June 2022

# The MSCI Net-Zero Tracker

A quarterly gauge of progress by the world's listed companies toward curbing climate risk

# Introduction

The COP26 conference last November produced a wealth of commitments from investors and other capital markets participants to cut emissions in line with global temperature goals and make climate change part of every investment decision. The months since then have underscored the imperative of following through.

To implement their commitments, investors expect companies to set net-zero targets that are grounded in climate science and make reducing emissions as rapidly as possible the priority.

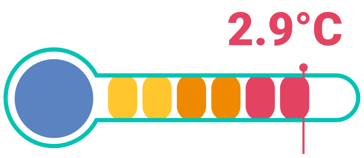
Reaching net-zero will demand the largest transformation of society since the Industrial Revolution in less than half the time. To compound the challenge, companies and investors also need to navigate the scramble for energy sparked by the Russia-Ukraine war and its potential to distract from the risk of delaying the transition away from fossil fuels.

The MSCI Net Zero Tracker from MSCI ESG Research looks at the climate impact of listed companies based on their projected emissions and counts down the time remaining to reach net-zero.[1] It shows the companies with the largest carbon footprints, shines a light on corporate leaders and laggards in climate disclosure, and highlights companies whose climate targets are notable for their alignment with global goals.

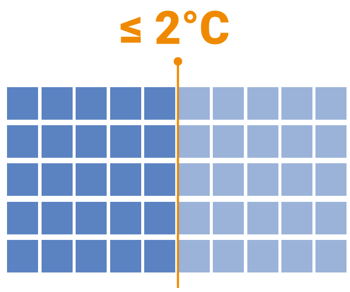
The Net-Zero Tracker offers an objective gauge of companies' progress toward an economy that removes as much greenhouse gas from the atmosphere as it puts in. It also underscores both the outsize importance of turning climate commitments into action and the value of disclosure to enable investors to identify companies in every sector that are taking concrete steps to reduce their reliance on fossil fuels and reimagine their businesses for a net-zero world.

1 Represented by the MSCI All Country World Investable Market Index (ACWI IMI), which includes large-, mid- and small-cap traded listed companies across 23 developed-market and 27 emerging market countries. With 9,189 constituents, the index covers approximately 99% of the global equity investment opportunity set, as of May 31, 2022.

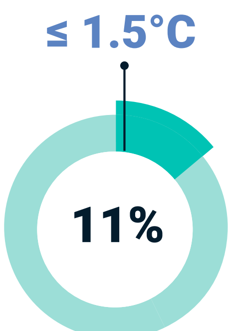
# Key findings




Listed companies are on track to cause average global temperatures to rise by 2.9°C above preindustrial levels.




Nearly half (46%) of listed companies align with future warming of 2°C, putting them at the high end of the Paris Agreement goal of keeping warming well below 2°C, preferably to no more than 1.5°C, above preindustrial levels.




Eleven percent of listed companies align with a 1.5°C temperature rise — the threshold above which scientists say the risk of catastrophic climate hazards increases significantly — up from 10% of companies in the October 2021 edition of the Net-Zero Tracker.

### Keeping 1.5°C alive?

Though more listed companies are taking climate action, a majority have yet to align with the goal of preventing the worst effects of a warming planet.

- Listed companies are on track to cause average global temperatures to rise by 2.9°C above preindustrial levels.[2]
- Nearly half (46%) of listed companies align with future warming of 2°C, putting them at the high end of the Paris Agreement goal of keeping warming well below 2°C, preferably to no more than 1.5°C, above preindustrial levels.
- Eleven percent of listed companies align with a 1.5°C temperature rise — the threshold above which scientists say the risk of catastrophic climate hazards increases significantly — up from 10% of companies in the October 2021 edition of the Net-Zero Tracker.[3]
- Listed companies in every region remain misaligned with global climate goals.

### Where the emissions are

The energy, materials and utilities sectors, not surprisingly, account for the lion's share of global greenhouse gas emissions. But companies in industries ranging from food and apparel to semiconductors also remain misaligned with global temperature targets.

### Emissions must fall rapidly to limit warming to 1.5°C

Listed companies are on track to put nearly 10.8 billion tons (gigatons) of direct Scope 1 greenhouse gas emissions into the atmosphere this year, up about 0.7% from last year but down 5.6% from their pre-pandemic high.

The slowdown in the growth of corporate emissions means the time for listed companies to limit warming to 1.5°C has lengthened by three months since we projected last October. We now estimate that listed companies will burn through their share of the global carbon budget for keeping temperature rise below 1.5°C by February 2027, based on their emissions as of May 31, 2022.[4]

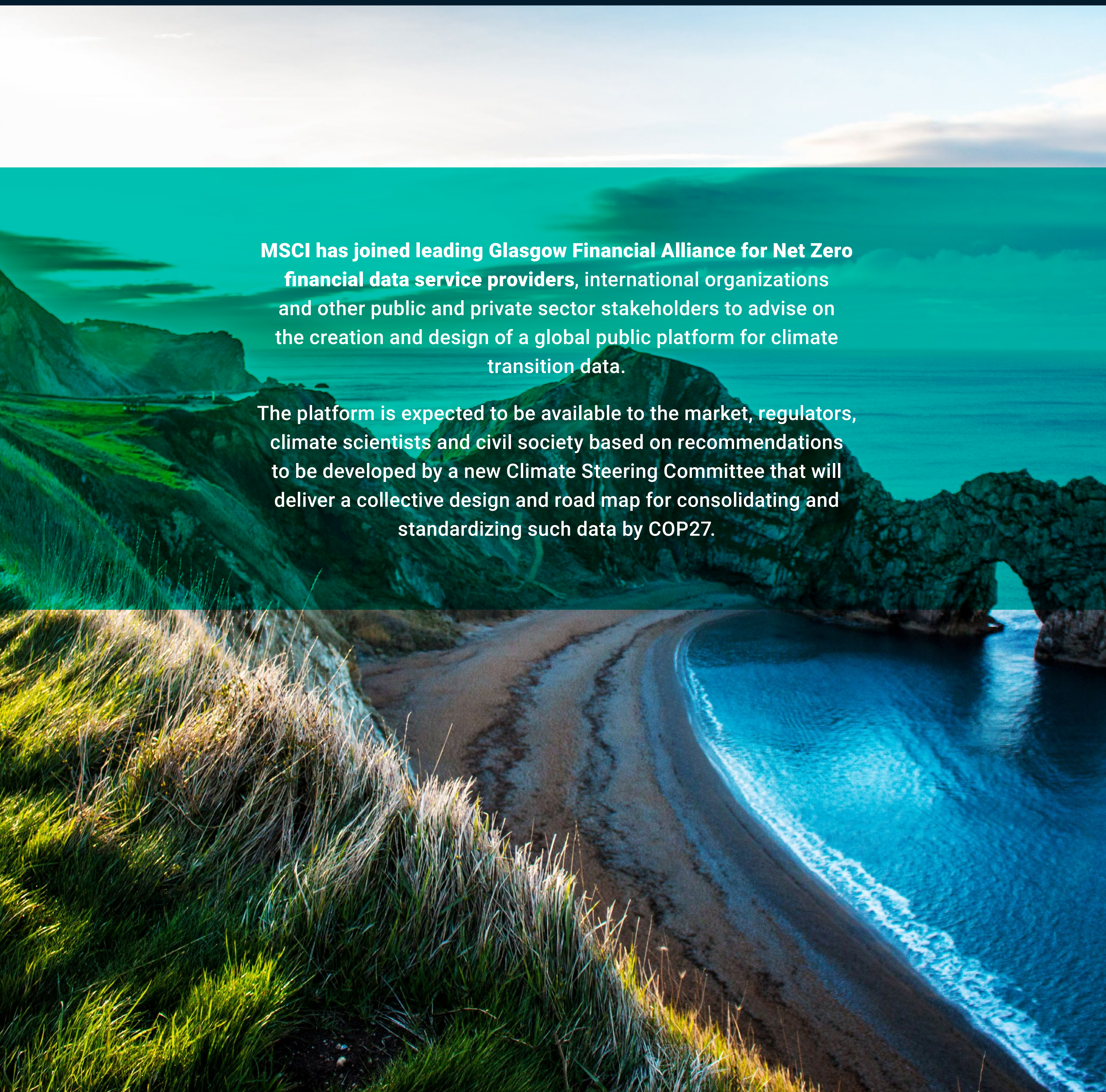
Time — and action by companies to rapidly reduce their emissions — will tell whether the drop in global emissions that accompanied the pandemic marked a momentary pause or prefigured a green recovery.

2 Data as of May 31, 2022

3 See "The MSCI Net-Zero Tracker," October 2021, available at https://www.msci.com/research-and-insights/net-zero-tracker. See also, "Climate Change 2022: Impacts, Adaptation and Vulnerability," UN Intergovernmental Panel on Climate Change (IPCC), Feb. 27, 2022.

4 The calculation reflects listed companies' share of the global budget, which is the total amount of greenhouse gas that humans can put into the atmosphere without undermining the Paris Agreement goal of keeping warming well below 2°C.

Clients can log in to MSCI Climate Lab to view the latest alignment of listed companies with global temperature targets together with corporate emissions profiles in detail. To learn more about Climate Lab, which combines our climate data and portfolio analytics in one intuitive platform, contact your MSCI representative or reach out at msci.com/contact-us.



**MSCI has joined leading Glasgow Financial Alliance for Net Zero financial data service providers**, international organizations and other public and private sector stakeholders to advise on the creation and design of a global public platform for climate transition data.

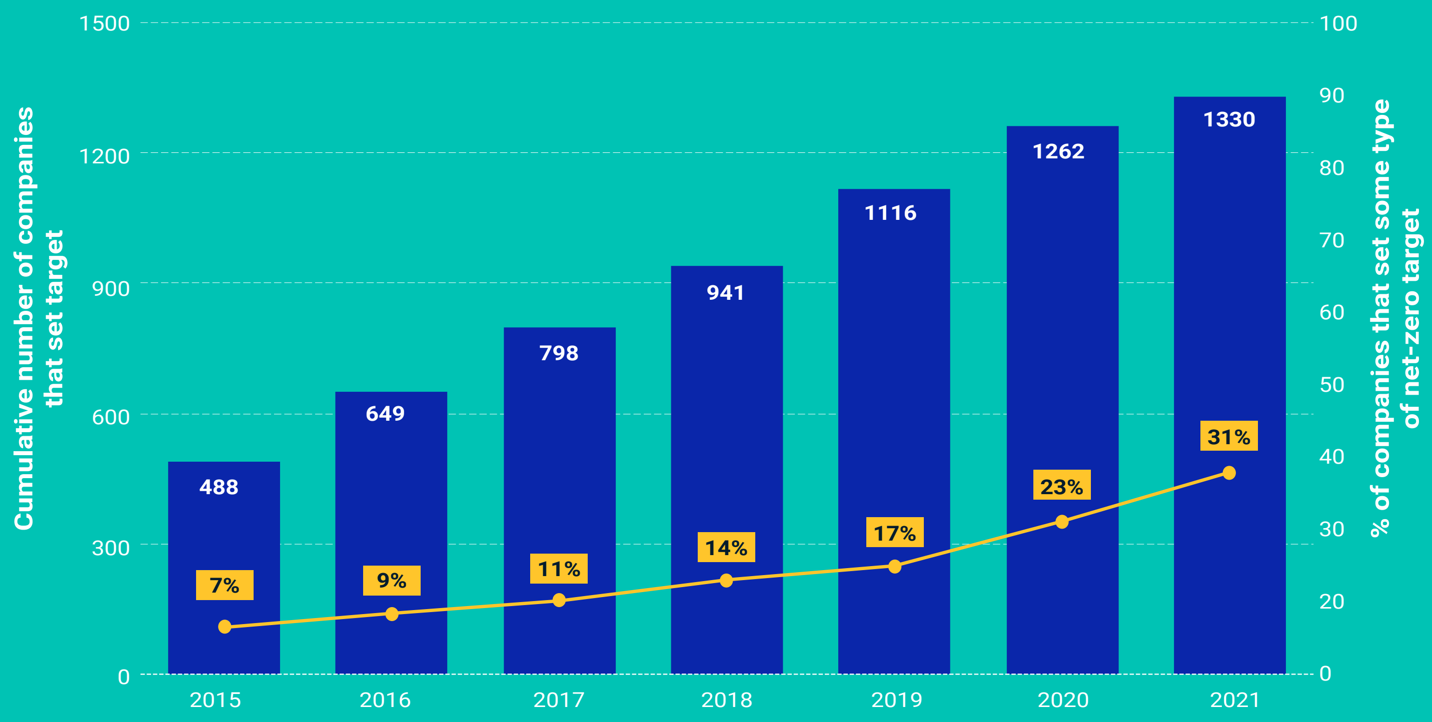
The platform is expected to be available to the market, regulators, climate scientists and civil society based on recommendations to be developed by a new Climate Steering Committee that will deliver a collective design and road map for consolidating and standardizing such data by COP27.

# Net-zero targets **matter**

Investors' use of forward-looking climate metrics like implied temperature rise may help incentivize companies to set — and act on — climate targets. While setting a target, by itself, does not guarantee a company will achieve it, committing a credible climate target and taking concrete steps to reduce emissions indicates a company's intent to minimize climate-related risk.

Decarbonization targets are also a key component of corporate climate change strategies. About 45% of the more than 2,900 companies in the MSCI ACWI Index had set a decarbonization target, as of March 2022.[5] About one-third (31%) of those targets aim to reduce the company's greenhouse gas emissions to net-zero between now and 2050.

## Steady rise in companies setting decarbonization and net-zero targets




Data on companies in the MSCI ACWI Index, as of March 2022. When target announcement dates were not disclosed, we assumed the targets were set in 2021.

MSCI's calculation of implied temperature rise uses companies' current emissions, reported emissions-reduction targets and other data to project their absolute Scope 1, 2 and 3 emissions out over the next five decades.[6]

5 The MSCI ACWI Index represents the performance of large- and mid-cap companies across 23 developed markets and 24 emerging market countries. With 2,933 constituents, the index covers approximately 85% of the global investable equity opportunity set, as of May 31, 2022.

6 See "Implied Temperature Rise Methodology," MSCI, September 2021

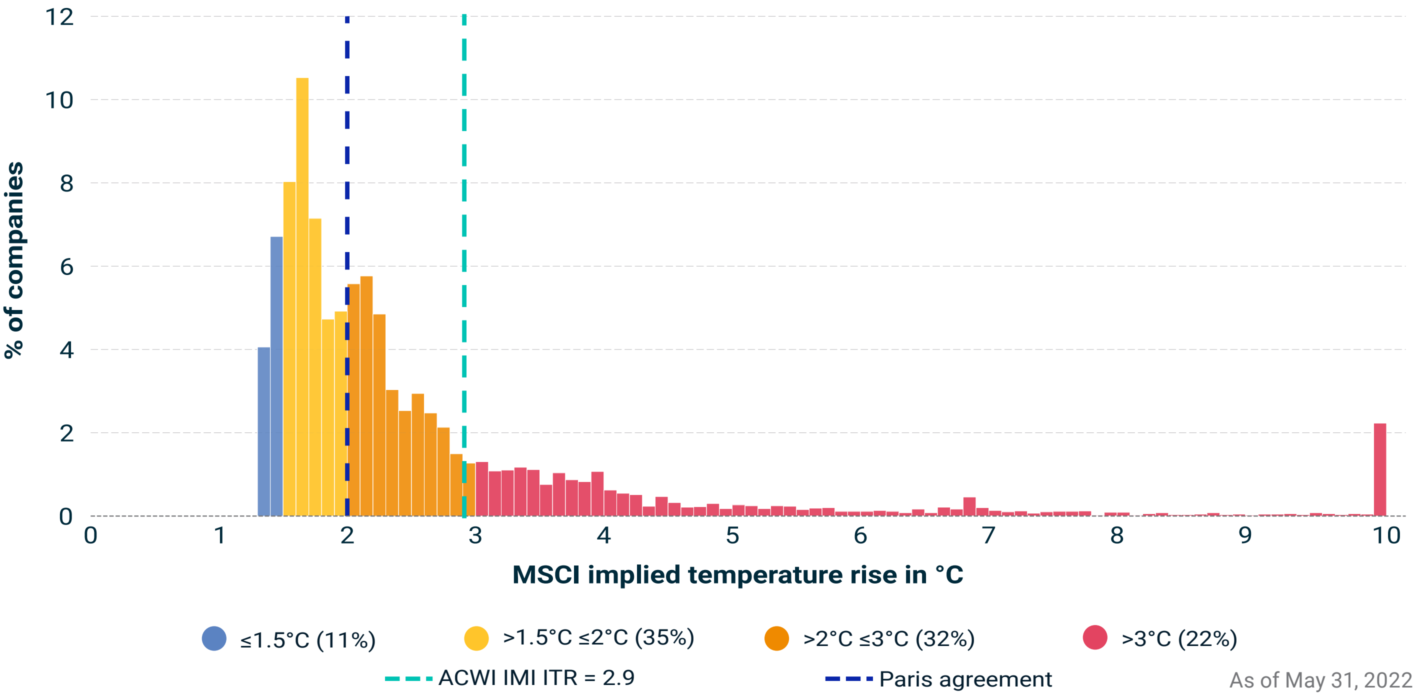
# Companies have yet to align **with the global goal**

Listed companies are putting greenhouse gases into the atmosphere at a rate that would make the planet 2.9°C warmer, a tenth of a degree less than we projected last October.[7] The estimate reflects companies' collective implied temperature rise, which projects the increase in average temperatures this century that would occur were the economy to overshoot or undershoot the global carbon budget by the same amount as the company in question.[8]

Nearly half (46%) of listed companies are on track to keep warming below 2°C; 11% are aligned with a 1.5°C temperature rise.

Every effort by companies to cut their absolute emissions matters because every tenth of a degree matters. Earth's temperature has already increased 1.1°C from preindustrial levels as a result of human-generated greenhouse gas emissions.[9] Climate-related risks to health, food security, water supply, natural ecosystems, and economic growth are all far greater for global warming of 2°C than they are for warming of 1.5°C, according to IPCC forecasts.[10]

## Listed companies are on track to make the world 2.9°C warmer




As of May 31, 2022

7 See "The MSCI Net-Zero Tracker," October 2021, available at https://www.msci.com/research-and-insights/net-zero-tracker

8 Implied temperature rise data reflects a point in time based on changes in the number of companies that declare and revise decarbonization targets. The data further reflects our allocation of an annual global carbon budget to individual companies based on their sector, country and business activities. See "Implied Temperature Rise Methodology," MSCI, September 2021.

9 "Climate Change 2021: The Physical Science Basis," IPCC, 2021

10 "Special Report: Global Warming of 1.5°C," IPCC, 2018

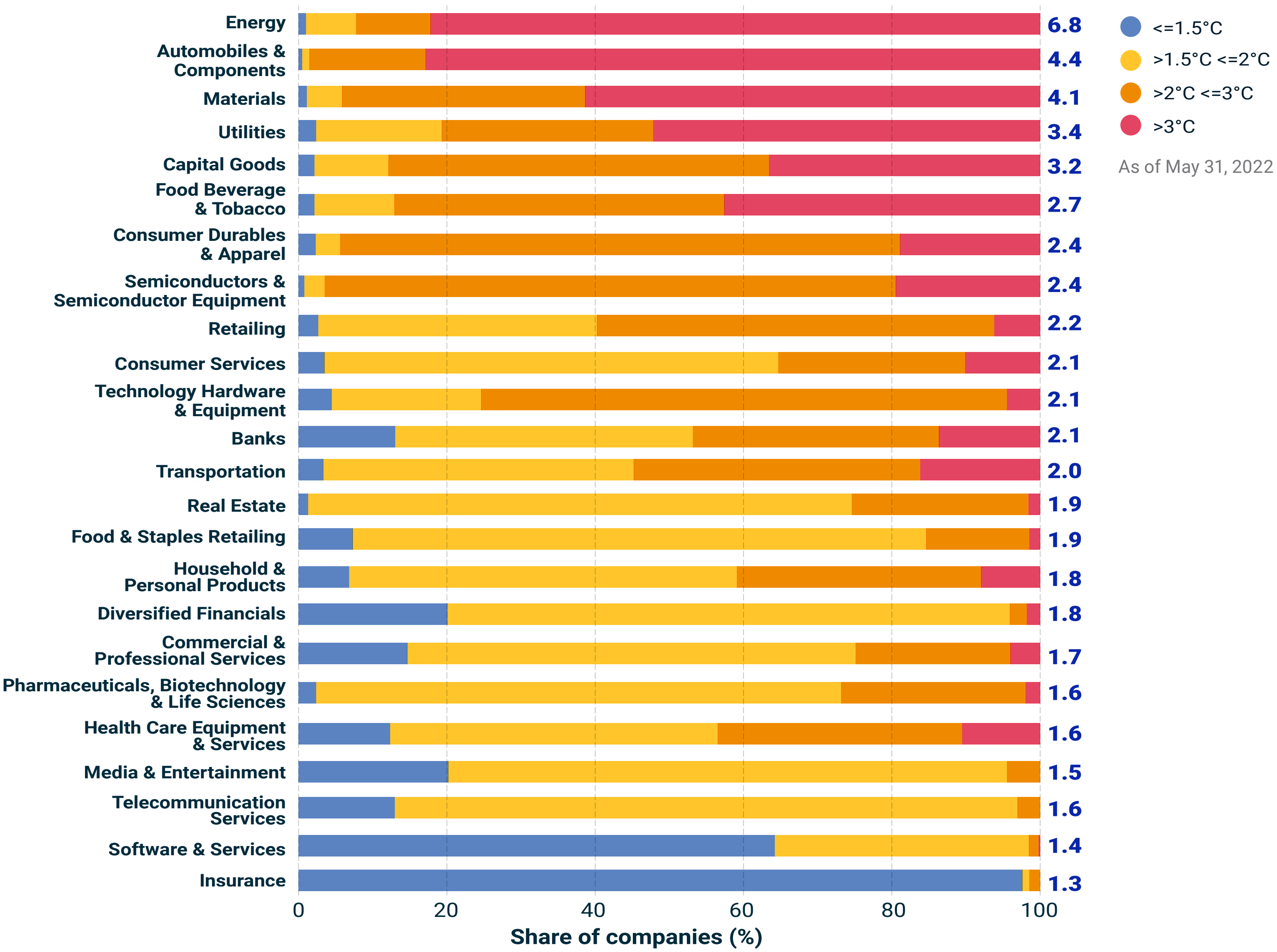
Our calculation of listed companies' carbon budget reflects the removal of Russian securities from all global and regional indexes within the MSCI Global Investable Market Indexes, including, but not limited to, MSCI ACWI Indexes. The removal, which MSCI announced on March 2, 2022, resulted in 44 companies leaving the indexes. See "MSCI to Reclassify the MSCI Russia Indexes from Emerging Markets to Standalone Markets Status," March 2, 2022, available at https://www.msci.com/eqb/pressreleases/archive/PR_Russia_Classification.pdf

# Going where the **emissions are**

Though the energy, materials and utilities industries are the biggest emitters of greenhouse gases, all but a handful of industries comprise companies that are misaligned with global temperature goals. The food and beverage industry, for example, aligns with a 2.7°C temperature rise. Both the consumer durables and apparel industry and the semiconductor industry align with a temperature rise of 2.4°C.

To align their portfolios with net-zero, investors want to identify and back companies in every industry that are decarbonizing. That means investing in companies based not on their carbon footprint today but on their projected emissions pathway. For the economy to reach net-zero by 2050, every company on track to exceed globally agreed thresholds will have to decarbonize.

## Implied temperature rise by GICS® industry group[11]

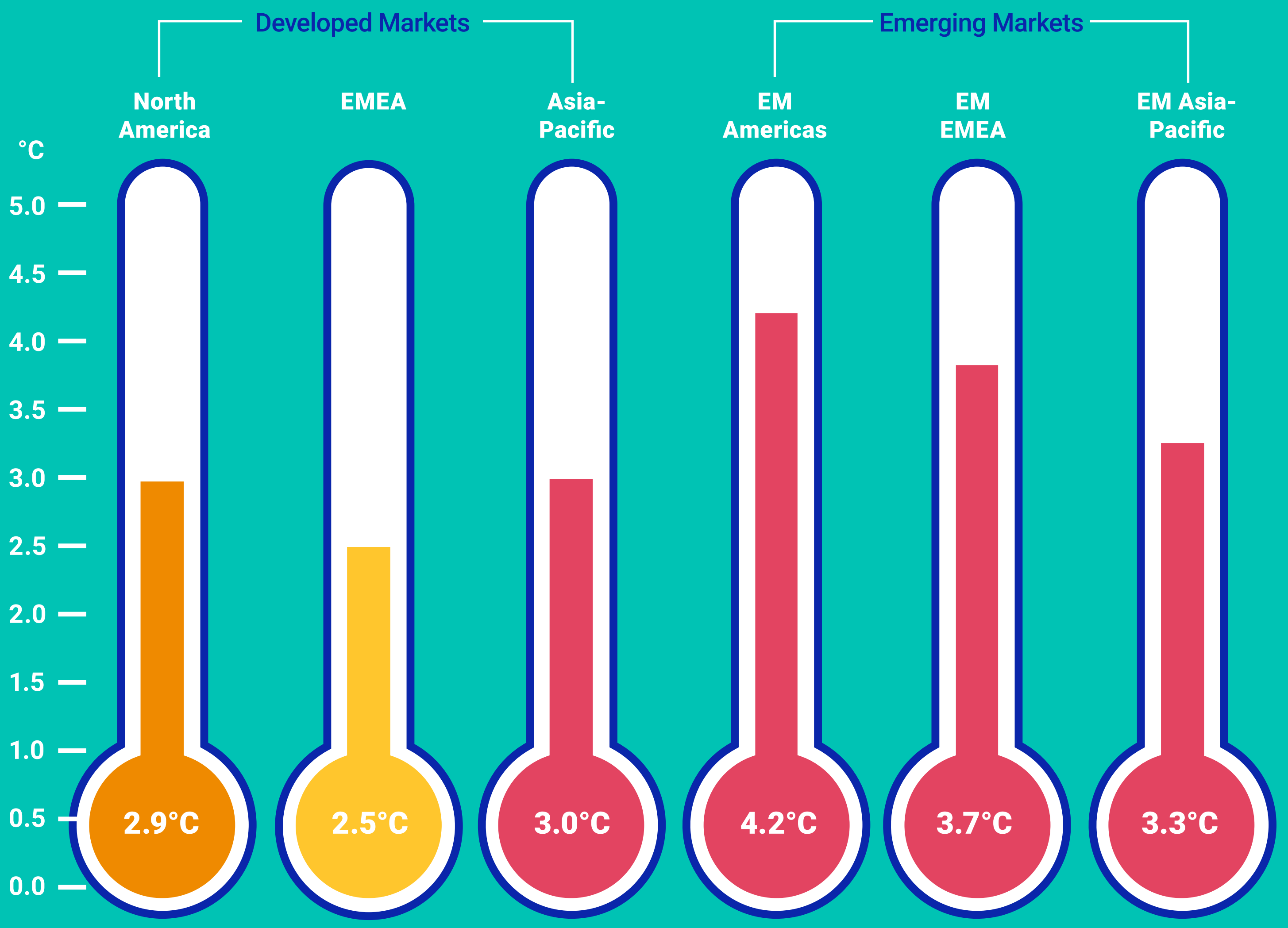



11 Industry groups from the Global Industry Classification Standard (GICS®), jointly developed by MSCI Inc. and S&P Global. The GICS® structure comprises 11 sectors, 24 industry groups, 69 industries and 158 sub-industries.

# Taking corporate temperatures by region

Listed companies in all regions are putting greenhouse gases into the atmosphere at a rate that will breach key climate thresholds. Though companies in developed economies are projected to become more carbon efficient than those in emerging economies, no region yet aligns with the Paris Agreement target. And because every company's emissions warm the same atmosphere, every company's emissions contribute to a global problem regardless of their industry or region.

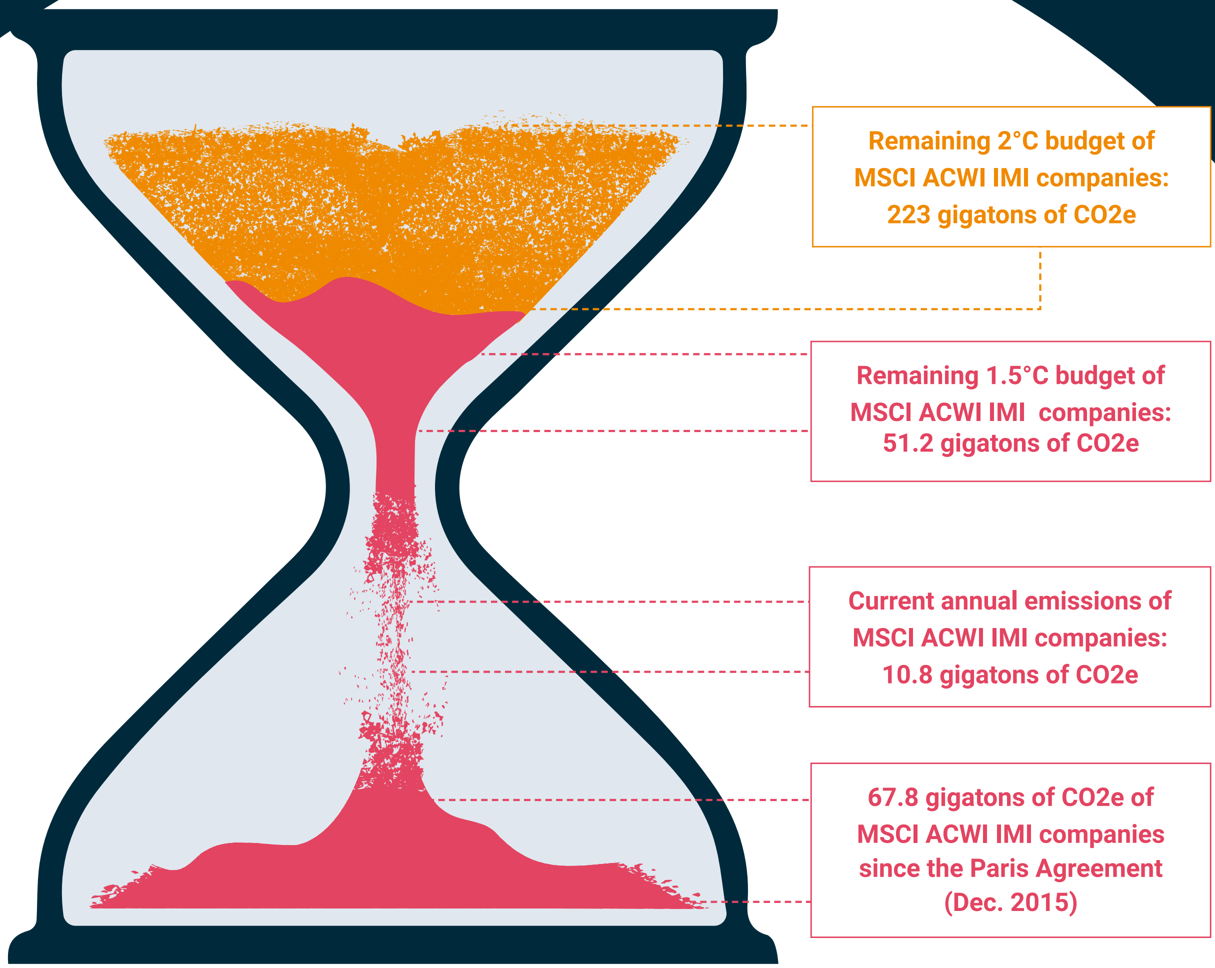
## Implied temperature rise




As of May 31, 2022

For the definition of developed- and emerging-market regions, see **https://www.msci.com/our-solutions/indexes/market-classification**

# **We're running out of time** to prevent the worst climate hazards




As of May 31, 2022

The time that remains until companies burn through their share of the global carbon budget for limiting warming to 1.5°C has lengthened. Listed companies will deplete their share of the global emissions budget for limiting temperature rise to a 1.5°C by February 2027, three months later than we estimated last October, based on their current greenhouse gas output.[12]

12 The hourglass shows annual total Scope 1 emissions of MSCI ACWI IMI constituents (not index-weighted) based on listed companies' reported emissions data and MSCI estimates as of May. 31, 2022. Emissions for 2021 that companies haven't yet reported and 2022 figures are based on MSCI estimates using Carbon Monitor data, given a lag in company reporting. The remaining future emissions budgets to achieve a 1.5°C and 2°C warming scenario are calculated based on bottom-up emission estimates (sum of remaining emissions budget of all MSCI ACWI IMI constituents) as of January 1, 2020 from which estimated Scope 1 emissions of the ACWI IMI index up to May 31, 2022 are deducted.

57

**Months left to limit warming to 1.5°C**

Time remaining until listed companies deplete the emissions budget for limiting global temperature rise this century to 1.5°C above preindustrial levels

248

**Months left to keep warming well below 2°C**

Time remaining until listed companies deplete the emissions budget for keeping global temperature rise this century well below 2°C above preindustrial levels

As of May 31, 2022

To have a chance of holding the rise in temperatures to 1.5°C, global greenhouse gas emissions would have to peak by 2025 at the latest, drop 43% by 2030 and hit net-zero by 2050, according to the IPCC. While technically possible, the emissions trajectories of listed companies (and countries) suggest the magnitude of the challenge.[13]

To align with a 1.5°C rise in temperature, listed companies would need to cut their total carbon intensity by an average of 8%-10% each year between now and 2050.[14] There's precedent. Thirty-nine percent of MSCI ACWI IMI constituents reduced emissions intensity by that much in the two years that ended Dec. 31, 2020. While the period coincided with the pandemic, the reductions point toward the magnitude of change that the transition to a net-zero economy will demand.

13 Countries' climate pledges and policies align the world with a temperature rise of between 2.4°C and 2.7°C, according to Climate Action Tracker. See "Despite Glasgow Climate Pact 2030 climate target updates have stalled," Climate Action Tracker, June 3, 2022. In an interview last April, Peter Erickson of the Stockholm Environment Institute noted that only a handful of countries have moved away from a single fossil fuel in a single sector at the pace with which the entire world would need to move away from fossil fuels in every sector. See "The 1.5-Degree Goal Is All But Dead," The Atlantic, April 6, 2022.

14 The amount of annual decarbonization aligns with the self-decarbonization embedded in MSCI's Climate Paris Aligned Index, which exceeds the European Union's requirement that climate benchmarks decarbonize at least 7% on average per year in line with the global goal of limiting future warming to 1.5°C. See "Sustainable finance — minimum standards for climate benchmarks," European Commission, July 17, 2020, available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12020-Sustainable-finance-minimum-standards-for-climate-benchmarks_en.

# Global and listed company Scope 1 emissions

Though greenhouse gas emissions continue to climb, the increase has slowed as the global economic recovery from the pandemic proceeds. We estimate that direct (Scope 1) emissions of the world's listed companies will edge up by an estimated 0.7% this year after climbing nearly 7% in 2021.

Listed company Scope 1 emissions are forecast to account for nearly one-fifth (18%) of this year's total global greenhouse gas emissions of 59.7 gigatons.

The table below shows the total MSCI ACWI IMI Scope 1 greenhouse gas emissions (sum for all constituents without index weighting) and total global emissions, as of May 31, 2022.

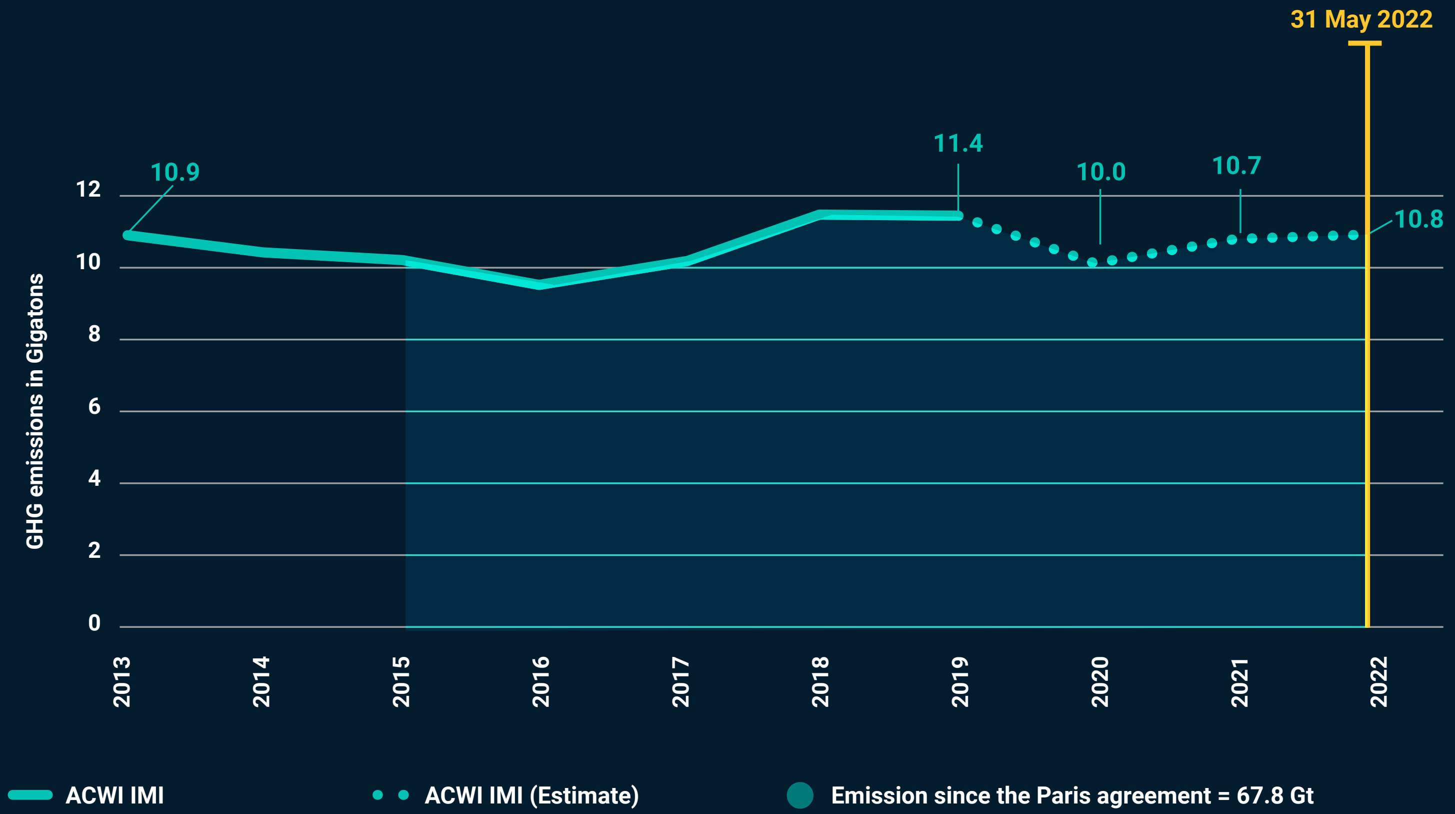
| Historical greenhouse gas emissions [Gt C02e] | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Global greenhouse gas emissions*** | 51.2 | 51.7 | 51.8 | 51.9 | 53.5 | 55.3 | 59.1 | 55.7 | 59.3 | 59.7 |
| **ACWI IMI Scope 1**** | 10.9 | 10.4 | 10.2 | 9.6 | 10.2 | 11.4 | 11.4 | 10.0 | 10.7 | 10.8 |

* Global emissions through the end of 2020 are based on annual UN Environment Programme reports. Emissions for subsequent years are estimates based on changes in emissions as reported by Carbon Monitor. Data reflects cumulative greenhouse gas emissions.

** ACWI IMI emissions for 2020 as reported by companies or estimated by MSCI where not reported. Emissions for 2021 and 2022 are estimated from changes in emissions as reported by Carbon Monitor.

## Scope 1 greenhouse gas emissions of listed companies

Listed companies' direct emissions continue to climb but have come down from levels that preceded the pandemic. The reality remains, however, that emissions must fall much more rapidly to have any chance of limiting the rise in average global temperatures to 1.5°C.




Emissions reflect the addition of China to the MSCI ACWI IMI starting in 2018

# **The top 10 listed companies** with the largest carbon footprints

The table on the following page shows the 10 largest emitters in the MSCI ACWI IMI based on total greenhouse gas emissions in the 12 months that ended May 31, 2022. It also shows the contribution of each of those companies' emissions to the total emissions of listed companies, as well as differences in transparency.

Saudi Aramco, which has the largest carbon footprint of any listed company, also has become the world's most valuable company amid a surge in oil prices following Russia's invasion of Ukraine.[15] For its part, the company, which aims to reach net-zero by 2050, has said it expects its emissions to increase through 2035 as it pumps more oil in response to global demand.[16] The reality underscores the tension between satisfying the urgent demand for energy at the cost of putting more greenhouse gases into the atmosphere and illustrates the challenge for net-zero aligned investors in the near term.

15 Based on market capitalization as of May 31, 2022.

16 See "Saudi Aramco Sustainability Report 2021"

| Issuer | Country | Scope 1 emissions [million tons of CO2e] | Scope 2 emissions [million tons of CO2e] | Scope 3 emissions [million tons of CO2e] | Carbon emissions scope 3 reported | Total carbon emissions [million tons of CO2e]* | Reported emissions (sum) as a percentage of MSCI estimated total emissions** | Ratio of total company emissions (reported/ estimated) vs ACWI IMI total emissions**** |
|---|---|---|---|---|---|---|---|---|
| Saudi Arabian Oil Company | Saudi Arabia | 74.94 | 6.42 | 2044.83 | Not Available | 2126.19 | Estimated only*** | 3.4% |
| Coal India Ltd | India | 16.66 | 1.51 | 997.71 | Not Available | 1015.87 | Estimated only*** | 1.6% |
| PetroChina Company Limited | China | 127.57 | 39.87 | 664.73 | Not Available | 832.17 | 20% | 1.3% |
| Exxon Mobil Corporation | U.S. | 105 | 7 | 668.71 | 540 | 780.71 | 84% | 1.2% |
| BP P.L.C. | U.K. | 41.3 | 4.2 | 647.9 | 327.6 | 693.4 | 54% | 1.1% |
| BHP Group Limited | Australia | 10 | 6.2 | 670.82 | 402.5 | 687.02 | 61% | 1.1% |
| Shell PLC***** | U.K. | 63 | 9 | 603.6 | 1339.55 | 675.6 | 209% | 1.1% |
| China Shenhua Energy Company Limited | China | 126.68 | 8.22 | 530.29 | Not Available | 665.19 | 20% | 1.1% |
| Chevron Corporation | U.S. | 54 | 4 | 485.98 | 412 | 543.98 | 86% | 0.9% |
| Volkswagen Aktiengesellschaft | Germany | 4.34 | 2.8 | 525.68 | 368.94 | 532.82 | 71% | 0.9% |

* Sum of reported or estimated Scope 1 and 2 emissions plus Scope 3 emissions estimates

** If a company does not report its Scope 1 and 2 carbon emissions data, MSCI estimates each scope separately based on either the company's previously reported emissions data or, if none, the carbon emissions intensity of the company's production or industry segments. We estimate Scope 3 emissions for all companies in our coverage based on company-specific information that considers both the revenue intensity of emissions and production data, in line with the Greenhouse Gas Protocol framework. For more information, please see: "MSCI Climate Change Metrics Methodology and Definition" and "Scope 3 Carbon Emissions Estimation Methodology," MSCI ESG Research.

*** Comparison between reported and estimated emissions does not apply because the company reports only some of its Scope 1 emissions. Hence, MSCI uses estimates alone to calculate the company's total emissions

**** Because companies share their value chain with multiple other companies, double-counting is unavoidable when estimating Scope 2 and 3 emissions. The comparison here, on average, cancels this double counting by comparing each listed company's share of total emissions to ACWI IMI total emissions

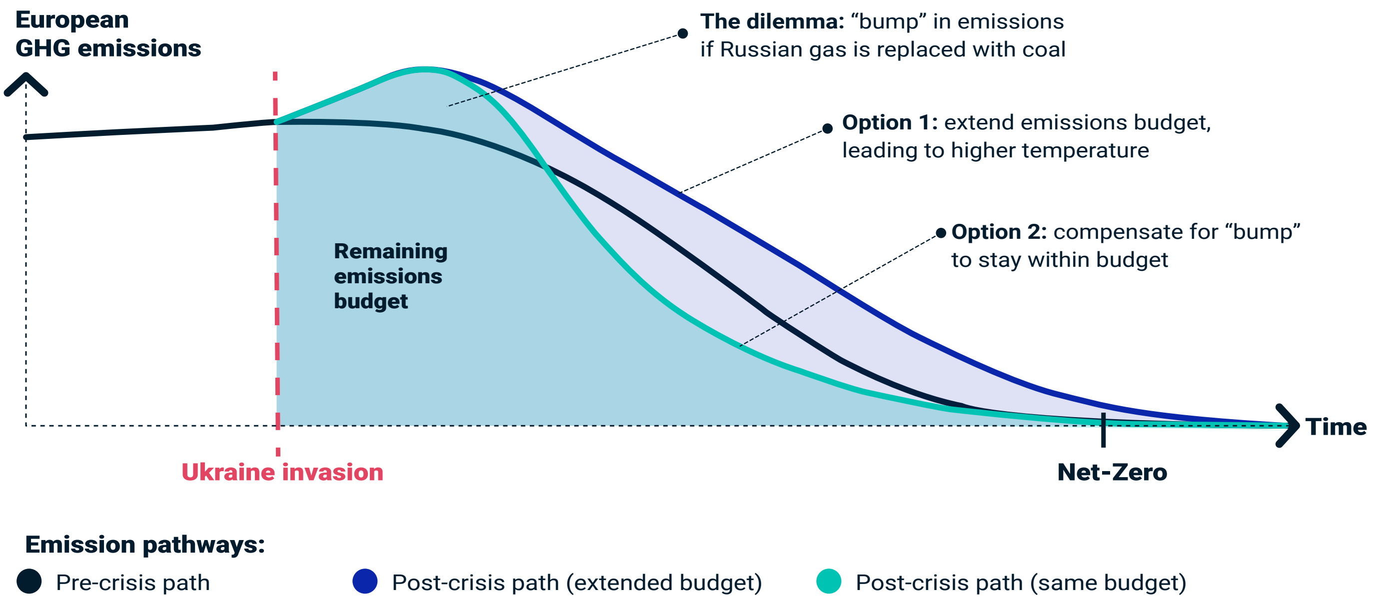
*****Because Shell reports Scope 3 emissions from the sale of products it produces, including oil, natural gas, liquified natural gas, gas-to-liquids and biofuels, and the emissions of products it sells on behalf of third parties, the company's reported emissions exceed by nearly two times MSCI's estimate, which calculates the company's Scope 3 emissions based on products the company itself produces. See, Shell, Greenhouse Gas Emissions, at shell.com.

# The value in accelerating **climate action**

Ramping up investments in renewable energy offers the lowest-cost path to containing runaway climate change in the wake of Russia's invasion of Ukraine, according to an analysis by MSCI ESG Research.[17]

If energy companies reinvested windfall profits in clean energy and energy efficiency, the world's average annual investment in sustainably generated power could grow by as much as 85% to about USD 654 billion a year, according to the analysis, which finds that when it comes to accelerating investment, sooner is better.

## European GHG emissions




Allowing emissions to rise in the short term to replace Russian energy and then scrambling to compensate for those extra emissions later would vastly increase the cost of transitioning to a clean-energy future, the analysis finds.

Yet investors may have more leverage to influence the clean energy transition than they think. Shareholders may be able to pressure energy companies to distribute windfall gains in the form of higher dividends, which investors could reinvest in renewable-energy solutions as part of their net-zero strategies, the analysis suggests. Or shareholders could use their leverage to urge energy companies to directly reinvest windfall profits into renewable energy. Both options illustrate the value of collective resolve and action to drive investment on a scale needed for a net-zero economy.

17 See "What the War in Ukraine Could Mean for Net-Zero Investing," MSCI ESG Research, May 16, 2022

# Shining a light on disclosure: leaders and laggards

What gets measured gets managed. Investors need emissions disclosures to assess the resilience of every company to climate change. Disclosure helps investors assess the carbon intensity of companies, to model climate-related financial risk and its possible impact on the performance of portfolios and to allocate capital accordingly.

### Listed companies with improved emissions reporting

The table below shows 10 of the nearly 80 companies in the MSCI ACWI IMI that reported additional scopes or categories of greenhouse gas emissions in the 12 months that ended May 31, 2022 and that are now reporting substantially all their emissions across all emissions scopes. Clients can view the complete list in MSCI Climate Lab.

| Issuer | Country | Total reported emissions [million tons CO2e] | Total estimated emissions [million tons CO2e] | Reported emissions (sum) as a percentage of MSCI estimated total emissions* |
|---|---|---|---|---|
| Suncor Energy Inc. | Canada | 143.76 | 149.2 | 96% |
| L'Oreal SA | France | 11.35 | 11.76 | 97% |
| Nippon Paper Industries Co., Ltd. | Japan | 13.58 | 14 | 97% |
| Thai Oil Public Company Limited | Thailand | 29.52 | 30.3 | 97% |
| SSE PLC | U.K. | 11.03 | 11.26 | 98% |
| Keurig Dr Pepper Inc. | U.S. | 8.91 | 9.09 | 98% |
| Dominion Energy, Inc. | U.S. | 50.36 | 51.21 | 98% |
| Colbun S.A. | Chile | 6.25 | 6.34 | 99% |
| Tata Steel Limited | India | 79.4 | 80.39 | 99% |
| A.P. Moeller-Maersk A/S | Denmark | 53.22 | 53.79 | 99% |

* If a company does not report its Scope 1 and 2 carbon emissions data, MSCI estimates each scope separately based on either the company's previously reported emissions data or, if none, the carbon emissions intensity of the company's production or industry segments. We estimate Scope 3 emissions for all companies in our coverage based on company-specific information that considers both the revenue intensity of emissions and production data, in line with the Greenhouse Gas Protocol framework. For more information, please see: "MSCI Climate Change Metrics Methodology and Definition" and "Scope 3 Carbon Emissions Estimation Methodology," MSCI ESG Research.

# **The largest emitters that have not disclosed** their greenhouse gas emissions

The table below shows the 10 largest emitters based on MSCI's estimates of emissions across all emissions scopes that had not reported any of their greenhouse gas emissions as of May 31, 2022.[18]

| Issuer | Country | Emissions reference year | GICS® sector | Total estimated emissions [million tons CO2e] |
|---|---|---|---|---|
| Shaanxi Coal Industry Company Limited | China | 2020 | Energy | 199.2 |
| Berkshire Hathaway Inc.* | U.S. | 2020 | Financials | 146.8 |
| China State Construction Engineering Corporation Limited | China | 2020 | Industrials | 93.6 |
| Shanxi Coking Coal Energy Group Co., Ltd. | China | 2019 | Energy | 82.5 |
| PBF Energy Inc. | U.S. | 2020 | Energy | 75.3 |
| Shanxi Lu'an Environmental Energy Dev. Co., Ltd. | China | 2020 | Energy | 73.8 |
| China Aviation Oil (Singapore) Corporation Ltd. | China | 2020 | Energy | 64.1 |
| Dongfang Electric Corporation Limited | China | 2020 | Industrials | 57.5 |
| Huayu Automotive Systems Company Limited | China | 2020 | Cons. Discretionary | 53.2 |
| Mastec, Inc. | U.S. | 2020 | Industrials | 41.0 |

* Berkshire Hathaway Inc., a holding company, has not reported carbon emissions as of May 31, 2022. At least three of its subsidiaries — Berkshire Hathaway Energy, MidAmerican Energy Company, and Burlington Northern Santa Fe (BNSF) — have reported emissions separately. The holding company, however, has not reported its emissions in the aggregate

18 The table remains unchanged from the March 2022 edition of the Net-Zero Tracker, which reported data as of Dec. 31, 2021. Both Shanxi Lu-an Environmental Energy Dev. Co. and Mastec, Inc. have said they plan to disclose carbon emissions but have not said when those disclosures might be.

# Listed companies with the most-thorough emissions-reduction targets

Not all decarbonization targets are up to the task. While corporate climate leaders aim to achieve net-zero emissions across their entire carbon footprint, some companies start with targets that address only a fraction.

The table below shows the 10 companies in the MSCI ACWI IMI that have published the most-thorough corporate decarbonization targets in the 12 months that ended May 31, 2022.

We assessed thoroughness according to three criteria: comprehensiveness (the table below comprises targets that address a company's total emissions), the change in emissions (% of tons of CO2e) targeted each year and the implied temperature rise that would result.

| Issuer | Country | Carbon emissions (most recent available year)* | Total carbon emission by issuer (estimated)** | Total carbon emission by issuer (reported) | Target summary annual change (annualized target)*** | Comprehensiveness **** | Implied temperature rise (°C) |
|---|---|---|---|---|---|---|---|
| ING Groep N.V. | Netherlands | 2020 | 27.19 | 0.02 | -4.74% | 100.00% | 1.3 |
| The Kansai Electric Power Company, Incorporated | Japan | 2020 | 53.65 | 60.69 | -3.23% | 100.00% | 1.4 |
| Apple Inc. | U.S. | 2020 | 124.68 | 22.59 | -5.82% | 100.00% | 1.5 |
| Electricite de France SA | France | 2020 | 54.12 | 134.66 | -3.23% | 100.00% | 1.6 |
| Schlumberger N.V. | U.S. | 2020 | 22.29 | 40.13 | -3.23% | 100.00% | 1.8 |
| Danone SA | France | 2020 | 43.23 | 26.51 | -3.23% | 100.00% | 1.8 |
| Sempra Energy | U.S. | 2020 | 31.34 | 72.98 | -3.23% | 100.00% | 2.0 |
| Aisin Corporation | Japan | 2020 | 83.21 | 12.37 | -2.79% | 100.00% | 2.1 |
| Honda Motor Co., Ltd. | Japan | 2020 | 207.96 | 254.48 | -3.12% | 100.00% | 2.1 |
| Uniper SE | Germany | 2020 | 165 | 64.38 | -3.23% | 100.00% | 2.1 |

* Carbon emissions (most recent available year) shows the latest year for which the company has reported its emissions and may differ from the date of the company's latest climate target

** Total carbon emissions (estimated) shows the sum of the company's reported Scope 1 and 2 emissions, if reported, together with MSCI's estimate of the company's Scope 3 emissions. See note on p. 14 above

*** Targeted change in emissions shows the projected normalized annual change in absolute emissions across all emissions scopes (Scope 1 and 2 reported, Scope 3 estimated)

****Comprehensiveness of target (%) refers to the percentage of a company's emissions (Scope 1 and 2 reported, Scope 3 estimated) covered by its latest climate target. MSCI measures comprehensiveness as the percentage of Scope 1, 2 and 3 emissions covered by the company's targets. MSCI standardizes companies' projected emissions to show them as the amount to be reduced annually.

# Conclusion

## A pivotal moment

Nearly half of listed companies align with a 2°C degree temperature rise based on their stated climate targets and emissions track records. Though companies' collective emissions have continued to rise, the rate has slowed and has yet to return emissions to pre-pandemic levels.

At the same time, the window for preventing the worst effects of a changing climate continues to close amid a Russian invasion of Ukraine that has set off a scramble for fossil-fuel energy. Saudi Aramco's standing as both the world's most valuable company and the listed company with the largest carbon footprint suggests that valuations today continue to reflect the prospect of future cash flows from fossil fuels and not a low-carbon transition.

The findings in this report underscore the importance of mandatory climate disclosures that would equip investors with the data they need to separate climate leaders from laggards and assess which companies may be most likely to thrive in a net-zero economy.

They also highlight how the global effort to standardize climate transition data holds the potential to help investors and policymakers incentivize action to reduce our reliance on fossil fuels and catalyze the massive investment needed to bring a sustainable energy economy to scale.

# Glossary

**Carbon budget:** The amount of greenhouse gas that society can release into the atmosphere before breaching key thresholds.

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

**Comprehensiveness:** Percentage of listed companies' Scope 1, 2 and 3 emissions covered by emissions reporting or target setting.

**Emissions intensity:** Greenhouse gas emissions in CO2e tons per USD millions of company sales.

**Implied temperature rise:** A measure that estimates the increase in average temperatures this century that would occur were the economy to overshoot or undershoot the global carbon budget by the same amount as the company in question.

**Megaton [Mt]:** One million tons (of emissions).

**GICS®:** The global industry classification standard jointly developed by MSCI Inc. and S&P Global Market Intelligence.

**Gigaton [Gt]:** One billion tons (of emissions).

**Greenhouse gas emissions:** Encompasses emissions of CO2 and six other gases covered by the Greenhouse Gas Protocol.

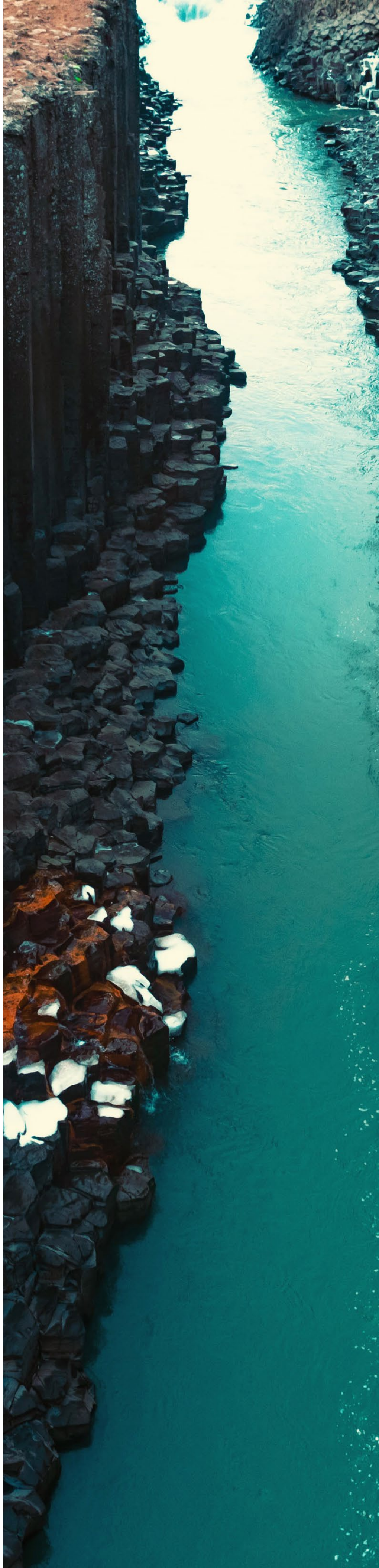
**MSCI ACWI Investable Market Index (IMI):** Captures listed large-, mid- and small-cap companies across 23 developed markets and 24 emerging-market countries. With 9,189 constituents, the index covers approximately 99% of the global equity investment opportunity set, as of May 31, 2022.

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

**Scope 1 emissions:** Listed companies' direct greenhouse gas emissions in tons of CO2e.

**Scope 2 emissions:** Listed companies' greenhouse gas emissions from electricity use in tons of C02e.

**Scope 3 emissions:** Listed 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. Scope 3 covers 15 categories of upstream and downstream emissions, as defined by the Greenhouse Gas Protocol.



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