

MSCI World Climate Change Paris-Aligned Low Carbon Select Indexes Methodology

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1. Introduction

The MSCI Climate Change Paris-Aligned Low Carbon Select Index¹ (the ‘Index’) is designed to support investors seeking to reduce their exposure to transition and physical climate risks and who wish to pursue opportunities arising from the transition to a lower-carbon economy. The Index aims to exclude companies meeting the below exclusion criteria –

- Companies involved in manufacturing of Controversial Weapons and Nuclear Weapons.
- Companies involved in ESG Controversies, Environmental Controversies, Human Rights Controversies and Labour Controversies.
- Companies involved in Tobacco-related businesses and Nuclear Power.
- Companies involved in Genetic Engineering and Stem Cell Research.
- Companies involved in fossil fuel extraction and power generation
- Companies classified in non-OECD countries² as per the MSCI Country of Classification framework.

The Index is constructed from the MSCI World Index (the ‘Parent Index’) and uses the MSCI Low Carbon Transition² (LCT) score and category to reweight constituents of the Parent Index 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 Index is designed to meet the minimum standards of the EU Paris Aligned Benchmark (PAB)³. The Index applies a *heuristics-based* approach in order to meet the following objectives –

- Reduce the weighted average greenhouse gas intensity by 50% compared to the Parent Index.
- Reduce the weighted average greenhouse gas (GHG) intensity by 7% on an annualized basis
- Reduce the weighted average potential emissions intensity by 50% relative to the Parent Index.
- Have at least equivalent ratio of weighted average “Green Revenues” to weighted average “Fossil fuels-based Revenues” as that of the Parent Index.

To avoid concentration, the Index is capped as per the MSCI 10/40 Indexes methodology⁴

¹ The Index is governed by a set of methodology and policy documents (“Methodology Set”), including the present index methodology document. Please refer to Appendix VI for more details

² As of June 07, 2021, Hong Kong and Singapore are not members of the OECD. The list of countries which are members of OECD are available at <https://www.oecd.org/about/members-and-partners/#d.en.533032>

² Please refer to Appendix I: 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.

³ 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.

⁴ For more details on the MSCI 10/40 Indexes Methodology, please refer to the methodology book on www.msci.com/index-methodology.

2. Constructing the Index

The Index uses company ratings and research provided by MSCI ESG Research⁴ for Index construction.

2.1 Applicable Universe

The Applicable Universe includes all the existing constituents of the Parent Index. This approach aims to provide an opportunity set with sufficient liquidity and capacity.

2.2 Minimum Requirements

The requirements imposed for the Index are detailed in Table 1.

Table 1: Requirements imposed for the Index

Minimum Requirements	Values
Minimum reduction in Weighted Average Scope 1+2+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	<ul style="list-style-type: none"> Controversial Weapons ESG Controversy Score⁶ of 0 Orange Flag Environmental Controversies Tobacco Manufacturers
Activity Exclusions	<ul style="list-style-type: none"> Thermal Coal (1%+ revenues) Oil & Gas (10%+ revenues)⁷ Coal, Oil & Gas based power generation (50%+ revenues)⁸
Minimum average reduction (per annum) in WACI relative to WACI at Inception	7%

⁴ Please refer to section 4 for further information regarding ESG and climate data used in the Index 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 and MSCI Deutschland GmbH are the benchmark administrator for the MSCI indexes.

⁶ 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

⁷ While the minimum requirements for EU PAB Indexes recommend exclusion of companies which derive 10% or more of their revenues from Oil or 50% or more of their revenues from natural gas exploration or processing activities, the Index excludes those that derive 10% or more of their revenues from Oil and Gas.

⁸ 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 100gCO₂/kWh.

Minimum ratio of Green Revenue/ Fossil fuels-based Revenue relative to the Parent Index	At least a Factor of 4
Active weight in High Climate Impact Sector relative to the Parent Index as defined in Section 2.5	0%
Corporate Target Setting	Aims to achieve higher allocation to companies (in the High & Low Climate Intermediate Universe) that set targets, publish emissions and have reduced their Carbon Intensity by 7% over each of the last 3 years. ⁹

2.3 Eligible Universe

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

- All companies classified in non-OECD countries¹¹ as per the MSCI Country of Classification framework.
- All companies that fail to comply with the United Nations Guiding Principles for Business and Human Rights
- All companies that fail to comply with the International Labor Organization’s broader set of labor standards.
- All companies with an MSCI Low Carbon Transition Category (LCT) of Operational Transition, Product Transition and Asset Stranding.

Additionally, exclusions are applied due to the following controversial business activities:

- **Controversial Weapons:** Companies involved in Controversial Weapons (i.e. cluster munitions, landmines, depleted uranium weapons, biological/chemical weapons, blinding lasers, non-detectable fragments and incendiary 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.
- **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).

⁹ Prior to the May 2021 Semi-Annual Index Review, this requirement has not been enforced and an increased allocation to companies which set evidence-based targets achieved by using the MSCI Climate Change Index Methodology

¹¹ From June 07,2021, Hong Kong and Singapore are not members of the OECD. The list of countries which are members of OECD are available at <http://www.oecd.org/about/members-andpartners/#d.en.533032>.

- 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.
- **Tobacco:**
 - All companies that are Tobacco Producers or derive 5% or higher revenue from tobacco related businesses.
 - All companies deriving 5% or more revenue (or, where not disclosed, maximum estimated revenue) from the distribution of tobacco products in their most recently completed fiscal year. Tobacco products include nicotine-containing products, including traditional and alternative tobacco smoking products.
- **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)
- **Oil & Gas:** All companies deriving 5% or more revenue from oil and gas related activities, including distribution / retail, equipment and services, extraction and production, pipelines and transportation and refining but excluding biofuel production and sales and trading activities.
- **Power Generation:** All companies deriving 50% or more revenue from thermal coal based power generation, liquid fuel based power generation and natural gas based power generation.

Additionally, companies based on the following values-based exclusion criteria are also excluded:

Fossil Fuel Exploration, Extraction and Refining

- **Conventional Oil & Gas Extraction** – All companies deriving more than 5% revenue (either reported or estimated) from the production of deep water, shallow water, and other onshore/offshore oil and gas. It does not cover revenue from unconventional oil and gas production (oil sands, shale oil, shale gas) and onshore/offshore oil and gas production in the Arctic region.
- **Unconventional Oil & Gas Extraction** – All companies deriving 5% or more revenues from oil sands, oil shale (kerogen-rich deposits), shale gas, shale oil, coal-seam gas, coal-bed methane as well as Arctic onshore/offshore reserves.
- **Arctic Oil & Gas**
 - All companies deriving 5% or more revenue from Arctic Oil
 - All companies deriving 5% or more revenue from Arctic Gas
 - All companies with evidence of producing Arctic oil. This factor does not capture revenue from non-extraction activities (e.g. exploration, surveying, processing,

refining); ownership of Arctic oil reserves with no associated extraction revenues; revenue from intra-company sales

- All companies with evidence of producing Arctic gas. This factor does not capture revenue from non-extraction activities (e.g. exploration, surveying, processing, refining); ownership of Arctic gas reserves with no associated extraction revenues; revenue from intracompany sales

- **Oil & Gas Refining** – All companies deriving 5% or more revenues from refining oil and gas.

Power Generation

- **Thermal Coal Power Generation** – All companies deriving more than 1% revenues from thermal coal based power generation.
- **Oil Power Generation** – All companies deriving 5% or more revenue (either reported or estimated) from liquid fuel-based power generation.
- **Natural Gas Power Generation** – All companies deriving 5% or more revenue (either reported or estimated) from the natural gas based power generation.
- **Fossil Fuel Power Generation** – All companies deriving 5% or more revenue (either reported or estimated) from the fossil fuel (thermal coal, liquid fuel and natural gas) based power generation.
- **Thermal Coal Power** – All companies generating 50% or more power⁵ from thermal coal.
- **Thermal Coal Reserves** – All companies that own thermal coal reserves.

Values Based Exclusions

- **Nuclear Weapons** – Please refer to Appendix V for details on Nuclear Weapons criteria
- **Nuclear Power**
 - All companies deriving 1% or more revenue from nuclear power activities.
 - All companies deriving 1% or more revenue (or, where not disclosed, maximum estimated revenue) from nuclear power generation in their most recently completed fiscal year.
 - All companies deriving 1% or more revenue (or, where not disclosed, maximum estimated revenue) from the ownership or operation of active uranium mines in their most recently completed fiscal year.
 - All companies deriving 5% or more revenue (or, where not disclosed, maximum estimated revenue) from nuclear power reactor design and engineering, uranium enrichment and processing, and from the ownership or operation of active uranium mines in their most recently completed fiscal year.
- **Aggregate Weapons** – All companies deriving 1% or more revenue from the production of conventional weapons, components for such products or support systems and services for such products; production of biological or chemical weapons, components

⁵ As per https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf, thermal coal based power generation has median lifecycle emissions exceeding 100gCO₂/kWh.

for such products; production of nuclear weapons, exclusive and dual-use delivery platform capable to deliver such products, intended and dual-use components of such products, services provided for such products; and the production of blinding laser, incendiary or non-detectable fragments weapons in their most recently completed fiscal year.

- **Genetic Engineering** – All companies deriving 1% or more revenue from activities like genetically modifying plants, such as seeds and crops, and other organisms intended for agricultural use or human consumption.
- **Stem Cell** – All companies that conduct stem cell research with cells derived from human embryos.

2.4 Determination of a Combined Score

Each company in the Eligible Universe is assigned a Combined Score, which is calculated using a company’s LCT Category and its LCT 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 Scores

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 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 ESG Scores

The Combined Score is calculated for each company as follows:

Combined Score = Category Tilt Score * Relative Tilt Score.

2.5 Weighted 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.

$$\text{Security Weight} = \text{Combined Score} * \text{Weight in Parent Index}$$

The above weights are then normalized to 100%.

2.6 Intermediate Universe

Each security in the Parent Index is then classified into one of two climate impact sectors¹² 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:

2.6.1 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 Applicable Universe.
- 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.

2.6.1.1 Increased Allocation to Companies Setting Targets

Within the High Climate Impact Intermediate Universe, securities (“securities with targets”) that meet each of the below criteria are identified:

- Securities of companies that have published emissions reduction targets
- Securities of companies that publish their emissions
- Securities of companies that have reduced their emissions intensity by 7% over each of the last 3 years

The Index aims to increase the aggregate weight to securities with targets in the following steps:

1. Calculate the aggregate weight in the Parent Index of all securities with targets in High Climate Impact Sector as W_p
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.
3. Calculate the aggregate weight in the High Climate Impact Intermediate Universe of all “Top Half” securities with targets as W_o
4. If W_o is less than 1.2 times of W_p , then the weights of all “Top Half” securities with targets in the High Climate Impact Intermediate Universe are scaled up proportionately so that their

¹² NACE is the European Union’s classification of economic activities. 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. For further details regarding NACE, please refer to https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background. The GICS Sub Industry code for each security is mapped to the corresponding “Climate Impact Sector” using a mapping. For further information regarding GICS, please refer to <https://www.msci.com/gics>

aggregate weight in the High Climate Impact Intermediate Universe is equal to 1.2 times of W_p

5. The weight of the remaining securities in the High Climate Impact Sector will be reduced proportionately in order to retain the aggregate weight of the High Climate Impact Intermediate Universe.

2.6.2 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 Applicable Universe.
- 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.

2.6.2.1 Increased Allocation to Companies Setting Targets

Within the Low Climate Impact Intermediate Universe, securities (“securities with targets”) that meet each of the below criteria are identified:

- Securities of companies that have published emissions reduction targets
- Securities of companies that publish their emissions
- Securities of companies that have reduced their emissions intensity by 7% over each of the last 3 years

The Index aims to increase the aggregate weight to securities with targets in the following steps:

1. Calculate the aggregate weight in the Parent Index of all securities with targets in Low Climate Impact Sector as W_p
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.
3. Calculate the aggregate weight in the Low Climate Impact Intermediate Universe of all “Top Half” securities with targets as W_o
4. If W_o is less than 1.2 times of W_p , then the weights of all “Top Half” securities with targets in the Low Climate Impact Intermediate Universe are scaled up proportionately so that their aggregate weight in the Low Climate Impact Intermediate Universe is equal to 1.2 times of W_p
5. The weight of the remaining securities in the Low Climate Impact Sector will be reduced proportionately in order to retain the aggregate weight of the Low Climate Impact Intermediate Universe.

2.7 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 weight in the Parent Index.

The security weight within the High Impact and Low Impact sectors are in proportion of the security’s LCT Category¹³, LCT Score and Carbon Emissions Intensity. Compared to the Parent Index, the Final Universe typically has

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

2.7.1 Capping of Security Weight in Final Universe

The weight of securities in the Final Universe is capped at 4%, 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.

2.7.2 Iterative Downweighting

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.

2.7.3 Applying the MSCI 10/40 Indexes Methodology

The MSCI 10/40 Indexes methodology¹⁴ is then applied on the remaining securities, such that the weight of any single group entity¹⁵ is capped at 10% and the sum of the weights of all group entities with a weight of more than 5% is capped at a maximum of 40%.

2.8 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 Business Involvement Screening Research (BISR)
- MSCI Climate Change Metrics

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

¹³ For details regarding the LCT Category and LCT Score, please refer to Appendix I: MSCI Low Carbon Transition Risk Assessment

¹⁴ For details, refer to the MSCI 10/40 Indexes Methodology at www.msci.com/index-methodology

¹⁵ For a definition and a description of the maintenance of Group Entities, please refer to the MSCI 10/40 Indexes methodology at www.msci.com/index-methodology.

3. Maintaining the Index

3.1 Semi-Annual Index Reviews

The Index is 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 data¹⁶ (including MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics and MSCI Impact Solutions) 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 Index aims to minimize turnover outside of Index Reviews. The methodology aims to appropriately represent an investor’s participation in an event based on relevant deal terms and pre-event weighting of the index constituents that are involved. Further, changes in index market capitalization that occur as a result of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent.

Additionally, if the frequency of Index Reviews in the Parent Index is greater than the frequency of Index Reviews in the 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.

¹⁶ See section 4 for details of data sourced from MSCI ESG Research used in the Indexes

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 Index is a product of MSCI Inc. that utilizes 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 Index uses the following MSCI ESG Research products: MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics and MSCI Impact Solutions. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH.

4.1 MSCI ESG Controversies

The Index is a product of MSCI Inc. that utilizes 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 Index uses the following MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics, MSCI Impact Solutions, MSCI ESG Ratings, and MSCI ESG Governance Metrics. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH

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.

The MSCI Business Involvement Screening Research methodology can be found at:

<https://www.msci.com/legal/disclosures/esg-disclosures>

4.3 MSCI Climate Change Metrics

MSCI Climate Change Metrics provides 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/legal/disclosures/climate-disclosures>

4.4 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	<ol style="list-style-type: none"> 1. Alternative energy 2. Energy efficiency 3. Green building
	Natural capital	<ol style="list-style-type: none"> 4. Sustainable water 5. Pollution prevention 6. Sustainable agriculture
Social Impact	Basic needs	<ol style="list-style-type: none"> 7. Nutrition 8. Major Disease Treatment 9. Sanitation 10. Affordable Real Estate
	Empowerment	<ol style="list-style-type: none"> 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.

For more details on MSCI Sustainable Impact Metrics, please refer to <https://www.msci.com/legal/disclosures/esg-disclosures>

Appendix I: MSCI Low Carbon Transition Risk Assessment

MSCI ESG Research’s Low Carbon Transition Risk assessment⁶ is designed to identify potential leaders and laggards by measuring companies’ exposure to and management of risks and opportunities related to the low carbon transition. The assessment is derived from company disclosures and estimated.

The final output of this assessment are two company-level factors:

- (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 primary and secondary risks a company faces. It is an industry agnostic assessment of a company’s position vis-à-vis the transition.

LOW CARBON TRANSITION SCORE	LOW CARBON TRANSITION CATEGORY		LOW CARBON TRANSITION RISK / OPPORTUNITY	INDUSTRY EXAMPLES
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; industries in the Oil & Gas value chain
	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.	Petrol/diesel-based automobile manufacturers
		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.	Cement, Steel
	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
SCORE = 10	SOLUTIONS		Potential to benefit through the growth of low-carbon products and services.	Renewable electricity, Electric vehicles, Solar cell manufacturers

Exhibit 1: Low Carbon Transition Categories and Scores

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.

⁶ For more details on MSCI Climate Change Metrics, please refer to <https://www.msci.com/climate-change-solutions>

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 estimated total net carbon intensity – which considers operational and product carbon emissions. In the next step, we compute Low Carbon Transition Risk Exposure Category and Score based on total net carbon intensity.

Step 2: Assess Low Carbon Transition Risk Management

In the second step, MSCI ESG Research assesses 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 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: 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 =

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

Enterprise Value Inflation Adjustment Factor (EVIAF) =

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

Weighted Average Carbon Emissions Intensity of Parent Index =

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

Weighted Average Carbon Emissions Intensity of Derived Index =

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

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 =

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

Weighted Average Potential Emissions Intensity of Parent Index =

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

Weighted Average Potential Emissions Intensity of Derived Index =

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

Calculation of Average Decarbonization

On average, the Indexes follow a 7% decarbonization trajectory since Inception. The Weighted Average Carbon Intensity at Inception (W_1) is used to compute the target Weighted Average Carbon Intensity at any given SemiAnnual 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 Inception.

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

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:

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

Climate Impact Sectors

NACE⁷ 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 GICS⁸ 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 mapping⁹ 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

⁷ For further details regarding NACE, please refer to https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background

⁸ For further information regarding GICS, please refer to <https://www.msci.com/gics>

⁹ 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.

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

The Weighted Average Carbon Intensity at Inception (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 Inception. The table below shows the Weighted Average Carbon Intensity at Inception (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 World Climate Change Paris-Aligned Low Carbon Select Index	MSCI World	June 01, 2020	218.86

Appendix IV: Iterative Down Weighting Process

The iterative down weighting process is applied on the securities of the Final Universe with the objective of meeting all the minimum requirements 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 being 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. If this target is met, but
 - a. If the target based on Weighted Average Potential Emissions Intensity relative to Parent Index is not being 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 being 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 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 4%, 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.

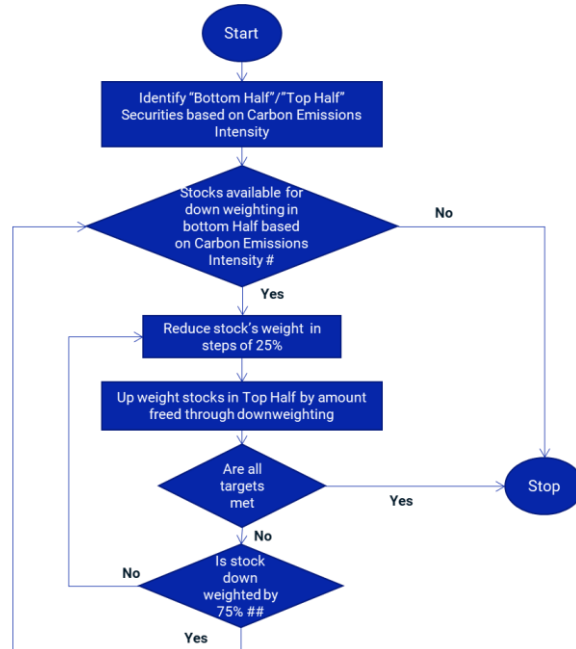


Exhibit 2: Schematic Representation of the Iterative Downweighting Process

If the target based on Minimum reduction in WACI relative to Parent Index and the Minimum average reduction in WACI (per annum) is being met but the target on Weighted Average Potential Emissions Intensity relative to Parent Index is not being 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 being 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: Nuclear Weapons

- **Nuclear Weapons**

- All companies deriving 0% or more revenue from the production of Nuclear Weapons and components
- All companies that manufacture nuclear warheads and/or whole nuclear missiles
- All companies that manufacture components that were developed or are significantly modified for exclusive use in nuclear weapons (warheads and missiles)
- All companies that manufacture or assemble delivery platforms that were developed or significantly modified for the exclusive delivery of nuclear weapons
- All companies that provide auxiliary services related to nuclear weapons
- All companies that manufacture components that were not developed or not significantly modified for exclusive use in nuclear weapons (warheads and missiles) but can be used in nuclear weapons
- All companies that manufacture or assemble delivery platforms that were not developed or not significantly modified for the exclusive delivery of nuclear weapons but have the capability to deliver nuclear weapons
- All companies that manufacture components for nuclear-exclusive delivery platforms

Appendix VI: Methodology Set

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

- Description of methodology set – <https://www.msci.com/index/methodology/latest/ReadMe>
- MSCI Corporate Events Methodology – <https://www.msci.com/index/methodology/latest/CE>
- MSCI Fundamental Data Methodology – <https://www.msci.com/index/methodology/latest/FundData>
- MSCI Index Calculation Methodology – <https://www.msci.com/index/methodology/latest/IndexCalc>
- MSCI Index Glossary of Terms – <https://www.msci.com/index/methodology/latest/IndexGlossary>
- MSCI Index Policies – <https://www.msci.com/index/methodology/latest/IndexPolicy>
- MSCI Global Industry Classification Standard (GICS) Methodology – <https://www.msci.com/index/methodology/latest/GICS>
- MSCI Global Investable Market Indexes Methodology – <https://www.msci.com/index/methodology/latest/GIMI>
- MSCI Climate Change Indexes Methodology – <https://www.msci.com/index/methodology/latest/ClimateChange>
- MSCI Global ex Controversial Weapons Indexes Methodology – <https://www.msci.com/index/methodology/latest/XCW>
- MSCI 1040 Indexes Methodology – <https://www.msci.com/index/methodology/latest/1040>
- ESG Factors In Methodology*

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

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

Appendix VII: Changes to this Document

The following sections have been modified effective 18 September 08, 2021-

- Section 3.4 –
 - The revenue threshold for Thermal Coal based Power Generation exclusion lowered from 10% to 1%.
 - The revenue threshold for Oil and Gas related activities exclusion lowered from 10% to 5%.
- Appendix V –
 - The revenue threshold for Nuclear Weapons exclusion lowered from 5% to 0%
 - The revenue threshold for Nuclear Power exclusion lowered from 5% to 1%
 - The revenue threshold for Weapons exclusion lowered from 5% to 1%
 - The revenue threshold for Genetic Engineering exclusion lowered from 5% to 1%

The following sections have been modified effective 19 March 01, 2022-

- Section 3.4 – Updated to add exclusions based on thermal coal power and thermal coal reserves

The following sections have been modified effective June 01, 2022:

Appendix V: Business Exclusion Criteria

- Updated to add new exclusion criteria for ‘Nuclear Weapons’, and ‘Arctic Oil & Gas’

The following sections have been modified effective July 2023:

Methodology book was updated to reflect the transition of the MSCI Global Investable Market Indexes (GIMI) to Quarterly Comprehensive Index Reviews.

All references to “Semi-Annual Index Reviews” and “Quarterly Index Reviews” of the MSCI GIMI were replaced with “Index Reviews”.

Section 2.4: Eligible Universe

- Clarified the exclusion criteria for companies involved in ESG Controversies

Section 4: MSCI ESG Research

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

The following sections have been modified effective May 2024

Section 2.4 Eligible Universe

- Decoupled screening criteria from the MSCI Climate Paris Aligned Indexes Methodology
- Moved details from Appendix V to this section
- Updated the exclusion criteria for the Thermal Coal Power Generation screen

Section 2.4 Determination of a Combined Score

- New Section was added

Section 4 MSCI ESG Research

- Language and new links were updated

Appendix I: MSCI Low Carbon Transition Risk Assessment

- Added new section

Appendix II: Calculation of Target Metrics

- Climate Impact Sectors was added

Appendix VI: Methodology Set

- Added details on the Methodology Set for the Index

The following sections have been modified effective November 2024

Section 2.3 Eligible Universe

- Added new exclusion criteria for Tobacco Distributor, Fossil Fuel Power Generation and Nuclear Power.
- “Fossil Fuel Extraction and Refining” was modified to “Fossil Fuel Exploration, Extraction and Refining”

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