

MSCI ESG Filtered Min TE Indexes Methodology

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1. Introduction

The MSCI ESG Filtered Min TE Indexes¹ (the “Indexes”) aim to represent the performance of a strategy that is designed to improve the weighted average emissions intensity by at least 20% over the corresponding Parent Indexes while maintaining a weighted average ESG Score better than the weighted average ESG Score of the respective parent indexes (“Parent Indexes”)² excluding the bottom 10% companies with the lowest ESG Scores.

The Indexes aim to minimize the tracking error relative to the respective Parent Indexes through an optimization process.

¹ The Indexes are 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 The corresponding Parent Indexes for the Indexes are defined in Section 2.1 of this methodology document.

2. Constructing the Indexes

The Index uses company ratings and research provided by MSCI ESG Research³ for the Index construction.

2.1 Applicable Universe

The Applicable Universe includes all the existing constituents of their respective Parent Indexes. This approach aims to provide an opportunity set with sufficient liquidity and investment capacity. The below table presents the Parent Indexes for the corresponding Indexes.

Index Name	Parent Index
MSCI EMU ESG Filtered Min TE Index	MSCI EMU
MSCI North America ESG Filtered Min TE Index⁴	MSCI North America
MSCI EM ESG Filtered Min TE Index	MSCI Emerging Markets Index
MSCI Japan ESG Filtered Min TE Index	MSCI Japan
MSCI Europe ESG Filtered Min TE Index	MSCI Europe
MSCI Pacific ex Japan ESG Filtered Min TE Index	MSCI Pacific ex Japan
MSCI World ESG Filtered Min TE Index	MSCI World
MSCI USA ESG Filtered Min TE Index	MSCI USA
MSCI China ESG Filtered Min TE Index	MSCI China
MSCI ACWI ESG Filtered Min TE Index⁵	MSCI ACWI

2.2 Eligible Universe

The Eligible Universe is constructed from the Applicable Universe by excluding companies that are involved in the following businesses and meet the business involvement exclusion criteria as detailed in Appendix II:

- Controversial Weapons
- Fossil Fuel Extraction
- Thermal Coal Power
- Weapons and Firearms⁶
- Tobacco Production

³ See section 4 for further information regarding ESG and climate data used in the Indexes that MSCI Limited and MSCI Deutschland GmbH 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 as a provider to MSCI Limited and MSCI Deutschland GmbH. MSCI Limited and MSCI Deutschland GmbH are the benchmark administrators for the MSCI indexes.

⁴ Please refer to Appendix I for further details on MSCI North America ESG Filtered Min TE Index methodology.

⁵ Please refer to Appendix I for further details on MSCI ACWI ESG Filtered Min TE Index methodology.

⁶ This exclusion is applicable only for MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index

Additionally, companies are required to have an MSCI ESG Controversies Score of 1 or above to be eligible for inclusion.

2.3 Optimization Constraints

At each 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:

Table 1: Constraints imposed to meet ESG and emissions objectives⁷

No.	ESG Related Objectives	Constraint
1.	Minimum Ratio of ESG Score of the Index to ESG Score of Parent Index excluding the bottom 10% companies (by count) with the lowest ESG scores	1
2.	Minimum reduction in Greenhouse Gas (GHG) Intensity (Scope 1+2+3) relative to the Parent Index	20%

Table 2: Constraints imposed to meet diversification objectives

No.	Diversification Objective	Constraint
1.	Constituent Active Weight	+/- 2%
2.	Minimum absolute constituent weight	0.01%
3.	Maximum Security Weight as a multiple of its weight in the Parent Index	20x
4.	Active Sector Weights	+/-5%
5.	Active Country Weights ⁸	+/-5%
6.	One Way Turnover in Semi-Annual Index Reviews	10%
7.	One Way Turnover in Quarterly Index Reviews ⁹	10%
8.	Common Factor Risk Aversion	0.0075
9.	Specific Risk Aversion	0.075

Additionally, the ex-ante Tracking Error of the Index relative to the Parent Index is constrained to be equal to or less than 1%.

During the Index Reviews, in the event that there is no optimal solution that satisfies all the optimization constraints, the constraints are relaxed in the following order:¹⁰

⁷ These constraints do not apply to MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index. Refer to Appendix I for complete methodology of MSCI ACWI ESG Filtered Min TE Index.

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.

⁹ For MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index, a turnover constraint of 5% applies at Quarterly index reviews.

¹⁰ These relaxations do not apply to MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index. Refer to Appendix I for complete methodology of MSCI ACWI ESG Filtered Min TE Index.

- a) The ESG Score constraint is first relaxed to achieve a weighted average ESG Score of at least the same value as that of the Parent Index.
- b) The tracking error is then relaxed in steps of 1% up to a maximum of 10% until a feasible solution is achieved.

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

2.4 Determining the Optimized Portfolio

The Indexes are constructed using the Barra Open Optimizer¹¹ in combination with the relevant Barra Equity Model. The optimization uses the universe of eligible securities and the specified optimization objectives and constraints to determine the constituents of the Indexes.

2.5 Treatment of Unrated Companies

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

- MSCI ESG Controversies

¹¹ Please refer to Appendix IV and V for more details.

3. Maintaining the Indexes

3.1 Quarterly Index Reviews

The Indexes are reviewed on a quarterly basis, coinciding with the February, May, August and November Index Reviews of the Parent Index. 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 Ratings, Climate Change 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.

3.2 Monthly Review of Controversies

Index constituents are reviewed on a monthly basis¹² for the involvement in ESG controversies. Existing constituents will be deleted if they face controversies as defined by MSCI ESG Controversy Score of 0 ('Red flag' companies). A Red Flag indicates an ongoing, Very Severe ESG controversy implicating a company directly through its actions, products, or operations. Existing Index constituents with missing MSCI ESG Controversy Scores are not deleted during Monthly Review of Controversies.

MSCI uses MSCI ESG Controversies data as of the end of the month preceding the review (e.g., end of June data for the 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 Index is generally announced nine business days before the effective date.

3.3 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 Indexes is greater than the frequency of Index Reviews in the Index, the changes made to the Parent Indexes during intermediate Index Reviews will be neutralized in the Indexes.

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.

¹² The Monthly Review of Controversies is not applied for the MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index.

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 Indexes.

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

4.1 MSCI ESG Ratings

MSCI ESG Ratings aim to measure entities' management of environmental, social and governance risks and opportunities. MSCI ESG Ratings use a weighted average key issue calculation that is normalized by industry to arrive at an industry-adjusted ESG score (0-10), which is then translated to a seven-point scale from 'AAA' to 'CCC', indicating how an entity manages relevant key issues relative to industry peers.

The MSCI ESG Ratings methodology can be found at: <https://www.msci.com/legal/disclosures/esg-disclosures>.

4.2 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/legal/disclosures/esg-disclosures>.

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

4.4 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.

4.4.1 Fossil Fuels and Power Generation Metrics

MSCI ESG Research identifies companies involved in fossil fuel-related assets and activities including fossil fuel reserves, resource extraction, power generation and generation capacity, revenue from such assets and activities and capital investments in such assets and activities. The metrics are based on disclosed activities, disclosed revenue and estimates of revenue that are extrapolated from company disclosures and eligible third-party sources (such as NGOs).

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

Appendix I: MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index Methodology

MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index aim to represent the performance of a strategy that is designed to exclude companies based on ESG and climate change criteria. Further, based on the companies' ESG Scores, the index excludes 20% of the number of stocks in the Parent Index.

As a final step, the indexes aim to minimize the tracking error relative to the Parent Index through an optimization process.

The Eligible Universe is constructed after applying the relevant exclusions outlined in Section 2.2 and detailed in Appendix II. The ESG Filtered Universe is then constructed from the Eligible Universe by excluding securities based on their ESG Score in the following steps:

1. Securities in the Applicable Universe are sorted in descending order of their ESG Score.
2. Securities which are in the bottom 20% of the sorted list are excluded from the ESG Filtered Universe

At each 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 optimization constraints outlined in Section 2.3.

During the Index Reviews, if there is no optimal solution that satisfies all the optimization constraints, the one-way index turnover constraint is relaxed in steps of 1% up to 20%.

The ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index will be maintained in accordance with Section 3 with the exception that the Monthly Review of Controversies detailed in Section 3.2 will not be applied.

Appendix II: Business Involvement Screening Criteria

- **Controversial Weapons**

- All companies with any tie to Controversial Weapons (cluster munitions, landmines, depleted uranium weapons, biological/chemical weapons, blinding lasers, nondetectable fragments and incendiary weapons), as defined by the methodology of the MSCI Global Ex-Controversial Weapons Indexes available at <https://www.msci.com/index-methodology>.

- **Fossil Fuel Extraction**

All companies deriving 10%¹³ or more aggregate revenue (either reported or estimated) from thermal coal mining and unconventional oil and gas extraction.

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

- **Thermal Coal Power**

- All companies deriving 5% or more revenue (either reported or estimated) from thermal coal-based power generation.

- **Weapons and Firearms¹⁴**

All companies deriving 10% or more aggregate revenue from conventional, controversial, and nuclear weapons as well as from civilian firearms and ammunitions based on the following categories:

- Companies involved in the production of conventional weapons, components for such products or support systems and services for such products.
- Companies involved in the production of biological or chemical weapons as well as components of such products.
- Companies involved in the production of blinding laser, incendiary or non-detectable fragments weapons in their most recently completed fiscal year.
- Companies involved in the production of nuclear weapons, exclusive and dual-use delivery platforms capable to deliver such products, intended and dual-use components of such products, as well as services provided for such products.

¹³ MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index applies a revenue threshold of 5% for Fossil Fuel Extraction.

¹⁴ This exclusion applies only for MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index.



- Companies involved in the manufacture and retail of civilian firearms and ammunition.

- **Tobacco Production**
 - All companies deriving 5% or more revenue from the production of tobacco related products.

Appendix III: Calculation of GHG Intensity relative to EVIC

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 =

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

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 Optimized Index =

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

Appendix IV: Barra Equity Model Used in The Optimization

The Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTLT).

Appendix V: New release of Barra® Equity Model or Barra® Optimizer

A major new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

Appendix VI: 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 – www.msci.com/index/methodology/latest/ReadMe
- MSCI Corporate Events Methodology – www.msci.com/index/methodology/latest/CE
- MSCI Fundamental Data Methodology – www.msci.com/index/methodology/latest/FundData
- MSCI Index Calculation Methodology – www.msci.com/index/methodology/latest/IndexCalc
- MSCI Index Glossary of Terms – www.msci.com/index/methodology/latest/IndexGlossary
- MSCI Index Policies – www.msci.com/index/methodology/latest/IndexPolicy
- MSCI Global Industry Classification Standard (GICS) Methodology – www.msci.com/index/methodology/latest/GICS
- MSCI Global Investable Market Indexes Methodology – www.msci.com/index/methodology/latest/GIMI
- MSCI Global ex Controversial Weapons Indexes Methodology – www.msci.com/index/methodology/latest/XCW
- 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 as of October 2021:

Section 2.1: Applicable Universe

- The following Indexes have been added with their corresponding Parent Indexes:
 - MSCI North America ESG Filtered Min TE Index
 - MSCI Pacific ex Japan ESG Filtered Min TE Index
 - MSCI EM ESG Filtered Min TE Index
 - MSCI Japan ESG Filtered Min TE Index
 - MSCI Europe ESG Filtered Min TE Index

The following sections have been modified as of June 2022:

Section 2.1: Applicable Universe

- The MSCI World ESG Filtered Min TE Index has been added with its corresponding Parent Index.

The following sections have been modified as of March 2024:

Section 2.1: Applicable Universe

- The MSCI ACWI ESG Filtered Min TE Index has been added with its corresponding Parent Index.

Section 2.6: Treatment of Unrated Companies:

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

Section 4: MSCI ESG Research

- Moved that section after Section 3 (Maintaining the Indexes)
- Updated the descriptions of MSCI ESG Research products.

Appendix I: Business Involvement Screening Criteria

- Updated the language for the Weapons and Firearms screens.

Appendix IV: Methodology Set

- Added details on the Methodology Set for the Indexes.

The following sections have been modified as of November 2024:

Section 1: Introduction

- Updated to reflect the new methodology.

Section 2.1: Applicable Universe

- Added footnote for MSCI North America ESG Filtered Min TE Index.
- Added MSCI China ESG Filtered Min TE Index to the Table
- Added MSCI USA ESG Filtered Min TE Index to the Table

- Added footnote for MSCI ACWI ESG Filtered Min TE Index

Section 2.3: Optimization Constraints (Removed Section: ESG Filtered Universe)

- Added Table 1 for details on new constraints.
- Updated Table 2 to reflect the modified turnover for Quarterly Index Reviews.
- Updated the constraint relaxations followed in case of no optimal solutions.
- Added footnote for constraint relaxations for MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index.

Appendix I: MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index Methodology

- Added new section.

Appendix II: Business Involvement Screening Criteria

- Updated fossil fuel extraction aggregate revenue threshold from 5% to 10%
- Added footnote to the subsection on Weapons and Firearms.
- Added footnote for MSCI ACWI ESG Filtered Min TE Index and MSCI North America ESG Filtered Min TE Index

Appendix III: Calculation of GHG Intensity relative to EVIC

- Added new section.

The following sections have been modified as of January 2025:

Section 3.3: MSCI Monthly Review of Controversies

- Added the monthly review of ESG controversies for all indexes except North America and ACWI. This change is effective February 2, 2025, and is not applied prior to this date.

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