

MSCI Climate Paris Aligned Benchmark Select Indexes Methodology

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1 Introduction

The MSCI Climate Paris Aligned Benchmark Select Indexes are 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 while aligning with the Paris Agreement requirements. The MSCI Climate Paris Aligned Benchmark Select Indexes are designed to exceed the minimum standards of the EU Paris-Aligned Benchmark. The MSCI Climate Paris Aligned Benchmark Select Indexes (the Index) are constructed from their corresponding Parent Indexes following an optimization-based approach and aim to:

- Exceed the minimum technical requirements laid out in the EU Delegated Act¹
- Reduce the Index’s exposure to physical risk arising from extreme weather events by at least 50%
- Increase the weight of companies which are exposed to climate transition opportunities and reduce the weight of companies which are exposed to climate transition risks
- Increase the weight of companies with credible carbon reduction targets through the weighting scheme
- Achieve a modest tracking error compared to the Parent Index and low turnover
- Ensure that the index-level sustainable exposure (which reflects a particular interpretation of the company-level sustainable investment assessment as per Article 2(17) of the Sustainable Finance Disclosure Regulation (SFDR)² along with an associated aggregation method) meets the relevant index-level sustainable exposure percentage (“Index SE%”) thresholds. The minimum thresholds vary depending on the respective MSCI Parent Index and are listed in Appendix 2.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R1816&from=EN>

² Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector, available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R2088&from=EN>

2 MSCI ESG Research

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

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

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

2.1 MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics provides climate data & tools to support investors integrating climate risk & opportunities into their investment strategy and processes. It supports investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, align 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-solutions>.

2.2 MSCI CLIMATE VALUE-AT-RISK

Climate Value-at-Risk (Climate VaR) is designed to provide a forward-looking and return-based valuation assessment to measure climate related risks and opportunities in an investment portfolio. The fully quantitative model offers deep insights into how climate change could affect company valuations.

For more details on MSCI Climate Value-At-Risk, please refer to <https://www.msci.com/climate-data-and-metrics>.

2.3 MSCI IMPACT SOLUTIONS: SUSTAINABLE IMPACT METRICS

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

MSCI Sustainable Impact Taxonomy

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

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

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

2.4 MSCI ESG CONTROVERSIES

MSCI ESG Controversies provides assessments of controversies concerning the negative environmental, social, and/or governance impact of company operations, products and services. The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and

Rights at Work, and the UN Global Compact. MSCI ESG Controversies Score falls on a 0-10 scale, with “0” being the most severe controversy.

The MSCI ESG Controversies methodology can be found in:

<https://www.msci.com/esg-and-climate-methodologies>

2.5 MSCI ESG BUSINESS INVOLVEMENT SCREENING RESEARCH

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

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

3 Index Construction Methodology

3.1 APPLICABLE UNIVERSE

The applicable universe includes all the existing constituents of the parent index (“Parent Index”). This approach aims to provide an opportunity set with sufficient liquidity and investment capacity.

3.2 ELIGIBLE UNIVERSE

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

1. **Controversial Weapons:** All companies involved in Controversial Weapons as defined by the methodology of the MSCI Ex-Controversial Weapons Indexes.
2. **ESG Controversies:** All companies having faced very severe controversies pertaining to ESG issues – Defined as companies with an ESG Controversy Score of 0.
3. **Tobacco:** All companies with involvement in Tobacco as defined by the methodology of the MSCI Global ex Tobacco Involvement Indexes.
4. **Environmental Harm:** All companies having faced very severe and severe controversies pertaining to Environmental issues – as described in section 3.2 of the MSCI Climate Paris Aligned Indexes methodology³.
5. **Thermal Coal Mining:** as described in section 3.2 of the MSCI Climate Paris Aligned Indexes methodology.
6. **Oil & Gas:** as described in section 3.2 of the MSCI Climate Paris Aligned Indexes methodology.
7. **Power Generation:** as described in section 3.2 of the MSCI Climate Paris Aligned Indexes methodology

Further, companies based on the following exclusion criteria are also excluded from the Applicable Universe.

8. **Nuclear Weapons:** All Companies with activities classified under “Minimal Tolerance”

³ For more details, please refer to the index methodology document on [MSCI Climate Paris Aligned Indexes Methodology](#)

- 9. **Civilian Firearms:** All companies classified as “Producer” or deriving 5% or more revenue from the distribution of firearms or small arms ammunition
- 10. **Oil Sands:** All companies deriving 5% or more revenue from oil sands extraction

Please refer to Appendix II for details on the criteria used for 8, 9 and 10.

3.3 OPTIMIZATION CONSTRAINTS

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

- 1. Transition and physical risk objectives – constraints detailed in Table 1
- 2. Transition opportunities objectives – constraints detailed in Table 2
- 3. Diversification objectives – constraints detailed in Table 3

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

No.	Transition and Physical Risk Objective	Target Value
1.	Minimum reduction in Greenhouse Gas (GHG) Intensity (Scope 1+2+3 ⁴) relative to Parent Index	As described in Section 3.3 - Table 1, of the MSCI Climate Paris Aligned Indexes methodology for the corresponding 'Transition and
2.	Minimum average reduction (per annum) in GHG Intensity relative to GHG Intensity at the Base Date ⁶	
3.	Minimum active weight in High Climate Impact Sector relative to Parent Index	
4.	Minimum Increase in aggregate weight in companies setting targets relative to the aggregate weight of such companies in the Parent Index.	
5.	Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index	
6.	Minimum increase in weighted average Low Carbon Transition (LCT) Score relative to Parent Index Please see more detail on LCT Score in Appendix I	

⁴ Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Indexes, the Weighted Average Carbon Emissions Intensity has been calculated based on Scope 1+2 Emissions.

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

No.	Transition and Physical Risk Objective	Target Value
7.	Minimum reduction in Weighted Average Extreme Weather Climate Value-At-Risk (Aggressive Scenario) relative to Parent Index	Physical Risk Objective ⁵ .

Table 2: Constraints imposed in order to meet transition opportunity objectives

No.	Transition Opportunity Objective	Target Value
8.	Minimum increase in weighted average LCT Score relative to Parent Index ⁷	As described in Section 3.3 - Table 2, of the MSCI Climate Paris Aligned Indexes methodology for the corresponding 'Transition Opportunity Objective'.
9.	Minimum ratio of Weighted Average Green Revenue/ Weighted Average Fossil fuels-based Revenue relative to Parent Index	
10.	Minimum increase in Weighted Average Green Revenue relative to the Parent Index	

Table 3: Constraints imposed to meet diversification objectives

No.	Diversification Objective	MSCI Climate Paris Aligned Benchmark Select Indexes
11.	Constituent Active Weight	As described in Section 3.3 - Table 3, of the MSCI Climate Paris Aligned Indexes methodology for
12.	Minimum constituent weight	
13.	Security Weight as a multiple of its weight in the Parent Index	
14.	Active Sector Weights (the Energy GICS Sector is not constrained)	

⁵ The Transition and Physical Risk Objective No. 6 - Aggregate Climate Value-At-Risk under 1.5 degree scenario, from the MSCI Climate Paris Aligned Indexes methodology is not applied as a constraint in the MSCI Climate Paris Aligned Benchmark Select Indexes.

⁷ The constraint on increase in LCT Score is designed to underweight companies with a low LCT Score (assessed as companies facing risks from a low carbon transition) and overweight companies with a high LCT Score (assessed as companies which may have opportunities from a low carbon transition). Thus, the constraint has been repeated in Table 2 to illustrate how the constraint meets both the objectives.

No.	Diversification Objective	MSCI Climate Paris Aligned Benchmark Select Indexes
15.	Active Country Weights ⁸	the corresponding 'Diversification Objective'.
16.	One Way Turnover	
17.	Common Factor Risk Aversion	
18.	Specific Risk Aversion	

The definitions of the target metrics for the optimization are detailed in Appendix III of the MSCI Climate Paris Aligned Indexes methodology.

The Weighted Average GHG Intensity on the base Date and the base dates for the respective indexes are described in Appendix I.

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

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

Table 4: Constraints imposed to meet the minimum Index SE%

The following optimization constraints on minimum Index SE% are used for each index.

No.	Index	Index SE% Threshold
1	MSCI World Climate PAB Select Index	25%
2	MSCI Europe Climate PAB Select Index	35%
3	MSCI EMU Climate PAB Select Index	40%

⁸ In case there are countries in the parent index which weigh less than 2.5% in the parent index then for such countries the active country upper bound of +5% is not applicable. When a country weighs less than 2.5% in parent index then the upper bound of country weight in the Index is set at three times of the country's weight in parent index.

Please refer to Appendix 3 for the criteria used to determine the company-level sustainable exposure qualification and the calculation of index-level sustainable exposure.

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

3.4 DETERMINING THE OPTIMIZED PORTFOLIO

The Index is constructed using the Barra Open Optimizer⁹ in combination with the relevant Barra Equity Model. The optimization uses universe of eligible securities and the specified optimization objectives and constraints to determine the constituents of the Indexes.

⁹ Please refer to Appendix V and VI of the MSCI Climate Paris Aligned Indexes methodology document for more details.

4 Index Maintenance

4.1 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 Semi-Annual Index Review of the MSCI Global Investable Market Indexes. The pro forma Indexes are in general announced nine business days before the effective date.

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

4.2 MONTHLY REVIEW OF CONTROVERSIES

Index constituents are reviewed on a monthly basis for the involvement in ESG controversies. Existing constituents will be deleted if they face controversies as defined by MSCI ESG Controversies Score of 0 ('Red Flag' companies).

MSCI uses MSCI ESG Controversies data as of the end of the month preceding the review (e.g., end of June data for the end of July monthly review). For some securities, such data may not be published by MSCI ESG Research by the end of the month preceding the review. For such securities, MSCI will use ESG data published after the end of month, when available, for the monthly review of the Index.

The pro forma Indexes are generally announced nine business days before the first business day of the month.

4.3 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 treatment of the common corporate events in the indexes follow the corporate events treatments as described in section 4.2 of the MSCI Climate Paris Aligned Indexes methodology.

Appendix I: Decarbonization Trajectory of Indexes

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

$$W_t = W_1 * 0.90^{\frac{(t-1)}{2}}$$

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

Index	Parent Index	Base Date	W_1 (tCO2/M\$ Enterprise Value + Cash)
MSCI World Climate PAB Select Index	MSCI World Index	June 01, 2020	475.58
MSCI Europe Climate PAB Select Index	MSCI Europe Index	June 01, 2020	540.45
MSCI EMU Climate PAB Select Index	MSCI EMU Index	June 01, 2020	612.74

Appendix II: Additional ESG Exclusions Criteria

ACTIVITIES CLASSIFIED UNDER “MINIMAL TOLERANCE”

NUCLEAR WEAPONS

- 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).
- All companies that manufacture or assemble delivery platforms that were not developed or not significantly modified for the exclusive delivery of nuclear weapons.
- All companies that manufacture components for nuclear-exclusive delivery platforms.

CIVILIAN FIREARMS

- All companies classified as “Producer” of firearms and small arms ammunitions for civilian markets. It does not include companies that cater to the military, government, and law enforcement markets.
- All companies deriving 5% or more revenue from the distribution (wholesale or retail) of firearms or small arms ammunition intended for civilian use.

ACTIVITIES NOT CLASSIFIED UNDER ANY SPECIFIC TOLERANCE LEVEL

OIL SANDS

All companies deriving 5% or more revenue from oil sands extraction, which own oil sands reserves and disclose evidence of deriving revenue from oil sands extraction. Companies that derive revenue from non-extraction activities (e.g. exploration,

surveying, processing, refining) or intra-company sales are not excluded. Additionally, companies that own oil sands reserves with no associated revenue are also not excluded.

Appendix III: Company-Level Sustainable Exposure And Calculation Of Index SE%
A company qualifies as having company-level sustainable exposure if it meets all the following conditions:

1. MSCI ESG Rating of “BB” or above¹⁰
2. MSCI ESG Controversies Score of 2 or above¹¹
3. At least one of the following conditions is met:
 - a. Derives 20% or more aggregate revenue from any of the thirteen social and environmental impact categories of Sustainable Impact Metrics (including nutrition, sanitation, major diseases treatment, SME finance, education, connectivity, affordable real estate, alternative energy, energy efficiency, green building, pollution prevention, sustainable agriculture and sustainable water)
 - b. Has one or more active carbon emissions reduction target(s) approved by the Science Based Targets initiative (SBTi)
4. Not flagged by the following business involvement criteria:
 - a. Has any tie to Controversial Weapons (cluster munitions, landmines, depleted uranium weapons, biological/chemical weapons, blinding lasers, non-detectable fragments and incendiary weapons), in line with the methodology of the MSCI Ex-Controversial Weapons Indexes available at <https://www.msci.com/index-methodology>
 - b. Derives 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
 - c. Manufactures tobacco products, such as cigars, blunts, cigarettes, e-cigarettes, inhalers, beedis, kreteks, smokeless tobacco, snuff, snus, dissolvable and chewing tobacco
 - d. Derives 5% or more aggregate revenue from the production, distribution, retail, supply and licensing of tobacco-related products

The index-level sustainable exposure is calculated as the sum of the weight of companies in the index that qualify as having company-level sustainable exposure.

¹⁰ The condition is not met if the MSCI ESG Rating is missing for the company.

¹¹ The condition is not met if the MSCI ESG Controversies Score is missing for the company.

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The following sections have been modified as of November 2022:

- Introduction: Updated to reflect the new requirement on index-level sustainable exposure
- Section 3.3: Updated Optimization Constraints to reflect the optimization constraints on index-level sustainable exposure
- Appendix 3: Introduced to reflect the criteria used to determine the company-level sustainable exposure qualification and the calculation of index-level sustainable exposure

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