

Methodology Book for:

- **MSCI EMU ESG Filtered Min TE Index**
- **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**

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1 Introduction

The MSCI EMU ESG Filtered Min TE Index, 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 and MSCI Europe ESG Filtered Min TE Index (the “Indexes”) aim to represent the performance of a strategy that is designed to exclude companies based on various ESG and climate change criteria. Further, based on the companies’ ESG Scores, the index also excludes 20% of the number of stocks in their corresponding Parent Indexes¹.

As a final step, the index also aims to minimize the tracking error relative to the Parent Index through an optimization process. The estimated security co-variance matrix used in the optimization process is based on the relevant Barra multi-factor equity model. Details about the Barra multi-factor risk models are available at <https://www.msci.com/portfolio-management>.

¹ The corresponding Parent Indexes for the Indexes are defined in Section 3.1 of this methodology document.

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 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 ESG RATINGS

MSCI ESG Ratings provides research, data, analysis and ratings of how well companies manage environmental, social and governance risks and opportunities. MSCI ESG Ratings provides an overall company ESG rating - a seven-point scale from ‘AAA’ to ‘CCC’. In addition, the product provides scores and percentiles indicating how well a company manages each key issue relative to industry peers, as well as underlying data and metrics used to compile the scores and ratings.

For more details on MSCI ESG Ratings, please refer to <https://www.msci.com/esg-ratings>.

2.2 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>.

2.3 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.

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

2.4 MSCI ESG BUSINESS INVOLVEMENT SCREENING RESEARCH

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

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

3 Index Construction Methodology

3.1 APPLICABLE UNIVERSE

The applicable universe includes all the existing constituents of their respective MSCI parent indexes (“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 Index	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

3.2 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 1:

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

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

3.3 ESG FILTERED UNIVERSE

The ESG Filtered Universe is 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.

3.4 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 diversification objectives

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

During the Index Reviews, in the event that 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%

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 Index Review.

3.5 DETERMINING THE OPTIMIZED PORTFOLIO

The Index is constructed using the Barra Open Optimizer³ 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 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.

³ Please refer to Appendix V and VI for more details.

4 Maintaining the Indexes

4.1 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.

4.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the Indexes aims to minimize turnover outside of Index Reviews. The methodology aims to appropriately represent an investor’s participation in an event based on relevant deal terms and pre-event weighting of the index constituents that are involved. Further, changes in index market capitalization that occur as a result of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent.

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

The following section briefly describes the treatment of common corporate events within the Index.

No new securities will be added (except where noted below) to the Index between Index Reviews. Parent Index deletions will be reflected simultaneously.

EVENT TYPE

EVENT DETAILS

New additions to the Parent Index

A new security added to the parent index (such as IPO and other early inclusions) will not be added to the index.

Spin-Offs

All securities created as a result of the spin-off of an existing Index

constituent will be added to the Index at the time of event implementation. Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Merger/Acquisition

For Mergers and Acquisitions, the acquirer’s post event weight will account for the proportionate amount of shares involved in deal consideration, while cash proceeds will be invested across the Index.

If an existing Index constituent is acquired by a non-Index constituent, the existing constituent will be deleted from the Index and the acquiring non-constituent will not be added to the Index.

Changes in Security Characteristics

A security will continue to be an Index constituent if there are changes in characteristics (country, sector, size segment, etc.) Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Further detail and illustration regarding specific treatment of corporate events relevant to this Index can be found in the MSCI Corporate Events Methodology book under the sections detailing the treatment of events in Capped Weighted and Non-Market Capitalization Weighted indexes.

The MSCI Corporate Events methodology book is available at:
<https://www.msci.com/index-methodology>

Appendix I: 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 5% 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 Firearms**

All companies that derive 10% or more aggregate revenue from the provision of the following products and services:

- Nuclear, Biological, Chemical, and Conventional weapons, components, support systems production; related support services (including trading and distribution); and/or
- Civilian firearms and ammunition production and retailing

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

Appendix II: 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 III: 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.

The following sections have been modified effective October 22, 2021 –

Section 3.1: 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

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The process for submitting a formal index complaint can be found on the index regulation page of MSCI's website at: www.msci.com/index-regulation.

To learn more, please visit www.msci.com.

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