

# **MSCI ESG Climate Transition (EU CTB) Select Indexes Methodology**

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# 1 Introduction

The MSCI ESG Climate Transition (EU CTB) Select Indexes are designed to meet the minimum standards of the EU Climate Transition Benchmark (CTB)<sup>1</sup>. The MSCI ESG Climate Transition (EU CTB) Select Indexes (the Indexes) are constructed from underlying MSCI indexes (herein, “Parent Indexes”) following an optimization-based approach<sup>2</sup> and aim to:

- Reweight or exclude securities to exceed the minimum requirements of the EU Climate Transition Benchmark designation
- Increase exposure to ESG Leaders and companies with higher Board Independence Percent
- Align with a 1.5°C climate scenario using the MSCI Climate Value-at-Risk
- Reduce the Index’s exposure to physical risk arising from extreme weather events by at least 50%
- Reduce exposure to a broad range of climate-change related risks
- Increase the weight of companies with credible carbon reduction targets through the weighting scheme
- Achieve a modest tracking error compared to the Parent Index and low turnover.<sup>3</sup>

<sup>1</sup> [Regulation \(EU\) 2016/1011 as amended by Regulation \(EU\) 2019/2089](#).

<sup>2</sup> In case there are changes in the EU delegated acts and an update to the Index methodology is required, MSCI will issue an announcement prior to implementing the changes in the methodology. MSCI will not conduct a formal consultation for such an update.

<sup>3</sup> The Indexes are governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document. The Methodology Set for the Indexes can be accessed from MSCI’s webpage <https://www.msci.com/index-methodology> in the section ‘Search Methodology by Index Name or Index Code’. The Methodology Set includes a document ‘ESG Factors in Methodology’ that contains the list of environmental, social, and governance factors considered, and how they are applied in the methodology (e.g., selection, weighting or exclusion).

## 2 Constructing the MSCI ESG Climate Transition (EU CTB) Select Indexes

### 2.1 Applicable Universe

The Applicable Universe includes all the existing constituents of underlying MSCI indexes (herein, “Parent Indexes”). This approach aims to provide an opportunity set with sufficient liquidity and investment capacity.

### 2.2 Eligible Universe

The Indexes use company ratings and research provided by MSCI ESG Research<sup>4</sup> to determine eligibility for Index inclusion.

The Eligible Universe is constructed from the Applicable Universe by excluding securities of companies based on the exclusion criteria below:

1. **Controversial Weapons:** All companies involved in Controversial Weapons as defined by the methodology of the MSCI Ex-Controversial Weapons Indexes.
2. **ESG Controversies:** All companies assessed as having involvement in ESG controversies that are classified as Red Flags (MSCI ESG Controversy Score of 0). A Red Flag indicates an ongoing, Very Severe ESG controversy implicating a company directly through its actions, products, or operations.
3. **Environmental Harm:** All companies assessed as having involvement in environmental controversies that are classified as Red (MSCI Environmental Controversy Score of 0) or Orange Flags (score of 1).
  - A Red Flag indicates an ongoing, Very Severe ESG controversy implicating a company directly through its actions, products, or operations.
  - An Orange Flag indicates an ongoing Severe ESG controversy implicating a company directly, or a Very Severe ESG controversy that is either partially resolved or indirectly attributed to the company’s actions, products, or operations.
4. **Conventional Weapons:** All companies deriving 10% or more revenue from the production of conventional weapons and components or deriving 10% or more aggregate revenue from weapons systems, components, and support systems and services.
5. **Exclusions as per MSCI ESG Screened Indexes:** All companies as per exclusions criteria in accordance with MSCI ESG Screened Indexes.
6. **ESG Score Based Exclusions:** All companies in bottom 25% by float adjusted market capitalization with worse ESG Score.

<sup>4</sup> See section 4 for further information regarding ESG and climate data used in the Indexes that MSCI Limited sources 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. MSCI Limited is the benchmark administrator for the MSCI indexes.

7. **Thermal Coal Based Power Generation:** All companies generating 10% or more power from thermal coal.
8. **Thermal Coal Reserves:** All companies that own thermal coal reserves.

## 2.3 Optimization Constraints

At each Semi-Annual 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
3. ESG objectives – constraints detailed in Table 3
4. Diversification objectives – constraints detailed in Table 4

The definitions of the target metrics for the optimization are detailed in Appendix III.

*Table 1: Constraints imposed to meet transition and physical risk objectives*

No.	Transition and Physical Risk Objective	Values
1.	Minimum reduction in Greenhouse Gas (GHG) Intensity (Scope 1+2+3 <sup>5</sup> ) relative to Parent Index	30%
2.	Minimum average reduction (per annum) in GHG Intensity relative to GHG Intensity at the Base Date <sup>6</sup>	7.35%
3.	Minimum active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix III	0%
4.	Minimum Increase in aggregate weight in companies setting targets relative to the aggregate weight of such companies in the Parent Index. Companies Setting Targets are defined in Appendix III	20%
5.	Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index	30%
6.	Aggregate Climate Value-At-Risk <sup>7</sup> under 1.5 degree scenario <sup>8</sup> Please see more detail on Aggregate Climate Value-At-Risk in Appendix I and Appendix II.	>= Max(0, Aggregate Climate VaR of Parent Index)

<sup>5</sup> Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Indexes, the Weighted Average Carbon Emissions Intensity has been calculated based on Scope 1+2 Emissions.

<sup>6</sup> Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Indexes, the average reduction in WACI has been calculated using Scope 1+2 Emissions since Inception.

<sup>7</sup> For more details on Climate value-at-Risk, please refer to Appendix I and Appendix II

<sup>8</sup> For more details on Climate value-At-Risk, please refer to Appendix I. Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Indexes, the Policy Risk Climate VaR using Scope 1 Emissions since Inception.

7.	Minimum reduction in Weighted Average Extreme Weather Climate Value-At-Risk (Aggressive Scenario) relative to Parent Index	50% <sup>9</sup>
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*Table 2: Constraints imposed in order to meet transition opportunity objectives*

No.	Transition Opportunity Objective	MSCI ESG Climate Transition (EU CTB) Select Indexes
8.	Minimum ratio of Weighted Average Green Revenue/ Weighted Average Fossil fuels-based Revenue relative to Parent Index	4 times
9.	Minimum increase in Weighted Average Green Revenue relative to the Parent Index	100%

*Table 3: Constraints imposed to meet ESG objectives*

No.	ESG Objective	MSCI ESG Climate Transition (EU CTB) Select Indexes
10.	Minimum increase in weighted average ESG Score relative to Parent Index	1%
11.	Minimum increase in weighted average Board Independence Percent relative to Parent Index	1%

*Table 4: Constraints imposed to meet diversification objectives*

No.	Diversification Objective	MSCI ESG Climate Transition (EU CTB) Select Indexes
12.	Constituent Active Weight	+/- 2%
13.	Security Weight as a multiple of its weight in the Parent Index	20x
14.	Active Sector Weights (the Energy GICS Sector is not constrained)	+/-5%
15.	Active Country Weights <sup>10</sup>	+/-5%
16.	One Way Turnover	5%

<sup>9</sup> In case the Parent Index has a positive Weighted Average Extreme Weather Climate VaR, the floor will be applied at the level of the Weighted Average Extreme Weather Climate VaR of the Parent Index

<sup>10</sup> 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.

17.	Common Factor Risk Aversion	0.0075
18.	Specific Risk Aversion	0.075

During the Semi-Annual 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% up to 20%
- Relax the active sector weight constraint in steps of 1% up to +/-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 Semi-Annual Index Review.

## 2.4 Determining the Optimized Portfolio

The Index is constructed using the Barra Open Optimizer<sup>11</sup> 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.

## 2.5 Treatment of Unrated Companies

Companies not assessed by MSCI ESG Research on data for any of the following MSCI ESG Research products are not eligible for inclusion in the Indexes:

- MSCI ESG Controversies

For the treatment of unrated companies in the calculation of target metrics for the optimization, please refer to Appendix 3.

<sup>11</sup> Please refer to Appendix IV and V for more details.

## 3 Maintaining the MSCI ESG Climate Transition (EU CTB) Select Indexes

### 3.1 Semi-Annual Index Reviews

The Indexes are rebalanced on a semi-annual basis, as of the close of the last business day of May and November, coinciding with the May and November Index Reviews 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<sup>12</sup> (including MSCI Climate Change Metrics, MSCI Climate Value-at-Risk, 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. 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, for the rebalancing of the Indexes.

### 3.2 Ongoing Event-Related Maintenance

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.

<sup>12</sup> See section 4 for details of data sourced from MSCI ESG Research used in the Indexes.



## 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 these Indexes 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 Impact Solutions, MSCI ESG Controversies and MSCI ESG Business Involvement Screening Research. MSCI Indexes are administered by MSCI Limited.

### 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.

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

### 4.2 MSCI Impact Solutions: Sustainable Impact Metrics

MSCI Impact Solutions' Sustainable Impact Metrics is designed to identify companies that derive revenue from products or services with positive impact on society and the environment. The Sustainable Impact Metrics are comprised of six Environmental Impact categories and seven Social Impact categories arranged by theme.

#### MSCI Sustainable Impact Taxonomy

Pillar	Themes	Categories
Environmental Impact	Climate Change	1. Alternative energy 2. Energy efficiency 3. Green building
	Natural capital	4. Sustainable water 5. Pollution prevention 6. Sustainable agriculture
Social Impact	Basic needs	7. Nutrition 8. Major Disease Treatment 9. Sanitation 10. Affordable Real Estate
	Empowerment	11. SME Finance 12. Education 13. Connectivity – Digital divide

Under each of the actionable environmental and social impact themes, MSCI ESG Research has identified specific categories of products and services that it has determined companies can offer as potential solutions to environmental and social challenges.

More detailed taxonomy for each category can be found in Section 2.4 of the MSCI ACWI Sustainable Impact Index Methodology available at <https://www.msci.com/index-methodology>

### 4.3 MSCI ESG Controversies

MSCI ESG Controversies provide assessments of controversies concerning the potential 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.

The MSCI ESG Controversies methodology can be found at: <https://www.msci.com/esg-and-climate-methodologies>.

### 4.4 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](http://www.msci.com/resources/factsheets/MSCI_ESG_BISR.pdf).

## Appendix I: MSCI Climate Value-At-Risk

The MSCI Climate Value-at-Risk measurement helps investors to assess future costs related to climate change and understand what those future costs could mean in the current valuation of securities. The premise of Climate Value-at-Risk is to aggregate costs related to specific climate risks and calculate what these costs might signify about financial performance into the foreseeable future.

### 1.5°C Aggregated Policy Risk Equity Climate VaR (REMIND NGFS Orderly) [%]

An equity's aggregated downside policy risk exposure according to all emission sources (Scope 1, 2, 3), expressed as a percentage of the equity's market value, assuming a global 1.5°C target and using carbon prices from the REMIND model under the NGFS Orderly scenario. Please refer to the Climate VaR methodology document for further details on scenario options.

### 1.5°C Technology Opportunities Equity Climate VaR (REMIND NGFS Orderly) [%]

An equity's upside technology opportunity exposure, expressed as a percentage of the equity's market value capped at 100%, assuming a global 1.5°C target and calculated using carbon prices from the REMIND model under the NGFS Orderly scenario. Please refer to the Climate VaR methodology document for further details on scenario options.

### 4°C Aggregated Physical Risk Equity Climate VaR (IPCC SSP3-7.0, Aggressive Outcome) [%]

An equity's "worst-case" (95th percentile) downside or upside potential, expressed as a percentage of the equity's market value, assuming trends in extreme cold, extreme heat, extreme precipitation, heavy snowfall, extreme wind, coastal flooding, fluvial flooding, river low flow, tropical cyclones and wildfires continue along the 4°C IPCC SSP3-7.0 scenario.

## Appendix II: Calculation of Target Metrics

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.

MSCI ESG Research estimates company-specific indirect (Scope 3) GHG emissions from the Scope 3 Carbon Emissions Estimation Model. The data is generally updated on an annual basis.

### Calculation of GHG Intensity

Carbon emissions of a company are normalized for size by dividing annual carbon emissions by Enterprise Value including Cash (EVIC). The Carbon Emissions Intensity is calculated using the latest Scope 1+2 carbon emissions, Scope 3 carbon emissions and EVIC of a company.

Security Level GHG Intensity (Scope 1+2+3) =

$$(\text{Unadjusted Security Level GHG Intensity (Scope 1+2)} + \text{Unadjusted Security Level GHG Intensity (Scope 3)}) * (1 + \text{EVIAF})$$

Unadjusted Security Level GHG Intensity (Scope 1+2) =

$$\frac{(\text{Scope 1} + 2 \text{ Carbon Emissions})}{\text{EVIC (in M\$)}}$$

If Scope 1+2 carbon emissions and/or EVIC are not available, the average Scope 1+2 intensity of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the security belongs is used.

Unadjusted Security Level GHG Intensity (Scope 3) =

$$\frac{(\text{Scope 3 Carbon Emissions})}{\text{EVIC (in M\$)}}$$

If Scope 3 carbon emissions and/or EVIC are not available, the average Scope 3 intensity of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the security belongs is used.

Enterprise Value Inflation Adjustment Factor (EVIAF) =

$$\left( \frac{\text{Average(EVIC)}}{\text{Previous (Average(EVIC))}} \right) - 1$$

Weighted Average GHG Intensity of Parent Index =

$$\sum (\text{Weight in Parent Index} * \text{Security Level GHG Intensity})$$

Weighted Average GHG Intensity of Derived Index =

$$\sum (Index\ Weight * Security\ Level\ GHG\ Intensity)$$

#### Calculation of Potential Carbon Emissions Intensity

Security Level Potential Carbon Emissions (PCE) Intensity =

$$\frac{Absolute\ Potential\ Emissions}{EVIC\ (in\ M\$)}$$

If Absolute Potential Emissions data is not available, MSCI uses zero fossil fuel reserves.

Weighted Average Potential Emissions Intensity of Parent Index =

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

Weighted Average Potential Emissions Intensity of Derived Index =

$$\sum (Index\ Weight * Security\ Level\ PCE\ Intensity)$$

#### Calculation of Average Decarbonization

On average, the Indexes follow a 7.35% decarbonization trajectory since the Base Date. The Weighted Average GHG Intensity at the Base Date ( $W_1$ ) is used to compute the target Weighted Average GHG Intensity at any given Semi-Annual Index Review ( $W_t$ ) as per the below formula.

$$W_t = W_1 * 0.9265^{\frac{(t-1)}{2}}$$

Where 't' is the number of Semi-Annual Index Reviews since the Base Date.

Thus, for the 3<sup>rd</sup> Semi-Annual Index Review since the Base Date (t=3), the target Weighted Average GHG Intensity will be  $W_1 * 0.9265$ .

#### Companies Setting Targets

Relative to their corresponding Parent Indexes, the Indexes require a minimum 20% increase in the aggregate weight of companies setting emissions reduction targets

- companies publishing emissions reduction targets
- companies publishing their annual emissions and
- Companies reducing their GHG intensity by 7% over each of the last 3 years

## Calculation of Green Revenue to Fossil fuels-based Revenue Multiple

### Green Revenue

For each constituent in the Parent Index, the Green Revenue% is calculated as the cumulative revenue (%) from the six Clean Tech 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:

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

### Fossil fuels-based Revenue

For each constituent in the Parent Index, the Fossil fuels-based 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, 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.

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

The Weighted Average Fossil fuels-based Revenue% is calculated as:

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

The Green Revenues to Fossil fuels-based 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 Fossil fuels-based Revenue as per the formula below:

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

### Aggregate Climate Value-at-Risk (VaR)

The Index-level Aggregate Climate Value-at-Risk for any Index is calculated as the sum of the below 3 components:

1. **Policy Risk Climate VaR<sup>13</sup> (1.5 Degrees):** Weighted average of security level 1.5°C Aggregated Policy Risk Equity Climate VaR (REMIND NGFS Orderly) [%]
2. **Technology Opportunities Climate VaR (1.5 Degrees):** Weighted average of security level 1.5°C Technology Opportunities Equity Climate VaR (REMIND NGFS Orderly) [%]
3. **Physical Risk Climate VaR (4 Degrees, Aggressive Outcome):** Weighted average of security level Aggregated Physical Risk Equity Climate VaR (Aggressive Outcome) [%]

### Climate Impact Sectors

NACE<sup>14</sup> 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<sup>15</sup> 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<sup>16</sup> 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<sub>H</sub>) and Low Climate Impact Sector (say the number of classes is N<sub>L</sub>) is identified

<sup>13</sup> Starting from the May 2020 Semi-Annual Index Review, the Policy Risk Climate VaR used in the Indexes incorporate Scope 2 and Scope 3 emissions as well. The Policy Risk Climate VaR used in the May 2020 Semi-Annual Index Review of the Indexes is as of September 30, 2020.

<sup>14</sup> For further details regarding NACE, please refer to [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE\\_background](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background)

<sup>15</sup> For further information regarding GICS, please refer to <https://www.msci.com/gics>

<sup>16</sup> This mapping is available in the [Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmark and Benchmarks' ESG Disclosures](#)



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.  **$N_H \geq N_L$** : 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

## Appendix III: Decarbonization Trajectory of Indexes

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

$$W_t = W_1 * 0.9265^{\frac{(t-1)}{2}}$$

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

Index	Parent Index	Base Date	$W_1$ (tCO <sub>2</sub> /M\$ Enterprise Value + Cash)
MSCI World ESG Climate Transition (EU CTB) Select Index	MSCI World Index	June 01, 2020	332.7
MSCI EM (Emerging Markets) ESG Climate Transition (EU CTB) Select Index	MSCI EM (Emerging Markets) Index	June 01, 2020	436.9
MSCI Europe ESG Climate Transition (EU CTB) Select Index	MSCI Europe Index	June 01, 2020	378.3
MSCI USA ESG Climate Transition (EU CTB) Select Index	MSCI USA Index	June 01, 2020	260.1

## Appendix IV: Barra Equity Model Used in The Optimization

The MSCI ESG Climate Transition (EU CTB) Select Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTLT).

## Appendix V: 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 VI: Notes on Historical Calculation of the Index

Companies Setting Targets Constraint from Table 1 in Section 2.3 was not applied on 2013 November rebalance for MSCI EM (Emerging Markets) ESG Climate Transition (EU CTB) Select Index due to unavailability of eligible companies with targets.

The aggregate Climate Value-at-Risk constraint from Table 1 in Section 2.3 was not applied during the November 2023 Index Review for all Indexes, as referenced in Appendix III.

## Appendix VII: Changes to this Document

**The following sections have been modified as of February 2022<sup>17</sup>:**

Section 3.2: Eligible Universe

- Updated to add exclusions based on thermal coal power and thermal coal reserves

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

Section 1: Introduction

- Added footnote on Methodology Set

Section 2.2: Eligible Universe

- Updated to add exclusions due to Environmental Harm
- Clarified the exclusion criteria for companies involved in ESG Controversies

Section 3: Maintaining the MSCI ESG Climate Transition (EU CTB) Select Indexes

- 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 4: MSCI ESG Research

- Moved that section after the Section 3 (Maintaining the MSCI ESG Climate Transition (EU CTB) Select Indexes)

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

Appendix VI

- The special treatment for Aggregate Climate Value-at-Risk was applied for all Indexes at the November 2023 Index Review was added.

<sup>17</sup> This change in screening criteria was implemented in the index on February 16, 2022, effective on March 01, 2022, by excluding existing constituents which meet the updated exclusion criteria. The weights of the remaining securities were subsequently renormalized to 100%.

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Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
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### EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
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### 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 *
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