MSCI Value Low Carbon SRI Screened Select Indexes Methodology

December 2022

Contents

1 Introduction

The MSCI Value Low Carbon SRI Screened Select Indexes (herein, 'the Indexes') are designed to represent the performance of a strategy that seeks systematic integration of environmental, social and governance (ESG) norms and maximizes its exposure to the Value factor.

The Indexes are constructed by selecting constituents of a market capitalization weighted index (the 'Parent Index') and applying an optimization process that aims to maximize the exposure to the Value factor, minimize Tracking Error relative to the respective MSCI Factor Index (the 'Reference Index'), reduce the carbon-equivalent exposure to CO2 and other Green House Gases (GHG) as well as reduce its exposure to active fossil fuel sector by fifty percent (50%), and aims for weighted-average industry-adjusted ESG score of the Index at least equal to their respective Parent Indexes weighted-average industry-adjusted ESG score using certain constraints described below.

2 MSCI ESG Research

The Indexes use company ratings and research provided by MSCI ESG Research. In particular, the Indexes use the following MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies Score, MSCI ESG Business Involvement Screening Research and MSCI Climate Change Metrics.

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 aim to measure entities' management of environmental, social and governance risks and opportunities. MSCI ESG Ratings are based on 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/esg-and-climate-methodologies.

2.2 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 in: https://www.msci.com/esg-and-climate-methodologies.

2.3 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 http://www.msci.com/resources/factsheets/MSCI_ESG_BISR.pdf.

2.4 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.

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

3 Constructing the MSCI Value Low Carbon SRI Screened Select Indexes

Constructing the Indexes involves the following steps:

- Defining the Parent Index
- Defining the exclusion criteria
- Defining the Reference Index
- Defining the Value Score
- Defining the security selection and weighting
- Determining the optimized index

The steps mentioned above are defined in detail in the subsequent sections.

3.1 APPLICABLE UNIVERSE

The Applicable Universe of the Indexes includes all the constituents of their respective MSCI Parent Index. For further details regarding the Parent Index, kindly refer to Appendix V.

3.2 ELIGIBLE UNIVERSE

The Eligible Universe comprises of all securities from the Applicable Universe that meet each of the below eligibility criteria:

- Securities with an ESG Controversy score greater than 0 ('Red Flags')
- Securities with an Environment Controversy score greater than 1 ('Orange Flags')
- Securities with an ESG Rating above 'CCC'
- Securities that do not breach any of the values and climate change-based exclusions criteria detailed in Section 3.2.1.

<u>Note on Unrated Securities or Securities with Missing Coverage:</u>

Companies that are not assessed on MSCI ESG Research's ESG Controversies are excluded from the final universe. Companies that are not assessed on MSCI ESG Research's ESG Ratings are excluded from the final universe.

3.2.1. VALUES AND CLIMATE CHANGE-BASED EXCLUSIONS

Companies that are involved in specific businesses, which are associated with negative environmental and/or social impact are ineligible for inclusion in the Index. The Indexes use MSCI ESG Business Involvement Screening Research and MSCI Climate Change Metrics to identify companies that are involved in the following business activities. Please refer to Appendix I for more details on these criteria.

- Controversial Weapons
- Civilian Firearms
- Nuclear Weapons
- Tobacco
- Adult Entertainment
- Alcohol
- Conventional Weapons
- Gambling
- Genetically Modified Organisms
- Nuclear Power
- Fossil Fuel Reserves Ownership
- Fossil Fuel Extraction
- Thermal Coal Power

3.3 REFERENCE INDEX

The Reference Index is the underlying MSCI Factor Index (the 'Reference Index'). For further details regarding the Reference Index, kindly refer to Appendix V.

3.4 CALCULATION OF THE VALUE SCORE

The winsorized Value z-score score for each security is calculated using the formulae defined in Section 2.2 of the MSCI Enhanced Value Indexes Methodology (for details about the methodology, please refer to: https://www.msci.com/index-methodology).

3.5 SECURITY SELECTION AND WEIGHTING

Securities in the Eligible Universe are selected and weighted following an optimization-based approach described below:

At each Quarterly Index Review, the Indexes are constructed using an optimization process that aims to maximize the Value score, while controlling the ex-ante Tracking Error relative to the Reference Index at the time of rebalancing, subject to the following constraints:

1. Climate and other environmental or social objectives – constraints detailed in Table 1
2. Diversification objectives – constraints detailed in Table 2

The definitions of the target metrics for the optimization are detailed in Appendix II.

Table 1: Constraints imposed to meet the climate and other ESG objectives

No.	Climate and Other ESG Objectives	
1.	Minimum reduction in Greenhouse Gas (GHG) Intensity relative to EVIC (Scope 1+2+3[1]) relative to the Parent Index	30%
2.	Minimum reduction in GHG Intensity relative to Sales (Scope 1+2+3[2]) relative to the Parent Index	30%
3.	Minimum reduction in active Fossil Fuel Sector exposure[3] relative to the Parent Index	50%
4.	Minimum reduction in Water Emissions Intensity relative to EVIC relative to Parent Index[4]	>= 0%
5.	Minimum reduction in Hazardous Waste Intensity relative to EVIC relative to Parent Index[5]	>= 0%

[1] Prior to the May 2020 Index Review of the Indexes, the Weighted Average Carbon Emissions Intensity relative to EVIC has been calculated based on Scope 1+2 Emissions.

[2] Prior to the May 2020 Index Review of the Indexes, the Weighted Average Carbon Emissions Intensity relative to sales has been calculated based on Scope 1+2 Emissions.

[3] Company's exposure to fossil fuels related activities, including extraction, processing, storage and transportation of petroleum products, natural gas, and thermal and metallurgical coal.

[4] Minimum Reduction in Water Emissions Intensity constraint is effective from May 2021 Index Review.

[5] Minimum Reduction in Hazardous Waste Intensity constraint is effective from May 2021 Index Review.

No.	Climate and Other ESG Objectives	
6.	Minimum increase in weighted average ESG Trend Score[6] relative to Parent Index	>= 0%
7.	Maximum Weight in securities with an ESG Rating of 'BB' or 'B'	15%
8.	Minimum increase in weighted average ESG Score relative to Parent Index	0%

Table 2: Constraints imposed to meet the diversification objectives

No.	Diversification Objective	
1.	The ex-ante Tracking Error of the Index, relative to the Reference Index	<= 5%
2.	Constituent Active Weight relative to the Parent Index	+/- 2%
3.	Security Weight as a multiple of its weight in the Parent Index	<= 10x
4.	Active Sector Weights relative to the Reference Index	+/-5%
5.	Country Weight as a multiple of its weight in the Reference Index (for country weight <= 2.5% in the Reference Index)	<= 3x
6.	Active Country Weights relative to the Reference Index (for country weight > 2.5% in the Reference Index)	+/-5%
7.	The exposure of the Index to the Barra style factors (except Book-to-Price, Earnings Yield, Long Term Reversal and Dividend Yield) will be restricted relative to the Parent Index (measured in standard deviations)	+/-0.1
8.	The minimum number of index constituents	150
9.	The minimum weight of an index constituent	0.05%

[6] The ESG Rating Trend indicates the rating change from previous to current in terms of the number of rating notches downgraded or upgraded. For example; +3 = three notch upgrade, -2 = two notch downgrade, 0 = maintain, and blank = new rating.

No.	Diversification Objective	
10.	One Way Turnover	<= 20%
11.	Common Factor Risk Aversion	0.0015
12.	Specific Risk Aversion	0.015

During the Quarterly 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 2% up to 30%
- Relax the security weight multiple constraint in steps of 2x to 20x
- Relax the maximum weight of ESG Rating of 'B' and 'BB' securities constraint in steps of 1% to 20%
- The one-way index turnover constraint, the security weight multiple constraint and the maximum weight of ESG Rating of 'B' and 'BB' securities constraint are alternately relaxed until a feasible solution is achieved.

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 Quarterly Index Review.

3.6 DETERMINING THE OPTIMIZED INDEX

The Indexes are constructed using the Barra Open Optimizer 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 and the weights of constituents in the Indexes. The optimization is performed from a base currency perspective and does not allow short selling of securities. The default currency is the US Dollar.

Please refer to Appendix III and IV for more details.

4 Maintaining the Indexes

4.1 QUARTERLY INDEX REVIEWS

The MSCI Indexes are rebalanced on a quarterly basis, usually as of the close of the last business day of February, May, August and November, coinciding with the regular Index Reviews (Semi-Annual Index Reviews in May and November and Quarterly Index Reviews in February and August) of the MSCI Global Investable Market Indexes. Barra Equity Model data as of the day before the rebalancing day is used.

In general, MSCI uses MSCI ESG Research data (including MSCI ESG Ratings, MSCI ESG Controversies Scores, MSCI Business Involvement Screening Research and MSCI Climate-change metrics) as of the end of the month preceding the Index Reviews for the rebalancing of the Index. For some securities, such data may not be published by MSCI ESG Research by the end of the month preceding the Index Review. For such securities, MSCI will use ESG data published after the end of month, when available, for the rebalancing of the Index.

The pro forma Indexes are in general announced nine business days before the effective date.

4.2 MONTHLY REVIEW OF CONTROVERSIES

Index constituents are reviewed on a monthly basis[7] for the involvement in ESG controversies and for compliance with the United Nations Global Compact Principles. Existing constituents will be deleted if they face controversies as defined by MSCI ESG Controversies Score of 0 ('Red Flag' companies), or if they fail to comply with the UN Global Compact Principles.

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.

[7] Monthly review of ESG controversies will be effective from January 2023

4.3 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the Indexes aim 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 Indexes, the changes made to the Parent Index during intermediate Index Reviews will be neutralized in the Indexes.

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

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: Values and Climate Change-based Exclusion Criteria

Companies whose activities meet the following business activities-based criteria, as evaluated by MSCI ESG Research, are excluded from the MSCI Value Low Carbon SRI Screened Select Indexes.

”Most Restrictive” screen applied

- **Controversial Weapons**
    - All companies with any tie to Controversial Weapons (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 Global Ex-Controversial Weapons Indexes available at https://www.msci.com/index-methodology.

”Highly Restrictive” screen applied

- **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 aggregate revenue from the production and distribution (wholesale or retail) of firearms or small arms ammunition intended for civilian use.

- **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) 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.

- **Tobacco**

  - All companies classified as a "Producer".

  - All companies deriving 5% or more aggregate revenue from the production, distribution, retail, supply and licensing of tobacco-related products.

"Moderately Restrictive" screen applied

- **Adult Entertainment**

  - All companies deriving 5% or more revenue from the production of adult entertainment materials.

  - All companies deriving 15% or more aggregate revenue from the production, distribution and retail of adult entertainment materials.

- **Alcohol**

  - All companies deriving 5% or more revenue from the production of alcohol-related products.

  - All companies deriving 15% or more aggregate revenue from the production, distribution, retail and supply of alcohol-related products.

- **Conventional Weapons**
  - All companies deriving 5% or more revenue from the production of conventional weapons and components.
  - All companies deriving 5% or more aggregate revenue from weapons systems, components, and support systems and services.
- **Gambling**
  - All companies deriving 5% or more revenue from ownership of operation of gambling-related business activities.
  - All companies deriving 15% or more aggregate revenue from gambling-related business activities.
- **Genetically Modified Organisms (GMO)**
  - All companies deriving 5% or more revenue from activities like genetically modifying plants, such as seeds and crops, and other organisms intended for agricultural use or human consumption.
- **Nuclear Power**
  - All companies generating 5% or more of their total electricity from nuclear power in a given year.
  - All companies that have 5% or more of installed capacity attributed to nuclear sources in a given fiscal year.
  - All companies deriving 15% or more aggregate revenue from nuclear power activities.

No specific restrictiveness level applied

- **Fossil Fuel Reserves Ownership**
  - All companies with evidence of owning proven & probable coal reserves and/or proven oil and natural gas reserves used for energy purposes, as defined by the methodology of the MSCI Global Ex Fossil Fuels Indexes available at https://www.msci.com/index-methodology.

- **Fossil Fuel Extraction**
    - All companies deriving any revenue (either reported or estimated) from thermal coal mining or 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.

Appendix II: Calculation of Target Metrics

Calculation of GHG Intensity relative to EVIC

For Parent Index constituents where Scope 1+2+3 Emissions Intensity is not available, the average Scope 1+2+3 Emissions Intensity relative to EVIC of all the constituents of the MSCI ACWI in the same GICS®[8] Industry Group in which the constituent belongs to is used.

Security Level GHG Intensity relative to EVIC =

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

Enterprise Value Inflation Adjustment Factor (EVIAF) =

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

Weighted Average GHG Intensity relative to EVIC of the Parent Index =

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

Weighted Average GHG Intensity relative to EVIC of the Optimized Index =

$$\sum (Index\ Weight * \ Security\ Level\ GHG\ Intensity\ relative\ to\ EVIC)$$

Calculation of GHG Intensity relative to Sales

For Parent Index constituents where the Scope 1+2+3 Emissions Intensity is not available, the average Scope 1+2+3 Emissions Intensity relative to Sales of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the constituent belongs to is used.

Security Level GHG Intensity relative to Sales =

$$\frac{Scope\ 1+2+3\ Carbon\ Emissions}{Sales\ (in\ M\$)}$$

[8] GICS, the Global Industry Classification Standard, jointly developed by MSCI Inc. and S&P Global

Weighted Average GHG Intensity relative to Sales of the Parent Index =

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

Weighted Average GHG Intensity relative to Sales of the Optimized Index =

$$\sum(Index\ Weight * \ Security\ Level\ GHG\ Intensity\ relative\ to\ Sales)$$

Calculation of Water Emissions Intensity relative to EVIC

Security Level Water Emissions Intensity =

$$\frac{Water\ Emissions\ (metric\ tons)}{Enterprise\ Value + Cash(in\ M\$)}$$

Weighted Average Water Emissions Intensity of the Parent Index =

$$\frac{\sum(Weight\ in\ Parent\ Index_i * Security\ Level\ Water\ Emissions\ Intensity)}{\sum_{i=1}^{n} Weight\ in\ Parent\ Index_i}$$

Weighted Average Water Emissions Intensity of the Optimized Index =

$$\frac{\sum(Index\ Weight_i * Security\ Level\ Water\ Emission\ Intensity)}{\sum_{i=1}^{n} Index\ Weight_i}$$

Where:
i = index security with Water Emissions and EVIC available.

Calculation of Hazardous Water Intensity relative to EVIC

Security Level Hazardous Waste Intensity =

$$\frac{Hazardous\ waste\ (metric\ tons)}{Enterprise\ Value + Cash(in\ M\$)}$$

Weighted Average Hazardous Waste Intensity of the Parent Index =

$$\frac{\sum(Weight\ in\ Parent\ Index_i * Security\ Level\ Hazardous\ Waste\ Intensity)}{\sum_{i=1}^{n} Weight\ in\ Parent\ Index_i}$$

Weighted Average Hazardous Waste Intensity of the Optimized Index =

$$\frac{\sum(Index\ Weight_i * Security\ Level\ Hazrdous\ Waste\ Intensity)}{\sum_{i=1}^{n} Index\ Weight_i}$$

Where:

i = index security with all Hazardous Waste and EVIC available.

Calculation of Weighted Average ESG Trend Score

Weighted Average ESG Trend Score of the Index =

$$\frac{\sum(Index\ Weight_i * ESG\ Trend\ Score\ of\ Security)}{\sum_{i=1}^{n} Index\ Weight_i}$$

Where:

i = index security with ESG Trend Score available.

Calculation of Weighted Average ESG Score

Weighted Average ESG Score of the Index =

$$\frac{\sum(Index\ Weight_i * ESG\ Score\ of\ Security)}{\sum_{i=1}^{n} Index\ Weight_i}$$

Where:

i = index security with ESG Score available.

Appendix III: 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 (GEMLTL).

Appendix IV: 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 V: The Parent Index and the Reference Index

Table 3: Indexes and their corresponding Parent Indexes and Reference Indexes

No.	Index Name	Parent Index	Reference Index
1.	MSCI World Value Low Carbon SRI Screened Select Index	MSCI World Index	MSCI World Enhanced Value Index

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