

METHODOLOGY BOOK FOR:
**-MSCI WORLD ESG QUALITY
SELECT LOW VOLATILITY INDEX**
**- MSCI WORLD ESG QUALITY
SELECT LOW VOLATILITY 5%
DECREMENT INDEX**
**- MSCI WORLD ESG QUALITY
SELECT LOW VOLATILITY 8% RISK
CONTROL INDEX**
**- MSCI WORLD ESG QUALITY
SELECT LOW VOLATILITY 8% RISK
CONTROL 3% DECREMENT INDEX**

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1 Introduction

The MSCI World ESG Quality Select Low Volatility Index aims to represent the performance of a strategy that seeks lower risk¹ than the MSCI World index along with improvement in the Quality, ESG and Carbon Emission Intensity characteristics.

The index is a Non-Market Capitalization Weighted Index, providing an alternative weighting construct using optimization.

The MSCI World ESG Quality Select Low Volatility 5% Decrement Index aims to represent the net performance of the MSCI World ESG Quality Select Low Volatility Index, while applying a constant markdown ('synthetic dividend') of 5% on an annual basis, expressed as a percentage of performance.

The MSCI World ESG Quality Select Low Volatility 8% Risk Control Index aims to target a specific level of risk by dynamically adjusting the weights assigned to MSCI World ESG Quality Select Low Volatility Index and a cash component.

The MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index aims to represent the performance of the MSCI World ESG Quality Select Low Volatility Index, while targeting a specific level of risk and applying a constant markdown ('synthetic dividend') expressed as a percentage of performance.

¹ An estimated security co-variance matrix based on the relevant Barra multi-factor equity model is used to forecast lowest risk. Details about the Barra multi-factor risk models are available at <https://www.msci.com/portfolio-management>

2 ESG Research Framework

The MSCI World ESG Quality Select Low Volatility Index uses company ratings and research provided by MSCI ESG Research. The index uses the following MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies 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 provides research, 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.

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

2.2 MSCI ESG CONTROVERSIES

MSCI ESG Controversies (formerly known as MSCI Impact Monitor) 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 : <https://www.msci.com/documents/10199/acbe7c8a-a4e4-49de-9cf8-5e957245b86b>

2.3 MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics is designed to support investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, and factoring climate change research into their risk management processes. It provides Carbon Emissions, Fossil Fuel exposure, environmental impact (i.e., clean technology) data and screens, as well as climate-related risk exposure and management assessment on companies such as Low Carbon Transition scores and categories.

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

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 Constructing the Index

The MSCI World ESG Quality Select Low Volatility Index is constructed from MSCI World (the “Parent Index”). The following steps are applied at initial construction of the Index.

- Defining the Parent Index, Eligible Universe and the base currency for optimization
- Eligible Universe Screening
- Defining the optimization constraints
- Determining the optimized portfolio

In addition to the above steps, the following steps are applied to the MSCI World ESG Quality Select Low Volatility Index to construct the “MSCI World ESG Quality Select Low Volatility 5% Decrement Index” and the “MSCI World ESG Quality Select Low Volatility 8% Risk Control Index”.

- MSCI World ESG Quality Select Low Volatility 5% Decrement Index:
Applying the MSCI Decrement Indexes methodology²
- MSCI World ESG Quality Select Low Volatility 8% Risk Control Index:
Applying the MSCI Risk Control Indexes methodology³

The MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index is constructed from the MSCI World ESG Quality Select Low Volatility Index, by applying the following steps sequentially:

- Applying the MSCI Risk Control Indexes methodology
- Applying the MSCI Decrement Indexes methodology

3.1 DEFINING THE PARENT INDEX, ELIGIBLE UNIVERSE AND THE BASE CURRENCY FOR OPTIMIZATION

Constructing the MSCI World ESG Quality Select Low Volatility Index (herein, “the Index”) begins with the Parent Index and then applying screens to arrive at the eligible universe to perform total risk minimizing optimization. The optimization is performed from a base currency perspective and does not allow short selling of securities. The optimization base currency is US Dollar.

² Please refer to the MSCI Decrement Indexes methodology at www.msci.com/index-methodology

³ Please refer to the MSCI Risk Control Indexes methodology at www.msci.com/index-methodology

The optimization relies on factor exposures for all the securities in the Parent Index and the factor co-variance matrix of the relevant Barra Equity Model⁴.

3.2 ELIGIBLE UNIVERSE SCREENING

3.2.1 LIQUIDITY CRITERIA

Securities with 12-month Annualized Traded Value (12-month ATV) greater than USD 1.26 Billion are eligible for inclusion in the Index.

To avoid multiple securities of the same company in the final index, only the most liquid security for each issuer per its 12-month Annualized Traded Value (12-month ATV) is eligible for inclusion in the Index. For any issuer, should two securities have the same 12-month ATV, the one with the higher free float-adjusted market capitalization is included.

3.2.2 ESG RATINGS ELIGIBILITY

The MSCI World ESG Quality Select Low Volatility Index uses MSCI ESG Ratings to identify companies that have demonstrated an ability to manage their ESG risks and opportunities. Companies having MSCI ESG Rating of 'AAA', 'AA', 'A' or 'BBB' are eligible for inclusion in the MSCI World ESG Quality Select Low Volatility Index⁵.

3.2.3 ESG CONTROVERSIES SCORE ELIGIBILITY

The MSCI World ESG Quality Select Low Volatility Index uses MSCI ESG Controversies Scores to identify those companies that are involved in very serious controversies involving the environmental, social, or governance impact of their operations and/or products and services. Companies are required to have an MSCI ESG Controversies Score of 1 or higher to be eligible for inclusion in the MSCI World ESG Quality Select Low Volatility Index⁶.

3.2.4 VALUES-BASED EXCLUSIONS

The MSCI World ESG Quality Select Low Volatility Index use MSCI ESG Business Involvement Screening Research to identify companies that are involved in the following business activities. Companies that meet the business involvement criteria

⁴ Please refer to Appendix 1 for the detailed information on model usage

⁵ Unrated companies (Companies not assessed by MSCI ESG Research on MSCI ESG Rating) are excluded from the eligible universe. For more details refer to the MSCI ESG Universal Index:
https://www.msci.com/eqb/methodology/meth_docs/ESG_Universal_Index_Methodology.pdf

⁶ Unrated companies (Companies not assessed by MSCI ESG Research on MSCI ESG Controversies Score) are excluded from the eligible universe. For more details refer to the MSCI ESG Universal Index:
https://www.msci.com/eqb/methodology/meth_docs/ESG_Universal_Index_Methodology.pdf

are excluded from the MSCI World ESG Quality Select Low Volatility Index. Please refer to Appendix 5 for details on these criteria.

- Controversial Weapons
- Civilian Firearms
 - Nuclear Weapons
- Tobacco
- Alcohol
- Adult Entertainment
- Conventional Weapons
 - Gambling
- Genetically Modified Organisms
 - Nuclear Power
 - Thermal Coal

3.2.5 CARBON EMISSION INTENSITY SCREENING

After applying the above liquidity and ESG eligibility criteria, the Index excludes top 20% of the securities from the remaining universe, as ranked based on their Carbon Emission Intensity. For more details on Carbon Emission Intensity calculation please refer to MSCI Low Carbon Leaders Index methodology at <https://www.msci.com/index-methodology>.

In case of two or more securities having the same Carbon Emission Intensity the security with the higher weight in the Parent Index is given lower rank.

3.2.6 QUALITY SCREENING

After applying the Carbon Emission Intensity screen, the Index excludes bottom 20% of the securities from the remaining universe, as ranked based on their Quality factor score derived from the relevant Barra Equity Model. The Barra Equity Model Quality factor score is defined for each security as described in Appendix 2.

In case of two or more securities having the same Quality factor score the security with the higher weight in the Parent Index is given higher rank.

3.3 DEFINING THE OPTIMIZATION CONSTRAINTS

At each Quarterly Index Review (QIR), the following optimization constraints are employed, which aim to ensure replicability and investability while achieving lower risk⁷.

- The maximum weight of an index constituent will be 2.5%.
- The minimum weight of an index constituent will be 0.25%.
- The minimum number of constituents in the index will be 50.
- For countries with weight greater than 2.5% in the Parent Index, the weight in the MSCI World ESG Quality Select Low Volatility Index will not deviate more than +/-15% from the country weight in the Parent Index.
- For countries with weight less than 2.5% in the Parent Index, the weight in the MSCI World ESG Quality Select Low Volatility Index will be capped at 7 times their weight in the Parent Index.
- The sector weights of the MSCI World ESG Quality Select Low Volatility Index will not deviate more than +/-15% from the sector weights of the Parent Index.

3.4 DETERMINING THE OPTIMIZED PORTFOLIO

The MSCI World ESG Quality Select Low Volatility Index is constructed using the Barra Open Optimizer in combination with the relevant Barra Equity Model⁸. The optimization uses the eligible universe as the universe of eligible securities and the specified optimization objective and constraints to determine the MSCI World ESG Quality Select Low Volatility Index.

3.5 APPLYING THE MSCI DECREMENT INDEXES METHODOLOGY

The MSCI Decrement Indexes Methodology⁹ is applied on the MSCI World ESG Quality Select Low Volatility Index to construct the MSCI World ESG Quality Select Low Volatility 5% Decrement Index. The parameters for the application of the decrement methodology in the above index is noted in Appendix 3.

⁷ An estimated security co-variance matrix based on the relevant Barra multi-factor equity model is used to forecast lowest risk. Details about the Barra multi-factor risk models are available at <https://www.msci.com/portfolio-management>

⁸ Please refer to Appendix 1 for the detailed information on model usage

⁹Please refer to the MSCI Decrement Indexes methodology at www.msci.com/index-methodology

3.6 APPLYING THE MSCI RISK CONTROL INDEXES METHODOLOGY

The MSCI Risk Control Indexes Methodology¹⁰ is applied on the MSCI World ESG Quality Select Low Volatility Index to construct the MSCI World ESG Quality Select Low Volatility 8% Risk Control Index. The parameters for the application of the risk control methodology in the above index is noted in Appendix 4.

3.7 APPLYING THE MSCI RISK CONTROL AND DECREMENT INDEXES METHODOLOGY

The MSCI Risk Control Indexes Methodology and the MSCI Decrement Indexes Methodology¹¹ is applied sequentially on the MSCI World ESG Quality Select Low Volatility Index to construct the MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index. The parameters for the application of the risk control methodology and the decrement methodology in the above index are noted in Appendix 5.

¹⁰Please refer to the MSCI Risk Control Indexes methodology at www.msci.com/index-methodology

¹¹Please refer to the MSCI Decrement Indexes methodology at www.msci.com/index-methodology

4 Maintaining the Index

4.1 QUARTERLY INDEX REVIEWS

The MSCI World ESG Quality Select Low Volatility Index is reviewed on a quarterly basis as per the steps described in Section 3, coinciding with the May and November Semi-Annual Index Reviews and the February and August Quarterly Index Reviews of the Parent Index.

For each rebalance, the Barra Equity Model data as of the end of the month preceding the Index Review are used. This approach aims to capture timely updates to the risk characteristics of the companies and coincide with the rebalancing frequency of the relevant Parent Index.

In general, MSCI uses MSCI ESG Research data (including MSCI ESG Ratings, MSCI ESG Controversies Scores, 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 index is in general announced nine business days before the effective date.

4.2 DAILY DECREMENT CALCULATION

The performance of the MSCI World ESG Quality Select Low Volatility 5% Decrement Index is computed by reducing the net performance of the MSCI World ESG Quality Select Low Volatility Index, by a fixed percentage, on a daily basis using parameters detailed in Appendix 3.

4.3 DAILY RISK CONTROL APPLICATION

The index is weighted and rebalanced in accordance with MSCI Risk Control Indexes Methodology with the parameters detailed in Appendix 4.

The MSCI World ESG Quality Select Low Volatility 8% Risk Control Index is rebalanced on a daily basis. The MSCI World ESG Quality Select Low Volatility 8% Risk Control Index is not rebalanced when 10% or more of the constituents of the MSCI World ESG Quality Select Low Volatility Index (calculated by the constituent weights) are not traded due to exchange holidays on the day prior to the effective date.

4.4 DAILY RISK CONTROL AND DAILY DECREMENT APPLICATION

The MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index is rebalanced on a daily basis, in accordance with the MSCI Risk Control Indexes Methodology and the MSCI Decrement Indexes Methodology with the parameters detailed in Appendix 5.

4.5 ONGOING EVENT-RELATED CHANGES

The following section briefly describes the treatment of common corporate events within the MSCI World ESG Quality Select Low Volatility Index. Changes in index market capitalization that occur because of corporate event implementation will be offset by a corresponding change in the Variable Weighting Factor (VWF) of the constituent.

No new securities will be added (except where noted below) to the Index between Index Reviews. For cases where additions are noted below, securities will be added to the index only if added to the parent index. 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 not 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 1: New release of Barra® Equity Model or Barra® Optimizer

The methodology presently uses MSCI Barra Global Equity Model for Long-Term Investors (“GEMTL”) for the optimization. A new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

Appendix 2: Quality Factor Definition

The quality factor score for each security is calculated by combining in equal proportion the security-level exposures to five factors - Profitability, Investment Quality, Earnings Quality, Leverage and Earnings Variability - from GEMTL model. A sector-relative score is derived from the combined score by standardizing the latter within each sector and winsorizing at +/- 3

$$\text{Quality}_i = (0.2) * \text{Profitability}_i + (0.2) * \text{Investment Quality}_i + (0.2) * \text{Earnings Quality}_i + (-1) * (0.2) * \text{Earnings Variability}_i + (-1) * (0.2) * \text{Leverage}_i$$

Appendix 3: Parameters used for the MSCI World ESG Quality Select Low Volatility 5% Decrement Index

The following parameters are used for the calculation of MSCI World ESG Quality Select Low Volatility 5% Decrement Index

	MSCI Decrement Indexes Methodology Parameters	Parameters
1	Currency of Calculation	USD
2	Return Variant of MSCI World ESG Quality Select Low Volatility Index	Daily Net Total Return
3	Decrement Type	Fixed Percentage
4	Decrement Application	Geometric
5	Decrement Value	5%
6	Day-count Convention	Actual / 360
7	Index Floor	0
8	Decrement Frequency	Daily

Appendix 4: Parameters used for the MSCI World ESG Quality Select Low Volatility 8% Risk Control Index

The following parameters are used for the calculation of MSCI World ESG Quality Select Low Volatility 8% Risk Control Index

	MSCI Risk Control Indexes Methodology Parameters	Parameters
1	Calendar Rule	Daily
2	Return Variant of MSCI World ESG Quality Select Low Volatility Index	Price Return
3	Risk Free Rate	LIBOR
4	Risk Free Maturity Rate	1D
5	Closed Market Threshold	10
6	Rebalancing Type	Volatility
	Volatility Rebalancing Parameters	
7	Risk Control Level	8%
8	Base Currency of MSCI World ESG Quality Select Low Volatility Index and the cash component	USD
9	Maximum Leverage	150%
10	Buffer	5%
11	Volatility Calculation Type	Equal Weighted Volatility
	Estimator Parameters	
12	Lag Between Rebalancing Date and Effective Date	3 business days
13	Short Term number of days estimate	20
14	Long Term number of days estimate	60
15	Exchange Holiday Rule Threshold ¹²	10%

¹² This screen is applied from May 22,2020

Appendix 5: Parameters used for the MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index

The MSCI Risk Control Indexes Methodology¹³ is applied on the MSCI World ESG Quality Select Low Volatility Index using the following parameters:

	MSCI Risk Control Indexes Methodology Parameters	Parameters
1	Calendar Rule	Daily
2	Return Variant of MSCI World ESG Quality Select Low Volatility Index	Net Total Return
3	Risk Free Rate	LIBOR
4	Risk Free Maturity Rate	1D
5	Closed Market Threshold	10
6	Rebalancing Type	Volatility
Volatility Rebalancing Parameters		
7	Risk Control Level	8%
8	Base Currency of MSCI World ESG Quality Select Low Volatility Index and the cash component	USD
9	Maximum Leverage	150%
10	Buffer	5%
11	Volatility Calculation Type	Equal Weighted Volatility
Estimator Parameters		
12	Lag Between Rebalancing Date and Effective Date	3 business days
13	Short Term number of days estimate	20
14	Long Term number of days estimate	60
15	Exchange Holiday Rule Threshold ¹⁴	10%

¹³Please refer to the MSCI Risk Control Indexes methodology at www.msci.com/index-methodology

¹⁴ This screen is applied from May 22,2020

The MSCI Decrement Indexes methodology is then applied using the parameters below, to construct the MSCI World ESG Quality Select Low Volatility 8% Risk Control 3% Decrement Index.

	MSCI Decrement Indexes Methodology Parameters	Parameters
1	Currency of Calculation	USD
2	Return Variant of the Risk Control Index	Combined Return
3	Decrement Type	Fixed Percentage
4	Decrement Application	Geometric
5	Decrement Value	3%
6	Day-count Convention	Actual / 360
7	Index Floor	0
8	Decrement Frequency	Daily

Appendix 6: VALUES-BASED EXCLUSION CRITERIA

MSCI ESG Research has developed a framework designed to define significant involvement in controversial activities. According to this framework, there are three tolerance levels: Zero Tolerance, Minimal Tolerance and Low Tolerance.

Each controversial activity screened by the MSCI SRI Indexes (except Thermal Coal) is assigned to one of these tolerance levels.

Activities classified under “Zero Tolerance”

• 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 Ex-Controversial Weapons indexes available at:

<https://www.msci.com/index-methodology>

Activities classified under “Minimal Tolerance”

• 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

• 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

• Tobacco

- All companies classified as a “Producer”
- All companies deriving 5% or more aggregate revenue from the production, distribution, retail and supply of tobacco-related products

Activities classified under “Low Tolerance”

• 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

• 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

• Conventional Weapons

- All companies deriving 5% or more revenue from the production of conventional weapons
- All companies deriving 15% 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

Activities not classified under any specific tolerance level**• Thermal Coal**

- All companies deriving 30% 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

- All companies deriving 30% or more revenue (either reported or estimated) from the thermal coal based power generation

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[Index regulation - MSCI](#)

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



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