

MSCI EU PAB Choice Indexes Methodology

April 2025

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1. Introduction

The MSCI EU PAB Choice Indexes¹ (the “Indexes”) are designed to represent the performance of companies that are consistent with specific values or climate change-based criteria and meet the minimum requirements of EU Paris-Aligned (PAB)² Benchmarks.

The Indexes are derived from their corresponding market cap weighted Indexes (the “Parent Indexes”). Companies are excluded based on their involvement in controversial business activities or ESG controversies. An optimization-based approach is then applied in relation to the PAB requirements.

Exclusions are based on three categories:

- Companies flagged for their involvement in ESG controversies as assessed by MSCI ESG Research.
- Companies flagged for involvement in Controversial Business Activities³.
- Companies flagged by the minimum exclusions for EU PAB indexes.

The optimization-based approach aims to:

- Reduce the weighted average greenhouse gas intensity of the Indexes by 50% relative to the respective Parent Indexes.
- Reduce the weighted average greenhouse gas (GHG) intensity by 7% on an annualized basis.
- Achieve low turnover and minimize tracking error compared to the Parent Index.

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 VI for more details

² The corresponding minimum requirements are defined in Commission Delegated Regulation (EU) 2020/1818, available under https://eur-lex.europa.eu/eli/reg_del/2020/1818/oj. MSCI’s approach to meeting these requirements is described in the MSCI EU CTB/PAB Index Framework, available under <https://www.msci.com/index/methodology/latest/EUCTBPABIndexFramework>. In case changes to the Index methodology are required to maintain compliance with the regulatory CTB/PAB labels, MSCI will issue an announcement prior to implementing the changes in the methodology. MSCI will not conduct a formal consultation for such an update.

³ The Controversial Business Activities are listed and defined in Section 2.2.1.

2. Constructing the Indexes

The Indexes use company ratings and research provided by MSCI ESG Research⁴ for the Index construction.

The below table shows the Indexes and their respective Parent Indexes:

Table 1: The list of Indexes with their respective Parent Indexes

Index Name	Parent Index
MSCI World EU PAB Choice Index	MSCI World Index
MSCI USA EU PAB Choice Index	MSCI USA Index
MSCI Europe EU PAB Choice Index	MSCI Europe Index

2.1 Eligible Universe

The Eligible Universe for the Indexes is constructed from the constituents of the Parent Indexes by excluding securities based on the controversial business involvement criteria.

2.2 Eligibility Criteria

The Indexes use company ratings and research provided by MSCI ESG Research⁵ to determine eligibility for index inclusion.

2.2.1 Controversial Business Involvement Criteria

The Indexes use MSCI ESG Controversies and Global Norms, MSCI ESG Business Involvement Screening Research and MSCI Climate Change Metrics to identify and exclude companies that are involved in the following activities.

- **ESG Controversies:** All companies assessed as having involvement in ESG controversies that are 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.
- **Environmental Harm:** All companies assessed as having involvement in environmental controversies that are classified as Red Flags (MSCI Environmental Controversy Score of 0) or Orange Flags (score of 1).

⁴ 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.

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.

- 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
- **UN Global Compact:** Failure to comply with the United Nations Global Compact Principles (UN Global Compact Alignment value of "Fail").
- **Labour Compliance:** Failure to comply with the International Labour Organization's (ILO) fundamental and broad principles (ILO Broad Principles value of "Fail").
- **Controversial Weapons:** All companies with any tie to Controversial Weapons (cluster munitions, landmines, depleted uranium weapons, biological/chemical weapons, blinding lasers, non-detectable fragments and incendiary weapons), as defined by the methodology of the MSCI Global Ex-Controversial Weapons Indexes available at <https://www.msci.com/index/methodology/latest/XCW>.
- **Nuclear Weapons:** All companies meeting specific Nuclear Weapons business involvement criteria as described in Appendix V.
- **Tobacco:**
 - All companies that are involved in the production of tobacco products. Tobacco products include nicotine-containing products, including traditional and alternative smoking products.
 - All companies that derive 5% or more reported revenue (or, where not disclosed, maximum estimated revenue) from the production, distribution or retail of tobacco products, as a licensor of brand names for tobacco products, or as a supplier for tobacco products as a percentage of total revenue in its most recently completed fiscal year.
- **Thermal Coal:**
 - 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)
 - All companies with evidence of involvement in thermal coal distribution⁶.
- **Oil & Gas Activity:** All companies deriving 10% or more aggregate 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.

⁶ The Thermal Coal distribution screen is applied from November 2024.

- **Power Generation:** All companies deriving 50% or more aggregate revenue from thermal coal-based power generation, liquid fuel-based power generation and natural gas-based power generation⁷.
- **Arctic Oil & Gas:** All companies deriving 5% or more aggregate revenue (either reported or estimated) from arctic oil and gas production. The definition of Arctic is geographical and includes production activities north of the 66.5 latitude. This includes offshore or onshore oil or gas production.

2.3 Security Selection and Weighting

Securities in the Eligible Universe are selected and weighted following an optimization-based approach described below in Section 2.4.

2.4 Optimization Constraints

At each Semi-Annual Index Review, the Indexes are constructed using an optimization process that aims to achieve replicability and investability as well as minimize ex-ante tracking error relative to the Parent Index subject to the following constraints:

1. Climate objectives – constraints detailed in Table 2.
2. Diversification objectives – constraints detailed in Table 3.

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

Table 2: Constraints imposed to meet ESG & climate objectives:

No.	Climate Objectives	Values
1.	Minimum reduction in Greenhouse Gas (GHG) Intensity relative to EVIC ⁸ (Scope 1+2+3 ⁹) relative to the Parent Index	50%
2.	Minimum average reduction (per annum) in GHG Intensity (relative to EVIC) relative to GHG Intensity of the index at the Base Date ¹⁰	7%

⁷ 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.

⁸ Enterprise Value including Cash.

⁹ Prior to the May 2020 Index Review, the Weighted Average Carbon Emissions Intensity relative to EVIC has been calculated based on Scope 1+2 Emissions.

¹⁰ Prior to the May 2020 Index Review, the average reduction in Weighted Average Carbon Emissions Intensity relative to EVIC has been calculated using Scope 1+2 Emissions since Inception.

3.	Minimum active weight in High Climate Impact Sector ¹¹ relative to the Parent Index	0%
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Table 3: Constraints imposed to meet diversification objectives:

No.	Diversification Objective	
5.	Constituent Active Weight relative to the Parent Index	+2%
6.	Security Weight as a multiple of its weight in the Parent Index	20x
7.	Active Sector Weights (the Energy GICS ¹² Sector is not constrained) relative to the Parent Index	+/-5%
8.	Active Country Weights relative to the Parent Index ¹³	+/-5%
9.	One Way Turnover	5%
10.	Common Factor Risk Aversion ¹⁴	0.0075
11.	Specific Risk Aversion ¹⁵	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/down to +/-20%.
- The one-way index turnover constraint and the active sector weight constraint are alternately relaxed until a feasible solution is achieved.

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

2.5 Determining the Optimized Index

The Index is constructed using the Barra Open Optimizer¹⁶ in combination with the relevant Barra Equity Model. The optimization uses the universe of eligible securities and the specified optimization objectives and constraints to determine the constituents of and the weights of constituents in the Indexes.

¹¹ For further details on how MSCI assigns companies to either the high or low climate impact sectors, please refer to the MSCI EU CTB/PAB Index Framework available under <https://www.msci.com/index/methodology/latest/EUCTBPABIndexFramework>.

¹² GICS, the global industry classification standard jointly developed by MSCI Inc. and S&P Dow Jones Indices.

¹³ 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.

¹⁴ The Common Risk Aversion penalizes systematic risk during the optimization process.

¹⁵ The Specific Risk Aversion penalizes idiosyncratic (asset-specific) risk during the optimization process.

¹⁶ Please refer to Appendix III and IV for more details.

2.6 Treatment of Unrated Companies

Companies not assessed by MSCI ESG Research on data for the following MSCI ESG Research products are not eligible for inclusion in the Indexes:

- MSCI ESG Controversies
- MSCI Climate Change Metrics¹⁷
- MSCI Business Involvement Screening Research¹⁸

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

¹⁷ The missing data treatment for MSCI Climate Change Metrics is applied from November 2024.

¹⁸ The missing data treatment for MSCI Business Involvement Screening Research is applied from November 2024.

3 Maintaining the Indexes

3.1 Index Reviews

The Indexes are reviewed 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 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 data¹⁹ as of the end of the month preceding the Index Reviews for the rebalancing of the MSCI EU PAB Choice Indexes. For some securities, such data may not be published by MSCI ESG Research by the end of the month preceding the Index Review. For such securities, MSCI will use ESG data published after the end of month, when available, for the rebalancing of the Indexes.

3.2 Ongoing Event Related Changes

The general treatment of corporate events in the Indexes 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 not be added to the Index at the time of event implementation. Reevaluation for continued inclusion in the Index will occur at the subsequent Index Review.

Merger/Acquisition

For Mergers and Acquisitions, the acquirer's post event weight will account for the proportionate

¹⁹ See section 4 for details of data sourced from MSCI ESG Research used in the Indexes.

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 Indexes are products of MSCI Inc. that utilize 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 and MSCI Climate Change Metrics. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH.

4.1 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>

4.2 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>.

4.3 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.

Fossil Fuels and Power Generation Metrics

MSCI ESG Research identifies companies involved in fossil fuel-related assets and activities including fossil fuel reserves, resource extraction, power generation and generation capacity, revenue from such assets and activities and capital investments in such assets and activities. The metrics are based on disclosed activities, disclosed revenue and estimates of revenue that are extrapolated from company disclosures and eligible third-party sources (such as NGOs).



Greenhouse Gas (GHG) Emissions

MSCI ESG Research collects reported emissions and uses proprietary estimation methodologies that follows the GHG Protocol in including carbon dioxide (CO₂) and the five other principal GHGs: hydrofluorocarbons (HFCs), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Emissions of these other gases are accounted for in terms of the quantity of CO₂ that has an equivalent global warming potential.

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

<https://www.msci.com/legal/disclosures/climate-disclosures>

Appendix I: 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

Carbon emissions of a company are normalized for size by dividing annual carbon emissions by Enterprise Value including Cash (EVIC). The Carbon Emissions Intensity is calculated using the latest Scope 1+2 carbon emissions, Scope 3 carbon emissions and EVIC of a company.

Security Level GHG Intensity (Scope 1+2+3) =

$$(Unadjusted\ Security\ Level\ GHG\ Intensity\ (Scope\ 1+2) + Unadjusted\ Security\ Level\ GHG\ Intensity\ (Scope\ 3)) * (1 + EVIAF)$$

Unadjusted Security Level GHG Intensity (Scope 1+2) =

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

If Scope 1+2 carbon emissions and/or EVIC are not available, the average Scope 1+2 intensity of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the security belongs is used.

Unadjusted Security Level GHG Intensity (Scope 3) =

$$\frac{(Scope\ 3\ Carbon\ Emissions)}{EVIC\ (in\ M\$)}$$

If Scope 3 carbon emissions and/or EVIC are not available, the average Scope 3 intensity of all the constituents of the MSCI ACWI in the same GICS Industry Group in which the security belongs is used.

Enterprise Value Inflation Adjustment Factor (EVIAF) =

$$\left(\frac{Average(EVIC)}{Previous\ (Average(EVIC))} \right) - 1$$

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 Average Decarbonization

On average, the Indexes follow a 7% decarbonization trajectory since the Base Date. The Weighted Average GHG Intensity relative to EVIC at the Base Date (W_1) is used to compute the target Weighted Average GHG Intensity relative to EVIC at any given Semi-Annual Index Review (W_t) as per the below formula.

$$W_t = W_1 * 0.93^{\frac{(t-1)}{2}}$$

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 relative to EVIC will be $W_1 * 0.93$.

Appendix II: Decarbonization Trajectory of Indexes

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.

$$W_t = W_1 * 0.93^{\frac{(t-1)}{2}}$$

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 Indexes are constructed:

Index	Parent Index	Base Date	W_1 (tCO2/M\$ Enterprise Value + Cash)
MSCI World EU PAB Choice Index	MSCI World Index	June 01, 2020	186.81
MSCI USA EU PAB Choice Index	MSCI USA Index	June 01, 2020	144.71
MSCI Europe EU PAB Choice Index	MSCI Europe Index	June 01, 2020	263.09

Appendix III: Barra Equity Model Used in the Optimization

The MSCI SRI EU PAB Overlay ESG Custom Indexes currently use an optimization setup using the MSCI Barra Global Equity Model for Long-Term Investors (GEMTLTL).

Appendix IV: New release of Barra® Equity Model or Barra® Optimizer

A major new release of the relevant Barra Equity Model or Barra Optimizer may replace the former version within a suitable timeframe.

Appendix V: Nuclear Weapons

- All companies that manufacture nuclear warheads and/or whole nuclear missiles.
- All companies that manufacture components that were developed or are significantly modified for exclusive use in nuclear weapons (warheads and missiles).
- All companies that manufacture or assemble delivery platforms that were developed or significantly modified for the exclusive delivery of nuclear weapons.
- All companies that provide auxiliary services related to nuclear weapons.
- All companies that manufacture components that were not developed or not significantly modified for exclusive use in nuclear weapons (warheads and missiles) but can be used in nuclear weapons.
- All companies that manufacture or assemble delivery platforms that were not developed or not significantly modified for the exclusive delivery of nuclear weapons but have the capability to deliver nuclear weapons.
- All companies that manufacture components for nuclear-exclusive delivery platforms.

Appendix VI: Methodology Set

The Indexes are 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>
- MSCI Index Glossary of Terms – <https://www.msci.com/index/methodology/latest/IndexGlossary>
- MSCI Index Policies – <https://www.msci.com/index/methodology/latest/IndexPolicy>
- MSCI Global Industry Classification Standard (GICS) Methodology – <https://www.msci.com/index/methodology/latest/GICS>
- 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>
- ESG Factors In Methodology*

The Methodology Set for the Indexes 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.

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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.

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