MSCI Climate Change Indexes Methodology

November 2023

Contents

1 Introduction

The MSCI Climate Change Indexes (the 'Indexes') aim to represent the performance of an investment strategy that re-weights securities based upon the opportunities and risks associated with the transition to a lower carbon economy. The Indexes also excludes companies meeting the below exclusion criteria –

- Companies involved in manufacturing of Controversial Weapons
- Companies involved in ESG Controversies
- Companies involved in Environmental Controversies
- Companies involved in the Tobacco-related businesses
- Companies involved in Thermal Coal extraction and mining

The Indexes are constructed from their corresponding market capitalization weighted indexes (the 'Parent Indexes') and use the MSCI Low Carbon Transition[1] (LCT) score and category to reweight constituents of the Parent Indexes to increase exposure to companies participating in opportunities associated with transition and decrease exposure to companies exposed to risks associated with transition. As a final step, the Indexes are designed to exceed the minimum standards of the EU Climate Transition Benchmark (CTB)[2]. The Indexes apply an *heuristics-based* approach in order to meet the following objectives –

- Reduce the weighted average greenhouse gas intensity by 30% (compared to the underlying investment universe.
- Reduce the weighted average greenhouse gas (GHG) intensity by 7% on an annualized basis
- Reduce the weighted average potential emissions intensity by 30% (compared to the underlying investment universe.

[1] Please refer to Appendix II: MSCI Low Carbon Transition Risk Assessment and https://www.msci.com/climate-change-solutions for further details regarding the MSCI Low Carbon Transition score and category.

[2] On December 3, 2020, the European Commission has published the delegated acts in the Official Journal (https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R1818&from=EN) which contain the minimum technical requirements for the EU Climate Transition Benchmarks. 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.

- Have at least equivalent ratio of weighted average “Green Revenues” to weighted average “Fossil fuels-based Revenues” as that of the underlying investment universe [3]

[3] 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 Index Construction Methodology

2.1 Eligibility Criteria

The Indexes use company ratings and research provided by MSCI ESG Research[4] to determine eligibility for Index inclusion.

2.2 Minimum Requirements

The requirements[5] imposed for the Indexes are detailed in Table 1.

Table 1: Requirements imposed for the MSCI Climate Change Indexes

Requirements	MSCI Climate Change Indexes
Minimum reduction in Weighted Average Scope 1+2+3 Carbon Emissions Intensity (WACI) relative to Parent Index	30%
Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index	30%
Baseline Exclusions	• Controversial Weapons • ESG Controversy Score of 0 • Tobacco Involvement • Orange Flag Environmental Controversies • Thermal coal mining
Minimum average reduction (per annum) in WACI relative to WACI in the Base Date[6]	7%
Minimum ratio of Green Revenue/ Fossil fuels-based Revenue relative to Parent Index	At least equivalent

[4] 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.

[5] the minimum requirements for EU Climate Transition Benchmarks in the EU Delegated Acts are detailed in Appendix V.

[6] During the November 2022 Semi-Annual Index Review, this condition was not applied for the MSCI China Climate Change Index.

Requirements	MSCI Climate Change Indexes
Active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix III	0%
Corporate Target Setting	Aims to achieve higher allocation to companies that set carbon reduction targets.

2.3 ELIGIBLE UNIVERSE

The Eligible Universe is constructed from the constituents for the Parent Index by excluding securities based on the exclusion criteria listed below:

- **Controversial Weapons**: Companies involved in Controversial Weapons as defined by the methodology of the MSCI Ex-Controversial Weapons Indexes.
- **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.
- **Tobacco**: All companies with involvement in Tobacco as defined by the methodology of the MSCI Global ex Tobacco Involvement Indexes.
- **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.
- **Thermal Coal Mining**: 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)

2.4 Determination Of Combined Score

Each company in the Eligible Universe is assigned a Combined Score, which is calculated using a company's LCT Category and its Low Carbon Transition Score as outlined below.

2.4.1 Category Tilt Score

The 'Category Tilt Score' is used to express relative tilt towards or away from a stock based on the LCT Category. Based on the LCT Category of a company, a Category Tilt Score is assigned based on the table below:

LCT Category	Category Tilt Score
Solutions	3
Neutral	1
Operational Transition	0.667
Product Transition	0.333
Asset Stranding	0.167

2.4.2 Relative Tilt Score

The 'Relative Tilt Score' differentiates companies within an LCT Category. Companies with higher LCT Score are determined by MSCI ESG Research to be relatively better at managing their climate related risk compared to their peers with worse LCT Score.

The Relative Tilt Score is calculated by normalizing security level LCT score relative to the maximum[7] LCT Score of the LCT Category within the Parent Index. The 'Relative Tilt Score' is floored at 0.5 to balance its effect on the final weight of index constituents.

$$Relative\ Tilt\ Score = \frac{LCT\ Score}{Maximum^2\ LCT\ Score\ in\ LCT\ Category}$$

2.4.3 Combined Score

The Combined Score is calculated for each company as follows:

Combined Score = Category Tilt Score * Relative Tilt Score.

[7] To account for potential outliers within each LCT Category, the category maximum LCT Score is calculated after winsorizing the security level LCT Score at 90th percentile of the LCT Category.

2.5 Weighting Scheme

At each rebalancing, all the securities from the Eligible Universe are weighted by the product of their weight in the Parent Index and the Combined Score.

$$Security\ Weight = Combined\ Score * Weight\ in\ Parent\ Index$$

The above weights are then normalized to 100%.

2.5.1 Intermediate Universe

Each security in the Parent Index is classified into one of two climate impact sectors[8] based on its NACE section code. A stock can be assigned to either a 'High Climate Impact' or 'Low Climate Impact' sector. The Eligible Universe is broken into two smaller universes as described below:

2.5.1.1 High Climate Impact Intermediate Universe

High Climate Impact Intermediate Universe is constructed in following two steps –

- Select all securities in the High Climate Impact Sector from the Parent Index.
- Renormalize the weights of securities so that the aggregate weight of securities is equal to the weight of High Climate Impact Sector in the Parent Index.

2.5.1.2 Low Climate Impact Intermediate Universe

Low Climate Impact Intermediate Universe is constructed in following two steps –

- Select all securities in the Low Climate Impact Sector from the Parent Index.
- Renormalize the weights of securities so that the aggregate weight of securities is equal to the weight of Low Climate Impact Sector in the Parent Index.

2.5.2 FINAL UNIVERSE

The Final Universe is constructed by combining the High Impact Intermediate Universe and the Low Impact Intermediate Universe. The High Impact Sector and Low Impact Sector weights are equal to their respective weights in the Parent Index.

The security weight within the High Impact and Low Impact sectors are in proportion of the security's LCT Category[9], LCT Score and Carbon Emissions Intensity. Compared to the Parent Index, the Final Universe typically has

[8] For details regarding the Climate Impact Sectors, please refer to Appendix III: Calculation of Target Metrics

[9] For details regarding the LCT Category and LCT Score, please refer to Appendix II: MSCI Low Carbon Transition Risk Assessment.

- Lower Carbon Footprint
- Higher Green Revenue to Fossil fuels-based Revenue ratio
- Higher weight in companies which set emission reduction targets[10]
- Equal weight in High Impact and Low Impact Sector

2.5.3 Capping of Security Weight In Final Universe

The weight of securities in the Final Universe is capped at 5%[11], with the excess weight being distributed among the remaining securities in the same Climate Impact sector as the security being capped so that the overall weight in the High Impact Sector and Low Impact Sector is unchanged.

2.5.4 EU CTB Check

The Final Universe is assessed against the minimum requirements detailed in Table 1. In case the Final Universe is found deficient on any of the minimum requirements, then the weights of the securities in the Final Universe are determined through an iterative process as described in Appendix IV.

2.6 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
- MSCI Climate Change Metrics

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

[10] The assessment of Low Carbon Transition Risk Management 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. Thus, emission reduction targets are considered in the MSCI Low Carbon Transition Assessment, which is used in the reweighting of constituents in the MSCI Climate Change Indexes methodology.

[11] Securities in the Index based on narrow Parent Indexes are capped at the maximum weight in the Parent Index. Narrow Parent Indexes are defined as those indexes for which the maximum market capitalization weight in the Parent Index is more than 10%.

3 Maintaining the 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 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 ESG Controversies, MSCI Climate Change Metrics and MSCI Business Involvement Screening Research) as of the end of the month preceding the Index Reviews for the rebalancing of the Indexes.

3.2 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. 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 ESG Controversies, MSCI Climate Change Metrics and MSCI ESG Business Involvement Screening Research. MSCI Indexes are administered by MSCI Limited.

4.1 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.

4.2 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.

4.3 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.

Appendix I: Companies Involved in Controversial Weapons Business

Companies which meet the following Controversial Weapons criteria are excluded from the Indexes.

- Cluster Bombs

  MSCI ESG Research's cluster bomb research identifies public companies that are involved in the production of cluster bombs and munitions, or the essential components of these products.

- Landmines

  MSCI ESG Research's landmines research identifies public companies that are involved in the production of anti - personnel landmines, anti - vehicle landmines, or the essential components of these products.

- Depleted Uranium Weapons

  MSCI ESG Research's depleted uranium weapons research identifies public companies involved in the production of depleted uranium weapons and armor.

- Chemical and Biological Weapons

  MSCI ESG Research's chemical and biological weapons research identifies public companies that are involved in the production of chemical and biological weapons, or the essential components of these products.

- Blinding Laser Weapons

  MSCI ESG Research's blinding laser weapons research identifies public companies that are involved in the production of weapons utilizing laser technology to cause permanent blindness.

- Non-Detectable Fragments

  MSCI ESG Research's non-detectable fragments research identifies public companies that are involved in the production of weapons that use non-detectable fragments to inflict injury.

- Incendiary Weapons (White Phosphorus)

  MSCI ESG Research's incendiary weapons research identifies companies that are involved in the production of weapons using white phosphorus.

Involvement criteria:

- Producers of the weapons
- Producers of key components of the weapons (only applies to cluster bombs, landmines, depleted uranium weapons as well as chemical and biological weapons)
- Ownership of 20% or more of a weapons or components producer
- The minimum limit is raised to 50% for financial companies having an ownership in a company that manufactures controversial weapons or key components of controversial weapons
- Owned 50% or more by a company involved in weapons or components production

Revenue limits:

Any identifiable revenues, i.e., zero tolerance.

For details, please refer to MSCI Global ex Controversial Weapons Indexes Methodology at https://www.msci.com/index/methodology/latest/XCW.

Appendix II: MSCI Low Carbon Transition Risk Assessment

MSCI ESG Research's Low Carbon Transition Risk assessment[12] 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.

Exhibit 1: Low Carbon Transition Categories and Scores

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.

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

Calculation methodology

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 III: Calculation of Target Metrics

Greenhouse Gas (GHG) Emissions Intensity

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) =

*(Unadjusted Security Level GHG Intensity (Scope 1+2) + Unadjusted Security Level GHG Intensity (Scope 3)) * (1 + EVIAF)*

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

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

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) =

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

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)[13] =

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

Weighted Average GHG Intensity of Parent Index =

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

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

[13] Average Enterprise Value + Cash is calculated for securities in the Eligible Universe

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

$$W_t = W_1 * \ 0.93^{\frac{(t-1)}{2}}$$

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

Thus, for the 3rd Semi-Annual Index Review since the Base Date (t=3), the target Weighted Average Carbon Intensity will be W_1*0.93.

Climate Impact Sectors

NACE[14] 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 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[15] 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

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

[15] This mapping is available in the Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmark and Benchmarks' ESG Disclosures. Please note that the mapping does not reflect changes in the GICS structure that were implemented in the MSCI indexes on June 1, 2023.

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 the High Climate Impact Sector or the Low Climate Impact Sector.

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 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:

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

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, 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 Fossil fuels-based Revenue% is calculated as:

$$= \sum (Weight\ in\ Index * \ Fossil\ fuels\ based\ Revenue\%)$$

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:

$$= \frac{Weighted\ Average\ Green\ Revenue\%}{Weighted\ Average\ Fossil\ fuels\ based\ Revenue\%}$$

Appendix IV: Iterative Process

The iterative down weighting process is applied on the securities of the Final Universe with the objective of meeting all the minimum requirements[16] detailed in Table 1.

ITERATIVE DOWNWEIGHTING

Starting with the Final Universe, an iterative down weighting process is applied in order to meet with the minimum requirements for the Indexes. The iterative down weighting stops when all the requirements defined in above are met. The steps followed in the iterative downweighting (Exhibit 2) are outlined below:

Step 1. Check whether all targets for the Index are met. If all targets are met, then no downweighting is required.

Step 2. Securities in the Applicable Universe are sorted in increasing order of their Scope 1+2+3 Carbon Emissions Intensity and securities in the top half of the sorted list are identified as "Top Half" securities. Securities in the bottom half of the sorted list are identified as "Bottom Half" securities.

Step 3. If the target based on Minimum reduction in WACI relative to Parent Index and the Minimum average reduction in WACI (per annum) is not met, the lowest ranked "Bottom Half" stock in ascending order of Scope 1+2+3 Carbon Emissions Intensity is selected for downweighting and the weight is reduced by 25% of its weight in the Final Universe. Note that stocks with an LCT Category of Solutions are not eligible for downweighting[17]. If this target is met, but

a. If the target based on Weighted Average Potential Emissions Intensity relative to Parent Index is not met, the "Bottom Half" stock with highest Potential Carbon Emissions Intensity is downweighted.

b. Otherwise if the target based on Minimum ratio of Green Revenue/ Fossil fuels-based Revenue relative to Parent Index is not met, the "Bottom Half" stock with largest difference between its Fossil fuels-based Revenue% and its Green Revenue% is downweighted

Step 4. If the targets are still not met, the stock is downweighted in steps of 25% of its weight in the Final Universe till a maximum downweighting of 75%.

Step 5. Stocks of the Final Universe in the "Top Half", belonging to the same "Climate Impact Sector" as the stock being downweighted are proportionally upweighted to ensure that the overall

[16] In the steps detailed for the iterative process, "targets" refers to all the minimum requirements as detailed in Table 1.

[17] This rule was not applied for the MSCI Denmark IMI Climate Change at the time of the May and November 2023 Index Reviews in order to achieve a feasible solution during the rebalancing process.

allocation to the High Climate Impact Sector is the same as that in the Parent Index and the sum of the weights of all constituents is 1.

Step 6. While upweighting stocks, the security weights of the stocks being upweighted is capped at 5%[18], with the excess weight being distributed among the remaining securities that are being upweighted.

Step 7. If the targets are still not met, the iterative process continues and Steps 3-6 are repeated.

Step 8. If the targets are not met and all "Bottom Half" stocks of the Final Universe are downweighted by 75% of the weight in the Final Universe, Steps 3-7 are repeated, with a maximum downweighting of 90% in a single downweighting step of 15 percentage points of the weight in the Final Universe.

Step 9. If the targets are not met after the maximum downweighting of 90% of all "Bottom Half" stocks, then stocks are iteratively excluded in the same order as outlined in Step 3.

Step 10. If the targets are not met after excluding all the "Bottom Half" stocks, then the index will rebalance using the constituents and weighting of stocks as after Step 9.

[18] Securities in the Index based on narrow Parent Indexes are capped at the maximum weight in the Parent Index. Narrow Parent Indexes are defined as those indexes for which the maximum market capitalization weight in the Parent Index is more than 10%.

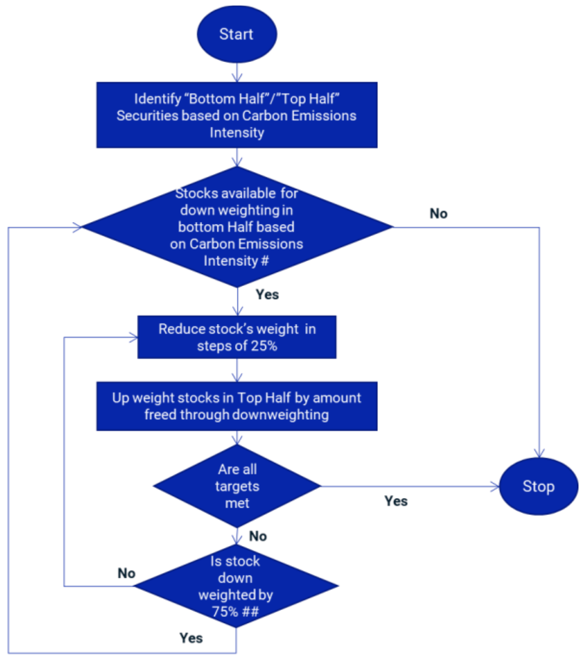

Exhibit 2: Schematic Representation of the Iterative Downweighting Process

If the target based on Minimum reduction in WACI relative to Parent Index and the Minimum average reduction in WACI (per annum) is met but the target on Weighted Average Potential Emissions Intensity relative to Parent Index is not met, the "Bottom Half" security with the highest Potential Carbon Emissions Intensity is selected for downweighting. If the target on Weighted Average Potential Emissions Intensity relative to Parent Index is also met but the target on Minimum ratio of Green Revenue/ Fossil fuels-based Revenue relative to Parent Index is not met, the "Bottom Half" security with the highest difference in its Fossil fuels-based Revenue% and Green Revenue% is selected for downweighting.

If the targets are not met and all "Bottom Half" stocks of the Final Universe are downweighted by 75% of the weight in the Final Universe, maximum downweighting is relaxed to 90% in a single downweighting step of 15 percentage points of the weight in the Final Universe.

If the targets are not met after the maximum downweighting of 90% of all "Bottom Half" stocks, then stocks are iteratively excluded in the same order.

If the targets are not met after excluding all the "Bottom Half" stocks then the index will rebalance using the constituents and weighting of stocks at the final step.

Appendix V: Minimum Requirements of EU CTB

The below details the minimum requirements of EU CTBs as per the EU Delegated Acts:

Exclusions (Applicable from 2023)

- **Controversial Weapons**: companies involved in any activities related to controversial weapons;
- **Tobacco**: companies involved in the cultivation and production of tobacco
- **Environmental Harm:** companies_significantly harm one or more of environmental objectives
- **Controversies:** companies in violation of the United Nations Global Compact (UNGC) principles or the Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises;

Objectives

- **Relative Reduction:** 30% minimum reduction in Weighted Average Scope 1+2+3 Carbon Emissions Intensity (WACI) relative to Parent Index
- **Self-Decarbonization**: 7% minimum average reduction (per annum) in WACI relative to WACI in the Base Date
- **Exposure Constraint**: At least equivalent exposure to the High Climate Impact Sector relative to Parent Index

Appendix VI: Changes to this Document

The following sections have been modified as of May 2021:

- Introduction – Updated to reflect the additional exclusions and objectives of the index
- Section 3.2 – Added section detailing the minimum requirements imposed on the MSCI Climate Change Indexes
- Section 3.3 – Updated to reflect additional exclusions (ESG Controversies, Environmental Controversies, Tobacco, Thermal Coal Mining)
- Sections 3.5 – Updated to reflect additional steps to meet the minimum requirements of EU CTBs
- Appendix III – Added with calculation details of some of the target objectives.
- Appendix IV – Added with details regarding iterative process
- Appendix V – Added with details regarding minimum requirements of EU Climate Transition Benchmarks

The following sections have been modified as of November 2022:

- Section 3.3 – Added footnote for a condition that was not applied during the November 2022 Semi-Annual Index Review.

The following sections have been modified as of May 2023:

- Section 1: Added footnote on Methodology Set
- Section 2.3: Clarified the exclusion criteria for companies involved in ESG Controversies
- Section 3: 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: Moved that section after the Section 3 (Maintaining the Indexes)
- Appendix IV – Added footnote for a condition that was not applied during the May 2023 Index Review.

The following sections have been modified as of November 2023:

- Section 2.6 – New section detailing the treatment of companies with ratings and research not available from MSCI ESG Research

- Appendix III – Updated to reflect the treatment of companies with ratings and research not available from MSCI ESG Research
- Appendix III – Updated the calculation of GHG Intensity to reflect the missing data treatment for Scope 1+2, Scope 3 and EVIC.
- Appendix III – Updated references on NACE and GICS mapping
- Appendix III – The calculation of Potential Emissions was clarified.
- Appendix IV – Updated footnote for a condition that was not applied during the November 2023 Index Review.

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