

COP28: Key Takeaways for Investors from the **Global Climate Summit**

December 2023







Oliver Marchand Managing Director, MSCI Research



Linda-Eling Lee Head, MSCI Sustainability Institute



Sylvain Vanston Executive Director, MSCI Research



Chris Cote Vice President, MSCI Research



Lucien Georgeson Vice President, MSCI Carbon Markets



Mathew Lee Senior Associate, MSCI Research



Elchin Mammadov Vice President, MSCI Research



On par with the Paris Agreement

The COP28 climate summit concluded with an agreement that calls on countries to transition away from fossil fuels in line with global climate goals, marking a historic pivot away from the primary sources of energy that have powered society for nearly 200 years.

The agreement by nearly 200 countries represents the first time a global climate agreement has called for supplanting fossil fuels with clean energy and arrives following a push by a majority of countries to call explicitly for phasing down the burning of oil, gas and coal that accounts for the lion's share of carbon-dioxide emissions in the atmosphere.

Though negotiators dropped language that would have directed an explicit phase-out of fossil fuels following opposition from oil-producing nations and some developing countries, the final decision asks countries to pursue a variety of approaches in their national climate plans for reaching net-zero emissions by midcentury.

Those include tripling capacity for renewable energy, doubling the annual rate of improvement in energy efficiency and substantially reducing methane emissions, all this decade, while redoubling efforts to retire unabated coal-fired power plants and accelerate development of climate-transition technologies. "All governments and businesses need to turn these pledges into real-economy outcomes without delay," Simon Stiell, executive secretary of the United Nations Framework Convention on Climate Change, told delegates.

The agreement, which arrives at the end of the hottest year on record, addresses three pillars of the Paris Agreement: mitigation (to reduce emissions of greenhouse gas (GHG), with the aim of ending climate change), adaptation (to reduce vulnerability and build resistance to the effects of a changing climate) and loss and damage (to compensate countries for injury from climate change).² The agreement envisions a leading role for the investment and financial industries via the capital markets in advancing toward a new era of sustainable growth.

Here are our takeaways.

Time to double down on climate strategies

The agreement reached at COP28 calls on countries to map out climate plans that shift their baseload energy away from fossil fuels and ramp up renewable energy with the goal of reducing GHG emissions by 43% this decade and 60% by 2035, in line with scientifically derived net-zero pathways.³

The shift raises both the prospect of transition risk for companies and the prospect for a repricing of assets that could occur sooner than investors may have anticipated two weeks ago from the outset of the climate summit. Only about one-fifth (22%) of listed companies globally, for example, align with a 1.5°C pathway, while 55% align with warming of 2°C, the latest MSCI Net-Zero Tracker shows.

^{1 &}quot;Outcome of the first global stocktake, draft decision," United Nations Framework Convention on Climate Change, Dec. 13, 2023.

² "The Paris Agreement," United Nations Framework Convention on Climate Change, Nov. 29. 2018. "2023 will be the warmest year on record," November Climate Bulletins, EU Copernicus Climate Change Service, Dec. 6, 2023.

³ "Synthesis Report of the IPCC Sixth Assessment Report (AR6)," United Nations Intergovernmental Panel on Climate Change, March 20, 2023.



Companies in the most emissions-intensive industries, such as energy and materials, and in industries with large value-chain emissions are further out of step with global goals.

"A fossil-free economy means that a majority companies need to reimagine their business models in some significant way to align with the path mapped out in Dubai," **observes Oliver Marchand, a managing director at MSCI**. "Two hundred countries have just sent a message that companies will need to change the products they sell or the methods of production or suppliers they use if society is to translate the agreement reached at COP28 into action. Investors may increasingly need to be able to identify climate leaders in every industry as they sharpen their view of the transition."

The agreement is only as good as the implementation

While the agreement to move away from fossil fuels in energy marks a first, the challenge remains to translate the agreement into outcomes in the real economy. The transition to a green economy can still be more or less orderly, depending on government policies and frameworks such as the one arrived at in Dubai. An orderly transition — that is, one that begins in earnest this decade instead of in decades to come — would cost less than one marked by delay, research by MSCI shows.⁴

The agreement reached in Dubai suggests that investors may want to revisit scenarios for 1.5°C warming.⁵ Still, while the agreement reached at COP28 puts fossil fuels on the chopping block, it also envisions a role for transitional fuels that can "facilitate the energy transition while providing energy security." Taken together, the outcome suggests the value for risk-minded investors and financial institutions of examining a range of hypothetical scenarios that can help them quantify the financial impact of delay in the climate transition on their investments and lending books.

"The agreement points toward progress in the economy's green transition but does not foreclose the prospect of delay," **notes Marchand.** "It highlights the value of scenario analysis that can help investors quantify the financial impact of achieving the aim of COP28 or the consequences of the alternatives."

The clean-energy transition hits hyperdrive

As noted above, the COP28 agreement asks countries to pursue through their climate plans one or more of a series of approaches for reducing global GHG emissions, in line with the goal of limiting the rise in average global temperatures to 1.5°C above preindustrial times.⁷ They include:

• **Tripling installed renewable-energy capacity** and doubling the annual rate of improvement in energy efficiency by 2030. The call aligns with the latest data from the International Energy Agency, which reported in October that tripling renewables, doubling efficiency and cutting

⁴ A transition in which governments introduce forceful policies early and gradually would prevent the loss of nearly USD 8 trillion in the market value of listed companies (as of April 2023), an analysis by MSCI ESG Research showed, while a disorderly transition, in which decarbonization begins in earnest only in the early 2030s, would cost listed firms roughly 2.5 times more. "The Climate Transition Is Increasingly About Opportunity," MSCI ESG Research, May 15, 2023.

⁵ Examples include both the NetZero 2050 scenario published by the Network for Greening the Financial System and the International Energy Agency's Net Zero Emissions by 2050 Scenario. "Scenarios Portal," Network for Greening the Financial System, and "Global Climate and Energy Model," IEA, 2023.

⁶ See note 1

⁷ "Synthesis Report of the IPCC Sixth Assessment Report (AR6). United Nations Intergovernmental Panel on Climate Change, March 20, 2023.

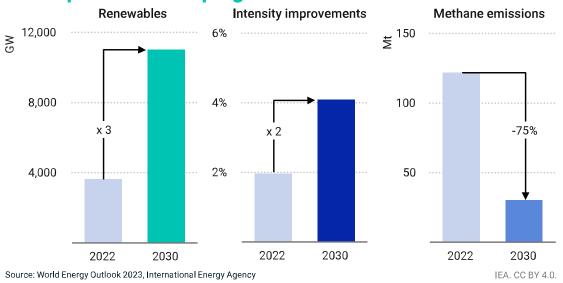


methane emissions by 75% would together achieve more than 80% of the emissions reductions needed this decade to hold the rise in temperatures to 1.5°C.8

- **Speeding development of transition technologies**, including renewables; nuclear energy; technologies for reducing and removing carbon; and low-carbon hydrogen.⁹
- Accelerating efforts toward a phasedown of unabated coal power.

Speaking of methane, the agreement calls for substantially reducing methane emissions by 2030 but stops short of specifying an amount. The U.S. and China catalyzed action on reducing emissions of the powerful greenhouse gas when they agreed two weeks before the summit to make methane targets part of their national climate plans.¹⁰ The UAE and Saudi Arabia later secured the backing of 50 oil and gas companies to eliminate routine flaring this decade and zero out methane emissions.¹¹

Three pillars for keeping 1.5°C alive this decade



"Country targets on renewables and energy efficiency can be harbingers of upcoming industrial and fiscal-policy incentives for investors to look out for," **notes Mathew Lee, senior associate at MSCI**. "The scope of any forthcoming policies, such as whether they also cover grid-related infrastructure necessary to facilitate the energy transition, can make or break the viability of emissions-reduction pathways.

"More gnarly to manage are commitments around hard-to-abate emissions, because companies with carbon capture and other technologies are often the highest emitters, creating a potential mismatch between their financial incentives and governments' timelines," he adds.

^{8 &}quot;World Energy Outlook 2023," International Energy Agency, October 2023

⁹ The inclusion of nuclear energy supports a commitment from countries at COP28 to triple nuclear energy capacity by 2050. "At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero," U.S. Department of Energy, Dec. 1, 2023.

¹⁰ "Sunnylands Statement on Enhancing Cooperation to Address the Climate Crisis," U.S. Department of State, Nov. 14, 2023

^{11 &}quot;Oil & Gas Decarbonization Charter launched to accelerate climate action," COP28 Presidency, Dec. 2, 2023



Countries call time on fossil fuels

The call for countries to transition away from fossil fuels in energy systems sends a signal to companies and investors about the direction of travel. The agreement holds out a role for transition fuels, a provision that leaves oil and gas in the mix while enhancing efforts to replace them with renewables.

The market is sending a signal too. While the bulk of the world's energy consumption remains fossil-based, new investments in the latter are already outpacing investments in oil, gas and coal - a shift driven by what the IEA notes is a combination of cost, energy and security aims, as well as industrial strategy, in the largest economies.¹²

"The agreement reached in Dubai alters the future for oil and gas producers, now that 200 countries have affirmed that reducing climate risk means moving away from their products," **Chris Cote observes**. "Some of the industry has pledged to make modest improvements to its methane and flaring practices, which would represent good business practice as well as a reduction in environmental impact. But the prospects for oil and gas producers will increasingly be shaped by governments that have declared their support for a low-carbon pathway."

Carbon markets find their footing even while negotiations stumble

A series of developments at COP28 aim to leverage carbon markets to unlock private capital as a tool for driving decarbonization.

- Morgan Stanley and Boston Consulting Group are among companies to back the U.S. State
 Department-led Energy Transition Accelerator, for which a framework was launched at COP28 to
 generate emissions reductions from the early retirement of coal plants and their replacement
 with renewables in developing economies.¹³
- The Glasgow Financial Alliance for Net Zero (GFANZ), which aims to mobilize transition finance among its more than 675 individual members, has put its support behind energy-transition credits to support the managed phase-out of high-emitting assets. GFANZ will continue to support these efforts in 2024.¹⁴
- The Monetary Authority of Singapore launched a Transition Credits Coalition and two pilot projects to test the use of credits that include the world's first "coal-to-clean" project in the Philippines. 15
- The World Bank also announced it aims to deliver 24 million carbon credits for sale in 2024 from forest-preservation efforts in countries such as Ghana and Costa Rica.¹⁶

Joint initiatives announced at COP28 aim to promote scale and integrity in carbon markets.

¹² "World Energy Investment 2023," International Energy Agency, May 2023.

^{13 &}quot;Countries, Companies Signal Support for Energy Transition Accelerator," Rockefeller Foundation, Dec. 3, 2023.

¹⁴ "2023 Progress Report," Glasgow Financial Alliance for Net Zero, Dec. 4, 2023

¹⁵ "MAS Launches Coalition and Announces Pilots to Develop Transition Credits for the Early Retirement of Asia's Coal Plants," Monetary Authority of Singapore, Dec. 4, 2023.

¹⁶ "World Bank Carbon Credits to Boost International Carbon Markets," World Bank, Dec. 1, 2023.



- Six organizations across the voluntary-carbon-market ecosystem, including the Integrity Council
 for the Voluntary Carbon Market and the Voluntary Carbon Markets Integrity Initiative,
 announced they will establish an "end-to-end" integrity framework for the procurement and use
 of high-integrity carbon credits. This aims to harmonize their existing guidance.¹⁷
- Meanwhile, six of the largest carbon-crediting programs announced a collaboration to establish shared principles for quantifying and accounting for emissions reductions and removals. This collaboration among standards signals an effort to enhance consistency and transparency, with the aim of increasing confidence in carbon markets.¹⁸

The agreement reached at COP28 failed to include the most important steps for operationalizing a new international carbon market under the Paris Agreement. Technical work will continue in 2024, and discussions will roll over to COP29. When agreed, this would allow countries or companies to use carbon credits to help meet their UN-related climate targets and provide a source of climate finance for developing nations. In the meantime, corporates can still use carbon credits for voluntary climate action from a wide range of registered projects.

"It's positive that collaborative initiatives announced at COP28 by organizations across the voluntary carbon market demonstrate efforts to align guidance for both buyers and sellers of carbon credits to clarify what good looks like," **says Lucien Georgeson, vice president at MSCI**. "With diplomatic capital spent elsewhere, however, time ran out for negotiations on country-to-country trading and carbon markets. The timeline for implementing these will be delayed as a result, and these issues would benefit from being a higher priority at COP29."

Go deeper:

- The current rate of investment in carbon-credit projects is only one-third of the level needed to
 deliver the volume of credits required by 2030 under the 1.5°C threshold, according to the latest
 Global Carbon Credit Investment Report from MSCI Carbon Markets (formerly known as Trove
 Research).
- The <u>MSCI Carbon Markets Policy Tracker</u> provides summary and analysis of policy and guidance released by key organizations, regulators and governments relating to carbon markets and corporate climate commitments. Clients can access this analysis through an online portal or email alerts, which they can tailor to their preferences.

The nuclear age is dawning anew

At least 22 nations, including the U.S., France, Canada and the U.K., agreed at COP28 to triple nuclear-energy capacity globally by 2050.¹⁹ The pledge aligns with data from the International Energy Agency suggesting that reaching net-zero would require nuclear power to double to 916 GW by 2050,

¹⁷ "Achieving High-Integrity Corporate Climate Action: Animation and Infographic Launched by International Organizations Driving and Supporting Corporate Climate Transitions," Dec. 4, 2023.

¹⁸ "Independent Crediting Programs Announce Ground-Breaking Collaboration to Increase the Positive Impact of Carbon Market," Dec. 4, 2023.

¹⁹ "At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero," U.S. Department of Energy, Dec. 1, 2023.



and that aside from electricity, the biggest opportunities for nuclear include production of green hydrogen.²⁰

Though the substance and impact of such pledges remains to be seen, they suggest that the largest countries will be looking to harness every viable alternative in the energy mix as they push to decarbonize their economies. Time will tell how much a scramble an "all-of-the-above" approach to low-carbon energy can help to overcome struggles by developers of new forms of nuclear power to deploy such technologies commercially and at scale.²¹

"A new nuclear age may be arriving but it's likely to be conventional, large-scale plants that account for most of the capacity coming online over the next decade," **notes Elchin Mammadov, vice president at MSCI**. "As the saying goes, small modular reactors [SMRs] are neither small nor modular and face many of the similar challenges as conventional atomic plants. Building new nuclear is a highly expensive and risky endeavor. So, despite the all the hype around SMRs, most governments and developers will mostly rely on the established, large-scale technology to expand their nuclear-power fleet."

The importance of clarity from governments

The agreement reached in Dubai underscores the need to strengthen policy guidance to reach the scale of investment that the climate transition demands. The pact calls on governments to provide "clear signals to investors" that support "redirecting capital to climate action."²² They'll be needed. The rate of carbon cutting by listed companies is slowing, the latest MSCI Net-Zero Tracker shows.

The summit demonstrated the power of well-tailored policy to catalyze climate capital. A policy mix that pairs "a strong investment program, with a credible and rigorous" approach to setting standards, is essential, observed Ali Zaidi, the White House national climate adviser, during a conversation hosted by the MSCI Sustainability Institute, discussing the U.S.'s scale-up of investment in producing electric-vehicle batteries. "One without the other does not work."

"Governments have started to experiment with bold and novel policy approaches," **notes Linda-Eling Lee, head of the MSCI Sustainability Institute**. "Policymakers are listening to industry and private finance on their pain points in implementation. It's clear that the intention is there to help clear barriers to scaling climate investment and finance. As national policies are revised to meet the new commitments coming out of COP28, the new roadmaps will benefit from attention to how practically they can be accomplished."

Climate and nature are inextricably linked

The agreement reached at COP28 reinforces the nexus between nature and climate by stressing the importance of protecting and restoring nature and ecosystems to achieve global climate goals. The agreement calls for enhancing efforts to halt and reverse deforestation (see the discussion of

²⁰ "Net Zero Roadmap: A Global Pathway to Keep the 1.5°C Goal in Reach — 2023 Update," International Energy Agency, October 2023

²¹ "NuScale cancels its first-of-a-kind nuclear project as costs surge," E & E News, Nov. 9, 2023.

²² Annual global investment in low-carbon energy would need to more than double, to 4.5 trillion USD within the next decade, to align with the 1.5°C target. "Net Zero Roadmap: A Global Pathway to Keep the 1.5°C Goal in Reach," 2023 Update, International Energy Agency, September 2023.



carbon markets, above), preserve natural carbon sinks and protect biodiversity in line with the Global Biodiversity Framework adopted last year in Montreal.²³

The push to reverse nature-related loss received a boost when 15 countries, including the U.S. and China, said they would align country climate targets, national biodiversity strategies and plans for action, as well as work to standardize data collection, methods and frameworks across climate and nature. This initiative may leverage a global baseline launched in September by the Taskforce on Nature-related Financial Disclosures.

"Nature works for us, for free," **says Sylvain Vanston, executive director at MSCI**. "Both investors and parties to COP28 have started to connect the dots between the climate and nature crises. Despite ongoing challenges, frameworks exist, regulation is developing and models are improving. Data limitations are no longer an excuse for inaction."

Go deeper: "Private investors are increasingly finding opportunities in nature conservation or ecological-improvement projects, which are becoming increasingly available through mechanisms like debt-for-nature swaps and carbon credits," MSCI ESG Research notes in its <u>Sustainability and Climate Trends to Watch for 2024.</u>

The value of multilateral climate negotiations

COP28 may have been the most controversial of UN global climate summits. From the start, its location in an oil-rich country to its choice of an oil-and-gas CEO for president raised the risks of disengagement and distrust.²⁴ Yet as the agreement reached in Dubai shows, multilateralism has a purpose in the global effort to tackle climate change, **Vanston observes**.

"Thanks to the COP process, leaders in both the public and private sectors have a better understanding of climate risk," he notes. "Without these summits, we would not see pressure on governments and businesses to increase climate ambition, nor would we have a roadmap for decarbonizing the global economy, or frameworks or funding for the climate transition in developing countries.

"Global climate negotiations are slow and cumbersome, but they show how, despite divergent interests and despite the obvious temptations to free-ride the process for short-term gains, progress toward more sustainable growth remains possible."

²³ The 2022 COP15 is connected to the UN Convention on Biological Diversity. The 2023 COP28 is connected to the UN Framework Convention on Climate Change.

²⁴ See, for example: "Sultan al-Jaber, the hard-charging oil head trying to broker COP28 consensus," Financial Times, Dec. 9, 2023.



Contact us

msci.com/contact-us

AMERICAS

Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
Monterrey	+ 52 81 1253 4020
New York	+ 1 212 804 3901
San Francisco	+ 1 415 836 8800
São Paulo	+ 55 11 3706 1360
Toronto	+ 1 416 628 1007

EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
London	+ 44 20 7618 2222
Milan	+ 39 02 5849 0415
Paris	0800 91 59 17 *

ASIA PACIFIC

China North	10800 852 1032 *
China South	10800 152 1032 *
Hong Kong	+ 852 2844 9333
Mumbai	+ 91 22 6784 9160
Seoul	00798 8521 3392 *
Singapore	800 852 3749 *
Sydney	+ 61 2 9033 9333
Taipei	008 0112 7513 *
Thailand	0018 0015 6207 7181 *

+81352901555

Tokyo

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading researchenhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit www.msci.com.

^{*} toll-free



Notice and disclaimer

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or redisseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI lnc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of msci.com.

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK).

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at https://adviserinfo.sec.gov/firm/summary/169222.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Global Market Intelligence. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Global Market Intelligence.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at https://www.msci.com/privacy-pledge.