# Methodology Book for:

- **MSCI ACWI ESG Leaders Select Sustainability Index**
- **MSCI Europe ESG Leaders Select Sustainability Index**
- **MSCI USA ESG Leaders Select Sustainability Index**

**May 2021**

# Contents

# 1 Introduction

The MSCI ACWI ESG Leaders Select Sustainability Index, MSCI Europe ESG Leaders Select Sustainability Index, and the MSCI USA ESG Leaders Select Sustainability Index ("Indexes") aim to represent the performance of an investment strategy that selects securities of companies that have high Environmental, Social and Governance (ESG) ratings relative to their sector peers. Additionally, the Indexes apply certain other climate-change related exclusion criteria. Finally, the Indexes follow an *optimization-based* approach to meet the following objectives:

- Reduce carbon footprint compared to their corresponding parent indexes[1]
- Follow a 7% annualized decarbonization trajectory
- Increase revenues from "green" sources relative to revenues from "brown" sources compared to their corresponding parent indexes
- Have a weighted average LCT Score at least equivalent to that of the corresponding parent indexes
- Have a weighted average ESG Score at least equivalent to that of the corresponding parent indexes
- Achieve a modest tracking error compared to the Parent Index and low turnover.

[1] The parent indexes are defined in Appendix V.

# 2 MSCI ESG Research

MSCI ESG Research provides in-depth research, ratings and analysis of the environmental, social and governance-related business practices of thousands of companies worldwide. It consists of an integrated suite of tools and products to efficiently manage research, analysis and compliance tasks across the spectrum of ESG factors.

The Index uses company ratings and research provided by MSCI ESG Research. In particular, this index uses the following MSCI ESG Research products: MSCI Climate Change Metrics, MSCI ESG Sustainable Impact Metrics, MSCI ESG Controversies and MSCI ESG Business Involvement Screening Research.

For details on MSCI ESG Research's full suite of ESG products, please refer to: https://www.msci.com/esg-investing

## 2.1 MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics is designed to support investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, and factoring climate change research into their risk management processes. It provides Carbon Emissions, Fossil Fuel exposure, environmental impact (i.e. clean technology) data and screens, as well as climate-related risk exposure and management assessment on companies such as Low Carbon Transition scores and categories.

For more details on MSCI Climate Change Metrics, please refer to https://www.msci.com/climate-change-solutions

## 2.2 MSCI ESG SUSTAINABLE IMPACT METRICS

MSCI ESG Research's Sustainable Impact Metrics is designed to identify companies that currently offer products or services that address at least one of the major social and environmental challenges as defined by the UN Sustainable Development Goals. Designed as a positive screen, it is designed to highlight companies that are deriving sales from products or services that may have a positive impact on society and the environment.

For more details on the MSCI ESG Sustainable Impact Metrics, please refer to https://www.msci.com/esg-sustainable-impact-metrics

## 2.3 MSCI ESG CONTROVERSIES

MSCI ESG Controversies provide assessments of controversies concerning the negative environmental, social, and/or governance impact of company operations, products and services. The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Global Compact. MSCI ESG Controversies Score falls on a 0-10 scale, with "0" being the most severe controversy.

For more details on MSCI ESG Controversies, please refer to : https://www.msci.com/documents/10199/acbe7c8a-a4e4-49de-9cf8-5e957245b86b

## 2.4 MSCI ESG BUSINESS INVOLVEMENT SCREENING RESEARCH

MSCI ESG Business Involvement Screening Research (BISR) aims to enable institutional investors to manage environmental, social and governance (ESG) standards and restrictions reliably and efficiently.

For more details on MSCI ESG Business Involvement Screening Research, please refer to http://www.msci.com/resources/factsheets/MSCI_ESG_BISR.pdf

# 3 Index Construction Methodology

## 3.1 APPLICABLE UNIVERSE

The applicable universe includes all the existing constituents of the corresponding free-float adjusted market-capitalization weighted parent index ("Parent Index"). This approach aims to provide an opportunity set with sufficient liquidity and capacity.

## 3.2 INITIAL UNIVERSE

The Initial Universe is constructed from the Applicable Universe as per Section 3 of the MSCI ESG Leaders Index methodology[2]. In addition to the Controversial Business Involvement Criteria in the MSCI ESG Leaders Index methodology, the indexes also apply the exclusion criteria detailed in Appendix II.

## 3.3 MINIMUM REQUIREMENTS

The requirements MSCI imposes for the MSCI ESG Leaders Select Sustainability Indexes are detailed in Table 1.

*Table 1: Requirements imposed for the MSCI ESG Leaders Select Sustainability Indexes*

| Minimum Requirements | MSCI ESG Leaders Select Sustainability |
|---|---|
| **Minimum reduction in Weighted Average Scope 1+2+3[3] Carbon Emissions Intensity (WACI) relative to Parent Index** | 50% |
| **Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index** | 50% |
| **Baseline Exclusions** | • Controversial Weapons<br>• ESG Controversy Score[4] of 0<br>• Environmental Controversy Score of 1 and below |

[2] For more details regarding the MSCI ESG Leaders Indexes, please refer to the MSCI ESG Leaders Indexes Methodology Book at https://www.msci.com/index-methodology.

[3] Prior to the May 2020 Quarterly Index Review (SAIR) of the Indexes, the Weighted Average Carbon Emissions Intensity has been calculated based on Scope 1+2 Emissions.

[4] The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Global Compact. For more details on MSCI ESG Controversies, please refer to www.msci.com/documents/esg-controversies

| Minimum Requirements | MSCI ESG Leaders Select Sustainability |
|---|---|
| | • Tobacco Producers |
| **Activity Exclusions** | • Coal (1%+ revenues)<br>• Oil & Gas (10%+ revenues)<br>• Coal, Oil & Gas based power generation (50%+ revenues) |
| **Minimum average reduction (per annum) in WACI relative to WACI in the Base Date**[5] | 7% |
| **Minimum ratio of Green Revenue/ Brown Revenue relative to Parent Index** | At least 4 times higher than Parent Index |
| **Minimum weighted average Low Carbon Transition (LCT) Score** | At least equivalent to the weighted average LCT Score of the Parent Index |
| **Minimum weighted average ESG Score** | At least equivalent to the weighted average ESG Score of the Parent Index |
| **Active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix IV** | 0% |

## 3.4 ELIGIBLE UNIVERSE

The Eligible Universe is constructed from the Initial Universe by excluding securities of companies based on the climate-related exclusion criteria listed in Appendix III.

## 3.5 OPTIMIZATION CONSTRAINTS

At each Quarterly Index Review, the indexes are constructed using an optimization process that aims to achieve replicability and investability as well as minimize ex-ante tracking error relative to the Parent Index subject to the following constraints:

1. Transition and physical risk objectives – constraints detailed in Table 1
2. Transition opportunities objectives – constraints detailed in Table 2

[5] Prior to the May 2020 Quarterly Index Review (SAIR) of the Indexes, the average reduction in WACI has been calculated using Scope 1+2 Emissions since Inception.

3. Diversification objectives – constraints detailed in Table 3

Table 2: Constraints imposed to meet transition and physical risk objectives

| No. | Transition and Physical Risk Objective | MSCI ESG Leaders Select Sustainability |
|---|---|---|
| 1. | Minimum reduction in Greenhouse Gas (GHG) Intensity (Scope 1+2+3[6]) relative to Parent Index | 50% |
| 2. | Minimum average reduction (per annum) in GHG Intensity relative to GHG Intensity at the Base Date[7] | 7% |
| 3. | Minimum active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix IV | 0% |
| 4. | Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index | 50% |
| 5. | Minimum increase in weighted average Low Carbon Transition (LCT) Score relative to Parent Index Please see more detail on LCT Score in Appendix I | 0% |
| 6. | Minimum increase in weighted average ESG Score relative to Parent Index | 0% |

*Table 3: Constraints imposed in order to meet transition opportunity objectives*

| No. | Transition Opportunity Objective | MSCI ESG Leaders Select Sustainability |
|---|---|---|
| 7. | Minimum increase in weighted average LCT Score relative to Parent Index[8] | 0% |
| 8. | Minimum ratio of Weighted Average Green Revenue/ Weighted Average Brown Revenue relative to Parent Index | 4 times |

[6] Prior to the May 2020 Quarterly Index Review (SAIR) of the Indexes, the Weighted Average Carbon Emissions Intensity has been calculated based on Scope 1+2 Emissions.

[7] Prior to the May 2020 Quarterly Index Review (SAIR) of the Indexes, the average reduction in WACI has been calculated using Scope 1+2 Emissions since Inception. The Base Date may be updated based on the rules identified in Appendix VI.

[8] The constraint on increase in LCT Score is designed to underweight companies with a low LCT Score (assessed as companies facing risks from a low carbon transition) and overweight companies with a high LCT Score (assessed as companies which may have opportunities from a low carbon transition). Thus, the constraint has been repeated in Table 2 to illustrate how the constraint meets both the objectives.

*Table 4: Constraints imposed to meet diversification objectives*

| No. | Diversification Objective | MSCI ESG Leaders Select Sustainability |
|---|---|---|
| 9. | Constituent Active Weight | +/- 5% |
| 10. | Maximum Issuer Weight | 15% |
| 11. | Security Weight as a multiple of its weight in the Parent Index | 0.1x/20x |
| 12. | Active Sector Weights (the Energy GICS Sector is not constrained) | +/-5% |
| 13. | Active Country Weights[9] | +/-5% |
| 14. | One Way Turnover in Feb, Aug, Nov Index Reviews | 5% |
| 15. | One Way Turnover in May Index Reviews and Base Resets as detailed in Appendix VII | 10% |
| 16. | Common Factor Risk Aversion | 0.0075 |
| 17. | Specific Risk Aversion | 0.075 |

During the Quarterly Index Review, in the event that there is no optimal solution that satisfies all the optimization constraints, the following constraints will be relaxed, until an optimal solution is found:

- Relax the one-way index turnover constraint in steps of 1% upto 20%
- Relax the active sector weight constraint in steps of 1% upto +/-20%
- The one-way index turnover constraint and the active sector weight constraint are alternately relaxed until a feasible solution is achieved.

In the event that no optimal solution is found after the above constraint relaxations are exhausted, the relevant Index will not be rebalanced for that Quarterly Index Review.

## 3.6 DETERMINING THE OPTIMIZED PORTFOLIO

The Index is constructed using the Barra Open Optimizer[10] in combination with the relevant Barra Equity Model. The optimization uses universe of eligible securities and the specified optimization objectives and constraints to determine the constituents of the Indexes.

[9] In case there are countries in the parent index which weigh less than 2.5% in the parent index then for such countries the active country upper bound of +5% is not applicable. When a country weighs less than 2.5% in parent index then the upper bound of country weight in the Index is set at three times of the country's weight in parent index.

[10] Please refer to Appendix V and VI for more details.

# 4 Maintaining the MSCI ESG Leaders Select Sustainability Indexes

## 4.1 QUARTERLY INDEX REVIEWS

The Indexes are rebalanced on a quarterly basis, as of the close of the last business day of February, May, August and November, coinciding with the Quarterly Index Review of the MSCI Global Investable Market Indexes. The pro forma Indexes are in general announced nine business days before the effective date.

In general, MSCI uses MSCI ESG Research data (including MSCI Climate Change Metrics, MSCI ESG Sustainable Impact Metrics, MSCI ESG Controversies and MSCI Business Involvement Screening Research) as of the end of the month preceding the Index Reviews for the rebalancing of the Indexes.

## 4.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the Indexes 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 Index, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the Index.

The following section briefly describes the treatment of common corporate events within the Index.

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. |
| **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.<br><br>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

# Appendix I: MSCI Low Carbon Transition Risk Assessment

MSCI ESG Research's Low Carbon Transition Risk assessment[11] is designed to identify potential leaders and laggards by holistically measuring companies' exposure to and management of risks and opportunities related to the low carbon transition.

The final output of this assessment is two company-level factors as described below:

(1) **Low Carbon Transition Category**: This factor groups companies in five categories that highlight the predominant risks and opportunities they are most likely to face in the transition (Exhibit 1).

(2) **Low Carbon Transition Score:** This score is based on a multi-dimensional risks and opportunities assessment and considers both predominant and secondary risks a company faces. It is industry agnostic and represents an absolute assessment of a company's position vis-à-vis the transition.

| LOW CARBON TRANSITION SCORE | LOW CARBON TRANSITION CATEGORY | | LOW CARBON TRANSITION RISK / OPPORTUNITY | |
|---|---|---|---|---|
| Score = 0 | ASSET STRANDING | | Potential to experience "stranding" of physical / natural assets due to regulatory, market, or technological forces arising from low carbon transition. | Coal mining & coal based power generation; Oil sands exploration/production |
| | TRANSITION | PRODUCT | Reduced demand for carbon-intensive products and services. Leaders and laggards are defined by the ability to shift product portfolio to low-carbon products. | Oil & gas exploration & production; Petrol/diesel based automobile manufacturers, thermal power plant turbine manufacturers etc. |
| | | OPERATIONAL | Increased operational and/or capital cost due to carbon taxes and/or investment in carbon emission mitigation measures leading to lower profitability of the companies. | Fossil fuel based power generation, cement, steel etc. |
| | NEUTRAL | | Limited exposure to low carbon transition carbon risk. Though companies in this category could have exposure to physical risk and/or indirect exposure to low carbon transition risk via lending, investment etc. | Consumer staples, healthcare, etc. |
| Score = 10 | SOLUTIONS | | Potential to benefit through the growth of low-carbon products and services. | Renewable electricity, electric vehicles, solar cell manufacturers etc. |

*Exhibit 1: Low Carbon Transition Categories and Scores*

**Calculation methodology**

[11] For more details on MSCI Climate Change Metrics, please refer to https://www.msci.com/climate-change-solutions

The Low Carbon Transition Categories and Scores are determined by a combination of each company's current risk exposure and its efforts to manage the risks and opportunities presented by the low carbon transition. The 3-step process followed by MSCI ESG Research is explained below.

**Step 1: Measure Low Carbon Transition Risk Exposure**

The first step towards measuring the Low Carbon Transition Risk Exposure for a company is the computation of its Carbon Intensity profile – which is informed by its Product Carbon Intensity, Operational Carbon Intensity and Total Carbon Intensity. In the next step, we compute Low Carbon Transition Risk Exposure Category and Score based on Total Carbon Intensity.

**Step 2: Assess Low Carbon Transition Risk Management**

In the second step, we assess a company's management of risks and opportunities presented by the low carbon transition. This assessment is based on policies and commitments to mitigate transition risk, governance structures, risk management programs and initiatives, targets and performance, and involvement in any controversies.

**Step 3: Calculate Low Carbon Transition Category and Score**

In the final step, the Low Carbon Transition Risk Exposure Category and Score that was calculated in Step 1 are adjusted for the strength of management efforts. Following this adjustment, Low Carbon Transition Risk Exposure Score of companies with top or second quartile risk management improves and some top and second quartile companies may move up one category.

# Appendix II: Additional Screens

Climate Change-based Exclusions Criteria:

- **Extraction & Production**
  - All companies deriving 5% or more aggregate revenue (either reported or estimated) from thermal coal mining, uranium mining, oil and gas extraction and production, and/or oil and gas refining

    - **Thermal Coal Mining:** Revenue from the mining of thermal coal (including lignite, bituminous, anthracite and steam coal) and its sale to external parties. It does not cover revenue from metallurgical coal; coal mined for internal power generation (e.g. in the case of vertically integrated power producers); intra-company sales of mined thermal coal; and revenue from coal trading
    - **Uranium Mining:** Revenue from the mining of uranium
    - **Oil and Gas Extraction and Production:** Revenue from the extraction and production of oil and gas. It covers revenue from the production of unconventional oil and gas (oil sands, oil shale, shale gas, shale oil, coal seam gas, and coal bed methane) and conventional (Arctic onshore/offshore, deep water, shallow water, and other onshore/offshore) oil and gas.
    - **Oil and Gas Refining:** Revenue from refining oil and gas

- **Power Generation**
  - All companies deriving 5% or more of installed capacity, or 5% or more revenue (either reported or estimated) from power generation based on thermal coal, liquid fuel, natural gas, or nuclear sources.

Values-based Exclusions Criteria:

- **Civilian Firearms**
  - All companies deriving 5% or more aggregate revenue from the production and distribution (wholesale or retail) of firearms or small arms ammunition intended for civilian use.

- **Conventional Weapons**
  - All companies deriving 5% or more revenue from the production of conventional weapons

- **Tobacco**

  - All companies deriving 5% or more revenue from the manufacturing of tobacco products

- **Genetically Modified Organisms (GMO)**
  - All companies deriving 5% or more revenue from activities like genetically modifying plants, such as seeds and crops, and other organisms intended for agricultural use or human consumption
- **Alcohol**
  - All companies deriving 5% or more revenue from the production of alcohol-related products

## Appendix III: Climate-related exclusions

Securities of companies that meet the below criteria are also ineligible for selection in the Index.

1. All companies having faced very severe controversies pertaining to ESG issues – Defined as companies with an ESG Controversy Score[12] of 0.[13]
2. All companies involved in the controversial weapons business as defined by the MSCI Global ex Controversial Weapons Index methodology[14]
3. All companies that manufacture tobacco products, such as cigars, blunts, cigarettes, e-cigarettes, inhalers, beedis, kreteks, smokeless tobacco, snuff, snus, dissolvable and chewing tobacco[15].
4. All companies with an environmental controversy score of 1 and below.
5. All companies deriving 1% or more revenue (either reported or estimated) from the mining of thermal coal (including lignite, bituminous, anthracite and steam coal) and its sale to external parties. It excludes: revenue from metallurgical coal; coal mined for internal power generation (e.g. in the case of vertically integrated power producers); intra-company sales of mined thermal coal; and revenue from coal trading (either reported or estimated)
6. All companies deriving 10% or more revenue from the extraction, production, transportation, distribution, refining, and equipment and services of Conventional and Unconventional Oil & Gas. Conventional Oil and Gas includes Arctic onshore/offshore, deep water, shallow water and other onshore/offshore. Unconventional Oil and Gas includes oil sands, oil shale (kerogen-rich deposits), shale gas, shale oil, coal seam gas, and coal bed methane.

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[12] The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Global Compact. For more details on MSCI ESG Controversies, please refer to www.msci.com/documents/esg-controversies

[13] The screen is also applied by the ESG Leaders Methodology

[14] The screen is also applied by the ESG Leaders Methodology

[15] The screen is also applied by the ESG Leaders Methodology

7. All companies deriving 50% or more revenue from thermal coal based power generation, liquid fuel based power generation and natural gas based power generation[16].

[16] As per https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf, thermal coal based power generation, liquid fuel based power generation and natural gas based power generation have median lifecycle emissions exceeding 100g$CO_2$/kWh.

# Appendix IV: Calculation of Target Metrics

### Calculation of Weighted Average Carbon Emissions Intensity

For Parent Index constituents where the Scope 1+2+3 Emissions Intensity is not available, the average Scope 1+2+3 Emissions Intensity of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the constituent belongs is used.

Security Level Carbon Emissions Intensity =

$$\frac{Scope\ 1+2+3\ Carbon\ Emissions * (1+EVIAF)}{Enterprise\ Value + Cash (in\ M\$)}$$

Enterprise Value Inflation Adjustment Factor (EVIAF) =

$$EVIAF = \left(\frac{Average\,(Enterprise\ Value + Cash)}{Previous\ (Average\,(Enterprise\ Value + Cash))}\right) - 1$$

Weighted Average Carbon Emissions Intensity of Parent Index =

$$\sum (Weight\ in\ Parent\ Index * Security\ Level\ Carbon\ Emissions\ Intensity)$$

Weighted Average Carbon Emissions Intensity of Derived Index =

$$\sum (Weight\ in\ Derived\ Index * Security\ Level\ Carbon\ Emissions\ Intensity)$$

### Calculation of Potential Carbon Emissions Intensity

For newly added companies to the index where data is not available yet, MSCI uses zero fossil fuel reserves.

Security Level Potential Carbon Emissions Intensity =

$$\frac{Absolute\ Potential\ Emissions * (1+EVIAF)}{Enterprise\ Value + Cash (in\ M\$)}$$

Weighted Average Potential Emissions Intensity of Parent Index =

$$\sum (Weight\ in\ Parent\ Index * Security\ Level\ Potential\ Carbon\ Emissions\ Intensity)$$

Weighted Average Potential Emissions Intensity of Derived Index =

$$\sum(Weight\ in\ Derived\ Index \\ *\ Security\ Level\ Potential\ Carbon\ Emissions\ Intensity)$$

### Calculation of Average Decarbonization

On average, the Indexes follow a 7% decarbonization trajectory since the Base Date. The Weighted Average Carbon Intensity at Base Date ($W_1$) is used to compute the target Weighted Average Carbon Intensity at any given Quarterly Index Review ($W_t$) as per the below formula.

$$W_t = W_1 * 0.93^{\frac{(t-1)}{4}}$$

Where 't' is the number of Quarterly Index Reviews (QIR) since the Base Date.

Thus, for the 5th Quarterly Index Review since the Base Date (t=5), the target Weighted Average Carbon Intensity will be $W_1 * 0.93$.

### Calculation of Green Revenue to Brown Revenue Multiple

**Green Revenue**

For each constituent in the Parent Index, the Green Revenue% is calculated as the cumulative revenue (%) from the six CleanTech themes which are as follows:

- Alternative Energy – products and services that support the transmission, distribution and generation of renewable energy and alternative fuels to reduce carbon and pollutant emissions in supporting affordable and clean energy to combat climate change.
- Energy Efficiency – products, and services that support the maximization of productivity in labor, transportation, power and domestic applications with minimal energy consumption to ensure universal access to affordable, reliable and modern energy services.
- Sustainable Water – products, services, infrastructure projects and technologies that resolve water scarcity and water quality issues, through minimizing and monitoring current water demand, improving the quality and availability of water supply to improve resource management in both domestic and industrial use.
- Green Building – design, construction, redevelopment, retrofitting, or acquisition of green-certified properties to promote mechanisms for raising capacity for effective climate change mitigation and adaptation.
- Pollution Prevention – products, services, infrastructure projects and technologies that reduces volume of waste materials through recycling, minimizes introduction of toxic substances, and offers remediation of existing contaminants such as heavy metals and organic pollutants in

various environmental media to significantly address pollution in all levels and its negative effects

- Sustainable Agriculture - revenues from forest and agricultural products that meet environmental and organic certification requirements to address significantly biodiversity loss, pollution, land disturbance, and water overuse

The Weighted Average Green Revenue% is calculated as:

$$= \sum (Weight\ in\ Index * Green\ Revenue\%)$$

**Brown Revenue**

For each constituent in the Parent Index, the Brown Revenue% is calculated as the cumulative revenue (%) from the following sources:

- Revenue% (either reported or estimated) from the mining of thermal coal (including lignite, bituminous, anthracite and steam coal) and its sale to external parties. It excludes: revenue from metallurgical coal; coal mined for internal power generation (e.g. in the case of vertically integrated power producers); intra-company sales of mined thermal coal; and revenue from coal trading (either reported or estimated)

- Revenue% from the extraction, production and refining of Conventional and Unconventional Oil & Gas. Conventional Oil and Gas includes Arctic onshore/offshore, deepwater, shallow water and other onshore/offshore. Unconventional Oil and Gas includes oil sands, oil shale (kerogen-rich deposits), shale gas, shale oil, coal seam gas, and coal bed methane.

- Revenue% from thermal coal based power generation, liquid fuel based power generation and natural gas based power generation.

The Weighted Average Brown Revenue% is calculated as:

$$= \sum (Weight\ in\ Index * Brown\ Revenue\%)$$

The Green Revenues to Brown Revenues multiple for either the Parent Index or the Index is calculated as a ratio of the Weighted Average Green Revenue to the Weighted Average Brown Revenue as per the formula below:

$$= \frac{Weighted\ Average\ Green\ Revenue\%}{Weighted\ Average\ Brown\ Revenue\%}$$

**Climate Impact Sectors**

NACE[17] is the European Union's classification of economic activities. As per the draft DA, stocks in the NACE Section codes A, B, C, D, E, F, G, H, L are classified as "High Climate Impact" sector and other stocks are classified 'Low Climate Impact' sector. The GICS[18] Sub-Industry code for each security is mapped to the corresponding "Climate Impact Sector" using a mapping. This mapping is constructed in the following steps:

1. MSCI has published a mapping[19] between the NACE classes and GICS Sub-Industry.
2. For each GICS Sub-Industry, the number of NACE classes which fall under the High Climate Impact Sector (say the number of classes is $N_H$) and Low Climate Impact Sector (say the number of classes is $N_L$) is identified
3. If all the NACE classes for a given GICS Sub-Industry are identified in the High Climate Impact Sector ($N_L = 0$), then the GICS Sub-Industry is mapped to the High Climate Impact Sector. Conversely, if all the NACE classes for a given GICS Sub-Industry are identified in the Low Climate Impact Sector ($N_H = 0$) then the GICS Sub-Industry is mapped to the Low Climate Impact Sector
4. In case a GICS Sub-Industry is mapped to some NACE classes in the High Climate Impact Sector and the others in the Low Climate Impact Sector, the GICS Industry is mapped to the Climate Impact Sector in the following manner:
    a. **$N_H >= N_L$**: If the number of NACE classes in the High Climate Impact Sector is at least equivalent to the number of NACE classes in the Low Climate Impact Sector, the GICS Sub-Industry is mapped to the High Climate Impact Sector
    b. **$N_H < N_L$**: If the number of NACE classes in the High Climate Impact Sector is less than the number of NACE classes in the Low Climate Impact Sector, the GICS Sub-Industry is mapped to the Low Climate Impact Sector
5. Using the GICS Sub-Industry to Climate Impact Sector mapping created in Step 4, and the security-level GICS Sub-Industry, each security in the Parent Index is classified in either High Climate Impact Sector or Low Climate Impact Sector

[17] For further details regarding NACE, please refer to https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background

[18] For further information regarding GICS, please refer to https://www.msci.com/gics

[19] This mapping is available in the Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmark and Benchmarks' ESG Disclosures

## Appendix V: Decarbonization Trajectory of Indexes

The Weighted Average Carbon Intensity on the Base Date ($W_1$) is used to compute the target Weighted Average Carbon Intensity at any given Quarterly Index Review ($W_t$) as per the below formula.

$$W_t = W_1 * 0.93^{\frac{(t-1)}{4}}$$

Where 't' is the number of Quarterly Index Reviews since the Base Date. The table below shows the Weighted Average Carbon Intensity on the Base Date($W_1$) for each of the regions where the Indexes are constructed:

| Index | Parent Index | Base Date | $W_1$ (tCO2/M$ Enterprise Value + Cash) |
|---|---|---|---|
| MSCI ACWI ESG Leaders Select Sustainability Index | MSCI ACWI | May 28, 2021 | 254.37 |
| MSCI Europe ESG Leaders Select Sustainability Index | MSCI Europe | May 28, 2021 | 536.48 |
| MSCI USA ESG Leaders Select Sustainability Index | MSCI USA | May 28, 2021 | 181.58 |

# Appendix VI: Implementation of new Base Date

The following steps are used to identify a whether the MSCI ESG Leaders Select Sustainability Indexes will implement a new Base Date during any Quarterly Index Review:

Step 1. Calculate the median Scope 3 Emissions of all companies in MSCI ACWI within each GICS Industry Group

Step 2. Out of the 24 GICS Industry Groups, identify the top 18 GICS Industry Groups with the highest median Scope 3 Emissions.

Step 3. The percentage change in the median Scope 3 Emissions for each of the 18 GICS Industry Groups is calculated relative to their median Scope 3 Emissions as of the previous Quarterly Index Review.

Step 4. If either of the following conditions are met, then a new Base Date would be implemented for the MSCI ESG Leaders Select Sustainability Indexes based on the change in Scope 3 Emissions–

a. Out of the 18 GICS Industry Groups, at least 2 Industry Groups see a 50% change in the median Scope 3 Emissions

b. Out of the 18 GICS Industry Groups, at least 6 Industry Groups see a 20% change in the median Scope 3 Emissions

A new Base Date may also be implemented based on the change in median Scope 1+2 Emissions by applying Steps 1-4 above using Scope 1+2 Emissions instead of Scope 3 Emissions.

When a new Base Date is implemented, either due to the change in median Scope 1+2 Emissions or due to the change in median Scope 3 Emissions, the Indexes will not apply the "Minimum average reduction (per annum) in WACI relative to WACI in the Base Date" as per Table 1 in Section 3.3 as a minimum requirement for the index. After the rebalance of the Index, the Base Date and Weighted Average Carbon Intensity on the Base Date ($W_1$) as per Appendix VI will be updated. For all subsequent Quarterly Index Reviews, the decarbonization targets will be calculated with the updated Base Date.

# Appendix VII: Barra Equity Model Used in the Optimization

The MSCI ESG Leaders Select Sustainability Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMLTL).

# Appendix VIII: 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.

**The following sections have been modified since May 2021-**

- Introduction – Change in approach from an iterative process to an optimization-based approach and added objectives on ESG Score and LCT Score
- Section 3 – Updated to reflect change in approach from an iterative process to an optimization-based approach and added objectives on ESG Score and LCT Score
- Appendix II – Added additional screen for Alcohol
- Appendix IV – Added definition for Climate Impact Sectors
- Appendix V – Updated decarbonization trajectory based on new Base Date as per the methodology rules in Appendix VI.
- Appendix VI – Deleted appendix detailing iterative process. Appendix VI now contains details on "Implementation of new Base Date"
- Appendix VII and VIII – Added for details on Barra Equity Model and Barra Optimizer

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