

# **MSCI Global Low Carbon Target Core Indexes Methodology**

December 2024

## Contents

<b>1. Introduction .....</b>	<b>3</b>
<b>2. Constructing the Indexes .....</b>	<b>4</b>
2.1 Defining the Eligible Universe .....	4
2.2 Defining the Carbon Exposure of Each Security in the Underlying Universe .....	4
2.2.1 Greenhouse Gas Emissions .....	4
2.2.2 Potential Emissions from Fossil Fuels .....	4
2.3 Defining the Optimization Parameters .....	5
2.4 Determining the Optimized Index .....	5
2.5 Treatment of Unrated Companies .....	5
<b>3. Maintaining the Indexes .....</b>	<b>6</b>
3.1 Semi-Annual Index Reviews .....	6
3.2 On going Event-Related Changes .....	6
<b>4. MSCI ESG Research .....</b>	<b>8</b>
4.1 MSCI Climate Change Metrics .....	8
<b>Appendix I: Calculation of Carbon Exposure Metrics .....</b>	<b>9</b>
<b>Appendix II: Barra Equity Model Used in The Optimization .....</b>	<b>11</b>
<b>Appendix III: New Release of Barra® Equity Model or Barra® Optimizer .....</b>	<b>12</b>
<b>Appendix IV: Index History .....</b>	<b>13</b>
<b>Appendix V: Methodology Set .....</b>	<b>14</b>
<b>Appendix VI: Changes to this Document .....</b>	<b>15</b>

## 1. Introduction

The MSCI Global Low Carbon Target Core Indexes (the “Indexes”) are designed to address two dimensions of carbon exposure – carbon emissions and fossil fuel reserves. The Index is constructed by selecting constituents of a market capitalization weighted index (the “Parent Index”) through an optimization process that aims to:

- Maximize the reduction of carbon exposure compared to the Parent Index – in terms of carbon emissions and fossil fuel reserves.
- Control tracking error by applying an ex-ante tracking error constraint of 30 bps while minimizing carbon exposure.
- Have low active sector, country, and regional biases relative to the Parent Index<sup>1</sup>.

---

<sup>1</sup> The Indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document. Please refer to Appendix V for more details.

## 2. Constructing the Indexes

The Indexes use company ratings and research provided by MSCI ESG Research<sup>2</sup> for the Index construction.

Constructing the Index involves the following steps:

- Defining the Eligible Universe
- Defining the Carbon Exposure of each security in the underlying universe
- Defining the optimization parameters
- Determining the optimized index

### 2.1 Defining the Eligible Universe

The Eligible Universe for the indexes is defined by all the constituents of the Parent Index.

### 2.2 Defining the Carbon Exposure of Each Security in the Underlying Universe

The Carbon Exposure of a security is measured in terms of its greenhouse gas (GHG) emissions and its potential emissions from fossil fuel reserves.

#### 2.2.1 Greenhouse Gas Emissions

MSCI ESG Research collects company-specific direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions data from company public documents and/or the Carbon Disclosure Project. If a company does not report GHG emissions, then MSCI ESG Research estimates Scope 1 and Scope 2 GHG emissions. The data is updated on an annual basis. Since the current carbon emissions of a company are directly influenced by its current business activity, MSCI normalizes for size by dividing the annual carbon emissions of the company by the annual sales of the company.

#### 2.2.2 Potential Emissions from Fossil Fuels

MSCI ESG Research collects fossil fuel reserves data where relevant for companies which have reserves, typically in the Oil & Gas, Coal Mining and Electric Utilities industries<sup>3</sup>. Fossil fuel reserves can be used for several applications including energy or industrial purposes (e.g. coking coal used for steel production). For the construction of the MSCI Global Low Carbon Target Core Indexes, only fossil fuel reserves used for energy purposes are taken into account. The data is updated on an annual basis based on information disclosed by companies. Sources include company publications, other public records and third party data providers.

<sup>2</sup> See section 4 for further information regarding ESG and climate data used in the Indexes that MSCI Limited and MSCI Deutschland GmbH source from MSCI ESG Research LLC, a separate subsidiary of MSCI Inc. MSCI ESG Research is solely responsible for the creation, determination and management of such data as a provider to MSCI Limited and MSCI Deutschland GmbH. MSCI Limited and MSCI Deutschland GmbH are the benchmark administrators for the MSCI indexes.

<sup>3</sup> For more information on MSCI Climate Change Metrics, please refer to <https://www.msci.com/climate-change-solutions>

To convert reserves data to potential carbon emissions, MSCI ESG Research applies a formula from the Potsdam Institute for Climate Impact Research.<sup>4</sup>

## 2.3 Defining the Optimization Parameters

The Index is constructed using an optimization process that applies the following objective and constraints:

- Minimize the carbon exposure subject to a tracking error constraint of 30 basis points relative to the Parent Index
- The maximum weight of an Index constituent will be restricted to 20 times its weight in the Parent Index
- The country weights in the Index will not deviate more than +/-2% from the country weights in the Parent Index
- The above country weight constraint will also apply on China A Stock Connect listings as a group separately in addition to the usual country weight constraint on China
- The sector weights in the MSCI Global Low Carbon Target Core Indexes will not deviate more than +/-2% from the sector weights in the Parent Index with the exception of the Energy Sector where no sector weight constraint is applied
- The one-way turnover of the Index is constrained to a maximum of 10% at each index review.

In the event that there is no optimal solution that satisfies all the optimization constraints, the turnover constraint will be relaxed up to a maximum turnover of 20% in steps of 1% until an optimal solution is found. If a feasible solution is still not found, the predicted tracking error is relaxed in steps of 10 basis points.

## 2.4 Determining the Optimized Index

The MSCI Global Low Carbon Target Core Indexes are constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model. The optimization uses the universe of eligible securities and the specified optimization objective and constraints to determine the constituents of the Index. After the optimization process, any securities with extremely low weights (less than 1/10th of the minimum weight in the Parent Index) are eliminated, and their weight is proportionately distributed over the remaining securities in order to determine the final Index constituents.

## 2.5 Treatment of Unrated Companies

For the treatment of unrated companies in the calculation of Carbon Exposure metrics, please refer to Appendix I.

<sup>4</sup> Malte Meinshausen, Nicolai Meinshausen, William Hare, Sarah C. B. Raper, Katja Frieler, Reto Knutti, David J. Frame & Myles R. Allen. *Greenhouse-gas emission Target for limiting global warming to 2 °C*. *Nature* 458, 1158-1162 (30 April 2009) | doi:10.1038/nature08017; Received 25 September 2008; Accepted 25 March 2009. Supplementary Information, p. 7.

### 3 Maintaining the Indexes

#### 3.1 Semi-Annual Index Reviews

The Index is reviewed on a semi-annual basis in May and November to coincide with the May and November Index Reviews of the MSCI Global Investable Market Indexes, and the changes are implemented as of the close of the last business day of May and November. In general, the pro forma Index is announced nine business days before the effective date.

At each Index Review, the optimization process outlined in Section 2 is implemented.

In general, MSCI uses MSCI ESG Research data (i.e., MSCI Climate Change Metrics) as of the end of the month preceding the Index Reviews<sup>5</sup>. For some securities, such data may not be published by MSCI ESG Research by the end of the month preceding the Index Review. For such securities, MSCI will use ESG data published after the end of month, when available.

#### 3.2 On going Event-Related Changes

The general treatment of corporate events in the Index aims to minimize turnover outside of Index Reviews. The methodology aims to appropriately represent an investor’s participation in an event based on relevant deal terms and pre-event weighting of the index constituents that are involved. Further, changes in index market capitalization that occur as a result of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent.

Additionally, if the frequency of Index Reviews in the Parent Index is greater than the frequency of Index Reviews in the MSCI Global Low Carbon Target Core Indexes, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the MSCI Global Low Carbon Target Core Indexes.

The following section briefly describes the treatment of common corporate events within the MSCI Global Low Carbon Target Core Indexes.

No new securities will be added (except where noted below) to the Index between Index Reviews. Parent Index deletions will be reflected simultaneously.

**EVENT TYPE**

**EVENT DETAILS**

**New additions to the Parent Index**

A new security added to the parent index (such as IPO and other early inclusions) will not be added to the index.

**Spin-Offs**

All securities created as a result of the spin-off of an existing Index constituent will be added to the Index at the time of event implementation. Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

<sup>5</sup> Emissions data, whenever available, will be taken as of the same calendar year as sales data. Depending on availability, such data may be based on values reported at least two years prior.

**Merger/Acquisition**

For Mergers and Acquisitions, the acquirer's post event weight will account for the proportionate amount of shares involved in deal consideration, while cash proceeds will be invested across the Index.

If an existing Index constituent is acquired by a non-Index constituent, the existing constituent will be deleted from the Index and the acquiring non-constituent will not be added to the Index.

**Changes in Security Characteristics**

A security will continue to be an Index constituent if there are changes in characteristics (country, sector, size segment, etc.) Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Further detail and illustration regarding specific treatment of corporate events relevant to this Index can be found in the MSCI Corporate Events Methodology book under the sections detailing the treatment of events in Capped Weighted and Non-Market Capitalization Weighted indexes.

The MSCI Corporate Events methodology book is available at:  
<https://www.msci.com/index-methodology>.

## 4 MSCI ESG Research

The Indexes are products of MSCI Inc. that utilize information such as company ratings and research produced and provided by MSCI ESG Research LLC (MSCI ESG Research), a subsidiary of MSCI Inc. In particular, the Indexes use the following MSCI ESG Research products: MSCI Climate Change Metrics. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH.

### 4.1 MSCI Climate Change Metrics

MSCI Climate Change Metrics provide climate data & tools to support institutional investors seeking to integrate climate risk & opportunities into their investment strategy and processes. This includes investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, alignment with temperature pathways and factoring climate change research into their risk management processes, in particular through climate scenario analysis for both transition and physical risks.

The dataset spans across the four dimensions of a climate strategy: transition risks, green opportunities, physical risks and 1.5° alignment.

#### 4.1.1 Greenhouse Gas (GHG) Emissions

MSCI ESG Research collects reported emissions and uses proprietary estimation methodologies that follows the GHG Protocol in including carbon dioxide (CO<sub>2</sub>) and the five other principal GHGs: hydrofluorocarbons (HFCs), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Emissions of these other gases are accounted for in terms of the quantity of CO<sub>2</sub> that has an equivalent global warming potential.

For more details on MSCI Climate Change Metrics, please refer to <https://www.msci.com/legal/disclosures/climate-disclosures>

## Appendix I: Calculation of Carbon Exposure Metrics

### Index Carbon Emissions –

#### Greenhouse Gas (GHG) Emissions

MSCI ESG Research collects company-specific direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions (GHG) data from company public documents and/or the Carbon Disclosure Project. If a company does not report GHG emissions, then MSCI ESG Research estimates Scope 1 and Scope 2 GHG emissions.

#### Calculation of GHG Intensity

First, index level carbon emissions are calculated using the Scope 1+2 carbon emissions of a company.

#### Parent Index Carbon Emissions –

$$\sum_i \left( \frac{(\text{Float Market Capitalization} * \text{Absolute Emissions})}{\text{Issuer Market Capitalization}} \right)$$

#### Derived Index Carbon Emissions –

$$\sum_i \left( \frac{(\text{Derived Index Market Capitalization} * \text{Absolute Emissions})}{\text{Issuer Market Capitalization}} \right)$$

Parent Index Carbon Emission Intensity is defined as Parent Index Carbon Emissions, as defined above, divided by Parent Index Sales –

$$\sum_i \left( \frac{(\text{Float Market Capitalization} * \text{Absolute Emissions})}{\text{Issuer Market Capitalization}} \right) / \sum_i \left( \frac{(\text{Float Market Capitalization} * \text{Sales})}{\text{Issuer Market Capitalization}} \right)$$

Derived Index Carbon Emissions Intensity is defined as Derived Index Carbon Emissions, as defined above, divided by Derived Index Sales –

$$\sum_i \left( \frac{(\text{Derived Index Market Capitalization} * \text{Absolute Emissions})}{\text{Issuer Market Capitalization}} \right) / \sum_i \left( \frac{(\text{Derived Index Market Capitalization} * \text{Sales})}{\text{Issuer Market Capitalization}} \right)$$

#### Estimation of missing Carbon Intensity data

For a security, if Scope 1+2 carbon emissions are not available but Sales are available, MSCI estimates emissions by multiplying the Sales of the security with the average Sales intensity (i.e., Scope 1+2 emissions / Sales) of all constituents of MSCI ACWI in the same GICS Industry Group that have both Scope 1+2 Emissions and Sales available.

If Sales are not available for a security but Scope 1+2 emissions are available, MSCI estimates Sales by dividing the security’s Scope 1+2 emissions by the average Sales intensity (i.e., Scope 1+2 emissions / Sales) of all constituents of MSCI ACWI in the same GICS Industry group that have both Scope 1+2 emissions and Sales available.

In case both Scope 1+2 emissions and Sales are not available for a security:

- The Sales are estimated by dividing the security’s Issuer market capitalization by the average Issuer market capitalization to Sales ratio of all constituents of MSCI ACWI in the same GICS Industry Group that have Sales available.
- The emissions are estimated by multiplying the estimated Sales of the security by the average Sales intensity (i.e., Scope 1+2 emissions / Sales) of all constituents of MSCI ACWI in the same GICS Industry group that have both Scope 1+2 emissions and Sales available.

In case there are no securities in the GICS Industry Group with relevant data available for the estimation, then the estimation is applied at the level of the corresponding GICS Sector.

## Index Potential Carbon Emissions from Fossil Fuels–

Parent Index Potential Carbon Emissions from Fossil Fuels–

$$\sum_i \left( \frac{(\text{Float Market Capitalization} * \text{Absolute Potential Emissions})}{\text{Issuer Market Capitalization}} \right)$$

Derived Index Potential Carbon Emissions from Fossil Fuels–

$$\sum_i \left( \frac{(\text{Derived Index Market Capitalization} * \text{Absolute Potential Emissions})}{\text{Issuer Market Capitalization}} \right)$$

For newly added companies to the index where data is not available yet, MSCI uses zero fossil fuel reserves. MSCI normalizes for the company’s size by dividing the potential carbon emissions of the company by its market capitalization.

## **Appendix II: Barra Equity Model Used in The Optimization**

The MSCI Global Low Carbon Target Core Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTL).

## **Appendix III: New Release of Barra® Equity Model or Barra® Optimizer**

A major new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

## Appendix IV: Index History

The MSCI Global Low Carbon Target Core Indexes were launched in September 2022. The simulated history was entirely copied from the corresponding MSCI Global Low Carbon Target Indexes.

The MSCI Global Low Carbon Target Core Indexes will start to diverge from the MSCI Global Low Carbon Target Indexes on December 1, 2022, after changes are implemented in the MSCI Global Low Carbon Target Indexes methodology as part of the November 2022 Semi-Annual Index Review.

## Appendix V: Methodology Set

The Indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document as mentioned below:

- Description of methodology set – [www.msci.com/index/methodology/latest/ReadMe](https://www.msci.com/index/methodology/latest/ReadMe)
- MSCI Corporate Events Methodology – [www.msci.com/index/methodology/latest/CE](https://www.msci.com/index/methodology/latest/CE)
- MSCI Fundamental Data Methodology – [www.msci.com/index/methodology/latest/FundData](https://www.msci.com/index/methodology/latest/FundData)
- MSCI Index Calculation Methodology – [www.msci.com/index/methodology/latest/IndexCalc](https://www.msci.com/index/methodology/latest/IndexCalc)
- MSCI Index Glossary of Terms – [www.msci.com/index/methodology/latest/IndexGlossary](https://www.msci.com/index/methodology/latest/IndexGlossary)
- MSCI Index Policies – [www.msci.com/index/methodology/latest/IndexPolicy](https://www.msci.com/index/methodology/latest/IndexPolicy)
- MSCI Global Industry Classification Standard (GICS) Methodology – [www.msci.com/index/methodology/latest/GICS](https://www.msci.com/index/methodology/latest/GICS)
- MSCI Global Investable Market Indexes Methodology – [www.msci.com/index/methodology/latest/GIMI](https://www.msci.com/index/methodology/latest/GIMI)
- ESG Factors In Methodology\*

The Methodology Set for the Indexes can also be accessed from MSCI’s webpage <https://www.msci.com/index-methodology> in the section ‘Search Methodology by Index Name or Index Code’.

\* ‘ESG Factors in Methodology’ contains the list of environmental, social, and governance factors considered, and how they are applied in the methodology (e.g., selection, weighting or exclusion). It can be accessed in the Methodology Set as described above.

## Appendix VI: Changes to this Document

**The following section has been modified as of November 2022:**

Section 4.1

- Added clarification on data cutoff dates

**The following sections have been modified as of February 2023:**

- Methodology book was updated to reflect the transition of the MSCI Global Investable Market Indexes (GIMI) to Quarterly Comprehensive Index Reviews.
- All references to “Semi-Annual Index Reviews” and “Quarterly Index Reviews” of the MSCI GIMI were replaced with “Index Reviews.”

Section 3.3

- Added clarification on optimization infeasibilities

**The following sections have been modified as of February 2024:**

Section 2.5

- New section detailing the treatment of companies with ratings and research not available from MSCI ESG Research

Section 4

- Moved that section after the Section 3
- Updated the descriptions of MSCI ESG Research products

Appendix I

- Moved treatment of unrated companies in Section 2.2.1 and Section 2.2.2 to Appendix 1

Appendix V

- Added details on the Methodology Set for the Indexes

**The following section has been modified as of December 2024**

Section 4.1: MSCI Climate Change Metrics

- Added a sub-section under Climate Change Metrics to provide additional details on Greenhouse Gas Emissions.

## Contact us

[msci.com/contact-us](https://www.msci.com/contact-us)

### AMERICAS

United States	+ 1 888 588 4567 *
Canada	+ 1 416 687 6270
Brazil	+ 55 11 4040 7830
Mexico	+ 52 81 1253 4020

### EUROPE, MIDDLE EAST & AFRICA

South Africa	+ 27 21 673 0103
Germany	+ 49 69 133 859 00
Switzerland	+ 41 22 817 9777
United Kingdom	+ 44 20 7618 2222
Italy	+ 39 02 5849 0415
France	+ 33 17 6769 810

### ASIA PACIFIC

China	+ 86 21 61326611
Hong Kong	+ 852 2844 9333
India	+ 91 22 6784 9160
Malaysia	1800818185 *
South Korea	+ 82 70 4769 4231
Singapore	+ 65 67011177
Australia	+ 612 9033 9333
Taiwan	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Japan	+ 81 3 4579 0333

\* toll-free

### 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 research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit [www.msci.com](https://www.msci.com).

The process for submitting a formal index complaint can be found on the index regulation page of MSCI's website at: <https://www.msci.com/index-regulation>.

## Notice and disclaimer

This document is research for informational purposes only and is intended for institutional professionals with the analytical resources and tools necessary to interpret any performance information. Nothing herein is intended to promote or recommend any product, tool or service.

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 disseminated 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 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 may include "Signals," defined as quantitative attributes or the product of methods or formulas that describe or are derived from calculations using historical data. Neither these Signals nor any description of historical data are intended to provide investment advice or a recommendation to make (or refrain from making) any investment decision or asset allocation and should not be relied upon as such. Signals are inherently backward-looking because of their use of historical data, and they are not intended to predict the future. The relevance, correlations and accuracy of Signals frequently will change materially.

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 Inc. 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 a 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](http://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](http://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) and MSCI Deutschland GmbH.

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>.