

**S&P Paris-Aligned & Climate  
Transition (PACT) Indices  
*Methodology***

December 2020

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# Introduction

## Index Objective

The S&P Climate Transition Index Series and S&P Paris-Aligned Climate Index Series measure the performance of eligible equity securities from an underlying parent index selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario<sup>1</sup> at the index level. The S&P Paris-Aligned Climate Index Series encompasses all the elements of the S&P Climate Transition Index Series, but are differentiated by their additional restrictiveness and ambition, seen through their additional constraints and eligibility requirements. The indices apply exclusions based on companies' involvement in specific business activities, performance against the principles of the United Nations' Global Compact (UNGC), and involvement in relevant ESG controversies, all outlined in *Eligibility Criteria*.

## Highlights

The indices aim to meet the minimum standards for EU Climate Transition Benchmarks (EU CTBs) and EU Paris-aligned Benchmarks (EU PABs) under Regulation (EU) 2019/2089 amending Regulation (EU) 2016/1011<sup>2</sup>. The law proposes the definitions of minimum standards for the methodology of any 'EU Climate Transition' and 'EU Paris-Aligned' benchmark indices that would be aligned with the objectives of the Paris Agreement<sup>3</sup>, and addresses the risk of greenwashing. The indices also incorporate factors that seek to manage transition risk and climate change opportunities in a way that aligns them with the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures' (TCFD) 2017 *Final Report*<sup>4</sup>, covering transition risk, climate change opportunities, and, for the S&P Paris-Aligned Climate Index Series, stranded asset and physical risk.

Should a material change to the methodology be required as a consequence of any change made by the EU to the minimum standards for EU CTBs and/or EU PABs, S&P Dow Jones Indices will issue an announcement before the change is implemented (and in these circumstances, S&P Dow Jones Indices would not conduct a formal consultation). For clarity, any other methodology change will follow S&P Dow Jones Indices' standard processes, which may include a consultation.

Both index series' weighting strategies aim to minimize the difference in constituent weights to the underlying parent index. In addition, the indices incorporate a variety of specified decarbonization targets and align with certain specified criteria through the use of optimization with multiple model constraints, including:

- alignment to a 1.5°C climate scenario using Trucost's Transition Pathway Model
- reduced overall greenhouse gas (GHG expressed in CO<sub>2</sub> equivalents) emissions intensity compared to their respective underlying parent index by at least 30% and 50% for the S&P Climate Transition Index Series and S&P Paris-Aligned Climate Index Series respectively
- minimum self-decarbonization rate of GHG emissions intensity in accordance with the trajectory implied by Intergovernmental Panel on Climate Change's (IPCC) most ambitious 1.5°C scenario, equating to at least 7% GHG intensity reduction on average per annum

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<sup>1</sup> A climate scenario of 1.5°C about preindustrial levels has been deemed important by the IPCC: Masson-Delmotte, V., Zhai, P., Pörtner, H. O., Roberts, D., Skea, J., Shukla, P. R. Waterfield, T. (2018). Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C. IPCC, available at <https://www.ipcc.ch/sr15/>.

<sup>2</sup> Pursuant to Articles 19(a)(2) and 19(b)(1) of Regulation (EU) 2019/2089, Commission Delegated Regulation (EU) 2020/1818 lays down the minimum standards for EU CTBs and EU PABs <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R1818>.

<sup>3</sup> UNFCCC. (2015). The Paris Agreement: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

<sup>4</sup> Financial Stability Board's Task Force on Climate-related Financial Disclosures' (TCFD). (2017). *Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures*, available at <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf>.

- increased exposure to companies with Science Based Targets from the Science Based Target Initiative (SBTI) that are credible and consistent with the above decarbonization trajectory
- improved S&P DJI Environmental Score (further defined further below) compared to the parent index
- exposure to sectors with high impact on climate change at least equivalent to the parent index
- managed exposure to potential climate change opportunities through controlled green-to-brown revenue share in order to align with the recommendations of the TCFD
- capped exposure to non-disclosing carbon companies
- constituent-level weight capping to address liquidity and diversification

In addition to those listed above, the S&P Paris-Aligned Climate Index Series incorporates further constraints to target:

- reduced exposure to physical risks from climate change using Trucost's Physical Risk dataset
- improved exposure to potential climate change opportunities through substantially higher green-to-brown revenue share compared to the parent index
- reduced exposure to fossil fuel reserves compared to the parent index

All indices in the series feature the exclusion of companies from the underlying parent index with:

- involvement in controversial weapons and tobacco business activities
- disqualifying United Nations Global Compact (UNGC) scores
- involvement in relevant ESG controversies

In addition to those listed above, the S&P Paris-Aligned Climate Index Series incorporates the further exclusion of companies whose revenues from coal, oil, or natural gas exploration or processing activities exceed defined thresholds, and electricity generation companies that exceed a stated revenues threshold.

## Climate-Related Data

### Trucost's Transition Pathway Model

The Trucost Transition Pathway approach is based on two models: the Sectoral Decarbonization Approach ("SDA") (Krabbe, et al., 2015)<sup>5</sup>, and the Greenhouse Gas Emissions per unit of Value Added Approach ("GEVA") (Randers, 2012)<sup>6</sup>, which are both recommended by the Science Based Targets Initiative (Science Based Targets Initiative, 2019).<sup>7</sup>

The approach allows for a forward-looking perspective on likely future greenhouse gas emissions, and uses a carbon budget allocation method to allocate each company a total amount of carbon emissions per year. These allocations allow companies, as a collective, to be 1.5°C aligned provided their emissions remain within the allocation budgets.

<sup>5</sup> Krabbe, O., Linthorst, G., Blok, K., Crijns-Graus, W., van Vuuren, D., Höhne, N., Pineda, A. C. (2015). Aligning Corporate Greenhouse-Gas Emissions Targets with Climate Goals. *Nature Climate Change*.

<sup>6</sup> Randers, J. (2012). Greenhouse gas emissions per unit of value added ("GEVA") – A corporate guide to voluntary climate action. *Journal Energy Policy*.

<sup>7</sup> Science Based Targets Initiative. (2019, April). Science-Based Target Setting Manual, available at <https://sciencebasedtargets.org/wp-content/uploads/2017/04/SBTI-manual.pdf>.

The SDA approach is sector specific and is used for high emitting sectors.<sup>8</sup> The SDA uses carbon intensity based on sector specific measures of output. For example, the unit of output for iron and steel companies is “tCO<sub>2</sub> per ton crude steel”. This allows an understanding of how carbon efficient companies are per unit of output. The SDA approach also sets carbon budgets for specific sectors as a whole, which allows some sectors to decarbonize more slowly where the opportunities for decarbonization are far lower. This is allowed by setting more aggressive targets for sectors with greater scope for decarbonization.

GEVA is applied to lower emitting or heterogeneous business activities. For GEVA, the unit of output used is gross profit. Companies have diverse business activities, most of which do not have distinct transition pathways defined in climate scenarios. For these companies, the methodology applies a contraction in carbon intensity principle under which a company should make emissions reductions. This is consistent with rates required for the overall economy, but from each company’s unique base year emissions intensity.

### **Trucost’s Physical Risk Data**

Trucost’s Physical Risk data set<sup>9</sup> allows users to understand the risk and sensitivity of company assets to the physical risks of climate change. Climate modelling datasets and hazard models are overlaid with the asset locations of companies. Sensitivity analysis is carried out for each asset, to assess whether the company’s operations would be affected by each specific physical risk, based on the asset type.<sup>10</sup>

These climate modelling datasets and hazard models have been created for each specific physical risk. Physical risk is judged by a score ranging between 1 and 100. The physical risks covered are; wildfire, cold wave, heatwave, water stress, sea level rise, flood and hurricanes. The index methodology uses a composite physical risk score that is an average of all 7 physical risk indicators, weighted for company specific sensitivity to each physical risk type.

**Other Trucost Data Used:** GHG emissions, Emissions Disclosure Levels, Green-to-Brown Share, Fossil Fuel Reserves, Power Generation, and Sector Revenues.

The indices are generated and published under agreements between S&P Dow Jones Indices and Trucost.

*Please refer to Appendix I for the Trucost Methodology, and <http://www.trucost.com/> for more information on Trucost generally.*

### **Science Based Target Initiative (SBTI)**

The Science Based Targets initiative champions science-based target setting as a powerful way of boosting companies’ competitive advantage in the transition to a low-carbon economy. The initiative is a collaboration between CDP, World Resources Institute (WRI), the World Wide Fund for Nature (WWF), and the United Nations Global Compact (UNGC).

Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered “science-based” if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

*For more information on the initiative, please refer to <https://sciencebasedtargets.org/>.*

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<sup>8</sup> As referenced in section 5.7.2. of The EU Technical Expert Group on Sustainable Finance. (2019). *TEG Final Report on Climate Benchmarks and Benchmarks’ ESG Disclosures*, available at [https://ec.europa.eu/info/files/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures\\_en](https://ec.europa.eu/info/files/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures_en).

<sup>9</sup> The 2050 High Climate Scenario is used.

<sup>10</sup> Lord, R, Bullock, S, Birt, M. (2019). ‘Understanding Climate Risk at the Asset Level: The Interplay of Transition and Physical Risks’: <https://www.spglobal.com/marketintelligence/en/documents/sp-trucost-interplay-of-transition-and-physical-risk-report-05a.pdf>.

## The S&P DJI Environmental Score

The S&P DJI Environmental Score is a component of the S&P DJI ESG Score, and is built from SAM's (a part of S&P Global) 'Corporate Sustainability Assessment' (CSA). A company's S&P DJI ESG score may either be calculated from data received directly by a company completing the comprehensive assessment (together with supporting documents), or – in the absence of this – by using publicly available information. SAM uses the CSA results to then calculate the S&P DJI ESG Scores, and the Environmental Score used in the index methodology.

For more information on the CSA Process, please refer to <https://www.spglobal.com/esg/csa/>.

For more information on S&P DJI ESG Scores, please refer to the S&P DJI ESG Score Methodology.

For the purposes of ESG assessment, companies are assigned to industries defined by SAM, and the assessment is largely specific to each industry. SAM uses the Global Industry Classification Standard (GICS®) as its starting point for determining industry classification. At the industry group and sector levels, the SAM Industries<sup>11</sup> match the standard GICS classifications, but some non-standard aggregations are done at the industry level.

The indices are generated and published under agreements between S&P Dow Jones Indices and SAM.

## Supporting Documents

This methodology is meant to be read in conjunction with supporting documents providing greater detail with respect to the policies, procedures and calculations described herein. References throughout the methodology direct the reader to the relevant supporting document for further information on a specific topic. The list of the main supplemental documents for this methodology and the hyperlinks to those documents is as follows:

Supporting Document	URL
S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology	<a href="#">Equity Indices Policies &amp; Practices</a>
S&P Dow Jones Indices' Index Mathematics Methodology	<a href="#">Index Mathematics Methodology</a>
S&P Dow Jones Indices' Float Adjustment Methodology	<a href="#">Float Adjustment Methodology</a>
S&P Dow Jones Indices' Global Industry Classification Standard (GICS) Methodology	<a href="#">GICS Methodology</a>
S&P DJI ESG Score Methodology	<a href="#">S&amp;P DJI ESG Score Methodology</a>

The methodology is created by S&P Dow Jones Indices to achieve the aforementioned objective of measuring the underlying interest of each index governed by this methodology document. Any changes to or deviations from this methodology are made in the sole judgment and discretion of S&P Dow Jones Indices so that the index continues to achieve its objective.

The Benchmark Administrator for the indices under this methodology is S&P DJI Netherlands B.V.

<sup>11</sup> Please see *Appendix II* for a list of SAM Industries.

# Eligibility Criteria

## Index Universe

At each rebalancing reference date, the following indices are constructed from an Eligible Universe consisting of the constituents of an underlying index, as defined below:

S&P Climate Transition Index Series	Underlying Index
S&P 500 Climate Transition Index	S&P 500
S&P Developed ex-Korea LargeMidCap Climate Transition Index	S&P Developed ex-Korea LargeMidCap
S&P Europe LargeMidCap Climate Transition Index	S&P Europe LargeMidCap
S&P Eurozone LargeMidCap Climate Transition Index	S&P Eurozone LargeMidCap

S&P Paris-Aligned Climate Index Series	Underlying Index
S&P 500 Paris-Aligned Climate Index	S&P 500
S&P Developed ex-Korea LargeMidCap Paris-Aligned Climate Index	S&P Developed ex-Korea LargeMidCap
S&P Europe LargeMidCap Paris-Aligned Climate Index	S&P Europe LargeMidCap
S&P Eurozone LargeMidCap Paris-Aligned Climate Index	S&P Eurozone LargeMidCap

For information on an underlying index, please refer to the respective index methodology, available at [www.spdji.com](http://www.spdji.com).

## Eligibility Factors

**Listing.** For the S&P Europe LargeMidCap Climate Transition Index, S&P Europe LargeMidCap Paris-Aligned Climate Index, S&P Eurozone LargeMidCap Climate Transition Index, and S&P Eurozone LargeMidCap Paris-Aligned Climate Index, constituents of the respective underlying index must be listed on an exchange in Europe or North America.

## Index Exclusions

At each rebalancing reference date, companies are excluded from the eligible universe as described below:

Exclusion Type	S&P Climate Transition	S&P Paris-Aligned Climate
Controversial Weapons	Applicable	Applicable
Tobacco	Applicable	Applicable
Low UNGC Score	Applicable	Applicable
Fossil Fuel Operations and Power Generation	Not Applicable	Applicable
Controversies: Media and Stakeholder Analysis	Applicable	Applicable

## Exclusions Based on Business Activities

As of each rebalancing reference date, companies with the following specific business activities are excluded from the eligible universe:

Sustainalytics Category of Involvement	Sustainalytics Category of Involvement Description	Sustainalytics Involvement Proxy	S&P DJI Level of Involvement Threshold
Controversial Weapons: Tailor Made and Essential	The company is involved in the core weapon system, or components/services of the core weapon system that are considered tailor-made and essential for the lethal use of the weapon.	NA	>0%
Controversial Weapons: Significant Ownership (Tailor Made and Essential)	The company is involved (as above), through corporate ownership.		≥25% Ownership of Company
Tobacco: Production	The company manufactures tobacco products.	Revenue	>0%
Tobacco: Related Products/Services	The company supplies tobacco-related products/services.		≥10%
Tobacco: Retail	The company derives revenues from the distribution and/or retail sale of tobacco products.		≥10%
Tobacco: Significant ownership (production)	The company owns 10-50 per cent of another company with involvement in manufacturing tobacco products.		≥25%
Tobacco: Significant ownership (related products/services)	The company owns 10-50 per cent of another company with involvement in supplying tobacco-related products/services.		≥25%
Tobacco: Significant ownership (retail)	The company owns 10-50 per cent of another company with involvement in the distribution and/or retail sale of tobacco products.		≥25%

These exclusions use business involvement data sets from Sustainalytics, a global leader in sustainability research and analysis, serving investors and financial institutions around the world. Companies not covered by Sustainalytics are excluded from index inclusion.

Please refer to <http://www.sustainalytics.com/> for more information.

## Exclusions Based on the United Nations Global Compact

As of each rebalancing reference date, companies with disqualifying Arabesque GC Scores, which are based on UNGC principles, are excluded from the eligible universe:

- **Low UNGC Score.**
  - Arabesque's S-Ray™ universe is used to assess very poor performers in relation to their alignment with United Nations Global Compact Principles.
  - The global S-Ray™ universe is ranked according to GC Score. All companies at or below the bottom 5% of the GC score universe globally are ineligible.
  - The reference date for S-Ray™ GC scores is the last business day of March.

UNGC information is provided by Arabesque S-Ray®, a global sustainability data provider. S-Ray combines big data on company-reported information, daily news and NGO campaigns in a quantitative algorithmic approach for the calculation of the UNGC score, which is based on the normative principles of the UN Global Compact: Human Rights, Labor Rights, the Environment and Anti-Corruption.

Please refer to <https://arabesque.com/s-ray/> for more information.

## Exclusions Based on Revenue Thresholds in Fossil Fuel Operations and Power Generation

As of each rebalancing reference date, companies considered for the S&P Paris-Aligned Climate Index Series are excluded from the eligible universe if the sum of their revenues derived from the relevant Trucost sectors breach the following revenue thresholds:

Exclusion Type	Trucost Revenue Sectors	Revenue Threshold
Coal Exploration or Processing	Bituminous Coal and Lignite Surface Mining Bituminous Coal Underground Mining All Other Petroleum and Coal Products Manufacturing Pipeline Transportation	≥ 1%
Oil Exploration or Processing	All Other Petroleum and Coal Products Manufacturing Crude Petroleum and Natural Gas Extraction Drilling Oil and Gas Wells Support Activities for Oil and Gas Operations Petroleum Lubricating Oil and Grease Manufacturing Mining and Oil and Gas Field Machinery Manufacturing Tar Sands Extraction Petroleum Refineries Petrochemical Manufacturing Pipeline Transportation	≥ 10%
Natural Gas Exploration or Processing	Crude Petroleum and Natural Gas Extraction Drilling Oil and Gas Wells Support Activities for Oil and Gas Operations Mining and Oil and Gas Field Machinery Manufacturing Natural Gas Liquid Extraction Natural Gas Distribution Industrial Gas Manufacturing Pipeline Transportation	≥ 50%
Power Generation	Coal Power Generation Petroleum Power Generation Natural Gas Power Generation Biomass Power Generation	≥ 50%

These exclusions use a sector revenues dataset from Trucost.

### Controversies Monitoring: Media and Stakeholder Analysis Overlay

In addition to the above, SAM uses RepRisk, a leading provider of business intelligence on environmental, social, and governance risks, for daily filtering, screening, and analysis of controversies related to companies within the indices.

In cases where risks are presented, SAM releases a Media and Stakeholder Analysis (MSA) which includes a range of issues such as economic crime and corruption, fraud, illegal commercial practices, human rights issues, labor disputes, workplace safety, catastrophic accidents, and environmental disasters.

The Index Committee will review constituents that have been flagged by SAM's MSA to evaluate the potential impact of controversial company activities on the composition of the indices. In the event that the Index Committee decides to remove a company in question, that company would not be eligible for re-entry into the index for one full calendar year, beginning with the subsequent rebalancing.

*For more information on RepRisk, please refer to [www.reprisk.com](http://www.reprisk.com). This service is not considered a direct contribution to the index construction process.*

## **Multiple Classes of Stock**

All publicly listed multiple share class lines are eligible for index inclusion subject to meeting the eligibility criteria. For more information regarding the treatment of multiple share classes, please refer to Approach A within the Multiple Share Classes section of the S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

# Index Construction

## Constituent Selection

At each rebalancing, the eligible constituents of each underlying index are selected and form each index, subject to the optimization constraints below.

## Constituent Weighting

At each rebalancing reference date, weights are determined to minimize the sum of the squared difference between the parent weight for each constituent (i) and its optimized weight, divided by its parent weight, subject to constraints. The objective function is as follows:

$$\text{Minimize } \left( \sum \frac{(\text{Parent Weight}_i - \text{Optimized Weight}_i)^2}{\text{Parent Weight}_i} \right)$$

For the S&P Europe LargeMidCap Climate Transition Index, S&P Europe LargeMidCap Paris-Aligned Climate Index, S&P Eurozone LargeMidCap Climate Transition Index, and S&P Eurozone LargeMidCap Paris-Aligned Climate Index the underlying index used as a reference for the optimization process has the weight of stocks not listed on European or North American exchanges transferred to other eligible share class lines from the same company (if available).

## Optimization Constraints

As of each rebalancing reference date, the optimizer will seek to minimize the above objective function for each index in the series while satisfying the criteria that index constituents will have an index weight of at least 0.01%, and all applicable combinations of the below transition risk, physical risk, climate opportunities, and index construction constraints.

## Transition Risk Constraints

Constraint*	S&P Climate Transition Index Series	S&P Paris-Aligned Climate Index Series	Data Source
1.5°C Climate Scenario Transition Pathway Budget Index Alignment	$\leq 0$		Trucost
Weighted-average Carbon Intensity (WACI) Target	$\leq$ underlying WACI $\times$ 70% $\times$ Buffer**	$\leq$ underlying WACI $\times$ 50% $\times$ Buffer	Trucost
7% Decarbonization Trajectory WACI Target	$\leq$ AnchorWACI*** $\times \frac{(1-7\%)^{(q/4)}}{1+Inf} \times$ Buffer		Trucost
	where: $q$ = number of rebalances since index launch date $Inf$ = Enterprise Value Including Cash (EVIC) growth of parent index since index Anchor Date <sup>12</sup> .		
Weight of Eligible Science Based Targets Companies	$\geq 120\% \times$ weight of group in underlying index		Trucost / Science Based Targets Initiative
Weighted-average S&P DJI Environmental Score (waE)	$\geq$ of eligible waE	$\geq$ eligible waE + (20% $\times$ (max E score in eligible - eligible waE))	SAM – S&P DJI
High Climate Impact Sectors Revenue Proportion (HCISRP)	$\geq$ HCISRP of underlying index		Trucost
Weight of Non-Disclosing Carbon Companies	$\leq 110\% \times$ weight in underlying index		Trucost
Fossil Fuel Reserves (FFR)	$\leq$ FFR of underlying index	$\leq 20\% \times$ FFR of underlying index	Trucost

\* Constraints are defined in *Constraint-Related Definitions* below.

\*\* Where Buffer = 95% to represent a 5% margin to allow for drift between targeted and realized WACI.

\*\*\* WACI of index on the index's Anchor Date. Prior to launch date, the 7% Decarbonization Trajectory WACI Target was reset to the index Anchor Date. Prior to launch, the 7% decarbonization Trajectory WACI Target was calculated based on the index Inception Date.

## Physical Risk Constraints

Constraint	S&P Climate Transition Index Series	S&P Paris-Aligned Climate Index Series	Data Source
Weighted-average Physical Risk Score (waPR)	$\leq$ waPR of underlying index	$\leq 90\% \times$ waPR of underlying index	Trucost
Physical Risk Max Stock Weight	$\leq A_i * \text{Parent Weight}_i$  where: $A_i = \frac{45}{PR_i - 10} - 0.5$  $PR_i$ = is the Physical Risk score of the company $i$  (This constraint is only applied to companies with a PR higher or equal to 20. See <i>Appendix III</i> .)		Trucost

## Climate Opportunities Constraint

Constraint	S&P Climate Transition Index Series	S&P Paris-Aligned Climate Index Series	Data Source
Green-to-Brown Revenue Share (GBR)	$\geq$ GBR of underlying index	$\geq 4 \times$ GBR of underlying index	Trucost

<sup>12</sup> The index 'Anchor Date' is the date of the reference index composition and base carbon intensity calculation used to determine the index's decarbonization trajectory. It is the rebalancing reference date for the most recent index rebalancing prior to the index's launch date. The index Anchor Date for the S&P PACT Indices is February 28<sup>th</sup>, 2020.

## Index Construction Constraints

S&P Climate Transition Index Series & S&P Paris-Aligned Climate Index Series	
Diversification Relative Stock Weight	± 2% from underlying index stock weight
Diversification Absolute Max Stock Weight	≤ 5%
Liquidity Max Stock Weight	$\leq \frac{\text{Hypothetical Days to Buy/Sell} \times \text{Daily Participation} \times \text{Liquidity}_i}{\text{Notional Portfolio Size}}$ <p>where:                      Hypothetical Days to Buy/Sell = 5                      Daily Participation = 10%                      Liquidity = 3-month Median Daily Value Traded of constituent <i>i</i> in euros or U.S. dollars<sup>13</sup>                      Notional Portfolio Size = 1bn in euros or U.S. dollars</p>
Minimum Stock Weight Lower Threshold	≥ 0.01%

### Constraint Relaxation Hierarchy

In the case that the optimization does not solve for a certain period each constraint in the hierarchy will be partially relaxed in the order listed below and repeated, if necessary, until a solution is found.

- Weighted-average S&P DJI Environmental Score
- Weighted-average Physical Risk Score
- Weight of Non-Disclosing Carbon Companies
- Diversification Absolute Max Stock Weight
- Diversification Relative Stock Weight
- Liquidity Max Stock Weight
- Fossil Fuel Reserves
- Physical Risk Max Stock Weight
- Green-to-Brown Revenue Share
- 1.5°C Climate Scenario Transition Pathway Budget Index Alignment

The following constraints are considered hard constraints and will not be relaxed:

- Weighted-average Carbon Intensity (WACI) Target
- 7% Decarbonization Trajectory WACI Target
- High Climate Impact Sectors Revenue Proportion
- Weight of Eligible Science Based Targets Companies

<sup>13</sup> The Europe and Eurozone PACT indices use euros to calculate liquidity. All other PACT indices use USD.

## Constraint-Related Definitions

### 1.5°C Climate Scenario Transition Pathway Budget Index Alignment

The alignment of the index<sup>14</sup> is calculated as follows:

$$\sum w_i \times \text{Winsorized TPBA}_i$$

where:

$w_i$  = weight of the company  $i$  in the index

The Transition Pathway Budget Alignment (TPBA) of each company  $i$  is calculated as the sum of the difference between a company's carbon budget and emissions (either realized or predicted) both using history and future projections. A TPBA of 0 would be compatible with a 1.5°C climate scenario, a budget below 0 would be compatible with better than a 1.5°C climate scenario and a budget above 0 would not be compatible with a 1.5°C climate scenario.

This metric is calculated using the GHG emissions data set and the 1.5°C Climate Transition Pathway Model Scenario data set provided by Trucost.

### Weighted-Average Carbon Intensity (WACI)

$$\sum w_i \times \frac{GHG1_i + GHG2_i + GHG3_i}{EVIC_i}$$

where:

$w_i$  = weight of the company  $i$  in the index

$GHG1_i$  = Scope 1 GHG emissions in tCO<sub>2</sub>e for the company  $i$

$GHG2_i$  = Scope 2 GHG emissions in tCO<sub>2</sub>e for the company  $i$

$GHG3_i$  = Scope 3 (upstream and downstream) GHG emissions in tCO<sub>2</sub>e for the company  $i$

$EVIC_i$  = enterprise value including cash of the company  $i$

This metric is calculated using the GHG emissions data set provided by Trucost.

### Eligible Science Based Targets

Eligible Science Based Targets Companies are those companies with publicly disclosed targets from the Science Based Targets Initiative (SBTI), subject to the following conditions:

1. The target is publicly disclosed and is 1.5°C aligned
2. The targets set include all scope 1, scope 2 and scope 3 (upstream and downstream) emissions
3. The company discloses their scope 1, scope 2 and scope 3 emissions sufficiently
4. Companies must show a 7% decarbonization year-on-year, for the past 3 years
5. Companies' targets must represent an annualized decarbonization rate of 7% when accounting for scopes 1, 2 and 3 (upstream and downstream) targets assuming the companies' current composition of emissions.

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<sup>14</sup> For history prior to November 2018, only the realized GHG data available at that point-in-time was used in the calculation of the Transition Pathway Budget Alignment (i.e. Predicted GHG was included from December 2018 onwards).

This metric is calculated using the GHG emissions data set and the 1.5°C Climate Transition Pathway Model Scenario data set provided by Trucost, and the register of approved science-based company targets from the SBTI.

### High Climate Impact Sectors Revenue Proportion (HCISRP)

$$\frac{\sum w_i \times \frac{HCISR_i}{EVIC_i}}{\sum w_i \times \frac{TR_i}{EVIC_i}}$$

where:

$w_i$  = weight of the company  $i$  in the index

$HCISR_i$  = revenue of the company  $i$  derived from High Climate Impact Sectors

$TR_i$  = total revenue of the company  $i$

$EVIC_i$  = enterprise value including cash of the company  $i$

High Climate Impact Sectors are defined by the follow NACE sections:

- Agriculture, Forestry and Fishing
- Mining and Quarrying
- Manufacturing
- Electricity, Gas, Steam and Air Conditioning Supply
- Water Supply; Sewerage, Waste Management and Remediation Activities
- Construction
- Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles
- Transportation and Storage
- Real Estate Activities

NACE sections have been mapped to Trucost Sectors. This metric is calculated using the sector revenues data set provided by Trucost.

*For more information on High Climate Impact Sectors, including the classification of Trucost revenue sectors as either 'high' or 'low' climate impact sectors, please refer to the [Trucost Climate Impact Sectors Classification](#).*

### Non-Disclosing Carbon Companies

Non-disclosing carbon companies are those companies identified by Trucost as having insufficiently disclosed their GHG emissions (expressed in CO<sub>2</sub> equivalents). A 'Disclosed' status is achieved when Trucost identifies companies as having full or partial disclosure in its largest GHG emissions scope in absolute emissions terms (between scope 1 and 2).

This metric is calculated using the GHG emissions disclosure level data set provided by Trucost.

### Fossil Fuel Reserves (FFR)

$$\sum w_i \times \frac{\text{Fossil Fuel Reserves}_i}{EVIC_i}$$

where:

$w_i$  = weight of the company  $i$  in the index

$Fossil\ Fuel\ Reserves_i$  = the embedded emissions (tCO<sub>2</sub>) within the fossil fuel reserves owned by company  $i$

$EVIC_i$  = enterprise value including cash of the company  $i$

This metric is calculated using the fossil fuel reserves data set provided by Trucost.

### **Green-to-Brown Revenue Share (GBR)**

$$\frac{\sum w_i \times \frac{GR_i}{EVIC_i}}{\sum w_i \times \frac{BR_i}{EVIC_i}}$$

where:

$w_i$  = weight of the company  $i$  in the index

$GR_i$  = revenue of the company  $i$  derived from Green Sectors

$BR_i$  = revenue of the company  $i$  derived from Brown Sectors

$EVIC_i$  = enterprise value including cash of the company  $i$

S&P DJI defines Green Sectors as the following Trucost Sectors:

- Nuclear Electric Power Generation
- Biomass Power Generation
- Geothermal Power Generation
- Hydroelectric Power Generation
- Solar Power Generation
- Wave & Tidal Power Generation
- Wind Power Generation

S&P DJI defines Brown Sectors as the following Trucost Sectors:

- Coal Power Generation
- Petroleum Power Generation
- Natural Gas Power Generation

This metric is calculated using the sector revenues data set provided by Trucost.

Please refer to <http://www.trucost.com/> for more information.

### **Index Calculations**

The indices are calculated by means of the divisor methodology used in all S&P Dow Jones Indices' equity indices.

*For more information on the index calculation methodology, please refer to the Non-Market Capitalization Weighted Indices and Capped Market Capitalization Weighted Indices sections, respectively, of S&P Dow Jones Indices' Index Mathematics Methodology.*

# Index Maintenance

## Rebalancing

The indices rebalance quarterly, effective after the close of the last business day of March, June, September, and December. The rebalancing reference date for each rebalance is the last trading day of the prior month. As part of the rebalancing process, constituent stock weights are updated. Weights calculated as a result of the reference date data are implemented in the indices using closing prices seven business days prior to the rebalancing effective date.

## Ongoing Maintenance

Index constituents are drawn from the underlying index or component indices. Specific changes to index constituents, such as share changes, Investable Weight Factor (IWF) changes, dividend distributions, and price adjustments, follow the policies of the underlying index.

*For more information on Share Updates, Float Adjustment, and IWFs, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology and S&P Dow Jones Indices' Float Adjustment Methodology.*

The indices are reviewed on an ongoing basis to account for corporate events such as mergers, takeovers, delistings, suspensions, spin-offs/demergers, or bankruptcies. Changes to index composition and related weight adjustments are made as soon as they are effective. These changes are typically announced prior to the implementation date.

## Quarterly Updates

Changes to a constituent's shares and IWF as a result of the quarterly updates are effective after the close on the third Friday in March, June, September, and December.

## Additions and Deletions

**Additions.** Except for spin-offs, no stocks are added to the indices between rebalance dates. Spinoffs are added to all indices where the parent security is a constituent at a zero price at the market close of the day before the ex-date (with no divisor adjustment) and are removed after at least one day of regular way trading (with a divisor adjustment).

**Deletions.** If a stock is dropped from an underlying index, it is also removed from the respective S&P Climate Transition Index Series and S&P Paris-Aligned Climate Index Series indices simultaneously. Between rebalancings, a stock can be deleted from an index due to corporate events such as mergers, takeovers, delistings, suspensions, spin-offs/demergers, or bankruptcies.

In addition, at the discretion of the Index Committee, a deletion may occur if an MSA is raised.

## Corporate Actions

For more information on Corporate Actions, please refer to the S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

## Currency of Calculation and Additional Index Return Series

The indices calculate in euros and U.S. dollars.

WM/Refinitiv foreign exchange rates are taken daily at 04:00 PM London Time and used in the end-of-day calculation of the indices. These mid-market fixings are calculated by The WM Company based on Refinitiv data and appear on Refinitiv pages WMRA.

In addition to the indices detailed in this methodology, additional return series versions of the indices may be available, including, but not limited to: currency, currency hedged, decrement, fair value, inverse, leveraged, and risk control versions. For a list of available indices, please refer to [S&P DJI's All Indices by Methodology Report](#).

For information on various index calculations, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.

For the inputs necessary to calculate certain types of indices, including decrement, dynamic hedged, fair value, and risk control indices, please refer to the Parameters documents available at [www.spdji.com](http://www.spdji.com).

## Base Dates and History Availability

Index history availability, base dates, and base values are shown in the table below.

Index	Launch Date	First Value Date	Base Date	Base Value
S&P 500 LargeMidCap Climate Transition Index	06/01/2020	12/31/2016	12/31/2016	1000
S&P 500 LargeMidCap Paris-Aligned Climate Index	06/01/2020	12/31/2016	12/31/2016	1000
S&P Developed ex-Korea LargeMidCap Climate Transition Index	06/01/2020	12/31/2016	12/31/2016	1000
S&P Developed ex-Korea LargeMidCap Paris-Aligned Climate Index	06/01/2020	12/31/2016	12/31/2016	1000
S&P Europe LargeMidCap Climate Transition Index	05/04/2020	12/31/2016	12/31/2016	1000
S&P Europe LargeMidCap Paris-Aligned Climate Index	05/04/2020	12/31/2016	12/31/2016	1000
S&P Eurozone LargeMidCap Climate Transition Index	04/20/2020	12/31/2016	12/31/2016	1000
S&P Eurozone LargeMidCap Paris-Aligned Climate Index	04/20/2020	12/31/2016	12/31/2016	1000

# Index Data

## Calculation Return Types

S&P Dow Jones Indices calculates multiple return types which vary based on the treatment of regular cash dividends. The classification of regular cash dividends is determined by S&P Dow Jones Indices.

- Price Return (PR) versions are calculated without adjustments for regular cash dividends.
- Gross Total Return (TR) versions reinvest regular cash dividends at the close on the ex-date without consideration for withholding taxes.
- Net Total Return (NTR) versions, if available, reinvest regular cash dividends at the close on the ex-date after the deduction of applicable withholding taxes.

In the event there are no regular cash dividends on the ex-date, the daily performance of all three indices will be identical.

For a complete list of indices available, please refer to the daily index levels file (“`.SDL`”).

*For more information on the classification of regular versus special cash dividends as well as the tax rates used in the calculation of net return, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.*

*For more information on the calculation of return types, please refer to S&P Dow Jones Indices' Index Mathematics Methodology.*

# Index Governance

## **Index Committee**

The indices are managed by an S&P Dow Jones Indices' Index Committee. The Index Committee meets regularly. At each meeting, the Index Committee reviews pending corporate actions that may affect index constituents, statistics comparing the composition of the index to the market, companies that are being considered as candidates for addition to the index, and any significant market events. In addition, the Index Committee may revise index policy covering rules for selecting companies, treatment of dividends, share counts or other matters.

S&P Dow Jones Indices considers information about changes to its indices and related matters to be potentially market moving and material. Therefore, all Index Committee discussions are confidential.

S&P Dow Jones Indices' Index Committees reserve the right to make exceptions when applying the methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, S&P Dow Jones Indices may publish a consultation inviting comments from external parties.

*For information on Quality Assurance and Internal Reviews of Methodology, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.*

# Index Policy

## Announcements

All index constituents are evaluated daily for data needed to calculate index levels and returns. All events affecting the daily index calculation are typically announced in advance via the Index Corporate Events report (.SDE), delivered daily to all clients. Any unusual treatment of a corporate action or short notice of an event may be communicated via email to clients.

Press releases are posted on our Web site, [www.spdji.com](http://www.spdji.com), and are released to major news services.

## Pro-forma Files

In addition to the corporate events file (.SDE), S&P Dow Jones Indices provides constituent pro-forma files each time the indices rebalance. The pro-forma file is typically provided daily in advance of the rebalancing date and contains all constituents and their corresponding weights and index shares effective for the upcoming rebalancing.

*Please visit [www.spdji.com](http://www.spdji.com) for a complete schedule of rebalancing timelines and pro-forma delivery times.*

## Holiday Schedule

The indices are calculated daily, throughout the calendar year. The only days an index is not calculated are on days when all exchanges where an index's constituents are listed are officially closed or if WM/Reuters' exchange rates services are not published.

A complete holiday schedule for the year is available at [www.spdji.com](http://www.spdji.com).

## Rebalancing

The Index Committee may change the date of a given rebalancing for reasons including market holidays occurring on or around the scheduled rebalancing date. Any such change will be announced with proper advance notice where possible.

## Unexpected Exchange Closures

For information on Unexpected Exchange Closures, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

## Recalculation Policy

For information on the recalculation policy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

*For information on Calculations and Pricing Disruptions, Expert Judgment and Data Hierarchy, please refer to S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.*

## Contact Information

For any questions regarding an index, please contact: [index\\_services@spglobal.com](mailto:index_services@spglobal.com).

# Index Dissemination

Index levels are available through S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com), major quote vendors (see codes below), numerous investment-oriented Web sites, and various print and electronic media.

## Tickers

The table below lists the headline indices covered by this document. All versions of the below indices that may exist are also covered by this document. Please refer to [S&P DJI's All Indices by Methodology Report](#) for a complete list of indices covered by this document.

Index	Return Type	Bloomberg
S&P 500 Climate Transition Index (EUR)	Price Return Total Return Net Total Return	SP50CTEP SP50CTET SP50CTEN
S&P 500 Climate Transition Index (USD)	Price Return Total Return Net Total Return	SP50CTUP SP50CTUT SP50CTUN
S&P 500 Paris-Aligned Climate Index (EUR)	Price Return Total Return Net Total Return	SP50PAEP SP50PAET SP50PAEN
S&P 500 Paris-Aligned Climate Index (USD)	Price Return Total Return Net Total Return	SP50PAUP SP50PAUT SP50PAUN
S&P Developed Ex-Korea LargeMidCap Climate Transition Index (EUR)	Price Return Total Return Net Total Return	SPDKCTEP SPDKCTET SPDKCTEN
S&P Developed Ex-Korea LargeMidCap Climate Transition Index (USD)	Price Return Total Return Net Total Return	SPDKCTUP SPDKCTUT SPDKCTUN
S&P Developed Ex-Korea LargeMidCap Paris-Aligned Climate Index (EUR)	Price Return Total Return Net Total Return	SPDPACEP SPDPACET SPDPACEN
S&P Developed Ex-Korea LargeMidCap Paris-Aligned Climate Index (USD)	Price Return Total Return Net Total Return	SPDPACUP SPDPACUT SPDPACUN
S&P Europe LargeMidCap Climate Transition Index (EUR)	Price Return Total Return Net Total Return	SPEUCTEP SPEUCTET SPEUCTEN
S&P Europe LargeMidCap Climate Transition Index (USD)	Price Return Total Return Net Total Return	SPEUCTUP SPEUCTUT SPEUCTUN
S&P Europe LargeMidCap Paris-Aligned Climate Index (EUR)	Price Return Total Return Net Total Return	SPEUPAEP SPEUPAET SPEUPAEN
S&P Europe LargeMidCap Paris-Aligned Climate Index (USD)	Price Return Total Return Net Total Return	SPEUPAUP SPEUPAUT SPEUPAUN
S&P Eurozone LargeMidCap Climate Transition Index (EUR)	Price Return Total Return Net Total Return	SPEUCTEP SPEUCTET SPEUCTEN
S&P Eurozone LargeMidCap Climate Transition Index (USD)	Price Return Total Return Net Total Return	SPEUCTUP SPEUCTUT SPEUCTUN
S&P Eurozone LargeMidCap Paris-Aligned Climate Index (EUR)	Price Return Total Return Net Total Return	SPEUPAEP SPEUPAET SPEUPAEN
S&P Eurozone LargeMidCap Paris-Aligned Climate Index (USD)	Price Return Total Return Net Total Return	SPEUPAUP SPEUPAUT SPEUPAUN

**Index Data**

Daily constituent and index level data are available via subscription.

*For product information, please contact S&P Dow Jones Indices, [www.spdji.com/contact-us](http://www.spdji.com/contact-us).*

**S&P DJI ESG and Environmental Scores Data**

Company-level S&P DJI ESG and Environmental Scores data are available via subscription.

*For product information, please contact S&P Dow Jones Indices, [www.spdji.com/contact-us](http://www.spdji.com/contact-us).*

**Website**

*For further information, please refer to S&P Dow Jones Indices' Web site at [www.spdji.com](http://www.spdji.com).*

# Appendix I

## Trucost Methodology

Trucost has analyzed the environmental performance of over 16,000 companies worldwide. Trucost's standardized greenhouse gas ("GHG") emissions data provides a proxy for carbon performance. To calculate the carbon intensity of any company included in the indices, Trucost reviews company annual reports and accounts, environmental/sustainability reports, public disclosures and corporate Web sites.

However, many companies do not disclose their environmental or carbon impacts. Where there is no public disclosure, Trucost employs its environmental profiling system. This proprietary Input-Output model maps the GHG impacts of business activities in 464 sectors. Trucost's broad coverage seeks to ensure that all non-disclosing companies are considered for index eligibility, not just those that disclose environmental information.

Six greenhouse gases (GHGs) are included in the analysis; these are all the GHGs regulated under the Kyoto protocol. Each gas has a different capacity to cause global warming. Although carbon dioxide ("CO<sub>2</sub>") is the least potent of the GHGs, it is one of the most prevalent in terms of man-made emissions. The GHGs are calculated for each company and converted into tons of carbon dioxide equivalents based on the appropriate Global Warming Potential factors. The Global Warming Potential ("GWP") index, published by the Intergovernmental Panel on Climate Change ("IPCC"), assesses the effect of the emissions of different gases over a 100-year time period, relative to the emission of an equal mass of CO<sub>2</sub>. GWP enables all the GHGs to be expressed in terms of CO<sub>2</sub> equivalents, or CO<sub>2</sub>, and is used as the basis for the analysis and for index calculation.

Quantities of greenhouse gas emissions are, then, normalized by sales to calculate the company's carbon footprint, or "carbon intensity". The smaller the carbon footprint, the less investments contribute to climate change and the lower an index's exposure to the rising costs of emitting carbon dioxide.

Trucost, a part of S&P Global, is a leader in carbon and environmental data and risk analysis and assesses risks relating to climate change, natural resource constraints, and broader environmental, social and governance factors.

*For more information please refer to <http://www.trucost.com/>.*

# Appendix II

## SAM Industries

GICS Sub-Industry	GICS Code	SAM Industry
Auto Parts & Equipment	25101010	ATX Auto Components
Tires & Rubber	25101020	
Automobile Manufacturers	25102010	AUT Automobiles
Motorcycle Manufacturers	25102020	
Home Furnishings	25201020	DHP Household Durables
Household Appliances	25201040	
Housewares & Specialties	25201050	
Homebuilding	25201030	HOM Homebuilding
Consumer Electronics	25201010	LEG Leisure Equipment & Products and Consumer Electronics
Leisure Products	25202010	
Footwear	25203020	TEX Textiles, Apparel & Luxury Goods
Textiles	25203030	
Apparel, Accessories & Luxury Goods	25203010	
Specialized Consumer Services	25302020	CSV Diversified Consumer Services
Education Services	25302010	
Restaurants	25301040	REX Restaurants & Leisure Facilities
Leisure Facilities	25301030	
Hotels, Resorts & Cruise Lines	25301020	TRT Hotels, Resorts & Cruise Lines
Casinos & Gaming	25301010	CNO Casinos & Gaming
Advertising	50201010	PUB Media, Movies & Entertainment
Broadcasting	50201020	
Publishing	50201040	
Cable & Satellite	50201030	
Movies & Entertainment	50202010	
Distributors	25501010	
Internet & Direct Marketing Retail	25502020	
Department Stores	25503010	
General Merchandise Stores	25503020	
Apparel Retail	25504010	
Specialty Stores	25504040	
Automotive Retail	25504050	
Homefurnishing Retail	25504060	
Home Improvement Retail	25504030	
Computer & Electronics Retail	25504020	
Food Retail	30101030	FDR Food & Staples Retailing
Hypermarkets & Super Centers	30101040	
Drug Retail	30101010	
Food Distributors	30101020	BVG Beverages
Brewers	30201010	
Soft Drinks	30201030	
Distillers & Vintners	30201020	FOA Food Products
Agricultural Products	30202010	
Packaged Foods & Meats	30202030	TOB Tobacco
Tobacco	30203010	
Household Products	30301010	HOU Household Products
Personal Products	30302010	COS Personal Products

GICS Sub-Industry	GICS Code	SAM Industry
Oil & Gas Equipment & Services	10101020	OIE Energy Equipment & Services
Oil & Gas Drilling	10101010	
Integrated Oil & Gas	10102010	
Oil & Gas Exploration & Production	10102020	OGX Oil & Gas Upstream & Integrated
Oil & Gas Refining & Marketing	10102030	OGR Oil & Gas Refining & Marketing
Oil & Gas Storage & Transportation	10102040	PIP Oil & Gas Storage & Transportation
Coal & Consumable Fuels	10102050	COL Coal & Consumable Fuels
Regional Banks	40101015	BNK Banks
Diversified Banks	40101010	
Thriffs & Mortgage Finance	40102010	
Diversified Capital Markets	40203030	FBN Diversified Financial Services and Capital Markets
Investment Banking & Brokerage	40203020	
Asset Management & Custody Banks	40203010	
Mortgage REITs	40204010	
Financial Exchanges & Data	40203040	
Consumer Finance	40202010	
Specialized Finance	40201040	
Multi-Sector Holdings	40201030	
Other Diversified Financial Services	40201020	
Reinsurance	40301050	
Multi-line Insurance	40301030	
Property & Casualty Insurance	40301040	
Insurance Brokers	40301010	
Life & Health Insurance	40301020	
Diversified REITs	60101010	REA Real Estate
Industrial REITs	60101020	
Hotel & Resort REITs	60101030	
Office REITs	60101040	
Health Care REITs	60101050	
Residential REITs	60101060	
Retail REITs	60101070	
Specialized REITs	60101080	
Diversified Real Estate Activities	60102010	
Real Estate Operating Companies	60102020	
Real Estate Development	60102030	
Real Estate Services	60102040	
Health Care Supplies	35101020	
Health Care Equipment	35101010	HEA Health Care Providers & Services
Health Care Facilities	35102020	
Health Care Distributors	35102010	
Managed Health Care	35102030	
Health Care Services	35102015	
Health Care Technology	35103010	MTC Health Care Equipment & Supplies
Biotechnology	35201010	BTC Biotechnology
Life Sciences Tools & Services	35203010	LIF Life Sciences Tools & Services
Pharmaceuticals	35202010	DRG Pharmaceuticals
Aerospace & Defense	20101010	ARO Aerospace & Defense
Building Products	20102010	BLD Building Products
Construction & Engineering	20103010	CON Construction & Engineering
Heavy Electrical Equipment	20104020	IEQ Machinery and Electrical Equipment
Electrical Components & Equipment	20104010	ELQ Electrical Components & Equipment
Industrial Conglomerates	20105010	IDD Industrial Conglomerates
Industrial Machinery	20106020	IEQ Machinery and Electrical Equipment
Construction Machinery & Heavy Trucks	20106010	
Agricultural & Farm Machinery	20106015	
Trading Companies & Distributors	20107010	TCD Trading Companies & Distributors

GICS Sub-Industry	GICS Code	SAM Industry
Office Services & Supplies	20201060	ICS Commercial Services & Supplies
Diversified Support Services	20201070	
Commercial Printing	20201010	
Security & Alarm Services	20201080	
Environmental & Facilities Services	20201050	
Research & Consulting Services	20202020	PRO Professional Services
Human Resource & Employment Services	20202010	
Airlines	20302010	AIR Airlines
Air Freight & Logistics	20301010	TRA Transportation and Transportation Infrastructure
Marine	20303010	
Railroads	20304010	
Trucking	20304020	
Airport Services	20305010	
Highways & Railtracks	20305020	
Marine Ports & Services	20305030	
Semiconductors	45301020	SEM Semiconductors & Semiconductor Equipment
Semiconductor Equipment	45301010	
Data Processing & Outsourced Services	45102020	TSV IT services
Internet Services & Infrastructure	45102030	
IT Consulting & Other Services	45102010	
Systems Software	45103020	SOF Software
Application Software	45103010	
Interactive Media & Services	50203010	IMS Interactive Media, Services & Home Entertainment
Interactive Home Entertainment	50202020	
Communications Equipment	45201020	CMT Communications Equipment
Electronic Components	45203015	ITC Electronic Equipment, Instruments & Components
Technology Distributors	45203030	
Electronic Manufacturing Services	45203020	
Electronic Equipment & Instruments	45203010	
Technology Hardware, Storage & Peripherals	45202030	THQ Computers & Peripherals and Office Electronics
Commodity Chemicals	15101010	CHM Chemicals
Specialty Chemicals	15101050	
Fertilizers & Agricultural Chemicals	15101030	
Industrial Gases	15101040	
Diversified Chemicals	15101020	
Construction Materials	15102010	
Paper Packaging	15103020	CTR Containers & Packaging
Metal & Glass Containers	15103010	
Gold	15104030	MNX Metals & Mining
Steel	15104050	STL Steel
Aluminum	15104010	ALU Aluminum
Precious Metals & Minerals	15104040	MNX Metals & Mining
Diversified Metals & Mining	15104020	
Copper	15104025	
Silver	15104045	
Paper Products	15105020	FRP Paper & Forest Products
Forest Products	15105010	
Alternative Carriers	50101010	TLS Telecommunication Services
Integrated Telecommunication Services	50101020	
Wireless Telecommunication Services	50102010	
Gas Utilities	55102010	GAS Gas Utilities
Electric Utilities	55101010	ELC Electric Utilities
Independent Power Producers & Energy Traders	55105010	
Renewable Electricity	55105020	
Multi-Utilities	55103010	
Water Utilities	55104010	MUW Multi and Water Utilities

# Appendix III

## Physical Risk Max Stock Weight Constraint

This constraint is designed to avoid excessively overweighting companies with high physical risk score. This constraint is only applied to companies that have a Physical Risk Score higher than 20. The constraint is applied in proportion to the weight in the parent index.

$$\text{Strategy Weight}_i \leq A_i * \text{Parent Weight}_i$$

where:

$$A_i = \frac{45}{\text{Physical Risk Score}_i - 10} - 0.5$$

For example, if a company has a Physical Score of 30 and a weight in the parent of 2%, the maximal allowed weight in the S&P Paris-Aligned Climate Index Series strategy is  $2\% * 1.75 = 3.5\%$ . If instead its Physical Risk Score were 70 the maximum allowed weight would be  $2\% * 0.25 = 0.5\%$ .

Physical Risk Score	A	Physical Risk Score	A	Physical Risk Score	A	Physical Risk Score	A
20	4.000	40	1.000	60	0.400	80	0.143
21	3.591	41	0.952	61	0.382	81	0.134
22	3.250	42	0.906	62	0.365	82	0.125
23	2.962	43	0.864	63	0.349	83	0.116
24	2.714	44	0.824	64	0.333	84	0.108
25	2.500	45	0.786	65	0.318	85	0.100
26	2.313	46	0.750	66	0.304	86	0.092
27	2.147	47	0.716	67	0.289	87	0.084
28	2.000	48	0.684	68	0.276	88	0.077
29	1.868	49	0.654	69	0.263	89	0.070
30	1.750	50	0.625	70	0.250	90	0.063
31	1.643	51	0.598	71	0.238	91	0.056
32	1.545	52	0.571	72	0.226	92	0.049
33	1.457	53	0.547	73	0.214	93	0.042
34	1.375	54	0.523	74	0.203	94	0.036
35	1.300	55	0.500	75	0.192	95	0.029
36	1.231	56	0.478	76	0.182	96	0.023
37	1.167	57	0.457	77	0.172	97	0.017
38	1.107	58	0.438	78	0.162	98	0.011
39	1.052	59	0.418	79	0.152	99	0.006
						100	0.000

The table below shows the values of the multiplier A for each Physical Risk Score rounded to the 3rd decimal point.

# Appendix IV

## EU Required ESG Disclosures

EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY <sup>15</sup>			
1.	Name of the benchmark administrator.	S&P DJI Netherlands B.V.	
2.	Underlying asset class of the ESG benchmark. <sup>16</sup>	Equity	
3.	Name of the S&P Dow Jones Indices benchmark or family of benchmarks.	<a href="#">S&amp;P Paris-Aligned &amp; Climate Transition (PACT) Index Family Benchmark Statement</a>	
4.	Do any of the indices maintained by this methodology take into account ESG factors?	Yes	
5.	If the response to (4) is “Yes” the indices stated here take into account ESG factors.	For a list of the benchmarks within this family that take in account ESG factors, please refer to the <a href="#">S&amp;P DJI Methodology &amp; Regulatory Database</a> .	
6.	Where the response to (4) is ‘Yes’, the section below lists those ESG factors that are taken into account by the ESG indices governed by the methodology, including those ESG factors listed in Annex II to Delegated Regulation (EU) 2020/1816.		
6.a	List of environmental factors considered	<b>ESG Factor<sup>17</sup></b>	<b>S&amp;P DJI ESG Factor</b>
		Exposure of the benchmark portfolio to climate-related physical risks, measuring the effects of extreme weather events on	Physical Risk Constraint: <i>Weighted-average Physical Risk Score; Physical Risk Max Stock Weight</i>
			<b>Comment</b> Weighting. For more information, please refer to the ‘ <i>Index Construction</i> ’ section of the methodology.

<sup>15</sup> The information contained in this Appendix is intended to meet the requirements of the European Union Commission Delegated Regulation (EU) 2020/1817 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the minimum content of the explanation of how environmental, social and governance factors are reflected in the benchmark methodology.

<sup>16</sup> The ‘underlying assets’ are defined in European Union Commission Delegated Regulation (EU) 2020/1816 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the explanation in the benchmark statement of how environmental, social and governance factors are reflected in each benchmark provided and published.

<sup>17</sup> ‘ESG factors’ are defined in Annex II of European Union Commission Delegated Regulation (EU) 2020/1816 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards the explanation in the benchmark statement of how environmental, social and governance factors are reflected in each benchmark provided and published.

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	companies' operations and production or on the different stages of the supply chain (based on issuer exposure) (voluntary).		
	Weighted average environmental rating of the benchmark (voluntary).	Transition Risk Constraints: <i>Weighted-average S&amp;P DJI Environmental Score</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	Degree of exposure of the portfolio to the sectors listed in Sections A to H and Section L of Annex I to Regulation (EC) No 1893/2006 of the European Parliament and of the Council as a percentage of the total weight in the portfolio.	Transition Risk Constraints: <i>High Climate Impact Sectors Revenue Proportion (HCISRP)</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	Greenhouse gas (GHG) intensity of the benchmark.	Transition Risk Constraints: <i>Weighted-average Carbon Intensity (WACI) Target; 7% Decarbonization Trajectory WACI Target</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	Percentage of GHG emissions reported versus estimated.	Transition Risk Constraints: <i>Weight of Non-Disclosing Carbon Companies</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	N/A	Transition Risk Constraints: <i>Fossil Fuel Reserves</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	N/A	Transition Risk Constraints: <i>1.5°C Climate Scenario Transition Pathway Budget Index Alignment</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	N/A	Transition Risk Constraints: <i>Eligible Science Based Targets Companies</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	N/A	Climate Opportunities Constraints: <i>Green-to-Brown Revenue Share (GBR)</i>	Weighting. For more information, please refer to the ' <i>Index Construction</i> ' section of the methodology.
	N/A	Fossil Fuel Operations and Power Generation	Exclusion. For more information, please refer to the ' <i>Eligibility Criteria</i> '

<b>EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL &amp; GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY<sup>15</sup></b>			
			section of the methodology.
	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
<b>6.b List of social factors considered.</b>	International treaties and conventions, United Nations principles or, where applicable, national law used in order to determine what constitutes a 'controversial weapon'.	Business Activities: <i>Controversial Weapons</i>	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
	Weighted average percentage of benchmark constituents in the controversial weapons sector.	Business Activities: <i>Controversial Weapons</i>	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
	Weighted average percentage of benchmark constituents in the tobacco sector.	Business Activities: <i>Tobacco</i>	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
	Number of benchmark constituents subject to social violations (absolute number and relative divided by all benchmark constituents), as referred to in international treaties and conventions, United Nations principles and, where applicable, national law.	Low UNGC Score	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
<b>6.c List of governance factors considered.</b>	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
<b>7.</b>	<b>Data and standards used.</b>		
<b>7.a</b>	<b>Data sources, verification and quality of data.</b>	<p>The data sets are defined as either:</p> <ul style="list-style-type: none"> <li>- <u>Reported</u>: All data in the dataset are provided as disclosed by companies, or as stated in the public domain.</li> <li>- <u>Modeled</u>: All data are derived using a proprietary modelling process with only proxies used in the creation of the dataset.</li> </ul>	

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	<p>- <u>Reported and Modeled</u>: The dataset is either a mix of reported and Modeled data, or is derived by the vendor using reported data/information in a proprietary scoring or determination process.</p> <p>The index methodology uses the following ESG data sets.</p>
<b>Data Source.</b>	<b>Data Set.</b>
<b>Arabesque</b> (external data source)	<p>UNGC information (Reported and Modeled) is provided by Arabesque S-Ray®, a global sustainability data provider. S-Ray combines big data on company-reported information, daily news and NGO campaigns in a quantitative algorithmic approach for the calculation of the UNGC score, which is based on the normative principles of the UN Global Compact: Human Rights, Labor Rights, the Environment and Anti-Corruption.</p> <p><i>For more information on Arabesque’s S-Ray please refer to <a href="https://arabesque.com/s-ray/">https://arabesque.com/s-ray/</a>.</i></p>
<b>Sustainalytics</b> (external data source)	<p>Business Activities (Reported and Modeled) – Product involvement data is provided by Sustainalytics, a global leader in sustainability research and analytics.</p> <p><i>For more information please refer to <a href="http://www.sustainalytics.com/">http://www.sustainalytics.com/</a>.</i></p>
<b>S&amp;P Trucost Limited</b> (external data source)	<p>This methodology uses several data sets provided by S&amp;P Trucost Limited:</p> <ul style="list-style-type: none"> <li>• Transition pathway model (Reported and Modeled)</li> <li>• Physical risk scores dataset (Reported and Modeled)</li> <li>• Greenhouse gas emissions and emissions disclosure dataset (Reported and Modeled)</li> <li>• Green-to-brown share dataset (Reported and Modeled)</li> <li>• Fossil fuel reserves (Reported and Modeled)</li> <li>• Trucost sector revenues dataset (Reported and Modeled)</li> </ul> <p><i>For more information on Trucost, please refer to Appendix I and <a href="http://www.trucost.com/">http://www.trucost.com/</a>.</i></p>
<b>SAM (part of S&amp;P Global)</b> (external data source)	<p>Media &amp; Stakeholder Analysis (Reported and Modeled) – SAM uses RepRisk, a leading provider of business intelligence on environmental, social, and governance risks, for daily filtering, screening, and analysis of controversies related to companies within the indices. In cases where risks are presented, SAM releases a Media and Stakeholder Analysis (MSA) which includes a range of issues such as economic crime and corruption, fraud, illegal commercial practices, human rights issues, labor disputes, workplace safety, catastrophic accidents, and environmental disasters. The Index Committee will review constituents that have been flagged by SAM’s MSA to evaluate the potential impact of controversial company activities on the composition of the indices. If a company is removed due to an MSA, that company is not eligible for re-entry into the index for one full calendar year, beginning with the subsequent rebalancing.</p> <p><i>For more information about SAM’s Media and Stakeholder Analysis, please refer to the MSA Methodology Guidebook, available via <a href="https://www.spglobal.com/esg/csa/csa-resources/csa-methodology">https://www.spglobal.com/esg/csa/csa-resources/csa-methodology</a>.</i></p>
<b>S&amp;P Dow Jones Indices</b> (internal data source)	<p>Environmental score (Reported and Modeled) – The S&amp;P DJI Environmental Score is a component of the S&amp;P DJI ESG Score and is built from the SAM (part of S&amp;P Global) ‘Corporate Sustainability Assessment’ (CSA). A company’s S&amp;P DJI ESG score may either be calculated from data received directly by a company completing the comprehensive assessment (together with supporting documents), or – in the absence of this – by using publicly available information. SAM uses the</p>

<b>EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL &amp; GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY<sup>15</sup></b>		
		<p>CSA results to then calculate the S&amp;P DJI ESG Scores, and the Environmental Score used in the index methodology.</p> <p><i>For more information about the S&amp;P DJI ESG scores please refer to the <a href="#">S&amp;P DJI ESG Score Methodology</a> and <a href="https://www.spglobal.com/spdji/en/landing/investment-themes/esg-scores/">https://www.spglobal.com/spdji/en/landing/investment-themes/esg-scores/</a>.</i></p>
<b>7.b</b>	<b>Reference standards and index methodology.</b>	<p>Whilst there are no specific reference standards that apply to the data, where possible, S&amp;P DJI uses international sustainability disclosure frameworks such as, SASB, GRI, UN Global Compact and the recommendations of the Financial Stability Board's Task Force for Climate-related Financial Disclosures as published in the 2017 Final Report.</p>
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