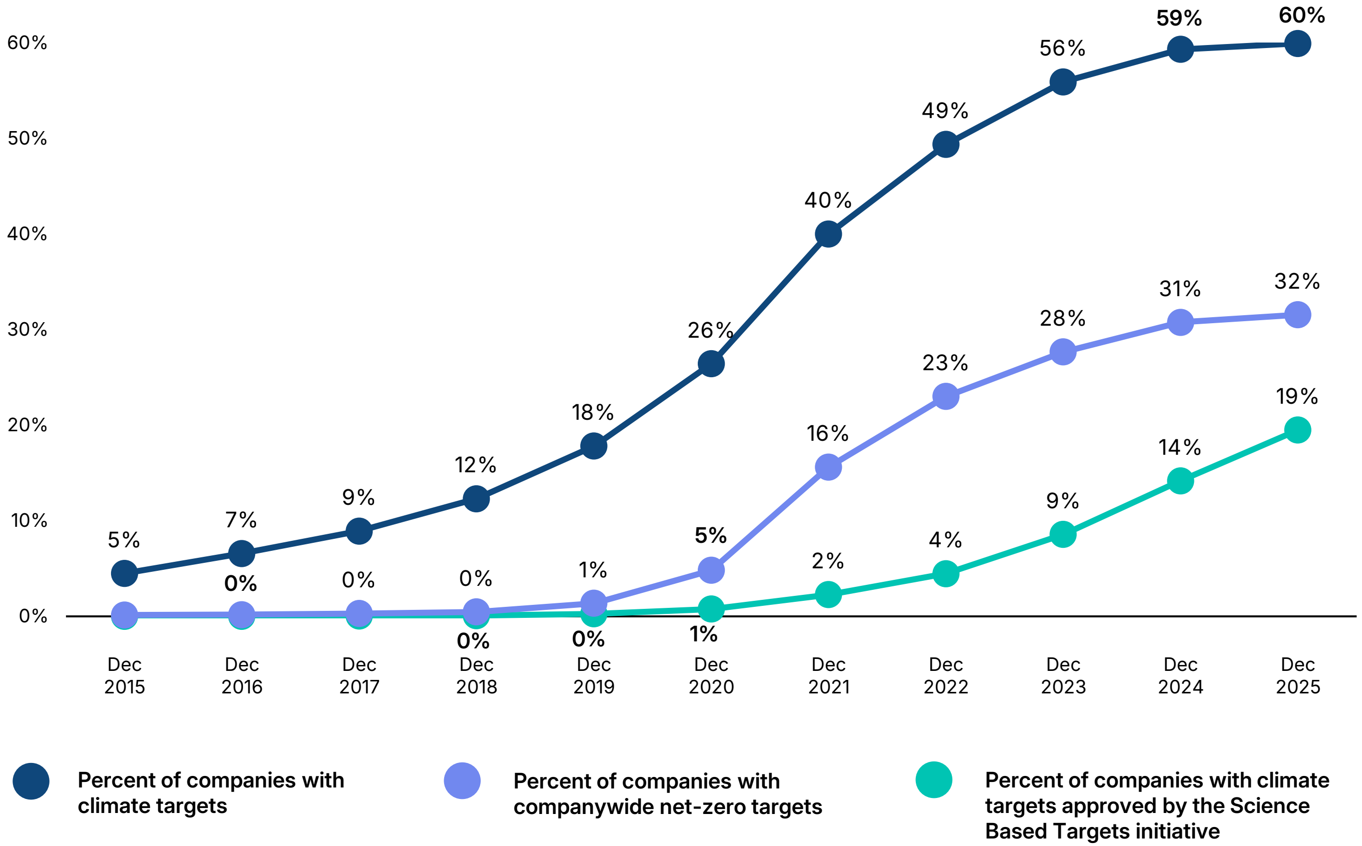
Largest credit retirees, Q4 2025 (tCO2e)



What percentage of companies have set climate targets?

- Nearly one-fifth (19%) of listed companies had a climate target validated by the SBTi as of Dec. 31, 2025, up from 14% a year earlier. Many investors view SBTi-approved targets as a mark of credibility because the initiative assesses whether targets align with climate science.
- The ambition of corporate climate targets matters, as such targets help investors gauge the scale of emissions reductions companies may achieve. Both the ambition and rigor of corporate targets vary widely.
- Nearly a third (32%) of companies have set a net-zero emissions target, though not necessarily one validated by the SBTi, roughly unchanged from a year earlier. Overall, 60% of listed companies have published some form of climate commitment, also little changed year over year.

Share of listed companies with disclosed climate targets by target type

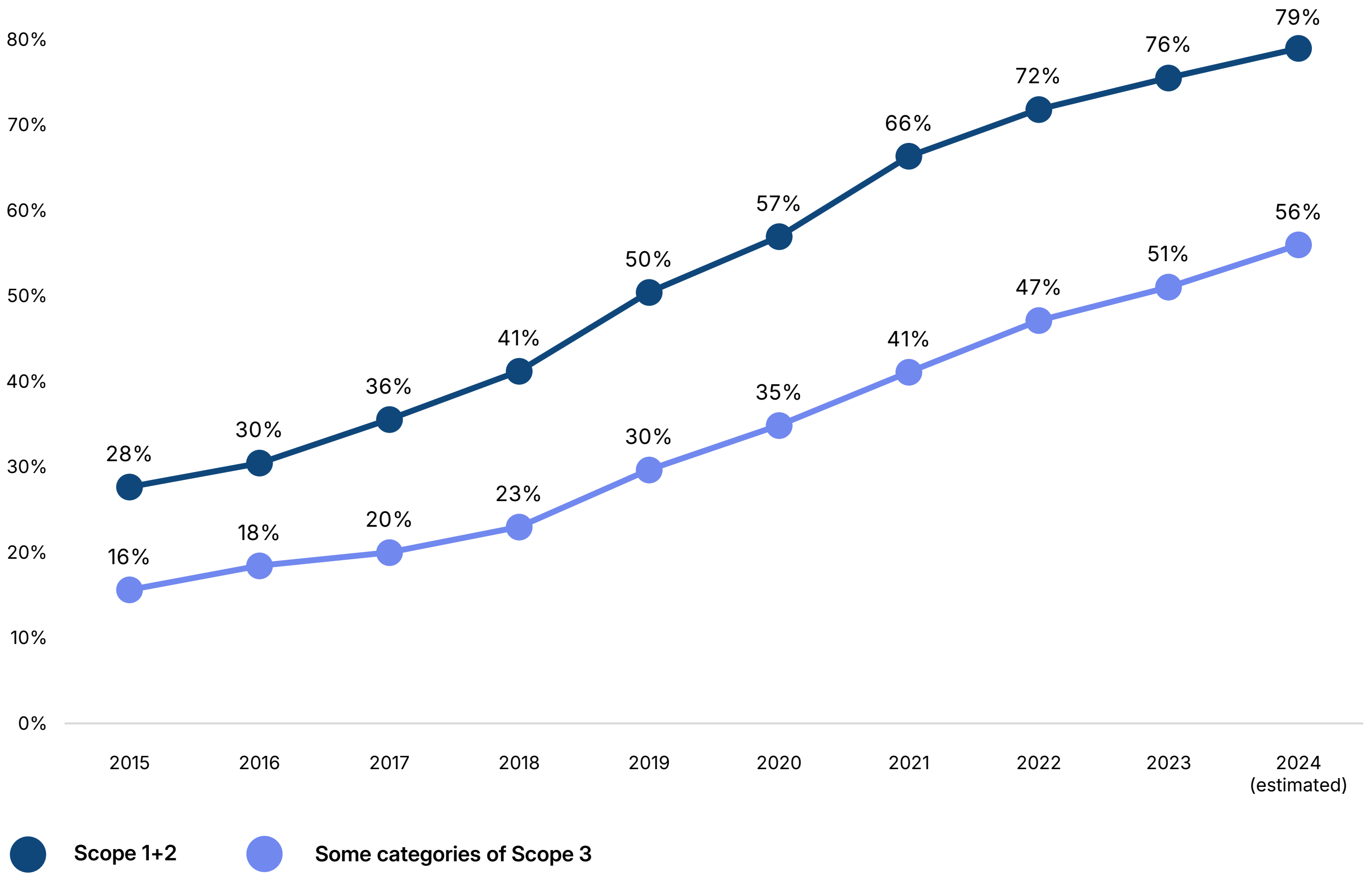


Source: MSCI Sustainability & Climate Research, data as of Dec. 31, 2025. Note that totals are cumulative. The share of corporate climate targets reported here reflects the relevant share of all companies in the MSCI ACWI IMI.

What percentage of companies disclose their emissions?

- Disclosure of corporate greenhouse gas (GHG) emissions enables investors to compare companies across sectors, track progress toward climate commitments and assess financially relevant risks in their portfolios and loan books.
- An estimated 79% of listed companies disclosed their Scope 1 and/or Scope 2 emissions as of Dec. 31, 2024, up from 76% a year earlier. We estimate emissions for 2024 because companies vary in the dates of their sustainability disclosures and additional quality checks are ongoing.
- A majority (56%) of companies reported at least some of their Scope 3 emissions, up from 51% over the same period. Because companies often struggle to quantify their value-chain emissions, reporting rates for Scope 3 remain comparatively low.

Emissions disclosure by listed companies (%)



Source: MSCI Sustainability & Climate Research, estimated data as of Dec. 31, 2024.

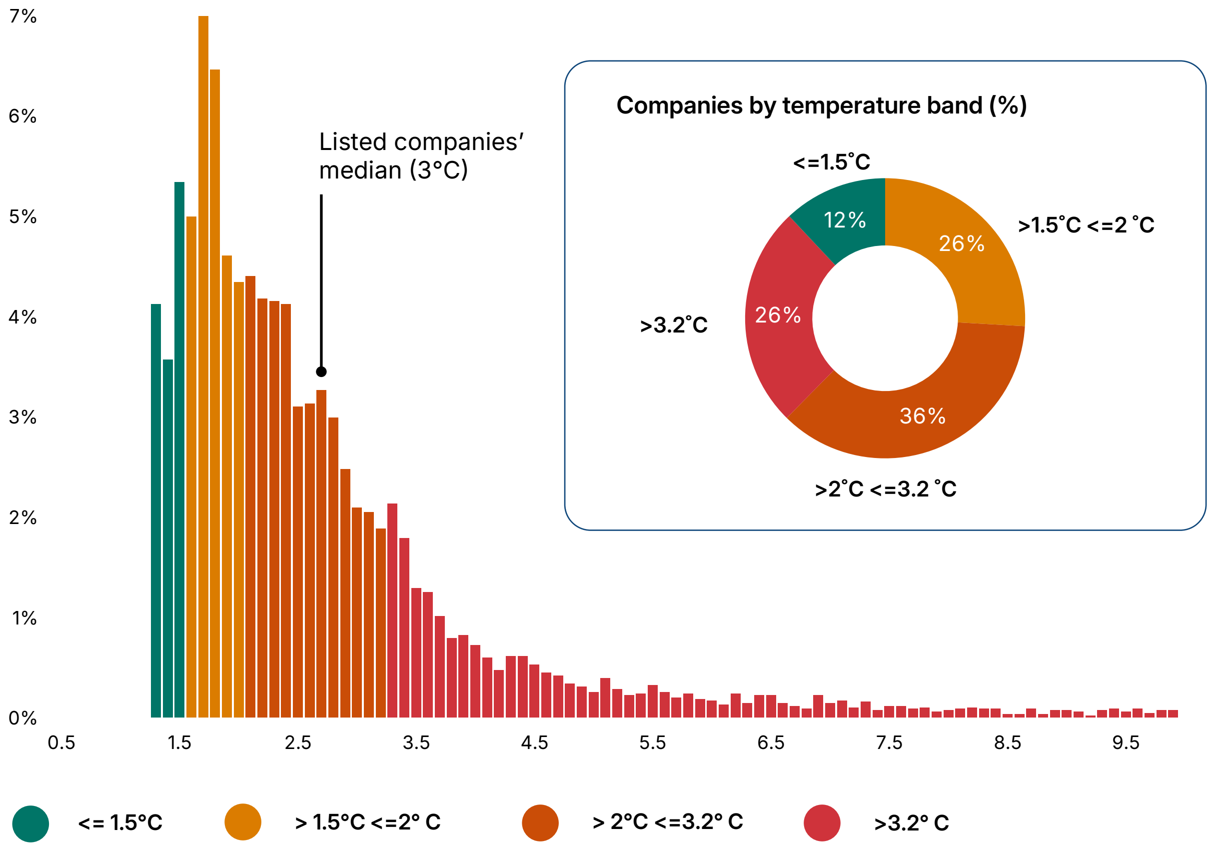
Are companies on track to meet global climate goals?

- The emissions trajectories of the world's listed companies imply warming of 3°C (5.4°F) above preindustrial levels this century, based on their aggregate emissions, sector-specific carbon budgets and climate targets as of Dec. 31, 2025.
- Twelve percent of listed companies aligned with projected warming of 1.5°C (2.7°F) or less, while an additional 26% aligned with warming between 1.5°C and 2°C (3.6°F). Almost two-thirds (62%) of listed companies are on an emissions trajectory that would breach the 2°C threshold, including 26% of companies whose trajectories would exceed 3.2°C (5.8°F).
- Our extrapolation relies on MSCI's Implied Temperature Rise (ITR), a forward-looking climate-impact metric that institutional investors use to assess the alignment of portfolios with global climate goals.

Why our estimate of companies' implied warming increased

Note that our latest estimate of warming implied by listed companies' aggregate emissions trajectories is three-tenths of a degree higher than our estimate for the three months ended Sept. 30, 2025. The increase reflects an enhancement to MSCI's Implied Temperature Rise (ITR) model introduced in October, rather than a change in companies' underlying emissions trajectories. The update removes a cap on how much companies can exceed their carbon budgets (measured as "absolute overshoot" in gigatons of CO_2e). Previously, the methodology capped this overshoot at a level equivalent to 10°C of warming. This cap prevented a handful of high-emitting companies from dominating portfolio-level temperature scores, but it also created volatility in the metric. By removing the cap, we reduce this volatility, though large emitters now have greater influence on aggregated ITR scores.

Projected temperature alignment of the world's listed companies (Implied Temperature Rise in °C)



Source: MSCI Sustainability and Climate Research, data as of Dec. 31, 2025. Not index weighted. The dataset used in this estimate comprises roughly 95% of ACWI IMI constituents, as roughly 5% of constituents lack data that would allow us to compute the relevant measures.

1. Listed companies represented by the MSCI ACWI Investable Market Index (IMI), which captures large-, mid- and small-cap listed companies across 23 developed-market and 27 emerging-market countries. With 8,225 constituents, the index covers approximately 99% of the global equity investment opportunity set, as of Dec. 31, 2025.

How do companies' emissions trajectories compare with those of their home countries?

- Countries' climate trajectories reflect differences in decarbonization targets, historical emissions, domestic policies and carbon budget constraints. We estimate the warming implied by those trajectories using MSCI's Sovereign Implied Temperature Rise model, which considers GHG emissions produced within a country's borders (Scope 1).[1]
- The model applies a fair-share approach, following recommendations from the Institutional Investors Group on Climate Change. This approach allocates proportionally larger carbon budgets to less-developed countries to balance decarbonization needs with economic development.[2]
- The table compares the warming trajectories of G20-member countries with those of the companies domiciled in them. Companies domiciled in many emerging markets, including Saudi Arabia, Indonesia and India, show higher estimated warming than their respective countries. This occurs because we estimate company emissions across all three scopes — including Scope 3 emissions from downstream activities like product use — many of which enter the atmosphere outside the company's home country.

1. Significantly, the model does not consider emissions from the production of imported energy (Scope 2) or emissions from imported goods or services (Scope 3).
2. See "Sovereign Bonds and Country Pathways," Institutional Investors Group on Climate Change, April 2024. For a summary of literature on the topic of fair-share budgets, see "Fair share," Climate Action Tracker, available at climateactiontracker.org.

Projected temperature alignment of G20 countries versus listed companies based in each country (Implied Temperature Rise in ˚C)

	Sovereign ITR	ITR of domiciled listed companies
China	3.8	4.4
Australia	3.4	3.4
Canada	3.3	2.8
Saudi Arabia	3.0	10.0
U.S.	2.9	2.8
Russia	2.6	
Japan	2.3	2.4
Turkey	2.2	3.7
Italy	2.2	1.8
Brazil	2.1	3.7
Argentina	2.1	
Indonesia	2.0	7.9
Mexico	2.0	2.1
Germany	2.0	2.0
India	1.9	4.9
France	1.9	2.3
South Africa	1.8	3.9
U.K.	1.8	2.5
South Korea	1.7	2.9

> 1.5°C <=2° C   > 2°C <=3.2° C   >3.2° C

Source: MSCI Sustainability & Climate Research, data as of Dec. 31, 2025. The ITR of companies listed in Russia and Argentina is not shown because the securities of companies listed there are not included in the MSCI ACWI IMI.

Key terms

Carbon credit: A unit representing the avoidance or removal of 1 ton of CO2e, created by an activity or set of activities in relation to a counterfactual baseline that considers what emissions would be but for the activity or activities.

Carbon dioxide equivalent (C02e): Greenhouse gas emissions with the same global warming potential as 1 metric ton of carbon.

Carbon engineering: Carbon credit projects that remove and store carbon dioxide emissions from the atmosphere and into materials that do not create or increase biomass carbon stocks.

Financed emissions: Greenhouse gas emissions associated with investments, loans and insurance.

GICS®: The global industry classification standard jointly developed by MSCI Inc. and S&P Global Market Intelligence. The GICS structure comprises 11 sectors, 24 industry groups, 69 industries and 158 subindustries.

Gigaton (Gt): 1 billion tons (of emissions).

Implied Temperature Rise: A forward-looking climate impact metric that estimates the increase in average global temperature that would occur this century if the economy were to overshoot or undershoot the global carbon budget by the same amount as the company or investment portfolio in question.

Megaton (Mt): 1 million tons (of emissions).

MSCI ACWI Investable Market Index: Captures large-, mid- and small-cap listed companies across 23 developed-market and 27 emerging-market countries. With 8,225 constituents, the index covers approximately 99% of the global equity investment opportunity set, as of Dec. 31, 2025.

Physical risk: Harm to people or property that may result from severe weather, extreme heat and other climate-related events.

Remaining emissions budget: A company’s future GHG emissions budget, in tons of CO2e, for limiting warming this century to 1.5°C or 2°C above preindustrial levels.

Renewable energy: The installation of new power generation capacity that uses carbon-free energy sources.

Science Based Targets initiative: A nonprofit organization established by CDP, the U.N. Global Compact, the World Resources Institute, the U.N. and the World Wildlife Foundation to assess corporate climate targets.

Scope 1 emissions: Companies' direct greenhouse gas emissions in tons of CO2e.

Scope 2 emissions: Companies' greenhouse gas emissions from purchased electricity, steam, heat and cooling in tons of C02e.

Scope 3 emissions: Companies' indirect greenhouse gas emissions in tons of CO2e from their upstream supply chain, emissions inherent in products and services or emissions from portfolio companies.

Sovereign Implied Temperature Rise: A forward-looking climate impact metric that estimates a global warming value for each country based on the extent to which the country’s projected Scope 1 emissions overshoot or undershoot its 1.5°C carbon budget and extrapolates the over- or undershoot to the world.

Transition risk: Financial risk that may result from the shift to a low-carbon economy.

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Brian Browdie edited the report, James Wrighton designed it, Manish Mandavia copy edited it, and Caitlin Williams managed the production.

About the data in this report

Listed companies referenced in this report are constituents of the MSCI ACWI Investable Market Index (IMI), which includes large-, mid- and small-cap companies across 23 developed and 24 emerging market countries. As of Dec. 31, 2025, the index comprises 8,225 companies and captures approximately 99% of the global equity investment opportunity set.

Unless otherwise specified, the data in this report reflects all constituents of the ACWI IMI as of the relevant date. (Please note that both the composition and number of index constituents vary over time.) Exceptions include the projected temperature alignment of listed companies. These datasets cover approximately 95% of ACWI IMI constituents, as roughly 5% of companies lack data that would allow us to compute the relevant measures.

About

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