

MSCI EMU PAB SELECT 50 INDEX AND MSCI EMU PAB SELECT 50 DECREMENT 50 POINT INDEX METHODOLOGY

July 2023

Contents	
1	Introduction 4
2	Index Construction Methodology 5
2.1	Eligible Universe..... 5
2.2	Optimization Constraints 7
2.3	Determining the Optimized Portfolio 8
2.4	Applying the MSCI Decrement Indexes Methodology 8
3	Maintaining MSCI EMU PAB Select 50 Index..... 9
3.1	Semi-Annual Index Reviews 9
3.2	Ongoing Event Related Changes..... 9
4	MSCI ESG Research..... 12
4.1	MSCI ESG Ratings..... 12
4.2	MSCI ESG Controversies 12
4.3	MSCI ESG Business Involvement Screening Research ... 122
4.4	MSCI Climate Change Metrics 13
4.5	MSCI Climate Value-At-Risk 13
	Appendix I: Calculation of Target Metrics 14
	Appendix II: Values- and Climate Change-Based Exclusion Criteria 20
	Appendix III: Parameters used for MSCI EMU PAB Select 50 Decrement 50 Point Index 22
	Appendix IV: Barra Equity Model Used in The Optimization 23
	Appendix V: New release of Barra® Equity Model or Barra® Optimizer..... 24
	Appendix VI: Definition of Risk Reference Index..... 25



Appendix VII: Changes to this Document26

1 Introduction

The MSCI EMU PAB Select 50 Index is a semi-annual rebalanced index of 50 stocks designed to meet the minimum standards of the the EU Paris-Aligned Benchmark (PAB)¹. The MSCI EMU PAB Select 50 Index is constructed by following an *optimization-based* approach and aims to:

- Reduce the weighted average greenhouse gas intensity by 50% compared to the underlying investment universe.
- Reduce the weighted average greenhouse gas (GHG) intensity by 7% on an annualized basis
- Minimize ex-ante tracking error relative to the Risk Reference Index²
- Exclude companies based on the following criteria:
MSCI EMU PAB Select 50 Index excludes companies involved in Controversial Weapons businesses, Red Flag ESG Controversies, Red or Orange Flag Environmental Controversies , Tobacco Manufacturing , Thermal Coal, Oil & Gas and Fossil Fuel-based power generation.

The MSCI EMU PAB Select 50 Decrement 50 Point Index aims to represent the gross performance of the MSCI EMU PAB Select 50 Index, while applying a constant markdown of 50 points on MSCI EMU PAB Select 50 Index levels on a daily basis.³

¹ In case there are changes in the EU delegated acts and an update to the Index methodology is required, MSCI will issue an announcement prior to implementing the changes in the methodology. MSCI will not conduct a formal consultation for such an update.

² Please refer to Appendix VI for definition of Risk Reference Index

³ The Indexes are governed by a set of methodology and policy documents ("Methodology Set"), including the present index methodology document. The Methodology Set for the Indexes can be accessed from MSCI's webpage <https://www.msci.com/index-methodology> in the section 'Search Methodology by Index Name or Index Code'.

The Methodology Set includes a document 'ESG Factors in Methodology' that contains the list of environmental, social, and governance factors considered, and how they are applied in the methodology (e.g., selection, weighting or exclusion).

2 Index Construction Methodology

The MSCI EMU PAB Select 50 Index is constructed from the MSCI EMU (the “Parent Index”).

The MSCI EMU PAB Select 50 Index uses company ratings and research provided by MSCI ESG Research⁴ for the Index construction.

The following steps are applied at initial construction of the Index.

- Eligible Universe Screening
- Optimization constraints
- Determining the optimized portfolio

In addition to the above steps, the following steps are applied to the MSCI EMU PAB Select 50 Index to construct the MSCI EMU PAB Select 50 Decrement 50 Point Index.

- Applying the MSCI Decrement Indexes methodology⁵

2.1 ELIGIBLE UNIVERSE

2.1.1. LIQUIDITY CRITERIA

Securities with 3-month ADTV greater than or equal to EUR 5 million are eligible for inclusion in the MSCI EMU PAB Select 50 Index.

ADTV is defined as Average Daily Traded Value and is calculated as:

$$ADTV_{3M} = \frac{ATV_{3M}^6}{252}$$

Where ATV_{3M} is annualized 3-month Average Traded Value of the security.

To avoid multiple securities of the same company in the final Index, only the most liquid security for each issuer per its 3-month ADTV is eligible for inclusion in the Index. For any issuer, should two securities have the same 3-

⁴ See section 4 for further information regarding ESG and climate data used in the Indexes that MSCI Limited sources 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. MSCI Limited is the benchmark administrator for the MSCI indexes.

⁵ Please refer to the MSCI Decrement Indexes methodology at www.msci.com/index-methodology

⁶ MSCI Index Calculation Methodology at <https://www.msci.com/index-methodology>

MSCI Global Investable Market Indexes Methodology at <https://www.msci.com/index-methodology>

month ADTV, the one with the higher free float-adjusted market capitalization is included.

2.1.2. ESG RATINGS ELIGIBILITY

The MSCI EMU PAB Select 50 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', 'BBB' and 'BB' are eligible for inclusion in the MSCI EMU PAB Select 50 Index.

2.1.3. ESG CONTROVERSIES SCORE ELIGIBILITY

The MSCI EMU PAB Select 50 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 EMU PAB Select 50 Index.

2.1.4. ENVIRONMENTAL CONTROVERSIES SCORE ELIGIBILITY

The MSCI EMU PAB Select 50 Index uses MSCI Environment Controversy Scores to identify those companies involved in Red or Orange Flag environmental controversies. 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) are not eligible for inclusion in the MSCI EMU PAB Select 50 Index.

- 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.

2.1.5. CONTROVERSIAL BUSINESS INVOLVEMENT CRITERIA

The MSCI EMU PAB Select 50 Index uses MSCI ESG Business Involvement Screening Research and MSCI Climate Change Metrics to identify companies that are involved in the following business activities. Companies that meet the below values- and climate change-based criteria are excluded from the Eligible Universe. Please refer to Appendix II for details on these criteria.

- Compliance with all the UN Global Compact Principles
- Controversial Weapons
- Thermal Coal Mining
- Tobacco
- Oil & Gas
- Power Generation

2.2 OPTIMIZATION CONSTRAINTS

At each Semi-Annual Index Review, the MSCI EMU PAB Select 50 Index is constructed using an optimization process that aims to achieve replicability and investability as well as minimize ex-ante tracking error relative to the Risk Reference Index⁷ subject to the following constraints:

1. Climate Objectives – constraints detailed in Table 1
2. Diversification objectives – constraints detailed in Table 2

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

Table 1: Constraints imposed to meet Climate objectives

No.	Climate Objective	MSCI EMU PAB Select 50 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	7%
3.	Minimum active weight in High Climate Impact Sector relative to Parent Index as defined in Appendix III	0%

⁷ Please refer to Appendix VI for definition of Risk Reference Index

⁸ Prior to the May 2020 Semi-Annual Index Review (SAIR) of the Indexes, 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 Indexes, the average reduction in WACI has been calculated using Scope 1+2 Emissions since Inception.

Table 2: Constraints imposed to meet diversification objectives

Diversification Objective	MSCI EMU PAB Select 50 Index
Constituent Maximum Weight	7.5%
Minimum constituent weight	0.01%
Target Number of Stocks	50

During the Semi-Annual Index Review, in the event that there is no optimal solution that satisfies all the optimization constraints defined in Table 2 will be relaxed.

In the event that no optimal solution is found after the above constraint relaxation, the relevant Index will not be rebalanced for that Semi-Annual Index Review.

2.3 DETERMINING THE OPTIMIZED PORTFOLIO

The MSCI EMU PAB Select 50 Index is constructed using the Barra Open Optimizer¹⁰ in combination with the relevant Barra Equity Model. The weights of the securities are an outcome of the optimization process. The optimization uses the universe of eligible securities and the specified optimization objectives and constraints to determine the constituents of the MSCI EMU PAB Select 50 Index.

2.4 APPLYING THE MSCI DECREMENT INDEXES METHODOLOGY

The MSCI Decrement Indexes Methodology¹¹ is applied on the MSCI EMU PAB Select to construct the MSCI EMU PAB Select 50 Decrement 50 Point Index. The parameters for the application of the decrement methodology in the above index is noted in Appendix III.

¹⁰ Please refer to Appendix IV and V for more details.

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

3 Maintaining MSCI EMU PAB Select 50 Index

3.1 SEMI-ANNUAL INDEX REVIEWS

The MSCI EMU PAB Select 50 Index is rebalanced on a semi-annual basis, as of the close of the last business day of May and November, coinciding with the May and November Index Review of the MSCI Global Investable Market Indexes. The pro forma Indexes are in general announced nine business days before the effective date.

In general, MSCI uses MSCI ESG Research data¹² (including MSCI ESG Ratings, MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics and MSCI Climate Value-at-Risk) as of the end of the month preceding the Index Reviews for the rebalancing of the Indexes.

3.2 ONGOING EVENT RELATED CHANGES

The general treatment of corporate events in the MSCI EMU PAB Select 50 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 MSCI EMU PAB Select 50 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.

¹² See section 4 for details of data sourced from MSCI ESG Research used in the Indexes.

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>.

4 MSCI ESG Research

The MSCI EMU PAB Select 50 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 Indexes use the following MSCI ESG Research products: MSCI ESG Ratings, MSCI ESG Controversies, MSCI ESG Business Involvement Screening Research, MSCI Climate Change Metrics and MSCI Climate Value-at-Risk. MSCI Indexes are administered by MSCI Limited.

4.1 MSCI ESG RATINGS

MSCI ESG Ratings aim to measure entities' management of environmental, social and governance risks and opportunities. MSCI ESG Ratings use a weighted average key issue calculation that is normalized by industry to arrive at an industry-adjusted ESG score (0-10), which is then translated to a seven-point scale from 'AAA' to 'CCC', indicating how an entity manages relevant key issues relative to industry peers.

The MSCI ESG Ratings methodology can be found at:
<https://www.msci.com/esg-and-climate-methodologies>

4.2 MSCI ESG CONTROVERSIES

MSCI ESG Controversies provide assessments of controversies concerning the potential negative environmental, social, and/or governance impact of company operations, products and services. The evaluation framework used in MSCI ESG Controversies is designed to be consistent with international norms represented by the UN Declaration of Human Rights, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Global Compact. MSCI ESG Controversies Score falls on a 0-10 scale, with "0" being the most severe controversy.

The MSCI ESG Controversies methodology can be found at:
<https://www.msci.com/esg-and-climate-methodologies>

4.3 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

4.4 MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics provide climate data & tools to support institutional investors seeking to integrate climate risk & opportunities into their investment strategy and processes. This includes investors seeking to achieve a range of objectives, including measuring and reporting on climate risk exposure, implementing low carbon and fossil fuel-free strategies, alignment with temperature pathways and factoring climate change research into their risk management processes, in particular through climate scenario analysis for both transition and physical risks.

The dataset spans across the four dimensions of a climate strategy: transition risks, green opportunities, physical risks and 1.5° alignment.

For more details on MSCI Climate Change Metrics, please refer to

<https://www.msci.com/climate-solutions>

4.5 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>.

Appendix I: Calculation of Target Metrics

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 =

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

Enterprise Value Inflation Adjustment Factor (EVIAF) =

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

Weighted Average GHG Intensity of Parent Index =

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

Weighted Average GHG Intensity of Derived Index =

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

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 =

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

Weighted Average Potential Emissions Intensity of Parent Index =

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

Weighted Average Potential Emissions Intensity of Derived Index =

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

Calculation of Average Decarbonization

On average, the Indexes follow a 10% decarbonization trajectory since the Base Date. 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

Relative to their corresponding Parent Indexes, the Indexes require a minimum 20% increase in the aggregate weight of companies setting emissions reduction targets

- 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.
- 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 Aggregate Climate Value-at-Risk for any Index is calculated as the sum of the below 3 components:

1. **Policy Risk Climate VaR¹³ (1.5 Degrees)**: Weighted average of security level 1.5°C Aggregated Policy Risk Equity Climate VaR (AIM CGE) [%]
2. **Technology Opportunities Climate VaR (1.5 Degrees)**: Weighted average of security level 1.5°C Technology Opportunity Equity Climate VaR (AIM CGE) [%]
3. **Extreme Weather Climate VaR (Aggressive Scenario)**: Weighted average of security level Aggregated Extreme Weather Equity Climate VaR (Aggressive Scenario) [%]

Climate Impact Sectors

¹³ 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.

NACE¹⁴ 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 GICS¹⁵ 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 mapping¹⁶ 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:
 - a. **$N_H \geq N_L$** : 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

¹⁴ For further details regarding NACE, please refer to https://ec.europa.eu/eurostat/statistics-explained/index.php?title=NACE_background

¹⁵ For further information regarding GICS, please refer to <https://www.msci.com/gics>

¹⁶ This mapping is available in the [Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmark and Benchmarks' ESG Disclosures](#)

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 II: Values- and Climate Change-Based Exclusion Criteria

The MSCI EMU PAB Select 50 Index is constructed with an aim to reflect the performance of companies that are consistent with specific values- and climate change-based criteria.

Compliance with all the UN Global Compact Principles

- All companies that fail to comply with the United Nations Global Compact principles are excluded. In this filter, activities are not classified under any specific tolerance level

Values-based Exclusions Criteria

- **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) according to MSCI Ex-Controversial Weapons Indexes are excluded.
- **Tobacco**
 - All companies classified as a "Producer".
 - All companies deriving any revenue from the production, distribution, retail and supply of tobacco-related products.

Climate Change-based Exclusions Criteria

- **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)
- **Oil & Gas**
 - All companies deriving any revenue from oil and gas related activities, including distribution / retail, equipment and services, extraction and

production, pipelines and transportation and refining but excluding biofuel production and sales and trading activities

- **Power Generation**

- All companies deriving any revenue from thermal coal-based power generation, liquid fuel based power generation and natural gas based power generation¹⁷.

- **Unconventional Oil & Gas**

- All companies deriving any revenue from unconventional oil and gas. It includes revenues from oil sands, shale gas, and shale oil. It excludes all types of conventional oil and gas production including Arctic onshore/offshore, deep-water, shallow water and other onshore/offshore.

¹⁷ As per https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf, thermal coal based power generation, liquid fuel based power generation and natural gas based power generation have median lifecycle emissions exceeding 100gCO₂/kWh.

Appendix III: Parameters used for MSCI EMU PAB Select 50 Decrement 50 Point Index

- The following parameters are used for the calculation of MSCI EMU PAB Select 50 Decrement 50 Point Index

	MSCI Decrement Indexes Methodology Parameters	Parameters
1	Currency of Calculation	EUR
2	Return Variant of the MSCI EMU PAB Select 50 Index	Daily Gross Total Return
3	Decrement Type	Fixed Index Points
4	Decrement Application	Geometric
5	Decrement Value	50 points
6	Day-count Convention	Actual / 365
7	Index Floor	0
8	Decrement Frequency	Daily

Appendix IV: Barra Equity Model Used in The Optimization

The MSCI EMU PAB Select 50 Index currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTLT).

Appendix V: 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 VI: Definition of Risk Reference Index

At each rebalance, the Risk Reference Index is constructed by selecting top 50 securities from the MSCI EMU Index based on their free float market capitalization.

The securities selected for inclusion in the Risk Reference Index assigned weights in proportion to their free-float adjusted market capitalization.

Appendix VII: Changes to this Document

The following sections have been modified as of July 2023:

Methodology book was updated to reflect the transition of the MSCI Global Investable Market Indexes (GIMI) to Quarterly Comprehensive Index Reviews.

All references to “Semi-Annual Index Reviews” and “Quarterly Index Reviews” of the MSCI GIMI were replaced with “Index Reviews.”

Section 2.1.4: Clarified the exclusion criteria for companies involved in ESG Controversies

Section 4: Moved section after Section 3.

Updated descriptions of MSCI ESG Research products.

Contact us

[msci.com/contact-us](https://www.msci.com/contact-us)

AMERICAS

Americas	1 888 588 4567 *
Atlanta	+ 1 404 551 3212
Boston	+ 1 617 532 0920
Chicago	+ 1 312 675 0545
Monterrey	+ 52 81 1253 4020
New York	+ 1 212 804 3901
San Francisco	+ 1 415 836 8800
São Paulo	+ 55 11 3706 1360
Toronto	+ 1 416 628 1007

EUROPE, MIDDLE EAST & AFRICA

Cape Town	+ 27 21 673 0100
Frankfurt	+ 49 69 133 859 00
Geneva	+ 41 22 817 9777
London	+ 44 20 7618 2222
Milan	+ 39 02 5849 0415
Paris	0800 91 59 17 *

ASIA PACIFIC

China North	10800 852 1032 *
China South	10800 152 1032 *
Hong Kong	+ 852 2844 9333
Mumbai	+ 91 22 6784 9160
Seoul	00798 8521 3392 *
Singapore	800 852 3749 *
Sydney	+ 61 2 9033 9333
Taipei	008 0112 7513 *
Thailand	0018 0015 6207 7181 *
Tokyo	+ 81 3 5290 1555

* toll-free

About MSCI

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

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

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

Notice and disclaimer

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or disseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investible assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance, but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of msci.com.

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK).

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at <https://adviserinfo.sec.gov/firm/summary/169222>.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Global Market Intelligence. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Global Market Intelligence.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at <https://www.msci.com/privacy-pledge>.