# MSCI World ESG Climate Paris Aligned Select Indexes Methodology

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# Contents

# 1 Introduction

This methodology book covers the following Indexes:

- MSCI World ESG Climate Paris Aligned Select Index
- MSCI World ESG Climate Paris Aligned Select 5% Decrement (EUR) Index
- MSCI World ESG Climate Paris Aligned Select 5% Decrement (CHF) Index
- MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index
- MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index

The MSCI World ESG Climate Paris Aligned Select Index[1] ("the Index") is designed to support investors seeking to reduce their exposure to transition and physical climate risks and who wish to pursue opportunities arising from the transition to a lower-carbon economy, while aligning with the Paris Agreement requirements. The Index is algined with the TCFD[2],[3] recommendations and is designed to exceed the minimum standards of the EU Paris-Aligned Benchmark. The Index constructed from the MSCI World Index (the "Parent Index") through an optimization process that aims to:

1. Exceed the minimum technical requirements laid out in the EU Delegated Act[3]
2. Align with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)
3. Align with a 1.5°C climate scenario using the MSCI Climate Value-at-Risk and a "self-decarbonization" rate of 10% year on year
4. Reduce the Index's exposure to physical risk arising from extreme weather events by at least 50%
5. Shift Index weight from companies facing climate transition risks to companies having climate transition opportunities, using the MSCI Low Carbon Transition Score, and by excluding categories of fossil-fuel linked companies
6. Increase the weight of companies which are exposed to climate transition opportunities and reduce the weight of companies which are exposed to climate transition risks
7. Reduce the weight of companies assessed as high carbon emitters using scope 1, 2 and 3 emissions
8. Increase the weight of companies with credible carbon reduction targets through the weighting scheme
9. Achieve a modest tracking error compared to the Parent Index and low turnover

The MSCI World ESG Climate Paris Aligned Select 5% Decrement (EUR) Index and the MSCI World ESG Climate Paris Aligned Select 5% Decrement (CHF) Index aim to represent the performance of

[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 X for more details.

[2] https://www.fsb-tcfd.org/publications/final-recommendations-report/

[3] On December 3, 2020, the European Commission has published the delegated acts in the Official Journal ( https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R1818&from=EN) which contain the minimum technical requirements for the EU Paris-aligned Benchmarks.

the MSCI World ESG Climate Paris Aligned Select Index, while applying a constant markdown ('synthetic dividend') of 5% on an annual basis, expressed as a percentage of performance[4].

The MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index, MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index aim to represent the performance of MSCI World ESG Climate Paris Aligned Select Index while targeting an annualized volatility of 10%.

[4] For more information on the MSCI Decrement Indexes Methodology, please refer to https://www.msci.com/index-methodology and Appendix IV

# 2 Index Construction Methodology

The MSCI World ESG Climate Paris Aligned Select Index uses company ratings and research provided by MSCI ESG Research[5] to determine eligibility for Index inclusion.

## 2.1 Eligible Universe

The Eligible Universe is constructed from the constituents of the Parent Index by applying the following steps:

1. Selecting all the constituents of the MSCI World ESG Leaders Index[6]
2. Applying a liquidity threshold to screen out securities which have a 3-Month Annualized Traded Value (ATV) less than USD 3.78 Billion
3. Excluding securities based on the exclusion criteria listed below:
    - **Controversial Weapons**: All companies involved in Controversial Weapons as defined by the methodology of the MSCI Ex-Controversial Weapons Indexes.
    - **Environmental Harm**: All companies assessed as having involvement in environmental controversies that are classified as Red (MSCI Environmental Controversy Score of 0) or Orange Flags (score of 1).
        - A Red Flag indicates an ongoing, Very Severe ESG controversy implicating a company directly through its actions, products, or operations.
        - An Orange Flag indicates an ongoing Severe ESG controversy implicating a company directly, or a Very Severe ESG controversy that is either partially resolved or indirectly attributed to the company's actions, products, or operations.
    - **ESG Controversies**: All companies assessed as having involvement in ESG controversies classified as Red Flags (MSCI ESG Controversy Score of 0). A Red Flag indicates an ongoing, Very Severe ESG controversy implicating a company directly through its actions, products, or operations.
    - **Oil & Gas**: All companies deriving 10% or more revenue from oil and gas related activities, including distribution / retail, equipment and services, extraction and production, petrochemicals, pipelines and transportation and refining but excluding biofuel production and sales and trading activities.
    - **Power Generation**: All companies deriving 50% or more revenue from thermal coal-based power generation, liquid fuel-based power generation and natural gas-based power generation[7].

[5] See section 4 for further information regarding ESG and climate data used in the Indexes that MSCI Limited and MSCI Deutschland GmbH source 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

[6] For more information on the MSCI World ESG Leaders Index, please refer to https://www.msci.com/index-methodology

[7] As per https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapte`r7.pdf, thermal coal based power generation, liquid fuel based power generation and natural gas based power generation have median lifecycle emissions exceeding 100g$CO_2$/kWh.

- **Tobacco**: All companies with involvement in "tobacco" as defined by the methodology of the MSCI Global ex Tobacco Involvement Indexes.
- **Thermal Coal Mining**: All companies deriving 1% 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 (either reported or estimated)
- **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 involved meeting specific nuclear weapons business involvement criteria as described in Appendix V.

## 2.2 Optimization Constraints

The optimization process is applied on the Eligible Universe at each Semi-Annual Index Review (in May and November), and the aim is to achieve replicability and investability as well as minimize ex-ante tracking error relative to the Parent Index subject to the following constraints:

1. Transition and physical risk objectives – constraints detailed in Table 1
2. Transition opportunities objectives – constraints detailed in Table 2
3. Diversification objectives – constraints detailed in Table 3

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

*Table 1: Company level reward for Climate Related Risk Mitigation Actions*

| No. | Transition and Physical Risk Objective | MSCI World ESG Climate Paris Aligned Select Index |
|---|---|---|
| 1. | Minimum reduction in Greenhouse Gas (GHG) Intensity (Scope 1+2+3[8]) relative to Parent Index | 50% |
| 2. | Minimum average reduction (per annum) in GHG Intensity relative to GHG Intensity at the Base Date[9] | 10% |
| 3. | Minimum active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix III | 0% |
| 4. | Minimum Increase in aggregate weight in companies setting targets relative to the aggregate weight of such companies in the Parent Index. Companies Setting Targets are defined in Appendix III | 20% |
| 5. | Minimum reduction in Weighted Average Potential Emissions Intensity relative to Parent Index | 50% |
| 6. | Aggregate Climate Value-At-Risk under 1.5 degree scenario[10]<br>Please see more detail on Aggregate Climate Value-At-Risk in Appendix II and Appendix III. | >= Max( -5%, Aggregate Climate VaR of Parent Index) |
| 7. | Minimum increase in weighted average Low Carbon Transition (LCT) Score relative to Parent Index<br>Please see more detail on LCT Score in Appendix I | 10% |
| 8. | Minimum reduction in Weighted Average Extreme Weather Climate Value-At-Risk (Aggressive Scenario) relative to Parent Index | 50%[11] |

*Table 2: Constraints imposed in order to meet transition opportunity objectives*

| No. | Transition Opportunity Objective | MSCI World ESG Climate Paris |
|---|---|---|

[8] Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Index, the Weighted Average Carbon Emissions Intensity has been calculated based on Scope 1+2 Emissions.

[9] Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Index, the average reduction in WACI (Weighted Average Carbon Intensity) has been calculated using Scope 1+2 Emissions since Inception.

[10] For more details on Climate value-At-Risk, please refer to Appendix II. Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Index, the Policy Risk Climate VaR using Scope 1 Emissions since Inception.

[11] In case the Parent Index has a positive Weighted Average Extreme Weather Climate VaR, the floor will be applied at the level of the Weighted Average Extreme Weather Climate VaR of the Parent Index

| | | Aligned Select Index |
|---|---|---|
| 9. | Minimum increase in weighted average LCT Score relative to Parent Index[12] | 10% |
| 10. | Minimum ratio of Weighted Average Green Revenue/ Weighted Average Fossil fuels-based Revenue relative to Parent Index | 4 times |
| 11. | Minimum increase in Weighted Average Green Revenue relative to the Parent Index | 100% |

*Table 3: Constraints imposed to meet diversification objectives*

| No. | Diversification Objective | MSCI World ESG Climate Paris Aligned Select Index |
|---|---|---|
| 12. | Constituent Active Weight | +/- 2% |
| 13. | Minimum constituent weight | 0.01% |
| 14. | Security Weight as a multiple of its weight in the Parent Index | 20x |
| 15. | Active Sector Weights (the Energy GICS[13] Sector is not constrained) | +/-5% |
| 16. | Active Country Weights[14] | +/-5% |
| 17. | One Way Turnover | 5% |
| 18. | Common Factor Risk Aversion | 0.0075 |
| 19. | Specific Risk Aversion | 0.075 |

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:

- Relax the one-way Index turnover constraint in steps of 1% up to 20%
- Relax the active sector weight constraint in steps of 1% up to +/-20%
- The one-way Index turnover constraint and the active sector weight constraint are alternately relaxed until a feasible solution is achieved.

[12] The constraint on increase in LCT Score is designed to underweight companies with a low LCT Score (assessed as companies facing risks from a low carbon transition) and overweight companies with a high LCT Score (assessed as companies which may have opportunities from a low carbon transition). Thus, the constraint has been repeated in Table 2 to illustrate how the constraint meets both the objectives.

[13] GICS is the global industry classification standard jointly developed by MSCI and S&P Global Market Intelligence.

[14] 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.

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

## 2.3 Determining the Optimized Index

The Index is constructed using the Barra Open Optimizer[15] 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 Index.

## 2.4 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 Index:

- MSCI ESG Controversies

For the treatment of unrated companies in the calculation of target metrics for the optimization, please refer to Appendix III.

[15] Please refer to Appendix VII and VIII for more details.

# 3 Constructing the MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index

The MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index is constructed by applying the following steps to the MSCI World ESG Climate Paris Aligned Select Index:

- Constructing the cost-deducted Index
- Applying the MSCI Excess Return Indexes methodology[16]
- Constructing the Volatility Target Index

## 3.1 Constructing the cost-deducted Index

The cost-deducted Index is constructed by applying the following formula to the MSCI World ESG Climate Paris Aligned Select Index:

$$CIL_t = CIL_{t-1} \times \{(\frac{BIL_t}{BIL_{t-1}}) - IndexFee \times \frac{ACT(t-1,t)}{360}\}$$

Where:

$CIL_t$ = Index Level of the cost-deducted Index on calculation day[17] t

$BIL_t$ = Standard Daily Net Return Index Level of the MSCI World ESG Climate Paris Aligned Select Index in EUR, as of calculation day t

$IndexFee = 0.30\%$

$ACT(t-1,t)$ = number of actual calendar days between calculation day t-1 and t

## 3.2 Applying the MSCI Excess Return Indexes Methodology

The MSCI Excess Return Indexes Methodology[18] is applied sequentially on the cost-deducted Index from the above Section 3.1 to construct the Excess Return Variant Index. The short-term rate used for the application of the excess return methodology is 1-month EURIBOR (Euro Interbank Offered Rate).

## 3.3 Constructing the Volatility Target Index

The objective of the Volatility Target Index is to replicate the performance of a strategy that targets 10% of volatility by adjusting the weight of the Excess Return Variant Index calculated in the above Section 3.2.

The Volatility Target Index is calculated in accordance with the below formula:

$$IL_t = IL_{t-1} \times (1 + IR_t)$$

[16] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

[17] All trading days except full holidays in London Stock Exchange, New York Stock Exchange, Euronext Paris, SIX Swiss Exchange, NASDAQ Copenhagen, Deutsche Börse Xetra or Tokyo Stock Exchange

[18] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

Where:

$IL_t$ is the Volatility Target Index levels on calculation day t

$IR_t$ is the Volatility Target Index return on calculation day t, calculated in accordance with the following formula:

$$IR_t = (W_t \times E_t) - TC_t$$

Where:

$$W_t = \begin{cases} W_{t-1}, ABS(\frac{W_{t_*} - W_{t-1}}{W_{t-1}}) \leq 5\% \\ W_{t_*}, ABS(\frac{W_{t_*} - W_{t-1}}{W_{t-1}}) > 5\% \end{cases}$$

Where:

$$W_{t_*} = \text{Minimum}\left(1, \frac{TargetRiskLevel}{\sigma_t}\right)$$

Where:

$TargetRiskLevel = 10\%$

$\sigma_t$ = volatility[19] of the Excess Return Variant Index

$$E_t = \frac{\text{Excess Return Variant Index}_t}{\text{Excess Return Variant Index}_{t-1}} - 1$$

$TC_t$ is used to represent rebalancing costs that may arise at the Index rebalance and determined in accordance with the following formula:

$$TC_t = C \times \text{ABS}(W_t - W_{t-1})$$

where:

$C = 0.05\%$

$W_t, W_{t-1}$ : Excess Return Variant Index weight as of calculation day $t$ and calculation day $t-1$ respectively

[19] Please refer to the Appendix VIII for details

# 4 Constructing the MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index

The MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index is constructed by applying the following steps to the MSCI World ESG Climate Paris Aligned Select Index:

- Constructing the cost-deducted Index
- Applying the MSCI Excess Return Indexes methodology[20]
- Constructing the Volatility Target Index

## 4.1 Constructing the cost-deducted Index

The cost-deducted Index is constructed by applying the following formula to the MSCI World ESG Climate Paris Aligned Select Index:

$$CIL_t = CIL_{t-1} \times \{(\frac{BIL_t}{BIL_{t-1}}) - IndexFee \times \frac{ACT(t-1,t)}{360}\}$$

Where:

$CIL_t$ = Index Level of the cost-deducted index on calculation day[21] t

$BIL_t$ = Standard Daily Net Return Index Level of the MSCI World ESG Climate Paris Aligned Select Index in CHF, as of calculation day t

$IndexFee = 0.30\%$

$ACT(t-1,t)$ = number of actual calendar days between calculation day t-1 and t

## 4.2 Applying the MSCI Excess Return Indexes Methodology

The MSCI Excess Return Indexes Methodology[22] is applied sequentially on the cost-deducted Index from the above Section 4.1 to construct the Excess Return Variant Index. The short-term rate used for the application of the excess return methodology is overnight SARON (Swiss Average Rate Overnight).

## 4.3 Constructing the Volatility Target Index

The objective of the Volatility Target Index is to replicate the performance of a strategy that targets 10% of volatility by adjusting the weight of the Excess Return Variant Index calculated in the above Section 4.2.

The Volatility Target Index is calculated in accordance with the below formula:

$$IL_t = IL_{t-1} \times (1 + IR_t)$$

[20] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

[21] All trading days except full holidays in London Stock Exchange, New York Stock Exchange, Euronext Paris, SIX Swiss Exchange, NASDAQ Copenhagen, Deutsche Börse Xetra or Tokyo Stock Exchange

[22] Please refer to the MSCI Excess Return Indexes methodology at www.msci.com/index-methodology

Where:

$IL_t$ is the Volatility Target Index levels on calculation day t

$IR_t$ is the Volatility Target Index return on calculation day t, calculated in accordance with the following formula:

$$IR_t = (W_t \times E_t) - TC_t$$

Where:

$$W_t = \begin{cases} W_{t-1}, ABS(\frac{W_{t_*} - W_{t-1}}{W_{t-1}}) \leq 5\% \\ W_{t_*}, ABS(\frac{W_{t_*} - W_{t-1}}{W_{t-1}}) > 5\% \end{cases}$$

Where:

$$W_{t_*} = \text{Minimum}\left(1, \frac{TargetRiskLevel}{\sigma_t}\right)$$

Where:

$TargetRiskLevel = 10\%$

$\sigma_t$ = volatility[23] of the Excess Return Variant Index

$$E_t = \frac{\text{Excess Return Variant Index}_t}{\text{Excess Return Variant Index}_{t-1}} - 1$$

$TC_t$ is used to represent rebalancing costs that may arise at the Index rebalance and determined in accordance with the following formula:

$$TC_t = C \times \text{ABS}(W_t - W_{t-1})$$

where:

$C = 0.05\%$

$W_t, W_{t-1}$ : Excess Return Variant Index weight as of calculation day $t$ and calculation day $t-1$ respectively

[23] Please refer to the Appendix VIII for details

# 5 Maintaining the MSCI World ESG Climate Paris Aligned Select Index

## 5.1 Index Reviews

The Index is reviewed on a semi-annual basis in May and November to coincide with the May and November Index Reviews of the MSCI Global Investable Market Index, and the changes are implemented as of the close of the last business day of May and November. In general, the pro forma Index are announced nine business days before the effective date.

In general, MSCI uses MSCI ESG Research data (including MSCI Climate Change Metrics, MSCI Climate Value-at-Risk, MSCI ESG Sustainable Impact 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 Index.

The MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index and the MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index are reviewed on a daily basis as per steps described in sections 4 and 5.

## 5.2 Ongoing Event Related Changes

The general treatment of corporate events in the Index 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.<br><br>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.

# 6 MSCI ESG Research

The Index is a product of MSCI Inc. that utilizes 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 Index uses the following MSCI ESG Research products: MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics, MSCI Impact Solutions, MSCI ESG Ratings, and MSCI ESG Governance Metrics. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH.

## 6.1 MSCI Climate Change Metrics

MSCI Climate Change Metrics provides 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.

## 6.2 MSCI Climate Value-At-Risk

Climate Value-at-Risk (Climate VaR) is designed to provide a forward-looking and return-based valuation assessment to measure climate related risks and opportunities in an investment portfolio. The fully quantitative model offers deep insights into how climate change could affect company valuations.

For more details on MSCI Climate Value-At-Risk, please refer to https://www.msci.com/climate-data-and-metrics.

## 6.3 MSCI Impact Solutions: Sustainable Impact metrics

MSCI Impact Solutions' Sustainable Impact Metrics is designed to identify companies that derive revenue from products or services with positive impact on society and the environment. The Sustainable Impact Metrics are comprised of six Environmental Impact categories and seven Social Impact categories arranged by theme.

**MSCI Sustainable Impact Taxonomy**

| Pillar | Themes | Categories |
|---|---|---|
| Environmental Impact | Climate Change | 1. Alternative energy<br>2. Energy efficiency<br>3. Green building |
| | Natural capital | 4. Sustainable water<br>5. Pollution prevention |

| | | |
|---|---|---|
| | | 6. Sustainable agriculture |
| **Social Impact** | Basic needs | 7. Nutrition<br>8. Major Disease Treatment<br>9. Sanitation<br>10. Affordable Real Estate |
| | Empowerment | 11. SME Finance<br>12. Education<br>13. Connectivity – Digital divide |

Under each of the actionable environmental and social impact themes, MSCI ESG Research has identified specific categories of products and services that it has determined companies can offer as potential solutions to environmental and social challenges.

For more details on MSCI Sustainable Impact Metrics, please refer to https://www.msci.com/legal/disclosures/esg-disclosures.

## 6.4 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.

## 6.5 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.

The MSCI Business Involvement Screening Research methodology can be found at:
https://www.msci.com/legal/disclosures/esg-disclosures.

# Appendix I: MSCI Low Carbon Transition Risk Assessment

MSCI ESG Research's Low Carbon Transition Risk assessment[24] is designed to identify potential leaders and laggards by extensively measuring companies' exposure to and management of risks and opportunities related to the low carbon transition. The assessment is derived from company disclosures and estimates.

The final output of this assessment is two company-level factors:

(1) **Low Carbon Transition Category**: This factor groups companies in five categories that highlight the predominant risks and opportunities they are most likely to face in the transition (Exhibit 1).

(2) **Low Carbon Transition Score:** This score is based on a multi-dimensional risks and opportunities assessment and considers both primary and secondary risks a company faces. It is an industry agnostic assessment of a company's position vis-à-vis the transition.

*Exhibit 1: Low Carbon Transition Categories and Scores*

| LOW CARBON TRANSITION SCORE | LOW CARBON TRANSITION CATEGORY | | LOW CARBON TRANSITION RISK / OPPORTUNITY | INDUSTRY EXAMPLES |
|---|---|---|---|---|
| SCORE = 0 | ASSET STRANDING | | Potential to experience "stranding" of physical / natural assets due to regulatory, market, or technological forces arising from low carbon transition. | Coal mining & coal-based power generation; industries in the Oil & Gas value chain |
| | TRANSITION | PRODUCT | Reduced demand for carbon-intensive products and services. Leaders and laggards are defined by the ability to shift product portfolio to low-carbon products. | Petrol/diesel-based automobile manufacturers |
| | | OPERATIONAL | Increased operational and/or capital cost due to carbon taxes and/or investment in carbon emission mitigation measures leading to lower profitability of the companies. | Cement, Steel |
| | NEUTRAL | | Limited exposure to low carbon transition carbon risk. Though companies in this category could have exposure to physical risk and/or indirect exposure to low carbon transition risk via lending, investment etc. | Consumer Staples, Healthcare |
| SCORE = 10 | SOLUTIONS | | Potential to benefit through the growth of low-carbon products and services. | Renewable electricity, Electric vehicles, Solar cell manufacturers |

### Calculation methodology

The Low Carbon Transition Categories and Scores are determined by a combination of each company's current risk exposure and its efforts to manage the risks and opportunities presented by the low carbon transition. The 3-step process followed by MSCI ESG Research is explained below.

[24] For more details on MSCI Climate Change Metrics: https://www.msci.com/climate-change-solutions

**Step 1: Measure Low Carbon Transition Risk Exposure**

The first step towards measuring the Low Carbon Transition Risk Exposure for a company is the computation of its estimated total net carbon intensity – which considers operational and product carbon emissions. In the next step, we compute Low Carbon Transition Risk Exposure Category and Score based on total net carbon intensity.

**Step 2: Assess Low Carbon Transition Risk Management**

In the second step, MSCI ESG Research assesses a company's management of risks and opportunities presented by the low carbon transition. This assessment is based on policies and commitments to mitigate transition risk, governance structures, risk management programs and initiatives, targets and performance, and involvement in any controversies.

**Step 3: Calculate Low Carbon Transition Category and Score**

In the final step, the Low Carbon Transition Risk Exposure Category and Score that was calculated in Step 1 is adjusted for the strength of management efforts. Following this adjustment, Low Carbon Transition Risk Exposure Score of companies with top or second quartile risk management improves and some top and second quartile companies may move up one category.

# Appendix II: MSCI Climate Value-At-Risk

The MSCI Climate Value-at-Risk measurement is designed to help investors to assess future costs related to climate change and understand what those future costs could mean in the current valuation of securities. The premise of Climate Value-at-Risk is to aggregate costs related to specific climate risks and calculate what these costs might signify about financial performance into the foreseeable future.

**1.5° C Aggregated Policy Risk Equity Climate VaR (REMIND NGFS Orderly) [%]**

An equity's aggregated downside policy risk exposure according to all emission sources (Scope 1, 2, 3), expressed as a percentage of the equity's market value, assuming a global 1.5° C target and using carbon prices from the REMIND model under the NGFS Orderly scenario. Please refer to the MSCI Climate VaR methodology document for further details on scenario options.

**1.5° C Technology Opportunities Equity Climate VaR (REMIND NGFS Orderly) [%]**

An equity's upside technology opportunity exposure, expressed as a percentage of the equity's market value capped at 100%, assuming a global 1.5° C target and calculated using carbon prices from the REMIND model under the NGFS Orderly scenario. Please refer to the MSCI Climate VaR methodology document for further details on scenario options.

**4° C Aggregated Physical Risk Equity Climate VaR (IPCC SSP3-7.0, Aggressive Outcome) [%]**

An equity's "worst-case" (95th percentile) downside or upside potential, expressed as a percentage of the equity's market value, assuming trends in extreme cold, extreme heat, extreme precipitation, heavy snowfall, extreme wind, coastal flooding, fluvial flooding, river low flow, tropical cyclones and wildfires continue along the 4° C IPCC SSP3-7.0 scenario.

# Appendix III: Calculation of Target Metrics

### Greenhouse Gas (GHG) Emissions Intensity

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

MSCI ESG Research estimates company-specific indirect (Scope 3) GHG emissions from the Scope 3 Carbon Emissions Estimation Model. The data is generally updated on an annual basis.

### Calculation of GHG Intensity

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 GHG Intensity =

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

Enterprise Value Inflation Adjustment Factor (EVIAF) =

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

Weighted Average GHG Intensity of Parent Index =

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

Weighted Average GHG Intensity of Derived Index =

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

### Calculation of Potential Carbon Emissions Intensity

For newly added companies to the index where data is not available yet, MSCI uses zero fossil fuel reserves.

Security Level Potential Carbon Emissions (PCE) Intensity =

$$\frac{Absolute\ Potential\ Emissions * \ (1+EVIAF)}{Enterprise\ Value + Cash(in\ M\$)}$$

Weighted Average Potential Emissions Intensity of Parent Index =

$$\sum(Weight\ in\ Parent\ Index * \ Security\ Level\ PCE\ Intensity)$$

Weighted Average Potential Emissions Intensity of Derived Index =

$$\sum(Index\ Weight * \ Security\ Level\ PCE\ Intensity)$$

**Calculation of Average Decarbonization**

On average, the Index follow a 10% decarbonization trajectory since the Base Date[25]. The Weighted Average GHG Intensity at the Base Date ($W_1$) is used to compute the target Weighted Average GHG Intensity at any given Semi-Annual Index Review ($W_t$) as per the below formula.

$$W_t = W_1 * \ 0.90^{\frac{(t-1)}{2}}$$

Where '*t*' is the number of Semi-Annual Index Reviews since the Base Date.

Thus, for the 3rd Semi-Annual Index Review since the Base Date (t=3), the target Weighted Average GHG Intensity will be $W_1$*0.90.

### Companies Setting Targets

The Index requires a minimum 20% increase in the aggregate weight of companies setting emissions reduction targets relative to the aggregate Parent Index weight of such companies that meet the eligibility criteria. Companies setting targets are defined as companies having one or more active carbon emissions reduction target(s) approved by the Science Based Targets initiative (SBTi), or companies meeting all the following requirements:

- Companies publishing emissions reduction targets
- Companies publishing their annual emissions and
- Companies reducing their GHG intensity by 7% over each of the last 3 years

### Calculation of Green Revenue to Fossil fuels-based Revenue Multiple

**Green Revenue**

For each constituent in the Parent Index, the Green Revenue% is calculated as the cumulative revenue (%) from the six Clean Tech themes which are as follows:

- Alternative Energy – products and services that support the transmission, distribution and generation of renewable energy and alternative fuels to reduce carbon and pollutant emissions in supporting affordable and clean energy to combat climate change.

[25] Please refer to Section VI

- Energy Efficiency – products, and services that support the maximization of productivity in labor, transportation, power and domestic applications with minimal energy consumption to ensure universal access to affordable, reliable and modern energy services.
- Sustainable Water – products, services, infrastructure projects and technologies that resolve water scarcity and water quality issues, through minimizing and monitoring current water demand, improving the quality and availability of water supply to improve resource management in both domestic and industrial use.
- Green Building – design, construction, redevelopment, retrofitting, or acquisition of green-certified properties to promote mechanisms for raising capacity for effective climate change mitigation and adaptation.
- Pollution Prevention – products, services, infrastructure projects and technologies that reduces volume of waste materials through recycling, minimizes introduction of toxic substances, and offers remediation of existing contaminants such as heavy metals and organic pollutants in various environmental media to significantly address pollution in all levels and its negative effects.
- Sustainable Agriculture - revenues from forest and agricultural products that meet environmental and organic certification requirements to address significantly biodiversity loss, pollution, land disturbance, and water overuse.

The Weighted Average Green Revenue% is calculated as:

$$= \sum(Weight\ in\ Index * \ Green\ Revenue\%)$$

**Fossil fuels-based Revenue**

For each constituent in the Parent Index, the Fossil fuels-based Revenue% is calculated as the cumulative revenue (%) from the following sources:

- 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 (either reported or estimated)
- Revenue% from the extraction, production and refining of Conventional and Unconventional Oil & Gas. Conventional Oil and Gas includes Arctic onshore/offshore, deep water, shallow water and other onshore/offshore. Unconventional Oil and Gas includes oil sands, oil shale (kerogen-rich deposits), shale gas, shale oil, coal seam gas, and coal bed methane.
- Revenue% from thermal coal-based power generation, liquid fuel-based power generation and natural gas-based power generation.

The Weighted Average Fossil fuels-based Revenue% is calculated as:

$$= \sum(Weight\ in\ Index * \ Brown\ Revenue\%)$$

The Green Revenues to Fossil fuels-based Revenues multiple for either the Parent Index or the Index is calculated as a ratio of the Weighted Average Green Revenue to the Weighted Average Fossil fuels-based Revenue as per the formula below:

$$= \frac{Weighted\ Average\ Green\ Revenue\%}{Weighted\ Average\ Brown\ Revenue\%}$$

**Aggregate Climate Value-at-Risk (VaR)**

The Index-level Aggregated Climate Value-at-Risk for any Index is calculated as the sum of the below 3 components:

1. **Policy Risk Climate VaR[26] (1.5 Degrees)**: Weighted average of security level 1.5° C Aggregated Policy Risk Equity Climate VaR (REMIND NGFS Orderly) [%]
2. **Technology Opportunities Climate VaR (1.5 Degrees)**: Weighted average of security level 1.5 ° C Technology Opportunities Equity Climate VaR (REMIND NGFS Orderly) [%]
3. **Physical Risk Climate VaR (4 Degrees, Aggressive Outcome)**: Weighted average of security level Aggregated Physical Risk Equity Climate VaR (Aggressive Outcome) [%]

**Climate Impact Sectors**

NACE[27] is the European Union's classification of economic activities. As per the draft DA, stocks in the NACE Section codes A, B, C, D, E, F, G, H, L are classified as "High Climate Impact" sector and other stocks are classified 'Low Climate Impact' sector. The GICS[28] Sub-Industry code for each security is mapped to the corresponding "Climate Impact Sector" using a mapping. This mapping is constructed in the following steps:

1. MSCI has published a mapping[29] between the NACE classes and GICS Sub-Industry.
2. For each GICS Sub-Industry, the number of NACE classes which fall under the High Climate Impact Sector (say the number of classes is $N_H$) and Low Climate Impact Sector (say the number of classes is $N_L$) is identified
3. If all the NACE classes for a given GICS Sub-Industry are identified in the High Climate Impact Sector ($N_L = 0$), then the GICS Sub-Industry is mapped to the High Climate Impact Sector. Conversely, if all the NACE classes for a given GICS Sub-Industry are identified in the Low Climate Impact Sector ($N_H = 0$) then the GICS Sub-Industry is mapped to the Low Climate Impact Sector
4. In case a GICS Sub-Industry is mapped to some NACE classes in the High Climate Impact Sector and the others in the Low Climate Impact Sector, the GICS Industry is mapped to the Climate Impact Sector in the following manner:

[26] Starting from the May 2020 Semi-Annual Index Review, the Policy Risk Climate VaR used in the Indexes incorporate Scope 2 and Scope 3 emissions as well. The Policy Risk Climate VaR used in the May 2020 Semi-Annual Index Review of the Indexes is as of September 30, 2020.

[27] For further details regarding NACE, please refer to https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background

[28] For further information regarding GICS, please refer to https://www.msci.com/gics

[29] This mapping is available in the Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmark and Benchmarks' ESG Disclosures Please note that the mapping does not reflect changes in the GICS structure that were implemented in the MSCI indexes on June 1, 2023.

   a. $N_H >= N_L$: If the number of NACE classes in the High Climate Impact Sector is at least equivalent to the number of NACE classes in the Low Climate Impact Sector, the GICS Sub-Industry is mapped to the High Climate Impact Sector

   b. $N_H < N_L$: If the number of NACE classes in the High Climate Impact Sector is less than the number of NACE classes in the Low Climate Impact Sector, the GICS Sub-Industry is mapped to the Low Climate Impact Sector

5. Using the GICS Sub-Industry to Climate Impact Sector mapping created in Step 4, and the security-level GICS Sub-Industry, each security in the Parent Index is classified in either High Climate Impact Sector or Low Climate Impact Sector

# Appendix IV: Constructing the MSCI World ESG Climate Paris Aligned Select 5% Decrement Indexes

The MSCI Decrement Indexes methodology[30] is applied to the Index using the following parameters:

| Methodology Parameter | MSCI World ESG Climate Paris Aligned Select 5% Decrement (EUR) Index | MSCI World ESG Climate Paris Aligned Select 5% Decrement (CHF) Index |
|---|---|---|
| Currency of Calculation | EUR | CHF |
| Return Variant of the Parent Index | Net Total Return | Net Total Return |
| Decrement Type | Fixed Percentage | Fixed Percentage |
| Decrement Application | Geometric | Geometric |
| Decrement Value | 5% | 5% |
| Day-count Convention | ACT/360 | ACT/360 |
| Index Floor | 0 | 0 |
| Decrement Frequency | Daily | Daily |

[30] For more information, please refer to the MSCI Decrement Indexes methodology at www.msci.com/index- methodology

# Appendix V: Companies Involved in Nuclear Weapons Business

Companies, whose activities meet the following criteria, as determined by MSCI ESG Research, are excluded from the Index:

- 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.

# Appendix VI: Decarbonization Trajectory of the Index

The Weighted Average GHG Intensity on the Base Date ($W_1$) is used to compute the target Weighted Average GHG Intensity at any given Semi-Annual Index Review ($W_t$) as per the below formula.

$$W_t = W_1 * \ 0.90^{\frac{(t-1)}{2}}$$

Where 't' is the number of Semi-Annual Index Reviews since the Base Date. The table below shows the Weighted Average GHG Intensity on the Base Date ($W_1$) for each of the regions where the Index is constructed:

| Index | Parent Index | Base Date | $W_1$ (tCO2/M$ Enterprise Value + Cash) |
|---|---|---|---|
| MSCI World ESG Climate Paris Aligned Select Index | MSCI World Index | June 01, 2020 | 218.80 |

# Appendix VII: Barra Equity Model Used in The Optimization

The Index currently uses an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMLTL).

# Appendix VIII: 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 IX: Volatility Calculation

The returns of the Excess Return Variant Index in EUR and CHF are used for volatility estimation for MSCI World ESG Climate Paris Aligned Select 10% Risk Control (EUR) Index and MSCI World ESG Climate Paris Aligned Select 10% Risk Control (CHF) Index respectively. The volatility estimation approach takes into account both the short-term and the long-term volatility trends of the Excess Return Variant Index and is calculated as the maximum of two volatility estimates: the short-term realized volatility estimate, calculated over a short horizon of 20 days, and the long-term realized volatility estimate, calculated over a long horizon of 80 days.

The volatility estimation approach uses equally weighted daily excess returns of Excess Return Variant Index for both horizons.

The volatility calculation formulae are described below:

$$Volatility_t =$$

$$Max(Short\text{-}term\ Realized\ Volatility_t, Long\text{-}term\ Realized\ Volatility_t)$$

$$Realized\ Volatility_t = \sqrt{252\ \times\ Variance(t)}$$

$$Variance(t)\ =\ (1/N) \times \sum_{t^*-N+1}^{t^*} \{ln \frac{Index\ 1_t}{Index\ 1_{t-1}}\}\text{^}2$$

Where:

$N$ = Total number of calculation days used for variance calculation and varies for short-term volatility estimate (N = 20) and long-term volatility estimate (N = 80)

$t^* = t - i$

Where:

$t$ is calculation day $t$

$i$ is the number of "days lag" in the return calculation used for computing volatility (i.e., the lag between the return date and the volatility calculation date), 3 days

# Appendix X: Methodology Set

The Index is governed by a set of methodology and policy documents ("Methodology Set"), including the present index methodology document as mentioned below:

- Description of methodology set – https://www.msci.com/index/methodology/latest/ReadMe
- MSCI Corporate Events Methodology – https://www.msci.com/index/methodology/latest/CE
- MSCI Fundamental Data Methodology – https://www.msci.com/index/methodology/latest/FundData
- MSCI Index Calculation Methodology – https://www.msci.com/index/methodology/latest/IndexCalc
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- MSCI Global Investable Market Indexes Methodology – https://www.msci.com/index/methodology/latest/GIMI
- MSCI Global ex Controversial Weapons Indexes Methodology – https://www.msci.com/index/methodology/latest/XCW
- MSCI Global ex Tobacco Involvement Index – https://www.msci.com/index/methodology/latest/ExTobacco
- MSCI ESG Leaders Index –https://www.msci.com/index/methodology/latest/ESG
- MSCI Climate Paris Aligned Indexes Methodology – https://www.msci.com/index/methodology/latest/ClimatePAB
- MSCI Excess Return Indexes Methodology – https://www.msci.com/index/methodology/latest/ExcessReturn
- MSCI Decrement Indexes Methodology – https://www.msci.com/index/methodology/latest/Decrement
- ESG Factors In Methodology*

The Methodology Set for the Index 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 XI: Changes to this Document

**The following Sections have been modified as of May 2024:**

Section 2.1 Eligible Universe:

- Exclusion criteria was detailed

Section 2.2 Optimization Constraints

- Methodology book was updated to reflect the change in the target for Aggregated Climate Value -At-Risk from greater than or equal to 0% to greater than or equal to -5%.

Section 2.4 Treatment of Unrated Companies

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

Section 6 MSCI ESG Research

- Moved that section after the Section V
- Updated the descriptions of MSCI ESG Research products

Appendix I: MSCI Low Carbon Transition Risk Assessment

- Updated language and the Low Carbon Transition Categories and Scores table

Appendix II and III

- The Climate Value-at-Risk models and scenarios used were updated

Appendix VI Decarbonization Trajectory of the Index

- New Appendix was added

Appendix IX: Methodology Set

- Added details on the Methodology Set for the Index

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