### S&P Dow Jones Indices

A Division of S&P Global

# S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index Methodology

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### Introduction

#### **Index Objective**

The S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index measures the performance of eligible equity securities from the S&P China-Hong Kong Greater Bay Area Index (the "underlying index") selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario¹ at the index level. The index seeks to exclude 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 defined in *Eligibility Criteria*.

The index aims to meet the minimum standards for EU Climate Transition Benchmarks (EU CTBs) 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.

For information on the underlying index, please refer to the S&P China Indices Methodology, available at www.spglobal.com/spdji.

#### **Highlights**

The index incorporates factors that seek to manage transition risk and climate change opportunities in a way that aligns it 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 and climate change opportunities.

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.

The index weighting strategy aims to minimize the difference in constituent weights to the underlying parent index. In addition, the index incorporates a variety of specified decarbonization targets and aligns with certain specified criteria through the use of optimization with multiple model constraints, including:

- alignment towards a 1.5°C climate scenario using the S&P Trucost Limited (Trucost) 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%

<sup>&</sup>lt;sup>1</sup> A climate scenario of 1.5°C above 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>&</sup>lt;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 <a href="https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R1818">https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020R1818</a>.

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

<sup>&</sup>lt;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 <a href="https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf">https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-2017-TCFD-Report-11052018.pdf</a>.

- 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
- 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
- exposure to sectors with high impact on climate change at least equivalent to the parent index
- decreased or equivalent exposure to fossil fuel reserve compared to the parent index
- decreased or equivalent physical risk compared 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

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

- involvement in specific business activities
- non-compliant UNGC Principles violations
- involvement in relevant ESG controversies

#### **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 GHG 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.

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

<sup>&</sup>lt;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>&</sup>lt;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>&</sup>lt;sup>7</sup> Science Based Targets Initiative. (2019, April). Science-Based Target Setting Manual, available at <a href="https://sciencebasedtargets.org/wp-content/uploads/2017/04/SBTi-manual.pdf">https://sciencebasedtargets.org/wp-content/uploads/2017/04/SBTi-manual.pdf</a>.

<sup>&</sup>lt;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 <a href="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</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 dataset<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 as follows: 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 Status, Green-to-Brown Share, Fossil Fuel Reserves, and Sector Revenues.

For information on Trucost, please refer here.

#### 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 UNGC.

Targets adopted by companies to reduce 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.

Any Trucost data with a financial year five years or more prior to the rebalancing reference date's year is considered as not covered.<sup>11</sup>

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

#### **Partnership**

The index is designed, developed and owned jointly by S&P Dow Jones Indices and the Bank of China. The index is calculated and maintained by S&P Dow Jones Indices and distributed by S&P Dow Jones Indices and the Bank of China.

#### **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:

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

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

<sup>&</sup>lt;sup>11</sup> For more details, please see *Appendix III*.

Supporting Document	URL
S&P Dow Jones Indices' Equity Indices Policies &	Equity Indices Policies & Practices
Practices Methodology	Equity maices Policies & Fractices
S&P Dow Jones Indices' Index Mathematics	Index Mathematics Methodology
Methodology	index mathematics methodology
S&P Dow Jones Indices' Float Adjustment	Float Adjustment Methodology
Methodology	Float Adjustment Methodology
S&P Dow Jones Indices' Global Industry	GICS Methodology
Classification Standard (GICS) Methodology	GICS Methodology

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.

## Eligibility Criteria

#### **Index Universe**

At each rebalancing reference date, the index universe is all constituents of the underlying index.

#### **Eligibility Factors**

**Carbon Emissions Coverage.** Companies must have GHG emissions data, as provided by Trucost.<sup>12</sup> Any Trucost data with a financial year five years or more prior to the rebalancing reference date's year is considered not covered.

#### **Exclusions Based on Business Activities**

As of each rebalancing reference date, exclude the following:

- · companies without coverage
- companies involved in the following specific business activities, at the relevant level of involvement. Revenue is used as a proxy for all categories.

S&P Global Business Involvement	SS&P Global Category of Involvement and Description	S&P DJI Level of Involvement Threshold	S&P DJI Significant Ownership Threshold
Controversial Weapons	Customized Weapons: This screen covers companies involved in the manufacturing of the components of a weapon. These components are intended solely for use in the production and are essential for the functioning of Anti-Personnel Mines, Biological and Chemical Weapons, Blinding Laser Weapons, Cluster Munitions, Depleted Uranium, Incendiary Weapons, and Nuclear Weapons.	>0%	≥25%
	<b>Production</b> : The screen covers companies that are involved in the manufacturing of tobacco	>0%	≥25%
Tobacco	Related Products and Services: The screen covers companies that supply essential products/services for the tobacco industry.	≥10%	N/A
	<b>Retail and Distribution</b> : The screen covers companies involved in the retail and/or distribution of tobacco as part of their offerings.	≥10%	N/A

Level of Involvement refers to the company's direct exposure to such products, while Significant Ownership indicates where the company has indirect involvement via some specified level of ownership of a subsidiary company with involvement.

For more information on the S&P Global Business Involvement Screens data set, please refer here.

#### **Exclusions Based on Sustainalytics' Global Standards Screening**

Sustainalytics' Global Standards Screening (GSS) provides an assessment of a company's impact on stakeholders and the extent to which a company causes, contributes, or is linked to violations of international norms and standards. The basis of the GSS assessments is the UNGC Principles. Information regarding related standards is also provided in the screening, including the Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights, as well as their underlying conventions. Sustainalytics classifies companies into the following three statuses:

<sup>&</sup>lt;sup>12</sup> The data must include all Scope 1, Scope 2, and Scope 3 (upstream and downstream) emissions.

- **Non-Compliant.** Classification given to companies that do not act in accordance with the UNGC principles and its associated standards, conventions, and treaties.
- Watchlist. Classification given to companies that are at risk of violating one or more principles, for which all dimensions for Non-Compliant status could not be established or confirmed.
- **Compliant.** Classification given to companies that act in accordance with the UNGC principles and its associated standards, conventions, and treaties.

As of each rebalancing reference date, exclude the following:

- · companies without coverage
- companies classified as Non-Compliant

Please refer to www.sustainalytics.com for more information.

#### Controversies Monitoring: Media and Stakeholder Analysis Overlay

In addition to the above, S&P Global uses RepRisk<sup>13</sup> for daily filtering, screening, and analysis of ESG risk incidents and controversial activities related to companies within the indices.

In cases where risks are presented, S&P Global 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 reviews constituents flagged by S&P Global's MSA to evaluate the potential impact of controversial company activities on the composition of the indices. If the Index Committee decides to remove a company in question, that company is ineligible for re-entry for one full calendar year, beginning with the subsequent rebalancing.

For more information on RepRisk, please refer to <u>www.reprisk.com</u>. 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.

<sup>&</sup>lt;sup>13</sup> RepRisk, an ESG data science company, leverages the combination of AI and machine learning with human intelligence to systematically analyze public information in 23 languages and identify material ESG risks. With daily data updates across 100+ ESG risk factors, RepRisk provides consistent, timely, and actionable data for risk management and ESG integration across a company's operations, business relationships, and investments.

### **Index Construction**

#### **Constituent Selection**

At each rebalancing, select all eligible companies in the index universe, 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:

$$\begin{split} \text{Minimize} &\left(\frac{1}{n} \sum \left[\frac{(Optimized\ Weight_i - Parent\ Weight_i)^2}{Parent\ Weight_i}\right] \\ &+ \frac{1}{k} \sum \left[\frac{(Optimized\ Sector\ Weight_i - Parent\ Sector\ Weight_i)^2}{Parent\ Sector\ Weight_i}\right] \\ &+ \frac{1}{m} \sum \left[\frac{(Optimized\ Domicile\ Weight_i - Parent\ Domicile\ Weight_i)^2}{Parent\ Domicile\ Weight_i}\right] \end{split}$$

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

#### **Optimization Constraints**

As of each rebalancing reference date, the optimizer seeks to minimize the above objective function for the index while satisfying the criteria that all index constituents have an index weight of at least 0.1% and all applicable combinations of the below transition risk, physical risk, climate opportunities, and index construction constraints.

**Table 1. Transition Risk Constraints** 

Constraint*	Index	Data Source
1.5°C Climate Scenario Transition Pathway Budget	$\leqslant$ C where: 0 $\leqslant$ C $\leqslant$ [50% × (weighted average of TPBA of underlying index)]	Trucost
Index Alignment****	For more details see Appendix II.	
Weighted-average Carbon Intensity (WACI) Target	≤ underlying WACI × 70% × Buffer**	Trucost
7% Decarbonization	$\leq$ AnchorWACI*** $\times \frac{(1-7\%)^{\wedge}(q/4)}{1+Inf} \times$ Buffer where:	
Trajectory WACI Target	q = number of rebalances since index launch date  Inf = Enterprise Value Including Cash (EVIC) growth of the parent index since the index's Anchor Date <sup>14</sup>	Trucost
Weight of Eligible Science Based Targets Companies	≥ 120% × weight of group in underlying index	Trucost / Science Based Targets Initiative

<sup>14</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. Please see *Appendix IV* for more details.

Constraint*	Index	Data Source	
High Climate Impact			
Sectors Revenue	≥ HCISRP of underlying index	Trucost	
Proportion (HCISRP)			
Weight of Non-Disclosing	< 1100/ v weight in underlying index	Trucost	
Carbon Companies	≤ 110% × weight in underlying index	Trucost	
Fossil Fuel Reserves (FFR) ≤ FFR of underlying index		Trucost	

<sup>\*</sup> Constraints are defined in Constraint-Related Definitions below.

#### **Table 2. Physical Risk Constraints**

Constraint	Index	Data Source
Weighted-average Physical Risk Score (waPR)*	≤ waPR of underlying index	Trucost
	$\leq A_i * Parent Weight_i$	
	where:	
	$A_i = \rho * \frac{PR_i - 100}{PR_i - 10}$	
Physical Risk Max	$PR_i$ = is the Physical Risk score of the company $i$	Trucost
Company Weight	$\rho = \frac{Physical\ Risk\ Score\ 95th\ percentile-10}{Physical\ Risk\ Score\ 95th\ percentile-100}$	110031
	Physical Risk Score 95th percentile — 100	
	See Appendix I for more details. (This constraint is only applied	
	to companies with a PR such that $A_i \le 4$ and a Physical Risk	
	Score higher than 10)	

<sup>\*</sup> For details about treatment of companies without Physical Risk Score, please see Appendix III.

#### **Table 3. Climate Opportunities Constraint**

Constraint	Index	Data Source
Green-to-Brown Revenue Share (GBR)*	≥ GBR of underlying index	Trucost

<sup>\*</sup> For details about treatment of companies without Physical Risk Score, please see Appendix III.

#### **Table 4. Index Construction Constraints**

Constraint		Index	
Diversification Relative Company Weight	± 2% from underlying index company weight		
Diversification Absolute Max Company Weight	≤ max(5%, underlying company weight)		
	Hypothetical Days t	to Buy/Sell $\times$ Daily Participation $\times$ Liquidity <sub>i</sub>	
	≤ Notional Portfolio Size		
	where:		
Liquidity Max Stock Weight	Hypothetical Days to Buy/Sell = 5		
	Daily Participation	= 10%	
	Liquidity	= 3-month Median Daily Value Traded	
	Notional Portfolio Size	= US \$1 billion	
Minimum Stock Weight	Existing constituents: ≥ 0.1% <sup>15</sup>		
Lower Threshold	New constituents: ≥ max(0.1%	, min(0.5%,0.5 × underlying stock weight))	

<sup>15</sup> Constraints relating to existing constituents do not apply to the historical rebalancing on the index 'Anchor Date'. For more information on the Anchor Date, please refer to Appendix IV.

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

<sup>\*\*\*</sup> 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.

<sup>\*\*\*\*</sup> For details on the treatment of companies without Transition Pathway Alignment, Sector Revenues, or Fossil Fuel Reserves, please see *Appendix III*.

#### **Constraint Relaxation Hierarchy**

If the optimization fails to find a solution, the optimizer partially relaxes each constraint in the order listed below, and repeats, if necessary, until a solution is found. In each attempt at optimization the constraints are further relaxed in the stated order, however, the Index Committee may revise the order of relaxation hierarchy if a particular constraint prevents the optimizer from finding a solution.

- Weighted-average Physical Risk Score
- Weight of Non-Disclosing Carbon Companies
- Diversification Absolute Max Company Weight
- Diversification Relative Company Weight
- Liquidity Max Stock Weight
- Fossil Fuel Reserves
- Physical Risk Max Company Weight
- Green-to-Brown Revenue Share
- 1.5°C Climate Scenario Transition Pathway Budget Index Alignment
- Weight of Eligible Science Based Targets Companies

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

#### **Constraint-Related Definitions**

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

The alignment of the index<sup>16</sup> is calculated as follows:

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

where:

 $w_i$  = Weight of the company i in the index  $Winsorized\ TPBA_i$  = max (2.5 percentile of the TPBA of underlying index, TPBA $_i$ )  $EVIC_i$  = Enterprise value including cash of the company i

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 dataset and the 1.5°C Climate Transition Pathway Model Scenario dataset provided by Trucost.

<sup>&</sup>lt;sup>16</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).

#### Weighted-Average Carbon Intensity (WACI)

$$\sum \mathbf{w}_i \times \frac{\mathsf{GHG1}_i + \mathsf{GHG2}_i + \mathsf{GHG3}_i}{\mathsf{EVIC}_i}$$

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

 $GHG3_i$  = Scope 3 (upstream and downstream) GHG emissions<sup>17</sup> 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 dataset 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
- 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 three 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.

This metric is calculated using the GHG emissions dataset and the 1.5°C Climate Transition Pathway Model Scenario dataset 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

<sup>17</sup> For history prior to the Anchor Date, only scopes 1 and 2 were used in the WACI calculation. Beginning with the Anchor Date, Scopes 1, 2, and 3 emissions are used.

- 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 dataset 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 <u>Trucost Climate Impact Sectors</u> 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 dataset provided by Trucost.

#### Fossil Fuel Reserves (FFR)

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

where:

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

Fossil Fuel Reserves<sub>i</sub> = 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 dataset 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 calculates using the sector revenues dataset provided by Trucost.

For more information, please refer here.

#### **Index Calculations**

The index calculates 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 Indices section of S&P Dow Jones Indices' Index Mathematics Methodology.

### **Index Maintenance**

#### Rebalancing

The index rebalances quarterly, effective after the close of the third Friday of March, June, September, and December. The rebalancing reference date for each rebalance is the third Friday 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.

S&P Dow Jones Indices monitors UNGC compliance on best effort basis until the initial announcement of the rebalancing results. If a company's UNGC compliance status changes any time prior to the rebalancing results announcement and no longer qualifies for the index S&P Dow Jones Indices may, at its discretion, exclude the company in conjunction with the rebalancing.

#### **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 index is 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 additions are made intra-rebalancing.

**Spin-offs.** 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 the underlying index, it is also removed from the index 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 Non-Market Capitalization Indices section of S&P Dow Jones Indices' Equity Indices Policies & Practices Methodology.

#### **Currency of Calculation and Additional Index Return Series**

The index calculates in Hong Kong dollars (HKD), U.S. dollars (USD), and China offshore/onshore renminbi (CNH/CNY).

The index uses spot exchange rates taken at 4:17 PM Sydney Time as supplied by WMR so that closing values can be provided in local time zones.

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 the <a href="#series">S&P DJI</a>
<a href="#mailto:Methodology">Methodology & Regulatory Status Database</a>.

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 <a href="https://www.spglobal.com/spdji">www.spglobal.com/spdji</a>.

#### **Base Dates and History Availability**

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

Index	Launch	First Value	Base	Base
	Date	Date	Date	Value
S&P/BOC China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index	06/27/2022	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**

An S&P Dow Jones Indices Index Committee maintains the index. 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.

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

#### **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 <u>www.spglobal.com/spdji</u> for a complete schedule of rebalancing timelines and pro-forma delivery times.

#### **Holiday Schedule**

The index calculates 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 WMR exchange rates services are not published.

A complete holiday schedule for the year is available at <a href="www.spglobal.com/spdii">www.spglobal.com/spdii</a>.

#### 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.

### **Index Dissemination**

Index levels are available through S&P Dow Jones Indices' Web site at <a href="www.spglobal.com/spdji">www.spglobal.com/spdji</a>, major quote vendors (see codes below), numerous investment-oriented Web sites, and various print, and electronic media.

#### **Tickers**

The table below lists headline indices covered by this document. All versions of the below indices that may exist are also covered by this document. Please refer to the <a href="S&P DJI Methodology & Regulatory Status Database">S&P DJI Methodology & Regulatory Status Database</a> for a complete list of indices covered by this document.

Index (Currency)	Return Type	BBG
COR BOCHK China Hang Kang Creator Boy Area Not Zoro 2050	Price Return	SPCHGCUP
S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index (USD)	Total Return	SPCHGCUT
Climate Transition index (OSD)	Net Total Return	SPCHGCUN
COR DOCUM China Hang Kang Creater Boy Area Not Zara 2050	Price Return	SPCHGCHP
S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index (HKD)	Total Return	SPCHGCHT
Climate Transition index (FIND)	Net Total Return	SPCHGCHN
COR BOCHK China Hang Kang Creator Boy Area Not Zoro 2050	Price Return	SPCHGCNP
S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index (CNH)	Total Return	SPCHGCNT
Climate transition index (CNH)	Net Total Return	SPCHGCNN
COR BOCHK China Hang Kang Creator Boy Area Not Zoro 2050	Price Return	SPCHGCCP
S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index (CNY)	Total Return	SPCHGCCT
Climate transition muex (CNT)	Net Total Return	SPCHGCCN

#### **Index Data**

Daily constituent and index level data are available via subscription.

For product information, please contact S&P Dow Jones Indices, <a href="www.spglobal.com/spdji/en/contact-us">www.spglobal.com/spdji/en/contact-us</a>.

#### Website

For further information, please refer to S&P Dow Jones Indices' Web site at www.spglobal.com/spdji.

## Appendix I

#### **Physical Risk Max Stock Weight Constraint**

This constraint is designed to avoid excessively overweighting companies with high physical risk score. The constraint is applied in proportion to the weight in the parent index.

 $Strategy\ Weight_i \leq A_i * Parent\ Weight_i$ 

#### where:

$$\begin{split} A_i &= \rho * \frac{\textit{Physical Risk Score}_{i} - 100}{\textit{Physical Risk Score}_{i} - 10}, \\ \text{and } \rho &= \frac{\textit{Physical Risk Score 95th percentile} - 10}{\textit{Physical Risk Score 95th percentile} - 100} \end{split}$$

where *Physical Risk Score* 95th percentile is the Physical Risk Score value greater that the 95% of the parent index.

This constraint is only applied to companies that have a Physical Risk Score higher than 10 and such that  $A_i \le 4$ .

Any stock with Physical Risk value greater than Physical Risk Score 95th percentile cannot have a weight greater than its parent index weight ( $A_i \le 1$ ). If the Physical Risk score is 100,  $A_i$  will be zero.

For example, for the indices where the 95<sup>th</sup> percentile Physical risk value for the stocks in the universe is 40, 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 Climate Transition Index Series 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%.

The following table shows the values of the multiplier A for each Physical Risk Score rounded to the third decimal point, for when the 95<sup>th</sup> percentile Physical risk value for the stocks in the universe is 40.

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

Physical Risk Score	A	Physical Risk Score	A	Physical Risk Score	A	Physical Risk Score	A
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

## Appendix II

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

For the indices where the 1.5°C Climate Scenario Transition Pathway Budget Index Alignment constraint is not zero, the value of C is used as the constraint.

At each rebalancing reference date, C is defined as the Transition Pathway Budget Alignment (TPBA)<sup>18</sup> of a specific underlying index stock that represents where the sum of Absolute Transition Pathway Budget Contributions for stocks with a TPBA below C is closest to 5% of the sum of Absolute Transition Pathway Budget Contributions for stocks with a TPBA above C.

The following steps describe the calculation of C in more detail:

- 1. Sort stocks by their TPBA values in ascending order (see *Table 7*).
- 2. Calculate the 'Transition Pathway Budget Contribution' for all stocks in the universe, by multiplying their TPBA by their weight in the underlying index as at the rebalancing reference date.
- 3. For each stock i calculate  $(S_i)$  as the sum of Absolute Transition Pathway Budget Contributions for all the stocks with a TPBA that is lower or equal than that of stock i.
- 4. For each stock i calculate  $(T_i)$  as the sum of Absolute Transition Pathway Budget Contributions for all the stocks with a TPBA that is higher than that of stock i.
- 5. The value C is the 1.5°C Climate Scenario Transition Pathway Budget Index Alignment constraint for the index and is defined as the TPBA of the stock whose  $\frac{S_i}{T_i}$  ratio is closest to 5%. This can also be stated as the TPBA of the stock with the minimum absolute value of  $\frac{S_i}{T_i}$  ratio minus 5% ( $|\frac{S_i}{T_i} 0.05|$ ).
  - If C is less than zero, zero is used instead.
  - If C ≥ [50% × (weighted average TPBA of underlying index)] then C is set to equal [50% × (weighted average TPBA of underlying index)].

The following table illustrates an example of how to calculate the value C. The  $\frac{S_i}{T_i}$  ratio value of 0.050575 (shown in bold in second-to-last column) is the closest  $\frac{S_i}{T_i}$  ratio to 5%, just as the  $|\frac{S_i}{T_i}-0.05|$  value in that column is the lowest among all others. Therefore C will be taken to be equal to 10, as it is the Transition Pathway Budget Index Alignment constraint. It is also greater than 0 and less than half of the weighted average of the parent (40.89  $\times$  50%).

<sup>&</sup>lt;sup>18</sup> 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.

**Table 7. Transition Pathway Budget Alignment Value Calculation Example** 

Stock	Transition Pathway Budget Alignment (TPBA)	Underlying Index Weight	Transition Pathway Budget Contribution	Absolute Transition Pathway Budget Contribution	$S_i$	$T_i$	$\frac{S_i}{T_i}$	$ rac{S_i}{T_i} - 0.05 $
Stock A	-24	3%	-0.72	0.72	0.72	43.11	0.016701	0.033299
Stock B	-3	25%	-0.75	0.75	1.47	42.36	0.034703	0.015297
Stock C	4	6%	0.24	0.24	1.71	42.12	0.040598	0.009402
Stock D	10	4%	0.40	0.40	2.11	41.72	0.050575	0.000575
Stock E	27	9%	2.43	2.43	4.54	39.29	0.115551	0.065551
Stock F	55	19%	10.45	10.45	14.99	28.84	0.519764	0.469764
Stock G	68	21%	14.28	14.28	29.27	14.56	2.010302	1.960302
Stock H	112	13%	14.56	14.56	43.83	0	Inf	Inf
•	•	•	•	•				
TOTAL	7	100%	40.89	43.83				

# Appendix III

#### **Data Coverage Treatment**

For companies without coverage for the data points described below, values are assigned according to the following table:

Data	Value Assigned
Transition Pathway	The index's 1.5°C Climate Scenario Transition Pathway Budget Index Alignment
Physical Risk	The underlying index's Weighted-average Physical Risk Score
Green-to-Brown	0
Share	0
Fossil Fuel	0
Reserves	U
Sector Revenues	0
S&P DJI ESG	The underlying index's waESG after excluding companies without an S&P DJI ESG Score
Score	from the calculation

## Appendix IV

#### **Index Anchor Date of Decarbonization Trajectory**

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. Prior to the index 'Anchor Date' the index 'First Value Date' is used to determine the index's decarbonization trajectory.

Index	First Value	Anchor	Launch
	Date	Date	Date
S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index	12/31/2016	02/28/2022	06/27/2022

## Appendix V

#### **Backward Data Assumption**

The index employs a "Backward Data Assumption" method for some datapoints used in the derivation of historical index membership prior to the Live Data Effective Date (defined below). The "Backward Data Assumption" method involves applying the earliest available actual live data point for an index constituent to all prior, historical instances of that constituent in the index universe.

Backward Data Assumption affects only the historical, hypothetical constituents of any index back-test. Only actual live data is ever used in live index rebalancings and in the historical rebalancing calculation of an index after its Live Data Effective Date.

For more information on S&P DJI's principles and processes for using Backward Data Assumption, please refer to the FAQ.

#### **Designated Datasets Subject to Backward Data Assumption**

The Backward Data Assumption within the historical back-test, with respect to the indices identified above, applies only to designated datasets and associated time horizons as defined below. For each designated dataset, all historical rebalancing events prior to the Live Data Reference Date listed below are subject to use of the Backward Data Assumption.

Data Provider	Designated Dataset	Live Data Reference Date	Live Data Effective Date
Trucost	Physical Risk	02/28/2020	04/01/2020

The Live Data Reference Date refers to the first rebalancing reference date from which only actual live data is used.

The Live Data Effective Date refers to the first date from which index constituents are determined solely on actual live data for each respective dataset.

Trucost Physical Risk Coverage (with respect to underlying index universe):

S&P BOCHK China Hong Kong Greater Bay Area Net Zero 2050 Climate Transition Index

Rebalancing	Underlying Index	Point-in-	-Time Data	After Using the Da	ata Assumption
Date	Stock Count	Stock Count	Index Weight	Stock Count	Index Weight
2016	306	0	0%	288	94.9%
2017	309	0	0%	288	94.5%
2018	310	0	0%	284	94.5%
2019	308	0	0%	279	94.0%
2020	311	277	91.8%	n/a	n/a

# Appendix VI

#### **Historical Back-Test Rule Deviations**

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).

For history prior to the Anchor Date, only scopes 1 and 2 were used in the WACI calculation. Beginning with the Anchor Date, Scopes 1, 2, and 3 emissions are used.

# Appendix VII

### **Methodology Changes**

Methodology changes since July 8, 2022, are as follows:

Olympia	Effective Date		dology
Exclusions Based on Business Activities:  Data Provider	(After Close) 06/21/2024	Previous Sustainalytics provides the data for exclusions based on business activities.	S&P Global provides the data for exclusions based on business activities.
Eligibility Factors:  Carbon Emissions Coverage	03/15/2024	-	Carbon Emissions Coverage: Must have GHG emissions data, as provided by Trucost. Any Trucost data with a financial year five years or more prior to the rebalancing reference date's year is considered not covered.
Rebalancing	09/18/2023	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.	The indices rebalance quarterly, effective after the close of the third Friday of March, June, September, and December. The rebalancing reference date is the third Friday of the prior month.
Constraint Relaxation Hierarchy: Weight of Eligible Science Based Targets Companies	12/30/2022	This is considered a hard constraint and will not be relaxed.	This is considered a soft constraint that can be relaxed if the optimizer cannot generate a result.
Minimum Stock Weight Lower Threshold	12/30/2022	Existing constituents: ≥ 0.01%  New constituents: ≥ max (0.01%, min (0.05%,0.5 × underlying stock weight))	Existing constituents: ≥ 0.1%  New constituents: ≥ max (0.1%, min (0.5%,0.5 × underlying stock weight))

## Appendix VIII

#### **ESG Disclosures**

EXPL	EXPLANATION OF HOW ENVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) FACTORS ARE REFLECTED IN THE KEY ELEMENTS OF THE BENCHMARK METHODOLOGY $^{19}$			
1.	Name of the benchmark administrator.	S&P DJI Netherlands B.V.		
2.	Underlying asset class of the ESG benchmark. <sup>20</sup>	Equity		
3.	Name of the S&P Dow Jones Indices benchmark or family of benchmarks.	S&P Paris-Aligned & Climate	Transition (PACT) Index Family	y Benchmark Statement
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 <u>S&amp;P DJI Methodology &amp; Regulatory Database</u> .		
6.				
		ESG Factor <sup>21</sup>	S&P DJI ESG Factor	Comment
	environmental considered	Exposure of the benchmark portfolio to climate-related physical risks, measuring the effects of extreme weather events on companies' operations and production or on the different stages of the supply chain (based on issuer exposure) (voluntary).	Physical Risk Constraints: Weighted-average Physical Risk Score; Physical Risk Max Stock Weight	Weighting. For more information, please refer to the 'Index Construction' section of the methodology.
		Degree of exposure of the portfolio to the sectors listed in Sections A to H and	Transition Risk Constraints: High Climate Impact	Weighting. For more information, please refer to the 'Index Construction'

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<sup>&</sup>lt;sup>19</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 and the retained EU law in the UK [The Benchmarks (amendment and Transitional Provision) (EU Exit) Regulations 2019].

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>&</sup>lt;sup>21</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.

	ENVIRONMENTAL, SOCIAL & HE KEY ELEMENTS OF THE BI		
· ·	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.	Sectors Revenue Proportion (HCISRP)	section of the methodology.
	Greenhouse gas (GHG) intensity of the benchmark.  Percentage of GHG	Transition Risk Constraints: Weighted-average Carbon Intensity (WACI) Target; 7% Decarbonization Trajectory WACI Target Transition Risk Constraints:	Weighting. For more information, please refer to the 'Index Construction' section of the methodology.  Weighting. For more
	emissions reported versus estimated.	Weight of Non-Disclosing Carbon Companies	information, please refer to the 'Index Construction' section of the methodology.
	N/A	Transition Risk Constraints: Fossil Fuel Reserves	Weighting. For more information, please refer to the 'Index Construction' section of the methodology.
	N/A	Transition Risk Constraints: 1.5°C Climate Scenario Transition Pathway Budget Index Alignment	Weighting. For more information, please refer to the 'Index Construction' section of the methodology.
	N/A	Transition Risk Constraints: Eligible Science Based Targets Companies	Weighting. For more information, please refer to the 'Index Construction' section of the methodology.
	N/A	Climate Opportunities Constraints: Green-to- Brown Revenue Share (GBR)	Weighting. For more information, please refer to the 'Index Construction' 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.
	International treaties and conventions, United Nations principles or, where applicable, national law used in order to determine what constitutes a 'controversial weapon'.	Business Activities: Controversial Weapons	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
6.b List of social factors considered.	Weighted average percentage of benchmark constituents in the controversial weapons sector.	Business Activities: Controversial Weapons	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: Tobacco	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	UNGC Non-Compliant Companies	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.

NATION OF HOW E	ENVIRONMENTAL, SOCIAL &	<b>GOVERNANCE (ESG) FACT</b>	ORS ARE REFLECTED IN
TH	in international treaties and conventions, United Nations principles and, where	ENCHMARK METHODOLOG	Y <sup>19</sup>
	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
overnance factors ed.	N/A	Controversies Monitoring: Media and Stakeholder Analysis	Exclusion. For more information, please refer to the 'Eligibility Criteria' section of the methodology.
Data and standards			
Data sources, verification and quality of data.	Reported: All data in stated in the public     Modeled: All data a proxies used in the Reported and Modedata or is derived by scoring or determination.	n the dataset are provided as of domain. re derived using a proprietary of creation of the dataset. eled: The dataset is either a mi by the vendor using reported dataset ation process.	modelling process with only x of reported and Modeled
Data Source.	Dataset.		
Limited (a part of S&P Global) (external data source)	<ul> <li>Transition pathway mode</li> <li>Physical risk scores data</li> <li>Greenhouse gas emission Modeled</li> <li>Green-to-brown share data</li> <li>Fossil fuel reserves (Representation on Truck</li> </ul>	el (Reported and Modeled) aset (Reported and Modeled) ons and emissions disclosure of ataset (Reported and Modeled) orted and Modeled) cost, please refer to <a href="http://www.ntp://www.ntp/">http://www.ntp/</a>	dataset (Reported and ) .trucost.com/.
S&P Global (external data source)	leading provider of business if for daily filtering, screening, a indices. In cases where risks Stakeholder Analysis (MSA) and corruption, fraud, illegal of workplace safety, catastrophic Committee will review constite evaluate the potential impact the indices. If a company is reentry into the index for one fur rebalancing.  For more information about Stothe MSA Methodology Guinhttps://www.spglobal.com/esg.  S&P Global Business Involvem business activities, products an Business Involvement Screens concern pinpointing the precise distribution, to inform values-based services of the information about S& refer to https://www.spglobal.com/	intelligence on environmental, and analysis of controversies reare presented, S&P Global relawhich includes a range of issue commercial practices, human reaccidents, and environmental uents that have been flagged to of controversial company active moved due to an MSA, that cell calendar year, beginning with a calendar year, beginning with the calendar year is and Stakel debook, available via a controversial companies are the controversial controversial controversial companies are the controversial controversial controversial controversial companies are the controversial controversial controversial companies are the controversial controversial controversial companies are the controversial controversial companies are the contr	social, and governance risks, elated to companies within the eases a Media and es such as economic crime ights issues, labor disputes, al disasters. The Index by S&P Global's MSA to vities on the composition of company is not eligible for re-the subsequent cholder Analysis, please refer codology.  Ideled) – The dataset tracks the involved in. The S&P Global of common areas of investor function to operations and
	Data sources, verification and quality of data.  Data Source. S&P Trucost Limited (a part of S&P Global) (external data source)  S&P Global (external data (external data)	in international treaties and conventions, United Nations principles and, where applicable, national law.  N/A  N/A  N/A  N/A  N/A  N/A  N/A  N/	conventions, United Nations principles and, where applicable, national law.  N/A    Controversies Monitoring: Media and Stakeholder Analysis   Media and Stakeholder Analysis

EXPL		INVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) FACTORS ARE REFLECTED IN EXCEPTION OF THE BENCHMARK METHODOLOGY <sup>19</sup>
	Sustainalytics	This methodology uses the following datasets provided by Sustainalytics, a global leader
	(external data	in sustainability research and analytics:
	source)	Global Standards Screening (Reported and Modeled)
		For more information, please refer to www.sustainalytics.com.
7.b	Verification and quality of data.	The data quality process involves regular reviews of new data received, and includes comparison with previous data, outlier and error checks and escalation of suspect data to data vendors. S&P DJI also holds regular feedback sessions with data partners and vendors to share any quality concerns and to remedy any issues that are observed during data validations performed by the Global Data Management Team. In addition, all users of third-party data perform their own review of data used in the maintenance of indices. Many of the third-party data used by S&P DJI is reviewed against secondary and tertiary data sources for cross comparison and validation. Some more thematic or specific datasets may not have a comparable data source as the used for
		comparison, but these datasets are still reviewed for internal consistency and self-comparison over time.
	Reference	Data is sourced from Trucost, which uses the following standards:
7.c	standards.	Scopes 1 and 2: the GHG Protocol Corporate Standard.
		<ul> <li>Scope 3 (upstream &amp; downstream): The Corporate Value Chain Standard, which is a supplement to the GHG Protocol specific to Scope 3.</li> </ul>
	dix latest update:	March 2024 – Changes to reflect methodology updates effective June 2024
	dix updates:	September 2023 – Added section 7c.
Append	dix first publication:	June 2022

### Disclaimer

#### Performance Disclosure/Back-Tested Data

Where applicable, S&P Dow Jones Indices and its index-related affiliates ("S&P DJI") defines various dates to assist our clients by providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the index is set to a fixed value for calculation purposes. The Launch Date designates the date when the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P DJI defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its data feed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

Please refer to the methodology for the Index for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Information presented prior to an index's launch date is hypothetical back-tested performance, not actual performance, and is based on the index methodology in effect on the launch date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. In addition, forks have not been factored into the back-test data with respect to the S&P Cryptocurrency Indices. For the S&P Cryptocurrency Top 5 & 10 Equal Weight Indices, the custody element of the methodology was not considered; the back-test history is based on the index constituents that meet the custody element as of the Launch Date. Also, the treatment of corporate actions in back-tested performance may differ from treatment for live indices due to limitations in replicating index management decisions. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results.

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