

# **MSCI EU CTB/PAB Index Framework**

April 2025

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## 1 Introduction

Commission Delegated Regulation (EU) 2020/1818<sup>1</sup> defines two labels: Climate Transition Benchmarks (CTBs) and Paris Aligned Benchmarks (PABs). These labels aim to provide transparent and credible standards for benchmarks targeting, among other things, a pre-defined decarbonization trajectory. The corresponding minimum requirements are defined in [Commission Delegated Regulation \(EU\) 2020/1818](#) and summarized below:

- Minimum exposure to high climate impact sectors (Article 3, applicable to equity indexes only): For both CTBs and PABs in the equity asset class, the exposure of the benchmark to NACE sections A to H and L has to be at least as high as the corresponding exposure of the underlying investable universe.
- Decarbonization trajectory (Articles 7 and 8): For both CTBs and PABs, greenhouse gas emissions (measured in terms of weighted-average greenhouse gas intensity per EVIC (Enterprise Value Including Cash) for equity benchmarks, or weighted-average absolute greenhouse gas emissions for fixed income benchmarks) have to decrease by at least 7% annually, on average.
- Baseline reduction of greenhouse gas emissions (measured as above): At least 30% for CTBs and 50% for PABs, compared to the investable universe (Articles 9 and 11).
- Minimum exclusions (Article 10 and 12): Both CTBs and PABs screen for controversial weapons, tobacco, violations of UN Global Compact and OECD guidelines, and significant harm to environmental objectives. PABs additionally screen for involvement in different activities associated with the fossil fuels value chain and power generation.

The average year-on-year decarbonization rate and the fossil fuel exclusions have been chosen to align with the 1.5°C scenario with no or limited overshoot, referred to in the IPCC Special Report on Global Warming<sup>2</sup>. As such, the MSCI equity and fixed income EU CTB/PAB indexes (“the Indexes”) aim for a decarbonization trajectory in line with the objectives of the Paris Agreement<sup>3</sup> (pursuing efforts to limit the global temperature increase to 1.5°C above pre-industrial levels).

Identical provisions for CTBs and PABs apply in the UK, since the corresponding technical standards have been retained as part of UK regulation when the UK left the EU.

This MSCI EU CTB/PAB Index Framework (“the Framework”) describes the framework applied by MSCI as benchmark administrator for the Indexes<sup>4</sup> to meet the minimum requirements required by Commission Delegated Regulation (EU) 2020/1818.

<sup>1</sup> [https://eur-lex.europa.eu/eli/reg\\_del/2020/1818/oj](https://eur-lex.europa.eu/eli/reg_del/2020/1818/oj)

<sup>2</sup> <https://www.ipcc.ch/sr15/>

<sup>3</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement>

<sup>4</sup> 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 Climate Change Metrics, MSCI ESG Controversies and MSCI ESG Business Involvement Screening Research. MSCI Indexes are administered by MSCI Limited and MSCI Deutschland GmbH.

## 2 Minimum exclusion criteria

Articles 10 and 12 of the [Commission Delegated Regulation \(EU\) 2020/1818](#) require certain companies to be excluded from CTBs and PABs. The following sections describe the framework for determining the resulting minimum exclusions for the Indexes. Note that individual Indexes may apply stricter exclusions as long as the minimum exclusion criteria described below are still met.

### 2.1 Common exclusions for EU CTB and EU PAB indexes

The minimum exclusions applicable to all Indexes (both CTBs and PABs) are described in Article 10(2), Article 12(1) a-c and Article 12(2) of the [Commission Delegated Regulation \(EU\) 2020/1818](#):

*Article 10(2): By 31 December 2022, administrators of EU Climate Transition Benchmarks shall comply with the requirements set out in Article 12(1), points (a), (b) and (c), and Article 12(2).*

*Article 12(1): Administrators of EU Paris-aligned Benchmarks shall exclude all of the following companies from those benchmarks:*

- (a) companies involved in any activities related to controversial weapons;*
- (b) companies involved in the cultivation and production of tobacco;*
- (c) companies that benchmark administrators find in violation of the United Nations Global Compact (UNGC) principles or the Organisation for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises;[. . .]*

*For the purposes of point (a), controversial weapons shall mean controversial weapons as referred to in international treaties and conventions, United Nations principles and, where applicable, national legislation.*

*Article 12(2): Administrators of EU Paris-aligned Benchmarks shall exclude from those benchmarks any companies that are found or estimated by them or by external data providers to significantly harm one or more of the environmental objectives referred to in Article 9 of Regulation (EU) 2020/852 of the European Parliament and of the Council(8), in accordance with the rules on estimations laid down in Article 13(2) of this Regulation.*

The following sections 2.1.1-2.1.4 describe the corresponding minimum exclusion criteria for the Indexes.

#### 2.1.1 Controversial Weapons

The Framework provides for the exclusion of all companies involved in Controversial Weapons as defined by the methodology of the MSCI Global ex Controversial Weapons Indexes. For more details regarding the MSCI Global ex Controversial Weapons Indexes Methodology, please refer to <https://www.msci.com/index/methodology/latest/XCW>.

#### 2.1.2 Tobacco

The Framework provides for the exclusion of all companies involved in the production of tobacco products. Tobacco products include nicotine-containing products, including traditional and alternative tobacco smoking products.

### 2.1.3 Violations of UNGC principles or OECD guidelines

The Framework provides for the exclusion of 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.

MSCI ESG Controversies are intended to reflect all areas of adverse impact covered by the Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises general policies. Specifically, MSCI ESG Research flags ESG controversy cases that may suggest violations of global norms such as the OECD guidelines and the UN Global Compact (UNGC), as defined under the MSCI ESG Global Norms screens. A Red Flag (i.e. direct involvement in one or more ongoing, Very Severe controversies) is equivalent to a “Fail” signal under the corresponding MSCI Global Norms Screening factors.<sup>5</sup>

### 2.1.4 Significant harm to environmental objectives

The Framework provides for the exclusion of all companies assessed as having involvement in environmental controversies that are classified as Red Flags (MSCI ESG 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.

The Framework uses environmental controversy assessments as a proxy for the company-level assessment of “do no significant harm” to environmental objectives. The use of a proxy is required since the regulatory definitions<sup>6</sup> of “significant harm to environmental objectives” are limited in scope to isolated economic activities. However, screening investments in companies for the purposes of Commission Delegated Regulation (EU) 2020/1818 Article 12(2) requires an assessment at company-level (not activity-level).

## 2.2 Additional exclusions specific to EU PABs

The additional minimum exclusions applicable specifically to EU PABs are described in Articles 12(1) d-g of Commission Delegated Regulation (EU) 2020/1818:

*Article 12(1): Administrators of EU Paris-aligned Benchmarks shall exclude all of the following companies from those benchmarks:*

*[ . . . ]*

*(d) companies that derive 1 % or more of their revenues from exploration, mining, extraction, distribution or refining of hard coal and lignite;*

<sup>5</sup> See MSCI ESG Controversies and Global Norms methodology, available under <https://www.msci.com/legal/disclosures/esg-disclosures>.

<sup>6</sup> As per the EU taxonomy regulation (Regulation (EU) 2020/852 referenced in Article 12(2) of the Commission Delegated Regulation (EU) 2020/1818) and its regulatory technical standards

*(e) companies that derive 10 % or more of their revenues from the exploration, extraction, distribution or refining of oil fuels;*

*(f) companies that derive 50 % or more of their revenues from the exploration, extraction, manufacturing or distribution of gaseous fuels;*

*(g) companies that derive 50 % or more of their revenues from electricity generation with a GHG intensity of more than 100 g CO<sub>2</sub> e/kWh.*

The following sections 2.2.1-2.2.3 describe the corresponding minimum exclusion criteria for PABs administered by MSCI (“MSCI EU PAB Indexes”).

### 2.2.1 Thermal Coal

The Framework provides for the exclusion from MSCI EU PAB Indexes of 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 does not consider 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).

The Framework provides for the exclusion from MSCI EU PAB Indexes of companies with evidence of involvement in thermal coal distribution. Following enhancements to the underlying data provided by MSCI ESG Research, the Framework foresees the application of this exclusion from February 2025 onwards.

### 2.2.2 Oil and Gas

The Framework provides for the exclusion from MSCI EU PAB Indexes of all companies deriving 10% or more aggregate revenue (either reported or estimated) from oil-related activities, including:

- Extraction and production of oil and natural gas liquids
- Refining of oil fuels
- Oil and oil products pipelines or natural gas liquids pipelines
- Transportation of oil and oil products
- Distribution of oil and related products
- Exploration as a service to the oil and natural gas industries
- Drilling wells as a service to the exploration and production of oil and natural gas

The Framework provides for the exclusion from MSCI EU PAB Indexes of all companies deriving 50% or more aggregate revenue (either reported or estimated) from gas-related activities, including:

- Extraction and production of natural gas
- Processing of natural gas fuels
- Natural gas pipelines
- Transportation of natural gas
- Distribution of gas and related products
- Exploration as a service to the oil and natural gas industries

- Drilling wells as a service to the exploration and production of oil and natural gas

The above two screens evaluate oil-related revenues and gas-related revenues separately, based on disaggregated oil/gas revenue data (see Appendix II) released by MSCI ESG Research in Q4, 2024. The Framework foresees these screens to be available for potential use from February 2025 onwards, subject to MSCI’s consultation policy.

As an alternative approach, the required exclusions can also be implemented through a combined oil & gas screen, excluding 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 (see Appendix II for details).

Note that the combined oil & gas screen is stricter than the separate oil and gas screens detailed above, i.e., Indexes that use the combined oil & gas screen exceed the minimum exclusion criteria. While the combined oil & gas screen may result in additional exclusions beyond the minimum regulatory requirements, it may nevertheless be appropriate depending on Index objectives and the need for a consistent data history.

Given that existing Indexes using the combined oil & gas screen remain compliant with the minimum exclusion requirements, the introduction of this Framework does not imply or necessitate any changes to the oil & gas screens in existing Indexes. Any switch between the separate oil and gas screens and the combined oil & gas screen, in the context of a specific Index, would be treated as a methodology change subject to MSCI’s consultation policy.

In addition, the Framework provides for the use in MSCI EU PAB Indexes of the combined oil & gas screen for all companies where the disaggregated oil/gas revenue data underlying the separate oil and gas screens is not available or not consistent (see Appendix II for details).

### 2.2.3 Electricity generation

The Framework provides for the exclusion from MSCI EU PAB Indexes of all companies deriving 50% or more aggregate revenue from thermal coal based power generation, liquid fuel based power generation and natural gas based power generation.

The Framework uses the power generation technology as a proxy to evaluate the 100g CO<sub>2</sub>/kWh threshold in Article 12(1) g. Based on third party analyses<sup>7</sup>, thermal coal based power generation, liquid fuel based power generation and natural gas based power generation have typical lifecycle emissions exceeding 100gCO<sub>2</sub>/kWh.

<sup>7</sup> See e.g. [https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc\\_wg3\\_ar5\\_chapter7.pdf](https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_chapter7.pdf)

### 3 Climate Impact Sector mapping

This section describes MSCI’s approach to determining the high climate impact sectors for the purposes of the equity allocation constraint in Article 3 of the Commission Delegated Regulation (EU) 2020/1818. Since this constraint applies only to the equity asset class, this section is not relevant for MSCI fixed income indexes.

Article 3 of the Commission Delegated Regulation (EU) 2020/1818 considers the high climate impact sectors to be those listed in Sections A to H and Section L of the NACE Rev 2 statistical classification (Annex I to Regulation (EC) No 1893/2006 of the European Parliament and of the Council).

MSCI determines which securities map to relevant sections in the NACE Rev 2 structure, based on companies’ sub-industry assignments according to the Global Industry Classification Standard (GICS®)<sup>8</sup>:

- 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
- 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
- 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 Sub-Industry is mapped to the Climate Impact Sector in the following manner:
  - $N_H \geq N_L$ : 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
  - $N_H < N_L$ : 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

The resulting GICS Sub-Industry to Climate Impact Sector mapping table is provided in Appendix III.

Securities are classified in either High Climate Impact Sector or Low Climate Impact Sector by applying this mapping table to the security-level GICS Sub-Industry.

<sup>8</sup> The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Dow Jones Indices. “Global Industry Classification Standard (GICS)” is a service mark of MSCI and S&P Dow Jones Indices.

## 4 Calculation of the decarbonization trajectory

This section describes the calculation of the decarbonization trajectory for the Indexes, as per the requirements of Commission Delegated Regulation (EU) 2020/1818 Article 7(1) and (2):

*Article 7(1) The decarbonisation trajectory for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks shall have the following targets:*

- (a) for equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of GHG intensity on average per annum;*
- (b) for debt securities other than those issued by a sovereign issuer, where the issuer of those debt securities has equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of GHG intensity on average per annum or at least 7 % reduction of absolute GHG emissions on average per annum;*
- (c) for debt securities other than those issued by a sovereign issuer, where the issuer of those debt securities does not have equity securities admitted to a public market in the Union or in another jurisdiction, at least 7 % reduction of absolute GHG emissions on average per annum.*

*Article 7(2): The targets referred to in paragraph 1 shall be calculated geometrically, which shall mean that the annual minimum 7 % reduction of GHG intensity or of absolute GHG emissions for year 'n' shall be calculated based on the GHG intensity or absolute GHG emissions for the year n-1, in a geometric progression from the base year.*

Throughout a calendar year, different Indexes may undergo index reviews at different dates and with different frequencies. Hence, the decarbonization trajectory for each Index is anchored at a specific date, which provides additional precision compared to only specifying a base year.

For equity Indexes, MSCI distinguishes two key dates for the decarbonization trajectory:

- The Decarbonization Start Date  $t_d$ , starting from which the yearly decarbonization requirement is applied.
- The Base Date  $t_b$ , which initially equals the Decarbonization Start Date. As detailed in section 5, the Base Date may change and thereafter differ from the Decarbonization Start Date. The regulatory “base year” in Articles 7 and 8 of Commission Delegated Regulation (EU) 2020/1818 corresponds to the year of the Base Date.

For fixed income Indexes, the Base Date is the same as the Decarbonization Start Date.

The Framework defines a Decarbonization Constraint  $W_t^{max}$  that is calculated in a geometric progression from the Base Date  $t_b$ : For  $t > t_b$ ,

$$W_t^{max} = W_{t_b} * (1 - r)^{\frac{t-t_b}{f}} \tag{4.1}$$

$W_{t_b}$  is the Base GHG Intensity of an equity Index, or the Base Absolute GHG Emissions of a fixed income Index. The initial<sup>9</sup> value of  $W_{t_b}$  is derived from the Index Review on the Decarbonization Start

<sup>9</sup> As detailed in section 5, the Base Date  $t_b$  may change and result in a recalculation of  $W_{t_b}$  and  $W_t^{max}$  as per section 5.2.

Date ( $t_b = t_d$ ), taking into account the baseline emissions reduction<sup>10</sup>  $R_0$  compared to the Investable Universe<sup>11</sup> of the Index:

$$W_{t_b} \leq W_{t_b}^{max}, \text{ where } W_{t_b}^{max} = W_{t_d, universe} * (1 - R_0) \quad (4.2)$$

This may result in  $W_{t_b} = W_{t_b}^{max}$ , but the application of different Index construction rules (such as exclusion criteria) may also lead to  $W_{t_b} < W_{t_b}^{max}$ .

The variables entering these equations are:

Variable	Explanation
$t$	Sequential number of the Index Review for which the Decarbonization Constraint should be calculated.  $t - t_d$ indicates the number of Index Reviews since the Decarbonization Start Date. $t - t_b$ indicates the number of Index Reviews since the Base Date.
$f$	Frequency of Index Reviews, as defined in the corresponding Index Methodology Set <sup>12</sup> <ul style="list-style-type: none"> <li>Semi-annual: <math>f = 2</math></li> <li>Quarterly: <math>f = 4</math></li> <li>Monthly: <math>f = 12</math></li> </ul>
$r$	Targeted average annual decarbonization rate, as defined in the corresponding Index Methodology Set. For each Index, $r$ must be larger or equal to 7% i.e. 0.07
$R_0$	Index baseline reduction percentage, as defined in the corresponding Index Methodology Set.  For CTBs, $R_0$ is at least 30%. For PABs, $R_0$ is at least 50%.
$W_{t_d, universe}$	<ul style="list-style-type: none"> <li>For equity Indexes: Weighted average GHG intensity of the Investable Universe of the Index, on the Decarbonization Start Date</li> <li>For fixed income Indexes: Weighted average absolute GHG emissions of the Investable Universe of the Index, on the Decarbonization Start Date</li> </ul> <p><math>W_{t_d, universe}</math> is recalculated in case of significant methodology changes (see section 5) and remains fixed otherwise.</p>
$W_{t_b}$	<ul style="list-style-type: none"> <li>For equity indexes: Base GHG Intensity, i.e., weighted average, inflation-adjusted<sup>13</sup> GHG intensity of the Index on the Base Date.</li> </ul>

<sup>10</sup> As per Articles 9 and 11 of Commission Delegated Regulation (EU) 2020/1818

<sup>11</sup> The Investable Universe is the (immediate or higher-level) parent index that is based on the MSCI Global Investable Market Indexes methodology. See Appendix VI for details.

<sup>12</sup> The Indexes are governed by a set of methodology and policy documents ("Methodology Set"). The Methodology Sets 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'.

<sup>13</sup> See Appendix VII for details on the inflation adjustment for equity Indexes.

Variable	Explanation
	<ul style="list-style-type: none"> <li>For fixed income indexes: Base Absolute GHG Emissions, i.e. Weighted average absolute GHG emissions of the Index on the Base Date</li> </ul> <p><math>W_{t_b}</math> is recalculated in case of significant methodology changes (see section 5) and remains fixed otherwise.</p>
$W_t^{max}$	<p>Decarbonization Constraint for the Index Review number <math>t</math>, which provides an upper bound for</p> <ul style="list-style-type: none"> <li>The weighted average inflation-adjusted GHG intensity of the Index (for equity Indexes)</li> <li>The weighted average absolute GHG emissions of the Index (for fixed income Indexes)</li> </ul>

The calculation of the weighted average, inflation-adjusted GHG intensity (for equity Indexes) or absolute GHG emissions (for fixed income Indexes) is specific to each index methodology and described in the corresponding Index Methodology Sets<sup>14</sup>.

The Base Date, the targeted average annual decarbonization rate, as well as the weighted average GHG intensity on the Base Date (for equity Indexes) or the weighted average absolute GHG emissions on the Base Date (for fixed income Indexes) are published for each Index on the [MSCI Index Profile Tool](#)<sup>15</sup>.

## 5 Changes in Base Dates and adjustments of the decarbonization trajectory

Article 8(2) of Commission Delegated Regulation (EU) 2020/1818 requires the implementation of a new Base Date following significant changes in the calculation methodology of GHG intensity or absolute GHG emissions:

*Article 8(2) Benchmark administrators shall use a new base year whenever significant changes in the calculation methodology of GHG intensity or absolute GHG emissions occur.*

The following sections 5.1 and 5.2 describe how MSCI determines whether such significant changes have occurred, and the default approach applied to determine the decarbonization trajectory applicable after the new Base Date. The approach described in sections 5.1 and 5.2 is initially being implemented for MSCI equity CTB/PAB indexes and will be applied not earlier than November 2025. For MSCI fixed income CTB/PAB indexes, the implementation of new Base Dates is currently treated on a case-by-case basis.

<sup>14</sup> Available under <https://www.msci.com/index-methodology>

<sup>15</sup> Available under <https://www.msci.com/our-solutions/indexes/index-profile-tool/>. The disclosures for the Decarbonization Start Date and the GHG intensity or absolute GHG emissions as of this date will be added at a later stage.

## 5.1 Changes in Base Dates

For each equity CTB/PAB index, MSCI determines that a significant change in the calculation methodology of GHG intensity occurred whenever one of the following conditions a. or b. is met:

- a. The changes in GHG intensity calculation methodology that occurred since the current Base Date of the Index exceed the quantitative significance threshold for the Index.

Generally, this means that their cumulative percentage impact on the GHG intensity of the Index's Investable Universe at the Decarbonization Start Date exceeds an equivalent of three years of the annual CTB/PAB decarbonization requirement:

$$\left| \frac{W_{t_d, universe}^{recalculated}}{W_{t_d, universe}} - 1 \right| \geq 1 - (1 - 0.07)^3$$

$W_{t_d, universe}$  as defined in section 4 is the weighted average GHG intensity of the Investable Universe of the Index, as of the Decarbonization Start Date, calculated using the methodology (current or previous) that was in place at the current Base Date of the Index.

$W_{t_d, universe}^{recalculated}$  is the corresponding value under the new GHG intensity calculation methodology.<sup>16</sup>

- b. Exceptionally, changes in the GHG intensity calculation methodology may be considered significant when they result in a fundamental, conceptual difference in how the GHG intensity is interpreted, even if the quantitative threshold is not met. Such exceptions will be assessed by the MSCI Equity Index Committee based on the nature of the change.

In both of the above conditions, "changes in the GHG intensity calculation methodology" are considered to include

- Changes to the methodology of the relevant data sourced from MSCI ESG Research; and/or
- Changes to the MSCI Index methodology used to derive security-level and/or index-level GHG emissions intensities

## 5.2 Decarbonization trajectory adjustments

For equity Indexes where the conditions for changing the Base Date are met, MSCI generally applies the following default treatment<sup>17</sup> at the subsequent Index Review (see Appendix V for an example):

- a. The Decarbonization Start Date of the Index ( $t_d$  in section 4) remains unchanged.
- b. The Base Date applicable going forward ( $t_b$  in section 4) is set to the effective date of the Index Review where the change is made.

<sup>16</sup> Note that both  $W_{t_d, universe}^{recalculated} > W_{t_d, universe}$  and  $W_{t_d, universe}^{recalculated} < W_{t_d, universe}$  are possible. See Appendix IV for details on how the recalculation is performed.

<sup>17</sup> Some Indexes may apply a custom treatment. Where this is the case, details of the treatment are provided in the respective Index methodology books.

c. The GHG intensity of the Investable Universe, at the Decarbonization Start Date ( $W_{t_d,universe}$  in section 4) is recalculated using the new methodology (i.e., replaced by  $W_{t_d,universe}^{recalculated}$  as specified in section 5.1 above). See Appendix IV for details on how the recalculation is performed.

d. The Decarbonization Constraint  $W_{t_b}^{max}$  for the Index Review at the new Base Date  $t = t_b$  is recalculated, accounting for both the baseline emissions reduction<sup>18</sup>  $R_0$  compared to the Investable Universe of the Index and the annual emissions reduction since the Decarbonization Start Date:

$$W_{t_b}^{max} = W_{t_d,universe} * (1 - R_0) * (1 - r)^{\frac{t_b - t_d}{f}}$$

e. The Index Review for the new Base Date  $t_b = t$  applies the recalculated Decarbonization Constraint  $W_{t_b}^{max}$ . The inflation adjustment applied to the security-level GHG intensities at the Index Review remains unchanged and continues to be calculated from the Decarbonization Start Date. The inflation-adjusted GHG intensity for the Index derived from the Index Review becomes the new Base GHG Intensity for the decarbonization trajectory going forward ( $W_{t_b}$  in section 4).

f. For subsequent Index Reviews ( $t > t_b$ ), the Decarbonization Constraint  $W_t^{max}$  is determined using equation (4.1) with the new value of  $W_{t_b}$ . As a result, the Decarbonization Constraint  $W_t^{max}$ , for all  $t \geq t_b$ , is at least as strict as if it were calculated in a geometric progression starting from the Decarbonization Start Date:

$$W_t^{max} \leq W_{t_d,universe} * (1 - R_0) * (1 - r)^{\frac{t - t_d}{f}}$$

The new values of  $t_b$ ,  $W_{t_d,universe}$ ,  $W_t^{max}$  and  $W_{t_b}$  only apply for the decarbonization trajectory going forward; the past emissions trajectory of the Index is not restated.

Appendix V shows an example which illustrates the above approach to calculating the decarbonization trajectory adjustment.

<sup>18</sup> As per Articles 9 and 11 of Commission Delegated Regulation (EU) 2020/1818

## Appendix I: 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 to meet the minimum requirements of Commission Delegated Regulation (EU) 2020/1818: 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.

### 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>.

### 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>.

### MSCI CLIMATE CHANGE METRICS

MSCI Climate Change Metrics provides climate data and tools to support institutional investors seeking to integrate climate risk and 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).

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

## Appendix II: Relevant MSCI ESG Research data fields

The screening criteria described in section 2 can be summarized as follows:

Commission Delegated Regulation (EU) 2020/1818 Reference	Screen	Formula
<b>12 (1) a</b>	Controversial Weapons	<p>CWEAP_TIE = T,</p> <p>which as of December 2024 is equivalent to any of the following flags being set:</p> <p>CB_TIE, LM_TIE,</p> <p>DU_WEAP, WEAP_OWNBYDU, WEAP_OWNOFDU,</p> <p>WEAP_BIO_CHEM_SYSTEM,</p> <p>WEAP_BIO_CHEM_COMPONENT, WEAP_OWNBYBIOCHEM,</p> <p>WEAP_OWNOFBIOCHEM,</p> <p>WEAP_BLINDING_LASER,</p> <p>WEAP_BLINDING_LASER_OWN_BY,</p> <p>WEAP_BLINDING_LASER_OWN_OF,</p> <p>WEAP_NONDETECTABLE_FRAGMENTS,</p> <p>WEAP_NDF_OWN_BY, WEAP_NDF_OWN_OF,</p> <p>WEAP_INCENDIARY_OWN_BY,</p> <p>WEAP_INCENDIARY_OWN_OF,</p> <p>WEAP_INCENDIARY_WP</p>
<b>12 (1) b</b>	Tobacco	TOB_PRODUCER = T
<b>12 (1) c</b>	Violations of UNGC principles or OECD guidelines	OVERALL_SCORE = 0
<b>12 (2)</b>	Significant harm to environmental objectives	ENVIRONMENT_CONTROVERSY_SCORE = 0 or 1
<b>12 (1) d</b>	Thermal Coal	<p>THERMAL_COAL_MAX_REV_PCT &gt;= 1</p> <p>THERMAL_COAL_STORAGE_INVLVMT = Yes</p>
<b>12 (1) e</b>	Oil	OIL_EXT_PRO_MAX_REV_PCT + OIL_PIP_MAX_REV_PCT + OIL_TRA_MAX_REV_PCT + OIL_REF_MAX_REV_PCT +

Commission Delegated Regulation (EU) 2020/1818 Reference	Screen	Formula
		$OIL\_DIS\_MAX\_REV\_PCT + OIL\_GAS\_EXP\_MAX\_REV\_PCT + OIL\_GAS\_DRIL\_MAX\_REV\_PCT \geq 10$
12 (1) f	Gas	$GAS\_EXT\_PRO\_MAX\_REV\_PCT + GAS\_PIP\_MAX\_REV\_PCT + GAS\_TRA\_MAX\_REV\_PCT + GAS\_REF\_MAX\_REV\_PCT + GAS\_DIS\_MAX\_REV\_PCT + OIL\_GAS\_EXP\_MAX\_REV\_PCT + OIL\_GAS\_DRIL\_MAX\_REV\_PCT \geq 50$
12 (1) e and f	Oil & Gas – combined screen	<p>Under the combined oil &amp; gas screen, companies are excluded if:</p> $OG\_REV\_DISTRIBUTION + OG\_REV\_EQUIPMT\_SERVICES + OG\_REV\_EXTRACTION\_PROD + OG\_REV\_PIPELINES\_TRANSP + OG\_REV\_REFINING \geq 10$ <p>The combined oil &amp; gas screen is stricter than the separate oil and gas screens listed in the two rows above, and may be used as an alternative to meet (and exceed) the minimum exclusion requirements, depending on the specific index objectives.</p> <p>In addition, the combined oil &amp; gas screen must be applied for companies where the disaggregated oil/gas revenue data is not available or not consistent, i.e. if the following two sums are not equal:</p> <ul style="list-style-type: none"> <li> <math>OIL\_EXT\_PRO\_MAX\_REV\_PCT + OIL\_PIP\_MAX\_REV\_PCT + OIL\_TRA\_MAX\_REV\_PCT + OIL\_REF\_MAX\_REV\_PCT + OIL\_DIS\_MAX\_REV\_PCT + OIL\_RET\_MAX\_REV\_PCT + GAS\_EXT\_PRO\_MAX\_REV\_PCT + GAS\_PIP\_MAX\_REV\_PCT + GAS\_TRA\_MAX\_REV\_PCT + GAS\_REF\_MAX\_REV\_PCT + GAS\_DIS\_MAX\_REV\_PCT + GAS\_RET\_MAX\_REV\_PCT + OIL\_GAS\_EXP\_MAX\_REV\_PCT + OIL\_GAS\_DRIL\_MAX\_REV\_PCT + OIL\_GAS\_SER\_MAX\_REV\_PCT</math> </li> <li> <math>OG\_REV\_DISTRIBUTION + OG\_REV\_EQUIPMT\_SERVICES + OG\_REV\_EXTRACTION\_PROD + OG\_REV\_PIPELINES\_TRANSP + OG\_REV\_REFINING</math> </li> </ul>

Commission Delegated Regulation (EU) 2020/1818 Reference	Screen	Formula
<b>12 (1) g</b>	Electricity generation	GENERAT_MAX_REV_THERMAL_COAL + GENERAT_MAX_REV_LIQUID_FUEL + GENERAT_MAX_REV_NATURAL_GAS >= 50

As of November 2024, the relevant underlying data fields as provided by MSCI ESG Research are:

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of November 2024
<b>CWEAP_TIE</b>	BISR	Indicates whether the company is involved in the production of whole weapon systems, delivery platforms or components of cluster munitions; production of whole weapon systems or components of landmines and biological or chemical weapons; production of depleted uranium weapons, blinding laser weapons, incendiary weapons, or weapons with non-detectable fragments; or is involved indirectly through ownership ties to companies involved in such products. Nuclear weapons are not considered for this screen. The value is “True” if one or more of the underlying involvement factors is “True.”
<b>CB_TIE</b>	BISR	Indicates whether the company is involved in the production of cluster munitions, components for such products, or is involved indirectly through ownership ties to companies involved in production of such goods. Cluster Munitions - Smart Weapon is excluded from Cluster Munitions - Any Tie. The value is “True” if one or more of the underlying involvement factors is “True.”
<b>LM_TIE</b>	BISR	Indicates whether the company is involved in the production of anti-personnel or anti-vehicle landmines, essential intended or dual-use components of such products or is involved indirectly through ownership ties to companies involved in such products. Landmines - Smart Weapon involvement is excluded from Landmines - Any Tie. The value is “True” if one or more of the underlying involvement factors is “True.”

<b>Data Field</b>	<b>MSCI ESG Research Product</b>	<b>Description as provided by MSCI ESG Research as of November 2024</b>
<b>DU_WEAP</b>	BISR	Companies involved in the production of depleted uranium weapons, ammunition and armor.
<b>WEAP_OWNBYDU</b>	BISR	Companies that are 50 percent or more owned by a company with depleted uranium weapons involvement.
<b>WEAP_OWNOFDU</b>	BISR	Companies that own 20 to 49.99 percent of a company with involvement. When a company owns 50 percent or more of a subsidiary with involvement, MSCI treats it as a consolidated subsidiary.
<b>WEAP_BIO_CHEM_SYSTEM</b>	BISR	Companies that produce biological or chemical weapons systems.
<b>WEAP_BIO_CHEM_COMPONENT</b>	BISR	Companies that produce critical components for biological and chemical weapons systems.
<b>WEAP_OWNBYBIO_CHEM</b>	BISR	Companies that are 50 percent or more owned by a company with biological and chemical weapons involvement.
<b>WEAP_OWNOFBIO_CHEM</b>	BISR	Companies that own 20 to 49.99 percent of a company with involvement. When a company owns 50 percent or more of a subsidiary with involvement, MSCI treats it as a consolidated subsidiary.
<b>WEAP_BLINDING_LASER</b>	BISR	Companies that produce blinding laser weapons, that cause permanent blindness to the target.
<b>WEAP_BLINDING_LASER_OWN_BY</b>	BISR	Ownership by a Blinding Laser Manufacturer
<b>WEAP_BLINDING_LASER_OWN_OF</b>	BISR	Ownership of a Blinding Laser Manufacturer
<b>WEAP_NONDETECTABLE_FRAGMENT</b>	BISR	Companies that produce weapons that use non-detectable fragments.
<b>WEAP_NDF_OWN_BY</b>	BISR	Ownership by a Non-detectable Weapons Manufacturer
<b>WEAP_NDF_OWN_OF</b>	BISR	Ownership of a Non-detectable Weapons Manufacturer
<b>WEAP_INCENDIARY_OWN_BY</b>	BISR	Ownership By a Incendiary Weapons Manufacturer.

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of November 2024
<b>WEAP_INCENDIARY_OWNOF</b>	BISR	Ownership Of a Incendiary Weapons Manufacturer.
<b>WEAP_INCENDIARY_WP</b>	BISR	Companies that produce incendiary weapons using white phosphorus.
<b>TOB_PRODUCER</b>	BISR	Companies involved in the production of tobacco products. Tobacco products include nicotine-containing products, including traditional and alternative tobacco smoking products.
<b>OVERALL_SCORE</b>	Controversies	The overall company assessment signals whether a company has a notable controversy related to a company's operations and/or products, and the severity of the social or environmental impact of the controversy.
<b>ENVIRONMENTAL_CONTROVERSY_SCORE</b>	Controversies	This ESG pillar is an assessment of controversies (if any) related to a firm's impact on the environment. Factors affecting this evaluation include whether a company is involved in controversies related to land use and biodiversity, toxic spills and releases, energy and climate change, water management, operational non-hazardous waste, and management of supply chain environmental impact.
<b>THERMAL_COAL_MAX_REV_PCT</b>	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) greater than 0% that a company derives 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.
<b>THERMAL_COAL_STORAGE_INVOLVEMENT</b>	SFDR	Identifies companies with evidence of thermal coal distribution involvement.
<b>OIL_EXTRACTOR_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the extraction and production of oil and natural gas liquids. The data point includes revenue from conventional and unconventional oil extraction and production.

<b>Data Field</b>	<b>MSCI ESG Research Product</b>	<b>Description as provided by MSCI ESG Research as of November 2024</b>
<b>OIL_PIP_MAX_RE V_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from oil and oil products or natural gas liquids pipelines.
<b>OIL_TRA_MAX_RE V_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the transportation of oil and oil products. The data point does not include revenue from oil/ oil products pipelines.
<b>OIL_REF_MAX_RE V_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the refining of oil fuels.
<b>OIL_DIS_MAX_RE V_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the distribution of oil and related products. The data point includes revenues from crude and petroleum products storage facilities and terminals and bulk stations.
<b>OIL_GAS_EXP_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the exploration as a service to the of oil and natural gas industries. The data point includes revenues from oil and gas exploration services and seismic surveys and does not include revenues from extraction & production.
<b>OIL_GAS_DRILLING_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from drilling wells as a service to the exploration and production of oil and natural gas. The data point does not include revenues from extraction & production.
<b>GAS_EXTRACTION_PROD_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the extraction and production of natural gas. The data point includes revenue from conventional and unconventional gas extraction and production.
<b>GAS_PIP_MAX_RE V_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from natural gas pipelines.

<b>Data Field</b>	<b>MSCI ESG Research Product</b>	<b>Description as provided by MSCI ESG Research as of November 2024</b>
<b>GAS_TRA_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the transportation of natural gas. The data point does not include revenue from natural gas pipelines.
<b>GAS_REF_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the processing of natural gas fuels.
<b>GAS_DIS_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the distribution of gas and related products. The data point includes revenues from liquefied petroleum gas and natural gas distribution.
<b>OIL_RET_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the retailing of oil and oil products. The data point includes revenues from crude and petroleum products gasoline and fuel oil retail stations.
<b>GAS_RET_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from gas retail sales and liquefied petroleum gas (bottled gas) dealers.
<b>OIL_GAS_SERVICES_MAX_REV_PCT</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from equipment and services for the exploration and production of oil and natural gas. The data point includes revenues from oil and gas exploration related equipment, manufacturing, engineering services and heavy construction related to oil and gas exploration activities.
<b>OG_REV_DISTRIBUTION</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from the distribution and retailing of oil and gas and related products. It includes revenues from crude and petroleum products storage facilities and terminals, bulk stations, gasoline and fuel oil retail stations as well as liquefied petroleum gas stations natural gas distribution and gas retail sales.

Data Field	MSCI ESG Research Product	Description as provided by MSCI ESG Research as of November 2024
<b>OG_REV_EQUIPMENT_SERVICES</b>	Climate Change Metrics	Identifies the maximum percentage of revenue (either reported or estimated) that a company derives from equipment and services for the exploration and production of oil and natural gas. It includes revenues from oil and gas exploration services, related equipment manufacturing, seismic surveys, engineering services and heavy construction related to oil and gas exploration activities. It does not include revenues from extraction & production.
<b>OG_REV_EXTRACTION_PROD</b>	Climate Change Metrics	Identifies the maximum percentage of revenue (either reported or estimated) that a company derives from the extraction and production of oil and gas.
<b>OG_REV_PIPELINE_S_TRANSP</b>	Climate Change Metrics	Identifies the maximum percentage of revenue (either reported or estimated) that a company derives from oil and gas pipelines and transportation. It includes revenues from mid-stream operations but excludes revenues from terminals and storage facilities.
<b>OG_REV_REFINING</b>	Climate Change Metrics	The maximum percentage of revenue (either reported or estimated) that a company derives from refining oil and processing natural gas.
<b>GENERAT_MAX_REVENUE_THERMAL_COAL</b>	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) that a company derives from the thermal coal based power generation.
<b>GENERAT_MAX_REVENUE_LIQUID_FUEL</b>	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) that a company derives from the liquid fuel based power generation.
<b>GENERAT_MAX_REVENUE_NATURAL_GAS</b>	Climate Change Metrics	This factor identifies the maximum percentage of revenue (either reported or estimated) that a company derives from the natural gas based power generation.

## Appendix III: Climate Impact Sector GICS mapping table

The below table shows the mapping of GICS Sub-Industries to Climate Impact Sectors, as of September 2024, and based on the GICS structure effective March 2023.

GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector <sup>19</sup>	GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector
10101010	Oil & Gas Drilling	HCI	10101020	Oil & Gas Equipment & Services	HCI
10102010	Integrated Oil & Gas	HCI	10102020	Oil & Gas Exploration & Production	HCI
10102030	Oil & Gas Refining & Marketing	HCI	10102040	Oil & Gas Storage & Transportation	HCI
10102050	Coal & Consumable Fuels	HCI	15101010	Commodity Chemicals	HCI
15101020	Diversified Chemicals	HCI	15101030	Fertilizers & Agricultural Chemicals	HCI
15101040	Industrial Gases	HCI	15101050	Specialty Chemicals	HCI
15102010	Construction Materials	HCI	15103010	Metal, Glass & Plastic Containers	HCI
15103020	Paper & Plastic Packaging Products & Materials	HCI	15104010	Aluminum	HCI
15104020	Diversified Metals & Mining	HCI	15104025	Copper	HCI
15104030	Gold	HCI	15104040	Precious Metals & Minerals	HCI
15104045	Silver	HCI	15104050	Steel	HCI
15105010	Forest Products	HCI	15105020	Paper Products	HCI
20101010	Aerospace & Defense	HCI	20102010	Building Products	HCI
20103010	Construction & Engineering	HCI	20104010	Electrical Components & Equipment	HCI
20104020	Heavy Electrical Equipment	HCI	20105010	Industrial Conglomerates	LCI
20106010	Construction Machinery & Heavy Transportation Equipment	HCI	20106015	Agricultural & Farm Machinery	HCI
20106020	Industrial Machinery & Supplies & Components	HCI	20107010	Trading Companies & Distributors	HCI
20201010	Commercial Printing	HCI	20201050	Environmental & Facilities Services	HCI
20201060	Office Services & Supplies	LCI	20201070	Diversified Support Services	LCI
20201080	Security & Alarm Services	LCI	20202010	Human Resource & Employment Services	LCI

<sup>19</sup> HCI = High Climate Impact, LCI = Low Climate Impact

GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector <sup>19</sup>	GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector
20202020	Research & Consulting Services	LCI	20202030	Data Processing & Outsourced Services	LCI
20301010	Air Freight & Logistics	HCI	20302010	Passenger Airlines	HCI
20303010	Marine Transportation	HCI	20304010	Rail Transportation	HCI
20304030	Cargo Ground Transportation	HCI	20304040	Passenger Ground Transportation	HCI
20305010	Airport Services	HCI	20305020	Highways & Railtracks	HCI
20305030	Marine Ports & Services	HCI	25101010	Automotive Parts & Equipment	HCI
25101020	Tires & Rubber	HCI	25102010	Automobile Manufacturers	HCI
25102020	Motorcycle Manufacturers	HCI	25201010	Consumer Electronics	HCI
25201020	Home Furnishings	HCI	25201030	Homebuilding	HCI
25201040	Household Appliances	HCI	25201050	Housewares & Specialties	HCI
25202010	Leisure Products	HCI	25203010	Apparel, Accessories & Luxury Goods	HCI
25203020	Footwear	HCI	25203030	Textiles	HCI
25301010	Casinos & Gaming	LCI	25301020	Hotels, Resorts & Cruise Lines	LCI
25301030	Leisure Facilities	LCI	25301040	Restaurants	LCI
25302010	Education Services	LCI	25302020	Specialized Consumer Services	LCI
25501010	Distributors	HCI	25503030	Broadline Retail	HCI
25504010	Apparel Retail	HCI	25504020	Computer & Electronics Retail	HCI
25504030	Home Improvement Retail	LCI	25504040	Other Specialty Retail	HCI
25504050	Automotive Retail	HCI	25504060	Homefurnishing Retail	HCI
30101010	Drug Retail	HCI	30101020	Food Distributors	HCI
30101030	Food Retail	HCI	30101040	Consumer Staples Merchandise Retail	HCI
30201010	Brewers	HCI	30201020	Distillers & Vintners	HCI
30201030	Soft Drinks & Non-alcoholic Beverages	HCI	30202010	Agricultural Products & Services	HCI
30202030	Packaged Foods & Meats	HCI	30203010	Tobacco	HCI
30301010	Household Products	HCI	30302010	Personal Care Products	HCI
35101010	Health Care Equipment	HCI	35101020	Health Care Supplies	HCI
35102010	Health Care Distributors	HCI	35102015	Health Care Services	LCI
35102020	Health Care Facilities	LCI	35102030	Managed Health Care	LCI
35103010	Health Care Technology	LCI	35201010	Biotechnology	LCI
35202010	Pharmaceuticals	HCI	35203010	Life Sciences Tools & Services	HCI

GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector <sup>19</sup>	GICS Sub-Industry Code	GICS Sub-Industry Name	Climate Impact Sector
40101010	Diversified Banks	LCI	40101015	Regional Banks	LCI
40201020	Diversified Financial Services	LCI	40201030	Multi-Sector Holdings	LCI
40201040	Specialized Finance	LCI	40201050	Commercial & Residential Mortgage Finance	LCI
40201060	Transaction & Payment Processing Services	LCI	40202010	Consumer Finance	LCI
40203010	Asset Management & Custody Banks	LCI	40203020	Investment Banking & Brokerage	LCI
40203030	Diversified Capital Markets	LCI	40203040	Financial Exchanges & Data	LCI
40204010	Mortgage REITs	LCI	40301010	Insurance Brokers	LCI
40301020	Life & Health Insurance	LCI	40301030	Multi-line Insurance	LCI
40301040	Property & Casualty Insurance	LCI	40301050	Reinsurance	LCI
45102010	IT Consulting & Other Services	LCI	45102030	Internet Services & Infrastructure	LCI
45103010	Application Software	LCI	45103020	Systems Software	LCI
45201020	Communications Equipment	HCI	45202030	Technology Hardware, Storage & Peripherals	HCI
45203010	Electronic Equipment & Instruments	HCI	45203015	Electronic Components	HCI
45203020	Electronic Manufacturing Services	HCI	45203030	Technology Distributors	HCI
45301010	Semiconductor Materials & Equipment	HCI	45301020	Semiconductors	HCI
50101010	Alternative Carriers	LCI	50101020	Integrated Telecommunication Services	LCI
50102010	Wireless Telecommunication Services	LCI	50201010	Advertising	LCI
50201020	Broadcasting	LCI	50201030	Cable & Satellite	LCI
50201040	Publishing	LCI	50202010	Movies & Entertainment	LCI
50202020	Interactive Home Entertainment	LCI	50203010	Interactive Media & Services	LCI
55101010	Electric Utilities	HCI	55102010	Gas Utilities	HCI
55103010	Multi-Utilities	HCI	55104010	Water Utilities	HCI
55105010	Independent Power Producers & Energy Traders	HCI	55105020	Renewable Electricity	HCI
60101010	Diversified REITs	HCI	60102510	Industrial REITs	HCI
60103010	Hotel & Resort REITs	HCI	60104010	Office REITs	HCI

<b>GICS Sub-Industry Code</b>	<b>GICS Sub-Industry Name</b>	<b>Climate Impact Sector<sup>19</sup></b>	<b>GICS Sub-Industry Code</b>	<b>GICS Sub-Industry Name</b>	<b>Climate Impact Sector</b>
60105010	Health Care REITs	HCI	60106010	Multi-Family Residential REITs	HCI
60106020	Single-Family Residential REITs	HCI	60107010	Retail REITs	HCI
60108010	Other Specialized REITs	HCI	60108020	Self-Storage REITs	HCI
60108030	Telecom Tower REITs	HCI	60108040	Timber REITs	HCI
60108050	Data Center REITs	HCI	60201010	Diversified Real Estate Activities	HCI
60201020	Real Estate Operating Companies	HCI	60201030	Real Estate Development	HCI
60201040	Real Estate Services	HCI			

## Appendix IV: Determining $W_{t_d, universe}^{recalculated}$

Both the assessment of quantitative significance of changes in the emissions calculation methodology (section 5.1) and the default approach to decarbonization trajectory adjustments (section 5.2) rely on  $W_{t_d, universe}^{recalculated}$ . This value is the emissions intensity of the Investable Universe of the Index, for a historical point in time (Decarbonization Start Date  $t_d$ ), but recalculated with the most recent emissions calculation/estimation methodology.

This appendix provides more details on how  $W_{t_d, universe}^{recalculated}$  is determined:<sup>20</sup>

- For each security in the Investable Universe as of the Decarbonization Start Date, the Historically Available Scope 3 Year is determined as the value of CARBON\_EMISSIONS\_SCOPE\_3\_ESTIMATES\_YEAR that was available at the Decarbonization Start Date. In case no value for CARBON\_EMISSIONS\_SCOPE\_3\_ESTIMATES\_YEAR was available for the security, the corresponding year for scope 1 and 2 emissions (CARBON\_EMISSIONS\_YEAR) is used as a proxy.
- For each security, the Recalculated Scope 3 Emissions for the relevant Historically Available Scope 3 Year are sourced from the Scope 3 GHG emissions timeseries data that is calculated based on the most recent Scope 3 methodology (CARBON\_EMISSIONS\_SCOPE\_3\_TOTAL\_TS). In case the Historically Available Scope 3 Year is prior to 2019, the 2019 value of CARBON\_EMISSIONS\_SCOPE\_3\_TOTAL\_TS is used as a proxy since the timeseries data is available only from 2019.
- The carbon intensity for each security is calculated as specified in the Index methodology, replacing the Scope 3 Emissions by the Recalculated Scope 3 Emissions, and keeping all other inputs (in particular, Scope 1 and 2 emissions and EVIC) unchanged.<sup>21</sup>
- $W_{t_d, universe}^{recalculated}$  is the weighted average of the security-level carbon intensities determined in the previous step, using the historical constituent weights of the Investable Universe as of the Decarbonization Start Date.

<sup>20</sup> Some Indexes may apply a custom treatment. Where this is the case, details of the treatment are provided in the respective Index methodology books.

<sup>21</sup> In case of potential future changes to the Scope 1 and/or Scope 2 estimation methodology, where historical timeseries data calculated based on the most recent methodology is provided, such timeseries data would also be used for Scope 1 and/or Scope 2 emissions, correspondingly.

## Appendix V: Example of a decarbonization trajectory adjustment

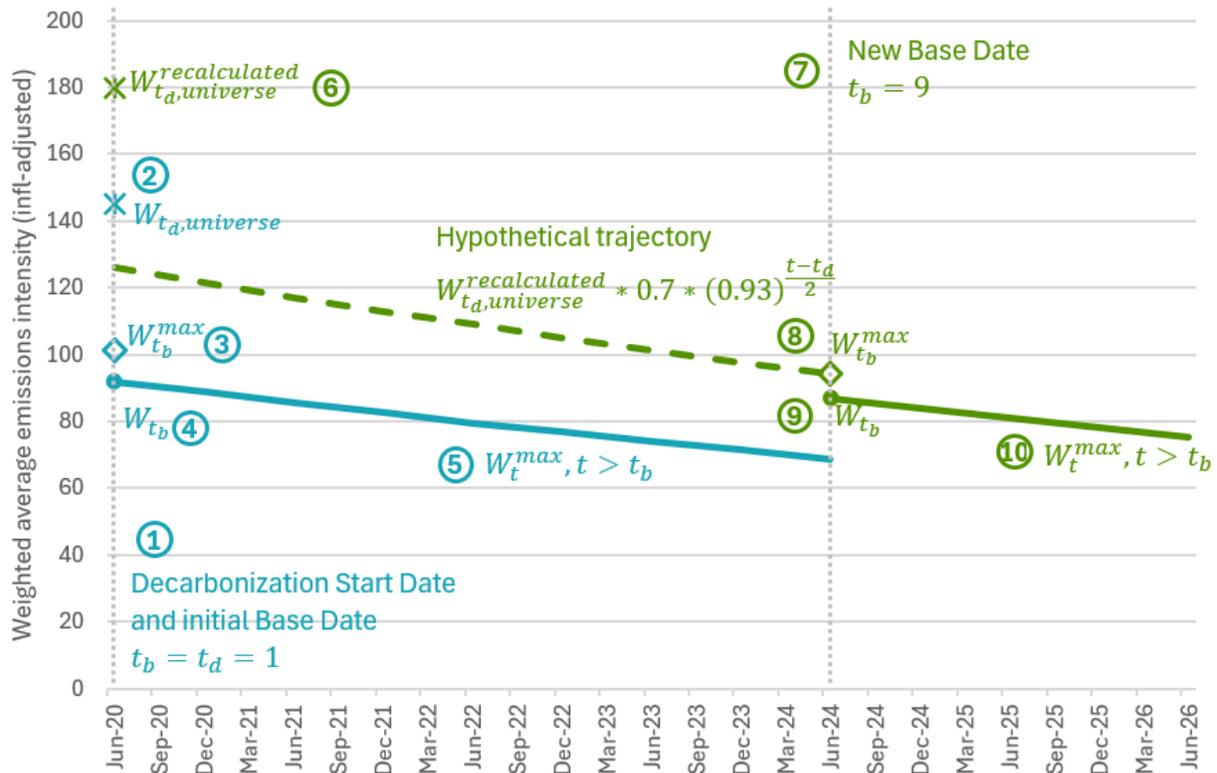
This section illustrates the approach to changes in Base Dates and decarbonization trajectory adjustments explained in section 5.

This illustration is based on a hypothetical example of an equity CTB Index, with a baseline reduction percentage of  $R_0 = 30\%$  and a targeted average annual decarbonization of  $r = 7\%$ , starting from June 2020. Following a hypothetical change to the calculation methodology of GHG intensity in June 2024, the decarbonization trajectory of this Index would be adjusted as shown in Exhibit 1.

### Exhibit 1: Example of calculation steps for decarbonization trajectory adjustment

Index Review Date	$t$	$t_d$	$t_b$	$W_{t_d,universe}$	$W_{t_b}^{max}$	$W_{t_b}$	$W_t^{max}, t > t_b$	Average EVIC	1 + EVIAF
Jun-20	1	1	1	145	101.5	92.0	<sup>-22</sup>	93.1	1.000
Dec-20	2	1	1	145	101.5	92.0	88.7	94.1	1.011
Jun-21	3	1	1	145	101.5	92.0	85.6	95.9	1.030
Dec-21	4	1	1	145	101.5	92.0	82.5	95.0	1.020
Jun-22	5	1	1	145	101.5	92.0	79.6	95.1	1.021
Dec-22	6	1	1	145	101.5	92.0	76.7	97.8	1.050
Jun-23	7	1	1	145	101.5	92.0	74.0	102.4	1.100
Dec-23	8	1	1	145	101.5	92.0	71.4	100.6	1.081
Jun-24	9	1	9	180	94.3	87.0	<sup>-22</sup>	101.5	1.090
Dec-24	10	1	9	180	94.3	87.0	83.9	102.5	1.101
Jun-25	11	1	9	180	94.3	87.0	80.9	102.4	1.100
Dec-25	12	1	9	180	94.3	87.0	78.0	102.1	1.097
Jun-26	13	1	9	180	94.3	87.0	75.2	103.4	1.111

<sup>22</sup> For Base Dates  $t = t_b$ , the Decarbonization Constraint is  $W_{t_b}^{max}$  as specified separately in the corresponding column. Equation (4.1), which determines  $W_t^{max}$  for  $t > t_b$ , is not applicable on the Base Date  $t = t_b$ , since it requires knowledge of  $W_{t_b}$ .



The elements 1-5, highlighted in turquoise, are determined at the Decarbonization Start Date  $t_d = 1$  (which is also the initial Base Date  $t_b = 1$  of the Index). The elements 6-10, highlighted in green, are determined at the new Base Date  $t_b = 9$  when the decarbonization trajectory is adjusted. The solid lines (elements 5 and 10) indicate the resulting Decarbonization Constraint  $W_t^{max}$  for the Index for subsequent Index Reviews  $t > t_b$ .

Additional explanations of the calculation steps:

1. The Decarbonization Start Date  $t_d$  is fixed at June 2020 ( $t_d = 1$ ). Initially, the Base Date  $t_b$  is June 2020 (so likewise  $t_b = 1$ ).
2. The GHG emissions intensity of the Investable Universe  $W_{t_d, universe}$  is calculated using the methodology in place at  $t_d = 1$ , resulting in a value of  $W_{t_d, universe} = 145$
3. The Decarbonization Constraint  $W_{t_b}^{max}$  for the initial Base Date  $t_b = 1$  is determined using equation (4.2). Since  $t_b = t_d$ , the resulting Decarbonization Constraint only reflects the baseline emissions reduction of  $R_0 = 30\%$  compared to the Investable Universe, i.e. for  $t_b = 1$ ,  

$$W_{t_b}^{max} = (1 - R_0) * W_{t_d, universe} = 0.7 * W_{t_d, universe} = 101.5$$
4. The Base GHG Intensity  $W_{t_b}$  is the GHG intensity for the Index derived from the Index Review for the Base Date  $t_b = 1$ , under the Decarbonization Constraint  $W_{t_b}^{max}$  determined in the previous step. This may result in  $W_{t_b} = W_{t_b}^{max}$ , but  $W_{t_b} < W_{t_b}^{max}$  is also possible if the application of different Index construction rules (such as exclusion criteria) leads to a lower Base GHG Intensity. In this example, the Base GHG Intensity is  $W_{t_b} = 92$ .

5. The Decarbonization Constraint  $W_t^{max}$  for subsequent Index Reviews ( $t = 2 \dots 8$ ) is determined using equation (4.1), in a geometric progression from the Base GHG Intensity  $W_{t_b}$ .
6. Between the initial  $t_b$  (June 2020) and  $t = 9$  (June 2024), one or more GHG intensity calculation methodology changes result in a recalculated value for the weighted average GHG intensity of the Investable Universe  $W_{t_d,universe}^{recalculated} = 180$ , which differs from the previous value  $W_{t_d,universe} = 145$  by more than 20% and hence is considered significant as per section 5.1.
7. As a result of the significant change(s), for the Index Reviews effective June 2024 and following ( $t \geq 9$ ), the Base Date is set to June 2024 (i.e.  $t_b = 9$ ).
8. The Decarbonization Constraint  $W_{t_b}^{max}$  for the Index Review at the new Base Date  $t_b = 9$  is determined using equation (4.2), based on the recalculated value of  $W_{t_d,universe}$ . Since now,  $t_b > t_d$ , the resulting  $W_{t_b}^{max}$  reflects not only the baseline emissions reduction of  $R_0 = 30\%$  against the Investable Universe, but also the annual decarbonization between the Decarbonization Start Date  $t_d = 1$  and the new Base Date  $t_b = 9$ :
 
$$W_{t_b}^{max} = W_{t_d,universe}^{recalculated} * (1 - R_0) * (1 - r)^{\frac{t_b - t_d}{f}} = 180 * 0.7 * 0.93^4 = 94.3$$
9. The Base GHG Intensity  $W_{t_b}$  is recalculated on the new Base Date  $t_b = 9$ . Its new value is the inflation-adjusted GHG intensity for the Index derived from the Index Review for the new Base Date  $t_b = 9$ , under the Decarbonization Constraint  $W_{t_b}^{max}$  determined in the previous step. As in step 4, this process may result in  $W_{t_b} = W_{t_b}^{max}$  or  $W_{t_b} < W_{t_b}^{max}$ , if the application of different Index construction rules (such as exclusion criteria) leads to a lower recalculated Base GHG Intensity. In this example, the recalculated Base GHG Intensity is  $W_{t_b} = 87.0$ .
10. The Decarbonization Constraint  $W_t^{max}$  for  $t \geq 10$  is determined using equation (4.1), in a geometric progression from the new Base GHG Intensity  $W_{t_b}$  as determined on the new Base Date  $t_b = 9$ .

The Enterprise Value Inflation Adjustment Factor ( $1 + EVIAF$ ), which is applied to the security-level GHG intensities as per Appendix VII, continues to be calculated as the ratio of Average EVIC at  $t$  divided by Average EVIC at the Decarbonization Start Date  $t_d$ . It is not affected by the adjustment.

## Appendix VI: Definition of the Investable Universe

For Indexes where the Parent Index is directly based on the MSCI Global Investable Market Indexes (GIMI) methodology, the Investable Universe as referenced in Commission Delegated Regulation (EU) 2020/1818 is the Parent Index. For Indexes where the Parent Index is a “derived” index (e.g., based on an MSCI ESG, Climate, Factor or Thematic index methodology), the Investable Universe is the GIMI Parent Index of the derived index<sup>22</sup>.

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<sup>22</sup> For further details regarding Index methodologies, please refer to <https://www.msci.com/index-methodology>.

## Appendix VII: Inflation adjustment for equity Indexes

For equity Indexes, the inflation adjustment as per Article 7 (3) of Commission Delegated Regulation (EU) 2020/1818 is implemented through an Enterprise Value Inflation Adjustment Factor ( $1 + \text{EVI AF}$ ), which is applied to the security-level GHG intensities at each Index Review as per the Index methodology. This factor reflects the ratio of the equally weighted average security EVIC at a given Index Review, to the equally weighted average security EVIC at the Decarbonization Start Date.

## Appendix VIII: Changes to this Document

The following sections have been modified as of April 2025:

- Section 4: Added definition of the Decarbonization Start Date and expanded description of the decarbonization trajectory calculations to connect with the approach to changes in Base Dates and decarbonization trajectory adjustments described in section 5.
- Section 5, Appendix IV and Appendix V: Added a description of the default approach to changes in Base Dates and decarbonization trajectory adjustments for MSCI equity CTB/PAB indexes.
- Appendix VI: Added a definition of the Investable Universe
- Appendix VII: Added a description of the inflation adjustment for equity Indexes

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