

## Methodology Book for:

- **MSCI World Energy ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Materials ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Industrials ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Consumer Discretionary ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Consumer Staples ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Healthcare ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Financials ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Information Technology ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Communication Services ESG Reduced Carbon Select 20 35 Capped Index**
- **MSCI World Utilities ESG Reduced Carbon Select 20 35 Capped Index**

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## 1 Introduction

The MSCI World Energy ESG Reduced Carbon Select 20 35 Capped, MSCI World Materials ESG Reduced Carbon Select 20 35 Capped, MSCI World Industrials ESG Reduced Carbon Select 20 35 Capped, MSCI World Consumer Discretionary ESG Reduced Carbon Select 20 35 Capped, MSCI World Consumer Staples ESG Reduced Carbon Select 20 35 Capped, MSCI World Healthcare ESG Reduced Carbon Select 20 35 Capped, MSCI World Financials ESG Reduced Carbon Select 20 35 Capped, MSCI World Information Technology ESG Reduced Carbon Select 20 35 Capped, MSCI World Communication Services ESG Reduced Carbon Select 20 35 Capped, MSCI World Utilities ESG Reduced Carbon Select 20 35 Capped Indexes (“The Indexes”) are designed to support investors seeking to increase exposure to positive environmental, social and governance (ESG) factors by 20% and aim to reduce the carbon-equivalent exposure to carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHG) as well as their exposure to potential emissions risk of fossil fuel reserves by thirty percent (30%) relative to the Parent Indexes<sup>1</sup>.

The Indexes are constructed from their corresponding free-float adjusted market capitalization weighted Parent Indexes by excluding securities based on ESG and Climate Change-related criteria and use an optimization-based approach. The optimization-based approach aims to:

- Minimize ex-ante tracking error relative to the Parent Index
- Increase the weighted average ESG Score by 20%
- Reduce the Carbon Intensity and Potential Emissions per dollar of Market Capitalization by 30%

As a final step, the Indexes are capped as per the MSCI 20/35 Indexes methodology.

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

## **2 MSCI ESG Research**

The Indexes use company ratings and research provided by MSCI ESG Research. In particular, these indexes use the following four MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies, MSCI 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 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 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](http://www.msci.com/resources/factsheets/MSCI_ESG_BISR.pdf)

## 2.4 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-solutions>

### 3 Constructing the Indexes

#### 3.1 APPLICABLE UNIVERSE

The applicable universe for the Indexes includes all the constituents of their respective MSCI parent index (the “Parent Index”), as shown in the table below.

Index Name	Parent Index
<b>MSCI World Energy ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Energy Index
<b>MSCI World Materials ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Materials Index
<b>MSCI World Industrials ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Industrials Index
<b>MSCI World Consumer Discretionary ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Consumer Discretionary Index
<b>MSCI World Consumer Staples ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Consumer Staples Index
<b>MSCI World Healthcare ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Healthcare Index
<b>MSCI World Financials ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Financials Index
<b>MSCI World Information Technology ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Information Technology Index
<b>MSCI World Communication Services ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Communication Services Index
<b>MSCI World Utilities ESG Reduced Carbon Select 20 35 Capped Index</b>	MSCI World Utilities Index

#### 3.2 DEFINING THE SECURITY LEVEL CARBON EXPOSURE

The carbon exposure of a security is measured in terms of its greenhouse gas emissions and its potential carbon emissions from fossil fuel reserves. The Indexes use MSCI ESG Carbon Metrics data from MSCI ESG Research.

##### 3.2.1 GREENHOUSE GAS EMISSIONS

MSCI ESG Research collects company-specific direct (Scope 1) and indirect (Scope 2) greenhouse gas (GHG) emissions data from company public documents and/or the Carbon Disclosure Project. If a company does not report GHG emissions, then MSCI ESG Research uses its proprietary methodology to estimate Scope 1 and

Scope 2 GHG emissions. The data is updated on an annual basis. Since the current carbon emissions of a company are directly influenced by its current business activity, MSCI normalizes for size by dividing the annual carbon emissions of the company by the annual sales of the company.

For newly added companies to the index which do not report emission data and where MSCI ESG Research has not estimated the greenhouse gas emissions yet, MSCI uses the average emissions per dollar of issuer market capitalization for the companies in the same industry group, multiplied by the market capitalization of the company as the estimated emission for the company.

### **3.2.2 POTENTIAL CARBON EMISSIONS FROM FOSSIL FUELS**

MSCI ESG Research collects fossil fuel reserves data where relevant for companies which have reserves, typically in the Oil & Gas, Coal Mining and Electric Utilities industries<sup>2</sup>. Fossil fuel reserves can be used for several applications including energy or industrial (e.g. coking coal used for steel production). For the development of the Indexes, only fossil fuel reserves used for energy are taken into account. The data is updated on an annual basis and based on information disclosed by companies. Sources include company publications, other public records and third party data providers. For newly added companies to the index where data is not available yet, MSCI uses zero fossil fuel reserves. The size of reserves of a company typically influences its market valuation, and hence MSCI normalizes for size by dividing the potential carbon emissions of the company by its market capitalization.

To convert reserves data to potential carbon emissions, MSCI ESG Research applies a formula from the Potsdam Institute for Climate Impact Research<sup>3</sup>.

### **3.3 ELIGIBLE UNIVERSE**

Securities of companies involved in Very Severe business controversies as defined by the MSCI ESG Controversies Methodology are not eligible for inclusion in the Indexes. This is implemented by excluding constituents of the Parent Index with ESG Controversy Score = 0 ('Red Flag' companies).

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<sup>2</sup> For more information on MSCI ESG Carbon Metrics, please refer to <https://www.msci.com/index-carbon-footprint-metrics>

<sup>3</sup> Malte Meinshausen, Nicolai Meinshausen, William Hare, Sarah C. B. Raper, Katja Frieler, Reto Knutti, David J. Frame & Myles R. Allen. Greenhouse-gas emission Target for limiting global warming to 2 °C. *Nature* 458, 1158-1162 (30 April 2009) | doi: 10.1038/nature08017; Received 25 September 2008; Accepted 25 March 2009. Supplementary Information, p. 7.

Companies that are involved in specific businesses which have high potential for negative social and/or environmental impact are ineligible for inclusion in the index.

- Controversial Weapons
- Nuclear Weapons
- Civilian Firearms
- Tobacco
- Thermal Coal
- Oil Sands
- Weapons

In addition to the above, companies that fail to comply with the United Nations Global Compact Principles are also excluded from The Indexes.

Please refer to Appendix 1 for more details on these criteria

**OTHER EXCLUSION CRITERIA**

- Missing Controversy Score – Companies not assessed by MSCI ESG Research’s MSCI ESG Controversy Scores are excluded from the index.
- Missing ESG Rating or ESG Score – Companies which are not rated by MSCI ESG Research for an MSCI ESG Rating are excluded from the index.

**3.4 DEFINING THE OPTIMIZATION CONSTRAINTS**

The optimization process aims to minimize the Index’s ex-ante tracking error relative to the Parent Index subject to the optimization constraints detailed in Appendix 2.

**3.5 DETERMINING THE OPTIMIZED INDEX**

The Index is constructed using MSCI’s Barra® Open Optimizer in combination with the relevant Barra Equity Model<sup>4</sup>. The optimization uses a universe of eligible securities and the specified optimization objective and constraints to determine the constituents of the Indexes.

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<sup>4</sup> Please refer to Appendix 3 and 4 for more details.



**Infeasible Solution –**

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:

- The one-way turnover constraint will be relaxed in 5 steps up to 30%.
- The weighted average ESG Score constraint will be relaxed in 5 steps up to 10%.
- The weighted average Carbon Intensity and the potential emissions per dollar of market capitalization constraint will be relaxed in 5 steps up to 20%.

The relaxations are completed in an alternative manner – a single step of turnover relaxation is followed by a single step of ESG score improvement relaxation, followed by a single step of weighted average carbon intensity reduction relaxation, before the turnover constraint is relaxed further. 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.

**3.5.1 DETERMINING THE OPTIMIZED INDEX**

The Index is constructed using the Barra Open Optimizer<sup>5</sup> 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.

**3.6 APPLYING THE MSCI 20/35 INDEXES METHODOLOGY**

As a final step, the Indexes are capped<sup>6</sup> as per the MSCI 20/35 Indexes methodology. For details, refer to the MSCI Capped Indexes Methodology at [www.msci.com/index-methodology](http://www.msci.com/index-methodology)

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<sup>5</sup> Please refer to Appendix 3 and 4 for more details.

<sup>6</sup> The ESG and Carbon targets are not enforced again post 20/35 capping.

## **4 Maintaining the Indexes**

### **4.1 QUARTERLY INDEX REVIEWS**

The Index is rebalanced on a quarterly basis to coincide 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. Changes are implemented at the end of February, May, August and November. The pro forma indexes are in general announced nine business days before the effective date.

ESG scores used for the Quarterly Index Reviews will be taken as of the end of the month preceding the Index Review, i.e., January, April, July, and October.

At each Index Review, the optimization process outlined in Section 3 is implemented.

In general, MSCI uses MSCI ESG Research data (including MSCI ESG Ratings, MSCI ESG Controversies Scores, MSCI Business Involvement Screening Research, and MSCI ESG Carbon Metrics) as of the end of the month preceding the Index Reviews. 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.

### **4.2 ONGOING EVENT-RELATED MAINTENANCE**

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.

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 1: Business 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 Indexes (except Thermal Coal, Conventional Weapons, Oil Sands and Global Norms) 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, non-detectable 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”**

- **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.
- **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 not classified under any specific tolerance level**

- **Thermal Coal**
  - All companies deriving 5% 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 5% or more revenue (either reported or estimated) from the thermal coal based power generation.
- **Conventional Weapons**
  - All companies deriving 5% or more revenue from the production of conventional weapons
  - All companies deriving 10% or more aggregate revenue from weapons systems, components and support systems and services
- **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.

- **Global Norms – United Nations Global Compact Compliance**
  - All companies that fail to comply with the United Nations Global Compact principles.

## Appendix 2: Optimization Constraints

At each Quarterly Index Review, the following optimization constraints are used to ensure replicability and investability.

### Screened Parent

The screened parent is constructed by excluding securities from the Parent Index based on the exclusion criteria as defined in Section 3.3 (“Screened Parent”). The security weights are then normalized to 100%.

### Optimization Constraints

No.	Parameter	Values
1	Minimum Constituent Weight	Minimum constituent weight in the Screened Parent
2	Asset Lower Bound	Maximum (Minimum constituent weight in the Screened Parent, $0.25 * \text{Security Weight in the Screened Parent}$ )
3	Asset Upper Bound	Minimum ( $5 * \text{Security Weight in the Screened Parent}$ , $\text{Security Weight in the Screened Parent} + 2\%$ )
4 <sup>^</sup>	Active Country Weights*	+/-10%
5 <sup>^</sup>	Minimum Increase in the Weighted Average ESG Score relative to the Parent Index	20%
6 <sup>^</sup>	Minimum Reduction in the Weighted Average Carbon Emission Intensity relative to the Parent Index	30%
7 <sup>^</sup>	Minimum Reduction in the Potential Emissions per dollar of market capitalization relative to the Parent Index	30%
8	One Way Turnover during May and November Index Review	10%
9	One Way Turnover during Feb and Aug Index Review	5%
10	Specific Risk Aversion	0.075
11	Common Factor Risk Aversion	0.0075
12	Maximum Issuer Weight	35%

\* Active Country Weights – 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 +10% is not applicable. When a country weighs less than 2.5% in the Parent Index then the upper bound of country weight in The Index is set at three times of the country's weight in the Parent Index. The Active Weight constraint is applied as a "Soft" constraint in The Indexes.

^ The Optimization Constraints are applied relative to the Parent Index.



## **Appendix 3: 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 4: 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.

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