Is there a Case for Indexing in Sustainability-themed investments?

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Maya Beyhan, PhD
Global Head of Sustainability,
Index Investment Strategy

S&P Dow Jones Indices

A Division of S&P Global

S&P Indices versus Active (SPIVA®)

Performance of actively managed mutual funds versus S&P DJI benchmarks

- **Summary:**
  - **Semi-annual** report, launched in 2002
  - Analysis over **various time horizons**
  - **Global**, separate reports for the fund industries in each of U.S., Europe, Australia, Japan, Latin America, Canada, South Africa, India and MENA.
- **Key Reports:**
  - **Performance**: Percentage of active funds that beat their assigned S&P DJI benchmark
  - **Survivorship**: Accounts for entire opportunity set, not just the survivors
  - **Weighted Returns**: equal- and asset-weighted averages
- **Extensions:**
  - Persistence Scorecard: U.S., Canada, Australia, Latin America and Europe.
  - Institutional Scorecard
  - Fleeting Alpha
  - After-Tax Scorecard: U.S.
  - **Sustainability Scorecard: Europe**

Source: S&P Dow Jones Indices

SPIVA Sustainability: Comparisons of Active Funds and Indices

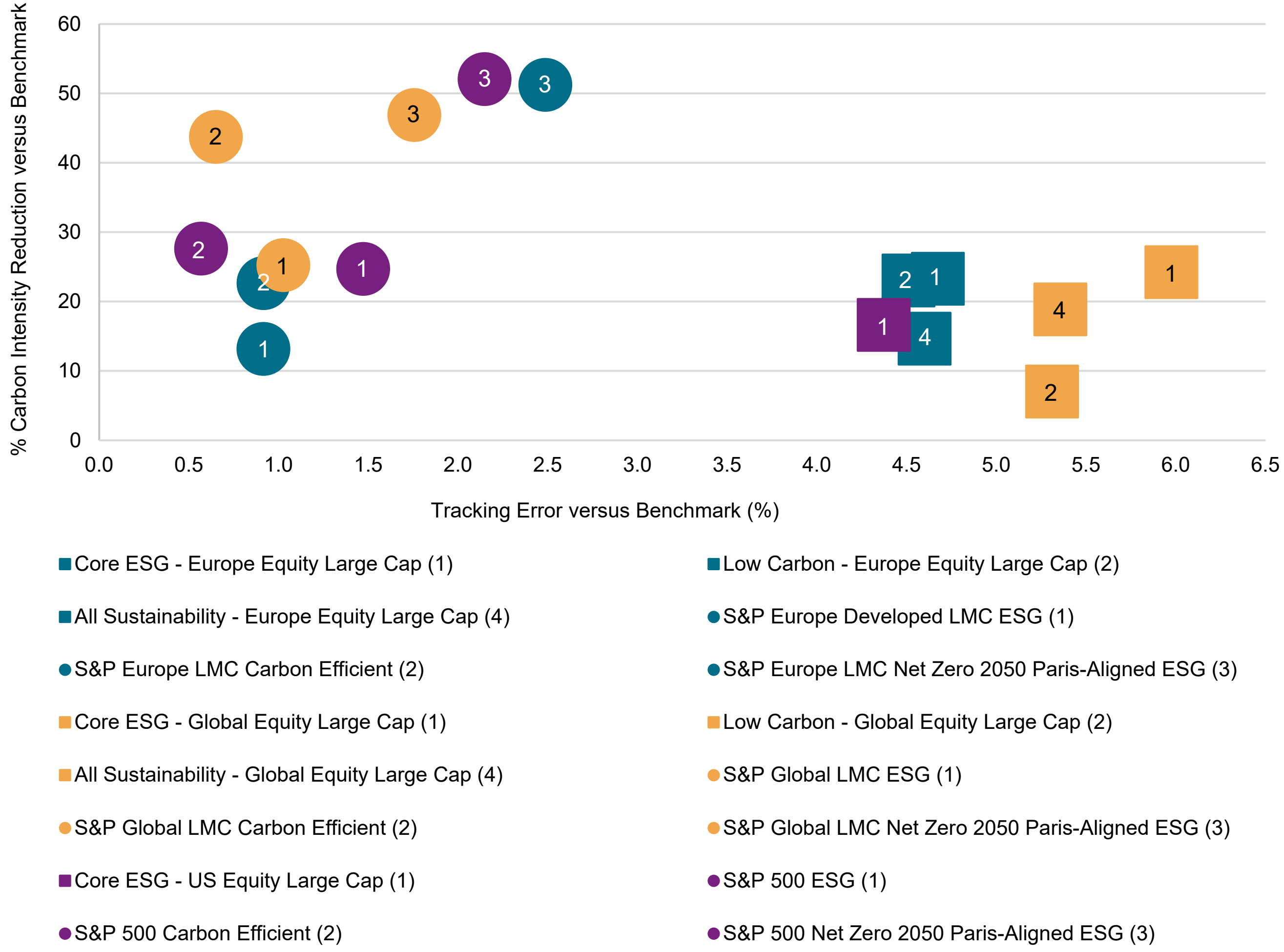
The newest addition to our SPIVA range

- Launched on **February 14th 2024**.
- This inaugural edition focuses on **Europe-domiciled** sustainability-themed active equity funds, with three broad equity investment universes: **U.S.**, **Global**, and **Europe**.

- **Research Questions:**
  1. How does the **Sustainability Profile** of actively managed sustainability funds compare against their assigned S&P DJI comparison indices?
  2. Do active sustainability funds incur **more Tracking Error (TE)** against broad equity benchmarks than their assigned S&P DJI comparison indices ?
  3. If yes, does that additional TE bring a higher return performance?

Active Managers: Similar Reductions in Carbon, but Much Higher Tracking Errors vs Benchmarks

Carbon Intensity Reduction versus Tracking Error Relative to Benchmarks

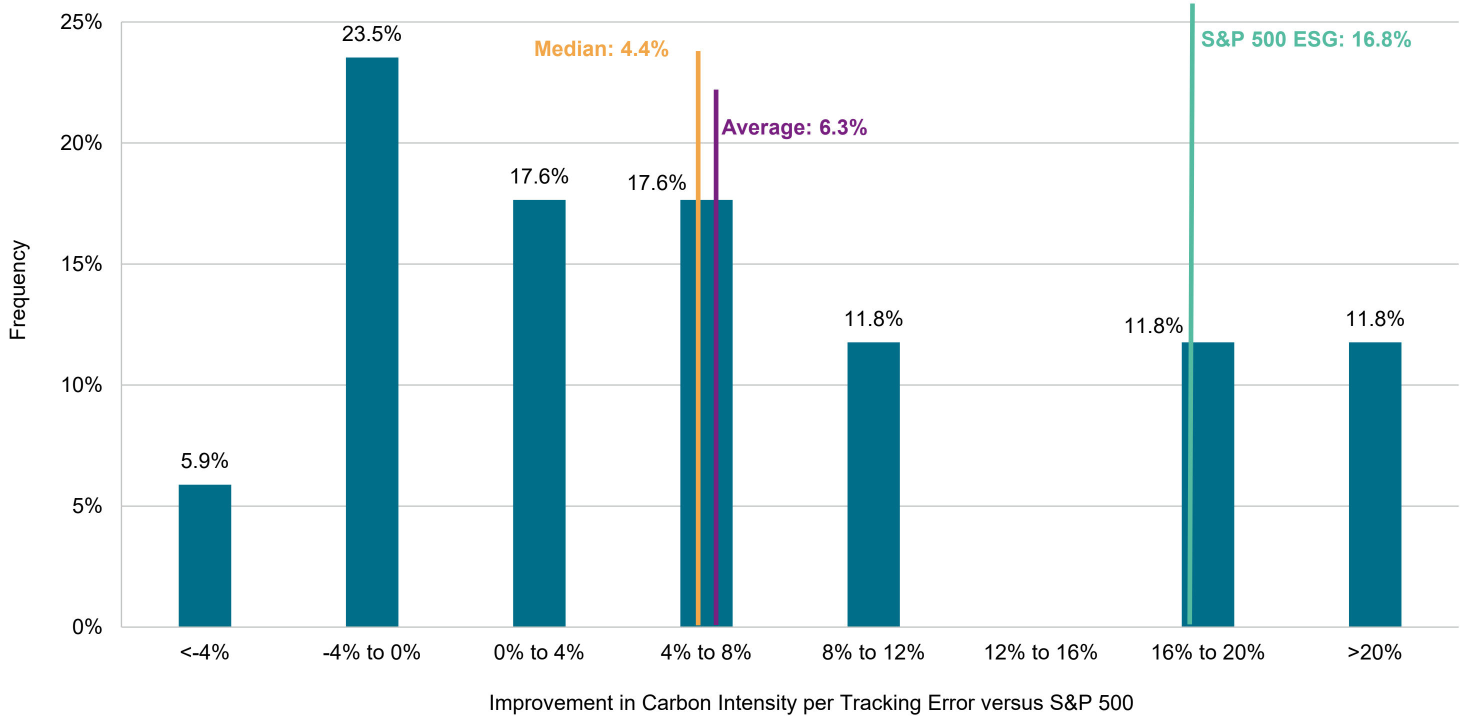


- Active funds, on average, achieved either **lower** or **similar benchmark relative improvements in carbon intensity** compared with their assigned indices.
- Active fund managers tended to display **materially higher tracking errors** versus their benchmarks—**more than fourfold**, on average.

Source: S&P Dow Jones Indices LLC, Morningstar. Source for Carbon Intensity: Direct and first-tier indirect emissions by S&P Global Trucost. Data as of Sept. 29, 2023. Tracking error was measured over trailing 12 months. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

Core ESG U.S. Equity Large Cap Managers Significantly Lagged the S&P 500 ESG in Carbon Intensity Improvement per Unit Tracking Error versus the S&P 500®

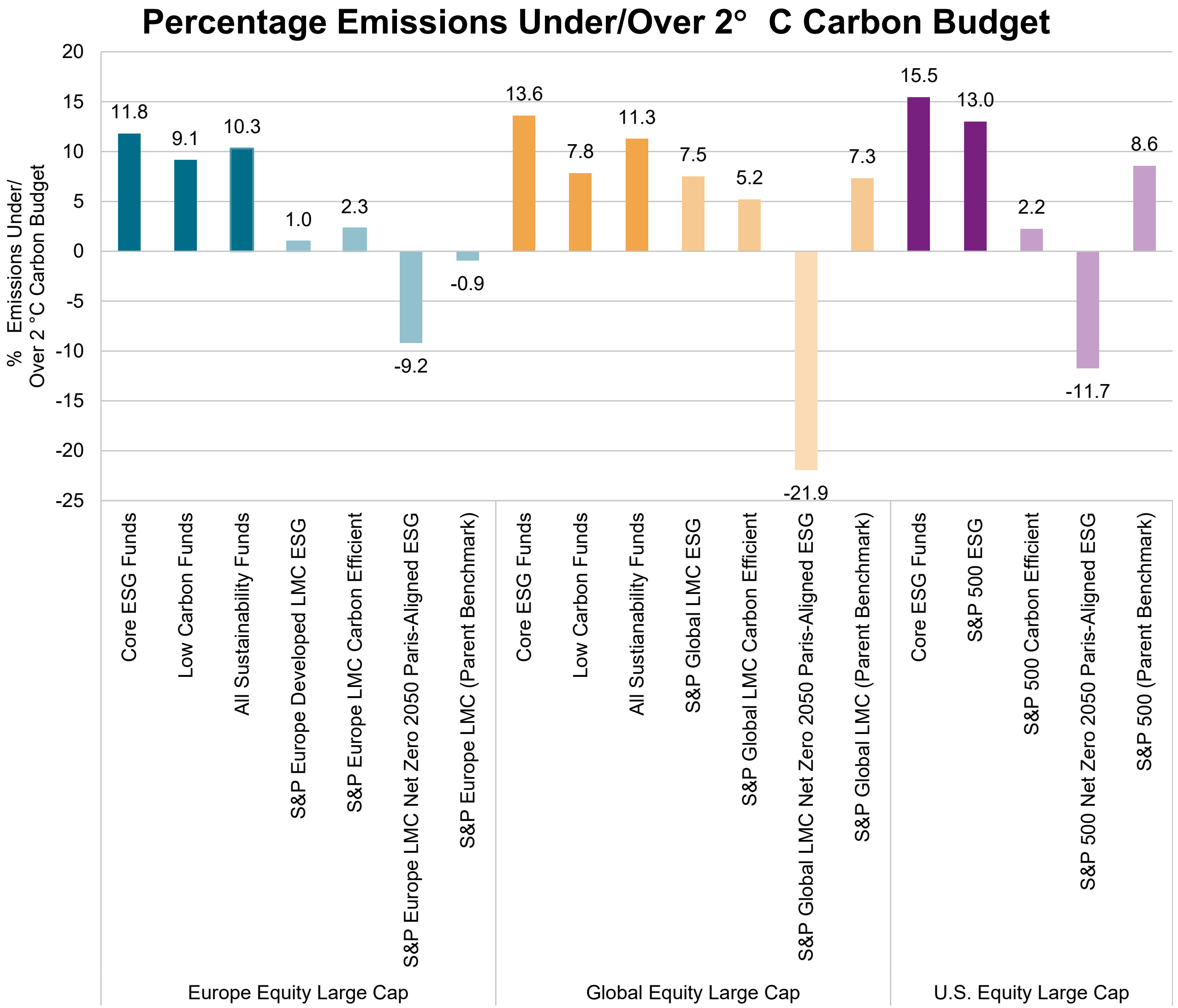
Distribution of Percentage Improvement in Carbon Intensity per Tracking Error versus S&P 500 for the Core ESG – U.S. Equity Large Cap Category



Source: S&P Dow Jones Indices LLC, Morningstar. Source for Carbon Intensity: Direct and first-tier indirect emissions by S&P Global Trucost. Data as of Sept. 29, 2023. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

- Core ESG – U.S. Equity Large Cap active funds achieved an average improvement in Carbon Intensity of **6.3%** per unit of tracking error they incurred against the S&P 500, with a median of 4.4%.
- **This meant they significantly lagged the S&P 500 ESG Index, which showed a 16.8% improvement in Carbon Intensity per unit of tracking error versus the S&P 500.**
- Only 11.8% of active funds in this category managed to achieve a Carbon Intensity improvement of between 16%-20%, while **29.4% increased their Carbon Intensity relative to the S&P 500.**

More Active Funds, On Average, Exceeded Their 2° C carbon budget Compared with Indices, Indicating a Poorer Overall Temperature Alignment



Source: S&P Dow Jones Indices LLC, Morningstar. Source for % emissions under / over 2° C carbon budget: S&P Global Trucost. Data as of Sept. 29, 2023. Chart is provided for illustrative purposes.

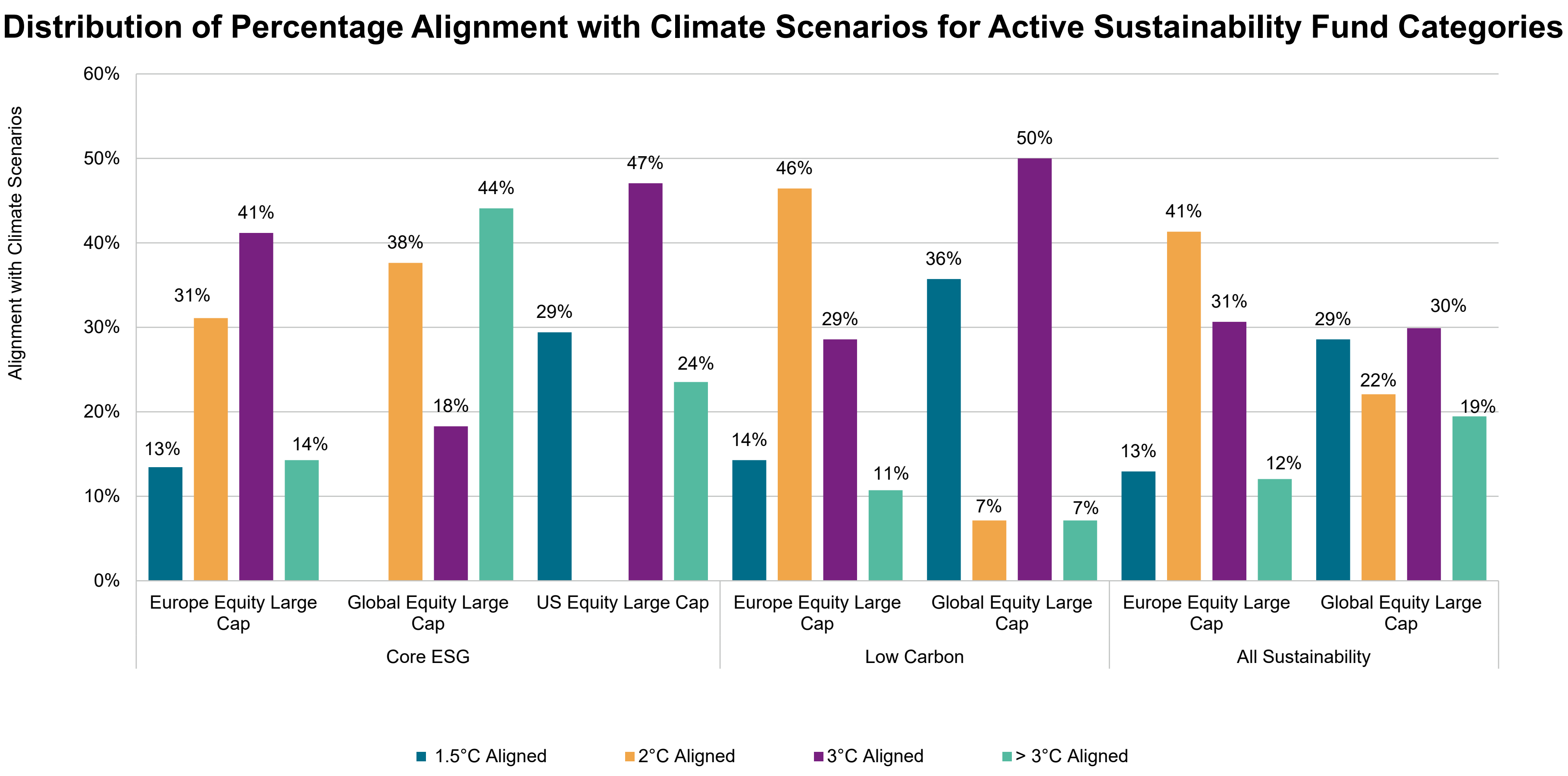
Almost All the Sustainability Comparison Indices, as well as Their Benchmarks, Achieved a Temperature Alignment Score of 3° C

Temperature Alignment Scores for S&P DJI Sustainability Indices and Benchmarks

S&P DJI Comparison Indices	Temperature Alignment Score
S&P Europe Developed LMC ESG	3°C
S&P Europe LMC Carbon Efficient	3°C
S&P Europe LMC Net Zero 2050 Paris-Aligned ESG	1.5°C
S&P Europe LargeMidCap (Benchmark)	2°C
S&P Global LMC ESG	3°C
S&P Global LMC Carbon Efficient	3°C
S&P Global LMC Net Zero 2050 Paris-Aligned ESG	1.5°C
S&P Global LargeMidCap (Benchmark)	3°C
S&P 500 ESG	3°C
S&P 500 Carbon Efficient	3°C
S&P 500 Net Zero 2050 Paris-Aligned ESG	1.5°C
S&P 500 (Benchmark)	3°C

LMC stands for LargeMidCap.
Source: S&P Dow Jones Indices LLC. Source for Temperature Alignment: S&P Global Trucost. Data as of Sept. 29, 2023. Table is provided for illustrative purposes.

Looking at the Distribution of This Metric Across the Different Active Fund Categories, We See a More Mixed Picture



Source: S&P Dow Jones Indices LLC. Source for Temperature Alignment: S&P Global Trucost. Data as of Sept. 29, 2023. Chart is provided for illustrative purposes.

Sustainability Active Fund Managers Incurred Significantly Higher Tracking Error vs Broad Equity Benchmarks Than Indices, and This **Did Not** Bring Outperformance

Percentage of Sustainability Active Funds Underperforming Indices

SPIVA Category	0.5-Year (%)	1-Year (%)	3-Year (%)	5-Year (%)
Core ESG - Europe Equity Large Cap	83.19	68.91	89.62	94.12
Low Carbon - Europe Equity Large Cap	86.21	71.43	87.50	94.44
All Sustainability - Europe Equity Large Cap	82.39	72.70	82.85	96.19
Core ESG - Global Equity Large Cap	82.47	83.87	79.37	82.93
Low Carbon - Global Equity Large Cap	93.33	92.86	66.67	66.67
All Sustainability - Global Equity Large Cap	87.17	89.86	55.34	83.20
Core ESG - US Equity Large Cap	63.16	79.63	90.91	100.00

Sources: S&P Dow Jones Indices LLC, Morningstar. Data as of Sep. 29, 2023. The S&P 500 ESG Index was launched on 29 January 2019. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index 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. Complete index methodology details are available at www.spglobal.com/spdji. Past performance of the Index is not an indication of future results. 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. 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. Back-tested performance is for use with institutions only; not for use with retail investors.Past performance is no guarantee of future results. Table is provided for illustrative purposes. All Sustainability does not have a comparison index. This is an aggregate category, which is an average of Core ESG and Low Carbon categories.

- In the six-months leading to 29 September 2023, **in most categories, more than 80% of sustainability active funds underperformed indices.**
- **After five years, all the active funds in the Core ESG – US Equity Large Cap underperformed the S&P 500 ESG index.**

Appendix 1: Morningstar Categories and SPIVA Peer Groups for Equity Funds

European Funds Denominated in Euros (EUR)	
Morningstar Global Category	**SPIVA Sustainability Category**
Global Equity Large Cap	Core ESG – Global Equity Large Cap
	Low Carbon – Global Equity Large Cap
	Paris-Aligned Climate Transition – Global Equity Large Cap
Europe Equity Large Cap	Core ESG – Europe Equity Large Cap
	Low Carbon – Europe Equity Large Cap
	Paris-Aligned Climate Transition – Europe Equity Large Cap
US Equity Large Cap Value	Core ESG – U.S. Equity Large Cap
US Equity Large Cap Blend	
US Equity Large Cap Growth	

Source: S&P Dow Jones Indices LLC, Morningstar. Table is provided for illustrative purposes.

Appendix 2: Sustainability Active Fund Categories, Their S&P Dow Jones Comparison Indices and Benchmarks

SPIVA Sustainability Category	S&P DJI Comparison Index	Benchmark
Core ESG – Europe Equity Large Cap	S&P Europe Developed LMC ESG	S&P Europe LMC
Low Carbon – Europe Equity Large Cap	S&P Europe LMC Carbon Efficient	
All Sustainability – Europe Equity Large Cap	-	
Core ESG – Global Equity Large Cap	S&P Global LMC ESG	S&P Global LMC
Low Carbon – Global Equity Large Cap	S&P Global LMC Carbon Efficient	
All Sustainability – Global Equity Large Cap	-	
Core ESG – U.S. Equity Large Cap	S&P 500 ESG	S&P 500

LMC stands for LargeMidCap.
Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Sept. 29, 2023. Table is provided for illustrative purposes.

Core ESG: This category represents broad-based active funds that employ a form of environmental, social and governance (ESG) criteria to select securities.

Low Carbon: This category represents active funds that build their portfolios based on Carbon Intensity reduction criteria.

All Sustainability: This is a holistic category, representing all active funds that seek to employ various sustainability criteria, including alignment with the goals of the Paris Agreement, as well as active funds in the Core ESG and Low Carbon categories. As this is an aggregate category, it does not have a single S&P DJI comparison index and benchmark. For this category, we calculated the overall underperformance rate using the average of underperformance figures for individual active funds, measured against their corresponding S&P DJI comparison indices.

Appendix 3: Climate Dictionary

Core ESG:

To scan with an "Or" condition:

- Positive Environmental,
- Environmental Footprint,
- Sustainable Development,
- Environmental,
- Social,
- Governance,
- Sustainable Finance,
- Article 8,
- Sustainable and Responsible Investment Strategy,
- SRI.

To scan with a "Not" condition:

- Low Carbon.

Low Carbon:

To scan with an "Or" condition:

- Low Carbon,
- Energy Transition,
- Carbon Reduction,
- CO_2 Reduction,
- Greenhouse Gas Emissions Reduction.

To scan with a "Not" condition:

- Paris-Aligned,
- Net-Zero,
- 2050,
- 1.5 ° C,
- Paris-Agreement.

Paris-Aligned:

- Paris-Aligned,
- Net Zero,
- 2050,
- Paris-Agreement,
- 1.5 ° C.

Sources: S&P Dow Jones Indices LLC, Morningstar. Data as of Sep. 29, 2023. LMC: LargeMidCap. Table is provided for illustrative purposes.

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PERFORMANCE DISCLOSURE/BACK-TESTED DATA

The S&P 500 Top 10 Index was launched on July 14, 2023. The S&P MidCap 400 Index was launched on June 19, 1991. The Russel Midcap was launched on November 1, 1991. The S&P 500 ESG Index was launched on 29 January 2019. The S&P S&P High Yield Dividend Aristocrat Index was launched on 9th November 2005. The S&P Global Dividend Aristocrat Index was launched on 26th March 2013. The S&P Emerging Markets High Yield Dividend Aristocrat Index was launched on 30th August 2019. The S&P UK High Yield Dividend Aristocrat Index was launched on 31st January 2012. The S&P Euro High Yield Dividend Aristocrat Index was launched on 31st January 2012. The S&P Pan Asia Dividend Aristocrat Index was launched on 14th April 2009. The S&P Euro ESG High Yield Dividend Aristocrats Index was launched on 6th April 2021. The S&P Global ESG Dividend Aristocrat Quality Income Index was launched on 1st March 2021. The S&P ESG High Yield Dividend Aristocrat Index was launched on 1st March 2021. All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index 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. Complete index methodology details are available at www.spglobal.com/spdji. Past performance of the Index is not an indication of future results. 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. 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. Back-tested performance is for use with institutions only; not for use with retail investors.

S&P Dow Jones Indices defines various dates to assist our clients in 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 Dow Jones Indices 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.

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S&P DJI Australia Contact

Please direct any questions on the content of this presentation or other S&P DJI resources to:

Julie Ballard

Director, Channel Management

julie.ballard@spglobal.com

Mob: +61 (0)438 085 276

Or

s&pdowjonesindices_au&nz@spglobal.com