

SPIVA[®] Sustainability Scorecard: Comparisons of Active Funds and Indices

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Summary

The semiannual [SPIVA Europe Scorecard](#) was first published in 2014 and reports on the performance of actively managed funds domiciled across Europe. In this report, we complement the traditional scorecard with a comparison of **sustainability-focused actively managed funds and indices**. In addition to performance, **we also assess changes in the sustainability profile relative to the broad equity benchmarks and tracking error characteristics**.

In the six-month period ending on Sept. 29, 2023, **more than 80% of active sustainability funds *underperformed* their assigned benchmarks in most categories**. Over the three-year horizon, **91% of active funds in the Core ESG – U.S. Equity Large Cap category underperformed the [S&P 500[®] ESG Index](#)** (see Exhibit 1).

Exhibit 1: Percentage of Active Sustainability Funds Underperforming Indices

SPIVA Sustainability Category	6-Month (%)	1-Year (%)	3-Year (%)
Core ESG – Europe Equity Large Cap	83.19	68.91	89.62
Low Carbon – Europe Equity Large Cap	86.21	71.43	87.50
All Sustainability – Europe Equity Large Cap	82.39	72.70	82.85
Core ESG – Global Equity Large Cap	82.47	83.87	79.37
Low Carbon – Global Equity Large Cap	93.33	92.86	66.67
All Sustainability – Global Equity Large Cap	87.17	89.86	55.34
Core ESG – U.S. Equity Large Cap	63.16	79.63	90.91

See section “Methodology” for details.

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Sept. 29, 2023. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Introduction

Asset owners around the globe have been increasing their allocations to investment strategies that incorporate sustainability considerations.¹ This increase, in turn, reflects the **growing importance of sustainability factors** for asset managers in their investment decisions. In the meantime, the regulatory landscape has been maturing and becoming **more far-reaching**, while a growing number of asset owners and asset managers have been voluntarily committing to sustainable investing practices.²

Sustainability-focused active funds and indices typically have investment objectives aimed at improving their sustainability profile relative to their underlying broad equity benchmark. For example, if one of the investment objectives is to reduce carbon emissions, an active fund or index may tilt toward less carbon-intensive companies or even exclude some of the largest emitters. This positioning, in turn, results in tracking error relative to the benchmark. **The trade-off between achieving an improved sustainability profile and maintaining the desired broad equity benchmark-like performance characteristics requires a delicate balance.**

In terms of sustainability profile, this report examines two metrics:

- [Index-weighted Carbon Intensity](#); and
- [Temperature Alignment](#), which is a forward-looking metric assessing a company's future projected decarbonization trajectory. Together, these two metrics measure carbon reductions realized at a given point in time, as well as assess alignment with climate scenarios from a forward-looking perspective.

There are different approaches to measuring and analyzing a fund's sustainability performance. The advantage of these two metrics is their relative robustness and quantifiable nature.

The purpose of this report is to provide asset owners and asset managers with research insights to help them prioritize and make decisions regarding sustainable investing strategies by finding the “sweet spot” between their tracking error tolerance and sustainability objectives in the most cost-efficient way.

¹ See “Voice of the Asset Owner Survey 2023”, Morningstar, October 4, 2023.

² See UN-convened Net-Zero Asset Owner Alliance and The Net-Zero Asset Managers Initiative.

Methodology

To produce this scorecard, the initial selection and screening of active funds was carried out using the same sources and a similar analytical framework as S&P DJI's SPIVA Scorecards (see Appendix A).

Our initial sample was formed from all Europe-domiciled, actively managed mutual funds covering the pan-Europe, Global, and U.S. equity markets (see Appendix B). We then screened the Key Investor Information Document (KIID) of each fund for certain specific keywords using the Sustainability Dictionary (see Appendix C). Each fund was then assigned to one or more Sustainability Categories or, in the case of funds that did not reference any keyword, excluded from the analysis. The final set of funds was also reviewed for accuracy.

To ensure the robustness of our data, we also excluded all funds that had less than 80% of their assets (by weight) in equity securities with associated Carbon Intensity and Temperature Alignment scores, as sourced from [S&P Global Trucost](#).

Exhibit 2: Active Sustainability Fund Categories, Their S&P DJI 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 (see Exhibit 1) using the average of

underperformance figures for individual active funds, measured against their corresponding S&P DJI comparison indices.

All Sustainability – Europe Equity Large Cap is a sample of:

1. Core ESG – Europe Equity Large Cap;
2. Low Carbon – Europe Equity Large Cap; and
3. Active funds that have a similar investment strategy as the [S&P Europe LargeMidCap Net Zero 2050 Paris-Aligned ESG Index](#), against which their performance is measured.

All Sustainability – Global Equity Large Cap is a sample of:

1. Core ESG – Global Equity Large Cap;
2. Low Carbon – Global Equity Large Cap; and
3. Active funds that have a similar investment strategy as the [S&P Global LargeMidCap Net Zero 2050 Paris-Aligned ESG Index](#), against which their performance is measured.

There are no Low Carbon and All Sustainability categories for U.S. Equities Large Cap, which only consists of the Core ESG category.³

The sustainability metrics presented in this scorecard were calculated using the same sources and analytical engine as [S&P DJI's Sustainability Index Dashboard](#). The constituents for active funds were sourced from [Morningstar](#).

Tracking error was calculated against the corresponding benchmark in each category (see Exhibit 2). The underperformance rate was calculated against the corresponding S&P DJI comparison index.⁴

We chose two sustainability metrics as our focal point in our analysis:

- Index-weighted Carbon Intensity:⁵ Weighted average of individual companies' Carbon Intensity (Direct + First tier indirect emissions/USD million revenues), weighted by the constituent weight within the index/active fund.
- Temperature Alignment (Forward-Looking):⁶ Forward-looking assessment of index Temperature Alignment to one of S&P Global Trucost's scenarios. Alignment is expressed in ranges rather than precise values, e.g., < 1.5°C or 2-3°C.

³ The reported categories were limited in scope by the available sample sizes for analysis. A summary of the sample sizes for each fund category and period are provided later in Report 2.

⁴ In the case of the "All Sustainability" category, the underperformance rate is a weighted average of underperformance rates in each sub-category.

⁵ [S&P Global Trucost Environmental Data Suite](#)

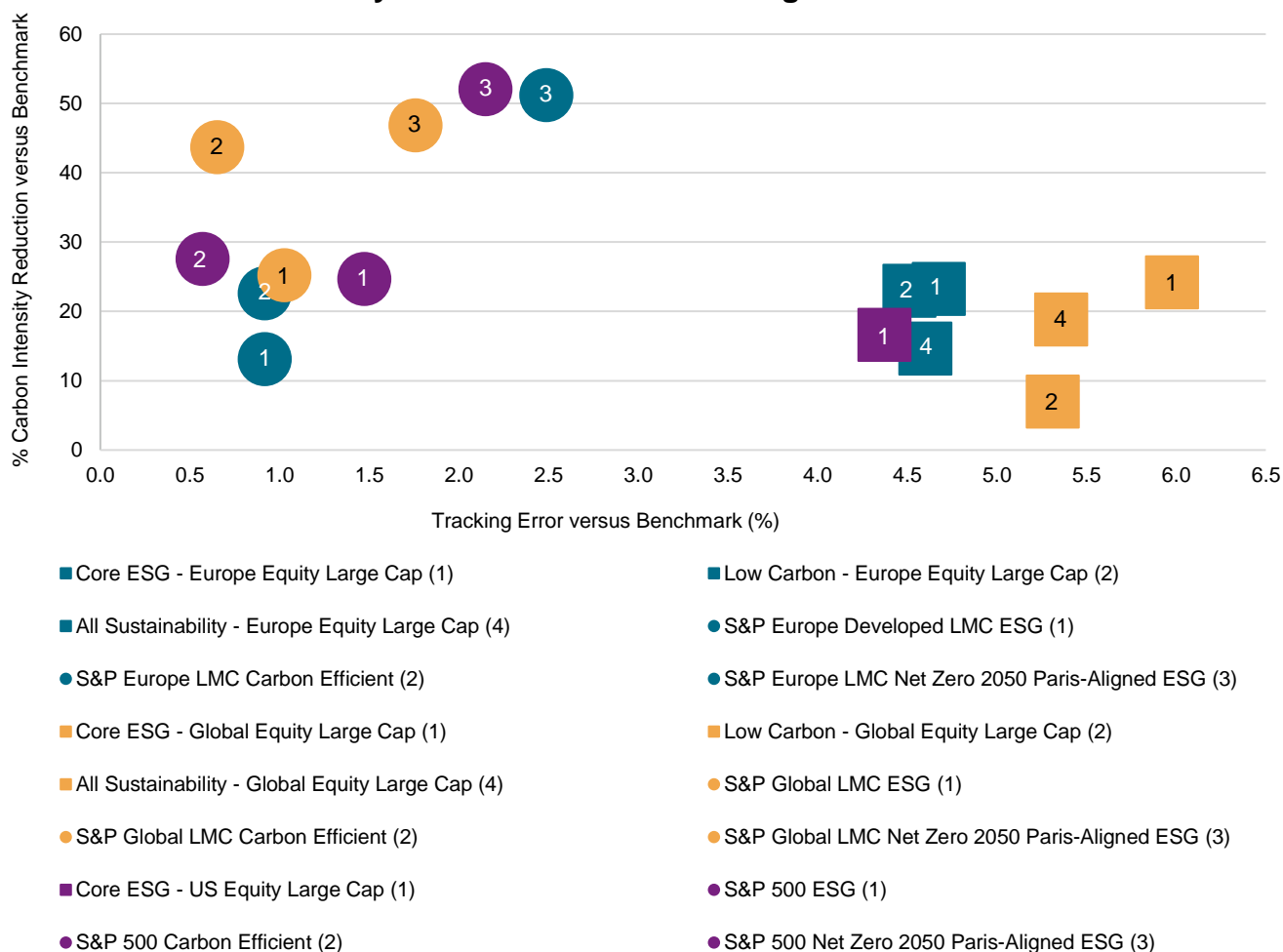
⁶ [S&P Global Trucost Sustainability Data Suite](#) and see "[Green Funds Have a Paris-Alignment Problem](#)", where S&P Global Sustainable 1 used the same data set to look at the Paris-Alignment of equity exchange traded and mutual funds.

Analysis of Sustainability Profile and Performance

The relationship between the average percentage change in index-weighted Carbon Intensity and incurred tracking error relative to benchmarks is summarized in Exhibit 3. The square-shaped markers represent an average of active sustainability funds and the circles refer to their corresponding S&P DJI comparison indices. Each color represents a particular investment universe, e.g., Europe, U.S. and global. A number is used to label the combination of an active fund and its comparison index. For reference, the appropriate S&P Paris-Aligned Indices are also included, as these represent S&P DJI's most sophisticated climate index series (labelled as number 3). As the All Sustainability category is aggregate, comprising all the sustainability-focused active funds, it does not have a single S&P DJI comparison index, and it is labelled as number 4.

As illustrated in Exhibit 3, **most active fund categories on average achieved either lower or similar benchmark relative improvements in Carbon Intensity as the comparison indices.** One exception was Core ESG – Europe Equity Large Cap category, which reduced Carbon Intensity by 23% versus only 13% for the [S&P Europe Developed LargeMidCap Index](#). However, **on average, active funds in every category displayed materially higher tracking errors (by more than four-fold) compared to the indices.** For the Europe Equity Large Cap sustainability categories, the average tracking error versus the benchmark [S&P Europe LargeMidCap](#) varied from 4.5% to 4.7% (see Exhibit 3). As a reference, the Europe Equity category in our [SPIVA Europe Mid-Year 2023 Scorecard](#) incurred an average tracking error of 5.7% versus the S&P Europe 350, indicating that its sustainability-focused variants were not particularly high in comparison.

Exhibit 3: Carbon Intensity Reduction versus Tracking Error Relative to Benchmarks

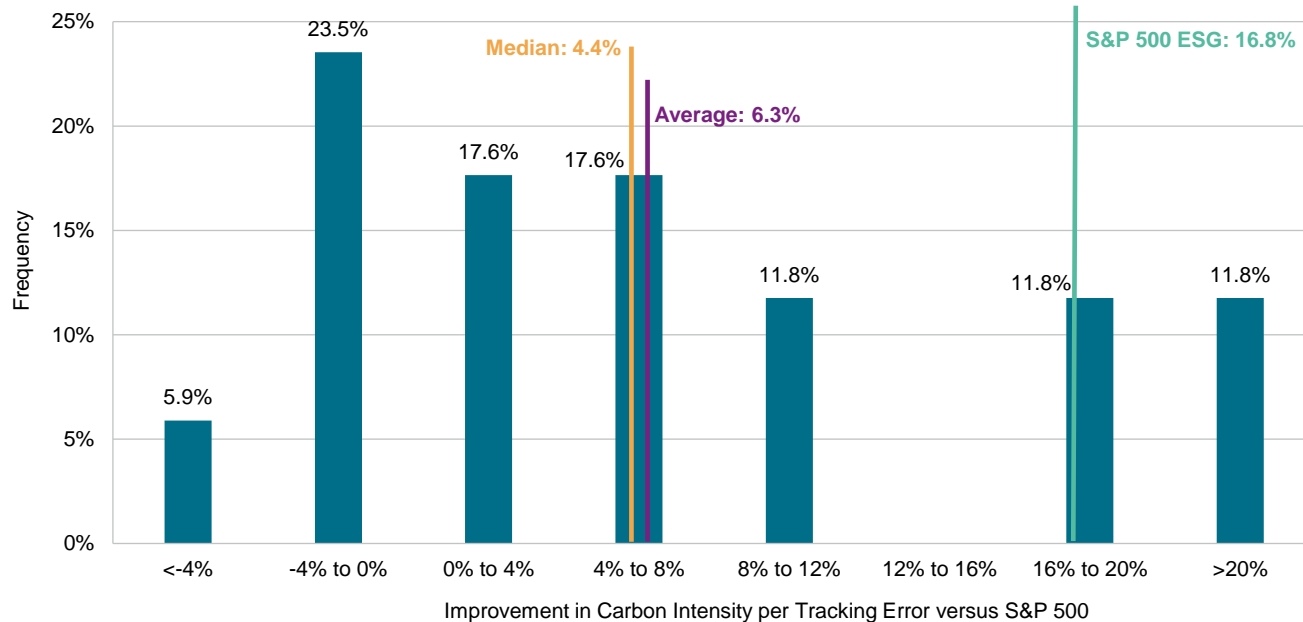


Source: S&P Dow Jones Indices LLC, Morningstar. Source for Carbon Intensity: Direct and first-tier indirect emissions by S&P Global Trucost. Data as of Sept. 29, 2023. Tracking error was measured over trailing 12 months. Past performance is no guarantee of future results. Chart is provided for illustrative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

Exhibit 3 summarizes the **average** figures for benchmark-relative Carbon Intensity reduction and tracking error, representing a central tendency of the dataset. However, it would also be revealing to see what the distribution of the percentage change in Carbon Intensity per incurred tracking error relative to the underlying benchmark looks like within individual active sustainability fund categories. This would help with learning about how the data is spread out and the range of values it covers.

Exhibit 4 illustrates this for the Core ESG – U.S. Equity Large Cap category relative to the S&P 500. In other words, this analysis measures efficiency and assesses how much of a percentage change in Carbon Intensity an active fund achieves per unit of tracking error it incurs against its benchmark.

Exhibit 4: 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.

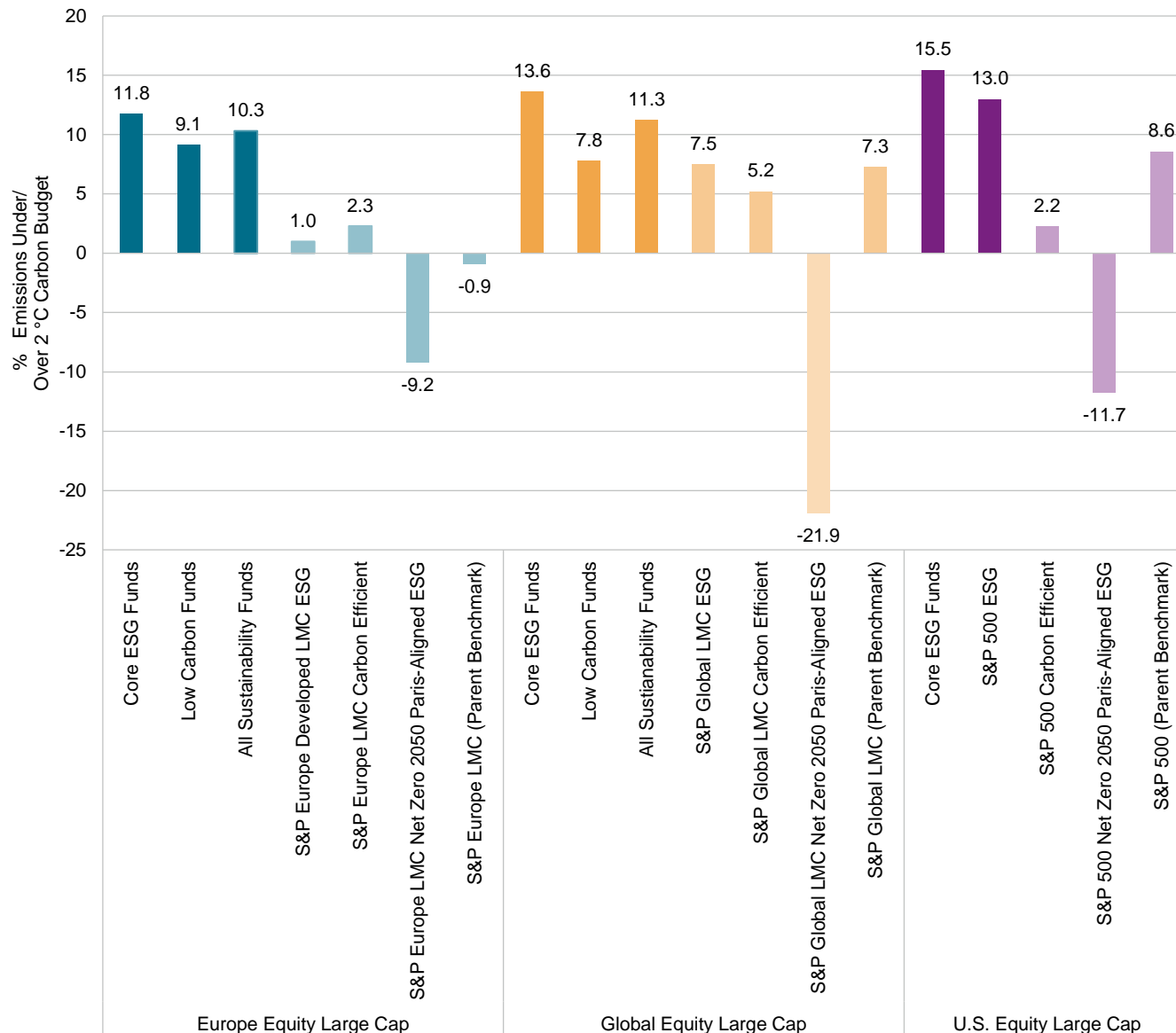
Core ESG – U.S. Equity Large Cap active funds achieved an average improvement in Carbon Intensity of **6.3%** per unit of tracking error they incurred against the S&P 500, with a median of 4.4%. **This meant they significantly lagged the S&P 500 ESG Index, which showed a 16.8% improvement in Carbon Intensity per unit of tracking error versus the S&P 500.** On the other hand, 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.**

As we noted in [a previous analysis](#), Carbon Intensity is based only on the most recent emission figures, representing a point-in-time perspective. It is also important to consider a **forward-looking** analysis, capturing decarbonization trajectory. Exhibit 5 illustrates the results of our forward-looking analysis using the [S&P Global Trucost Paris-Alignment dataset](#).⁷ Averages within fund categories and benchmark statistics are distinguished in the Exhibit by lighter/darker shades. On average, **more active funds exceeded their 2°C carbon budget⁸ compared with indices, indicating a poorer overall Temperature Alignment (see Exhibit 5).**

⁷ The dataset allows for the identification of the scale of company-level reductions required by **2030 and beyond** to meet various climate-related objectives, such as a 1.5°C or 2°C maximum increase. More details may be found [here](#).

⁸ 2°C carbon budget represents the allocated carbon emissions pathway to reach a 2°C climate change scenario, whereby the global warming is limited to well below 2°C from pre-industrial levels. See [Reversing the Entropy of Climate Change](#).

Exhibit 5: Percentage Emissions Under/Over 2°C Carbon Budget



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.

Given the marginal or similar reductions in Carbon Intensity and overall poorer Temperature Alignment for active funds, with materially higher tracking error than indices, the question that comes to mind is: did this significantly higher tracking error bring outperformance? It did not. Exhibit 1 illustrates the point. **In the six-month period ending Sept. 29, 2023, more than 80% of active funds underperformed their corresponding S&P DJI sustainability comparison indices.** The exception was Core ESG – U.S. Equity Large Cap, in which 63% of funds underperformed. However, **as time horizons lengthened underperformance rates rose: over the three-year horizon, 91% of active funds in the Core ESG – U.S. Equity Large Cap category underperformed the S&P 500 ESG Index.**

Percentage emissions under/over the 2°C carbon budget can also be translated into forward-looking Temperature Alignment scores. This is illustrated in **Exhibit 6** for S&P DJI comparison indices and underlying benchmarks, whereas **Exhibit 7** summarizes the distribution of percentage alignment with different climate scenarios for active sustainability fund categories.

Exhibit 6: 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

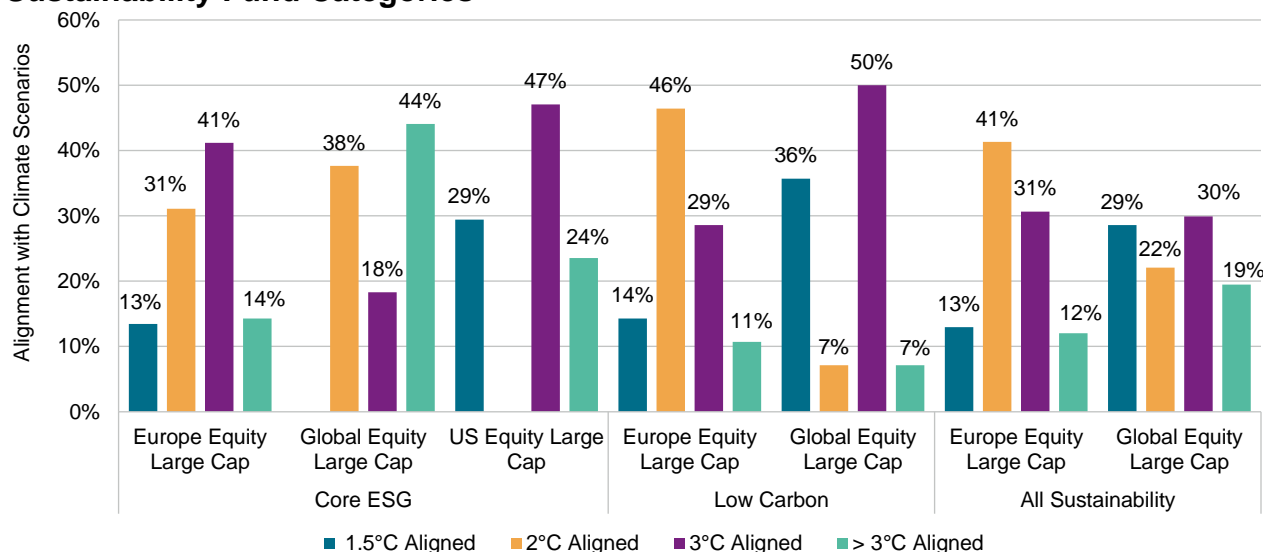
LMC stands for LargeMidCap.

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.

All the sustainability comparison indices, as well as their benchmarks, achieved a temperature alignment score of 3°C, except for the S&P Europe LargeMidCap benchmark, which obtained an alignment with 2°C climate scenario. The S&P Paris-Aligned Indices are shown for reference purposes and were the only indices that achieved a 1.5°C alignment.

Looking at the distribution of this metric across the different active fund categories, we see a more mixed picture: in the Core ESG – Global Equity Large Cap category, for example, 44% of active funds were aligned with a climate scenario of >3°C. In three out of seven active sustainability fund categories, more than 40% of funds were aligned with the 3°C climate scenario, which is in line with their comparison indices. There were also fund categories where a considerable percentage of active funds obtained an alignment of 1.5°C: 36% of Low Carbon – Global Equity Large Cap and 29% of All Sustainability – Global Equity Large Cap and Core ESG – U.S. Equity Large Cap. These results indicate that the Temperature Alignment can be varied rather than converging in a particular score. However, on average, more active sustainability funds exceeded their 2°C carbon budget compared with the indices (see Exhibit 5).

Exhibit 7: Distribution of Percentage Alignment with Climate Scenarios for Active Sustainability Fund Categories



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.

Conclusion

Since 2002, SPIVA Scorecards have shown that relatively few active managers are able to outperform their representative benchmarks, particularly over the long term. But the true measure of successful active management is whether a manager or strategy can consistently deliver above-average returns over consecutive periods. As the sustainability investment landscape advances and clarity improves around regulations, asset owners and asset managers can now view this active versus passive debate through a sustainability lens. **The results presented in the inaugural SPIVA Sustainability Scorecard are the first step to help investors make more informed decisions while seeking to fulfill their sustainability objectives and their tracking error appetite in a cost-efficient way.**

The results of this scorecard highlight that, on average, active funds that mention sustainability-related investment objectives in their KIID achieved marginally lower or similar benchmark-relative reductions in carbon intensity compared with their assigned indices. Furthermore, a significant proportion of active funds exceeded their forward-looking 2°C carbon budget. Meanwhile, active fund managers tended to display materially higher tracking errors versus their benchmarks—more than fourfold, on average.

This higher tracking error, however, did not typically result in outperformance. In most fund categories, more than 80% of active funds underperformed indices over the six-month period ending Sept. 29, 2023, and the underperformance rate generally rose as time horizons lengthened. **Over the three-year horizon, 91% of active funds in the Core ESG – U.S. Equity Large Cap category underperformed the S&P 500 ESG Index.**

Reports

Report 1: Percentage of Funds Outperformed by S&P DJI Comparison Indices (Based on Absolute Return)

SPIVA Sustainability Fund Category	S&P DJI Comparison Index	6-Month (%)	1-Year (%)	3-Year (%)
Core ESG – Europe Equity Large Cap	S&P Europe Developed LargeMidCap ESG Index	83.19	68.91	89.62
Core ESG – Global Equity Large Cap	S&P Global LargeMidCap ESG Index	82.47	83.87	79.37
Core ESG – U.S.US Equity Large Cap	S&P 500 ESG Index	63.16	79.63	90.91
Low Carbon – Europe Equity Large Cap	S&P Europe LargeMidCap Carbon Efficient Index	86.21	71.43	87.50
Low Carbon – Global Equity Large Cap	S&P Global LargeMidCap Carbon Efficient Index	93.33	92.86	66.67
All Sustainability* – Europe Equity Large Cap	-	82.39	72.71	82.85
All Sustainability* – Global Equity Large Cap	-	87.17	89.86	55.34

*All Sustainability does not have a comparison index. All Sustainability – Europe Equity Large Cap is a sample of Core ESG – Europe Equity Large Cap, Low Carbon – Europe Equity Large Cap and active funds that have a similar investment strategy as the S&P Europe LargeMidCap Net Zero 2050 Paris-Aligned Index, against which their performance is measured. All Sustainability – Global Equity Large Cap is a sample of Core ESG – Global Equity Large Cap, Low Carbon – Global Equity Large Cap, and active funds that have a similar investment strategy as the S&P Global LargeMidCap Net Zero 2050 Paris-Aligned Index, against which their performance is measured.

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Sept. 29, 2023. Index performance based on total return in USD and EUR for the S&P Europe Developed LMC ESG Index, the S&P Europe Developed LMC Carbon Efficient Index, and the S&P Europe LMC Net Zero 2050 Paris-Aligned ESG Index. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 2: Survivorship of Funds

SPIVA Sustainability Fund Category	Number of Funds at Start	Survivorship (%)
6-Month		
Core ESG – Europe Equity Large Cap	119	100
Core ESG – Global Equity Large Cap	97	100
Core ESG – U.S. Equity Large Cap	57	100
Low Carbon – Europe Equity Large Cap	29	100
Low Carbon – Global Equity Large Cap	15	100
All Sustainability – Europe Equity Large Cap	157	100
All Sustainability – Global Equity Large Cap	126	100
1-Year		
Core ESG – Europe Equity Large Cap	119	100
Core ESG – Global Equity Large Cap	93	97.85
Core ESG – U.S. Equity Large Cap	54	100
Low Carbon – Europe Equity Large Cap	28	100
Low Carbon – Global Equity Large Cap	14	100
All Sustainability – Europe Equity Large Cap	156	100
All Sustainability – Global Equity Large Cap	121	98.35
3-Year		
Core ESG – Europe Equity Large Cap	106	97.17
Core ESG – Global Equity Large Cap	63	96.83
Core ESG – U.S. Equity Large Cap	44	100
Low Carbon – Europe Equity Large Cap	24	100
Low Carbon – Global Equity Large Cap	9	100
All Sustainability – Europe Equity Large Cap	137	97.81
All Sustainability – Global Equity Large Cap	77	97.40

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Sept. 29, 2023. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 3: Average Fund Performance (Equal-Weighted)

SPIVA Sustainability Fund Category	6-Month (%)	1-Year (%)	3-Year (%)
Core ESG – Europe Equity Large Cap	-1.82	17.46	7.52
Core ESG – Global Equity Large Cap	-0.13	17.70	4.37
Core ESG – U.S. Equity Large Cap	4.47	18.80	6.39
Low Carbon – Europe Equity Large Cap	-2.10	16.49	7.20
Low Carbon – Global Equity Large Cap	-2.92	14.05	2.94
All Sustainability – Europe Equity Large Cap	-1.85	17.31	7.46
All Sustainability – Global Equity Large Cap	-0.60	17.19	4.34

Source: Morningstar. Data as of Sept. 29, 2023. Fund performance based on total return in USD and EUR for the Europe Equity Large Cap category. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 4: Average Fund Performance (Asset-Weighted)

SPIVA Sustainability Fund Category	6-Month (%)	1-Year (%)	3-Year (%)
Core ESG – Europe Equity Large Cap	-1.45	18.31	6.65
Core ESG – Global Equity Large Cap	1.17	18.02	4.44
Core ESG – U.S. Equity Large Cap	4.45	18.56	6.88
Low Carbon – Europe Equity Large Cap	-3.38	14.34	5.44
Low Carbon – Global Equity Large Cap	-4.93	11.19	-1.20
All Sustainability – Europe Equity Large Cap	-1.79	17.61	6.45
All Sustainability – Global Equity Large Cap	0.74	17.57	4.10

Source: Morningstar. Data as of Sept. 29, 2023. Fund performance based on total return in USD and EUR for the Europe Equity Large Cap category. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 5: Quartile Breakpoints of Funds

SPIVA Sustainability Fund Category	Third Quartile (%)	Second Quartile (%)	First Quartile (%)
6-Month			
Core ESG – Europe Equity Large Cap	-3.17	-1.49	0.67
Core ESG – Global Equity Large Cap	-2.80	1.10	2.86
Core ESG – U.S. Equity Large Cap	1.43	4.45	7.66
Low Carbon – Europe Equity Large Cap	-3.28	-1.97	-0.73
Low Carbon – Global Equity Large Cap	-6.26	-0.33	0.29
1-Year			
Core ESG – Europe Equity Large Cap	13.90	18.03	22.27
Core ESG – Global Equity Large Cap	15.19	18.81	21.54
Core ESG – U.S. Equity Large Cap	14.63	17.87	22.07
Low Carbon – Europe Equity Large Cap	13.89	17.01	21.72
Low Carbon – Global Equity Large Cap	10.23	14.54	17.94
3-Year			
Core ESG – Europe Equity Large Cap	4.67	7	10.40
Core ESG – Global Equity Large Cap	2.91	4.93	7.79
Core ESG – U.S. Equity Large Cap	3.75	7.15	9.01
Low Carbon – Europe Equity Large Cap	3.81	7.14	10.38
Low Carbon – Global Equity Large Cap	-1.24	3.87	8.04

Source: Morningstar. Data as of Sept. 29, 2023. Fund performance based on total return in USD and EUR for the Europe Equity Large Cap category. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 6: Quartile Breakpoints Based on Tracking Error Volatility

SPIVA Sustainability Fund Category	Third Quartile (%)	Second Quartile (%)	First Quartile (%)
6-Month			
Core ESG – Europe Equity Large Cap	3.31	3.73	4.05
Core ESG – Global Equity Large Cap	3.62	4.22	4.92
Core ESG – U.S. Equity Large Cap	3.48	4.07	5.37
Low Carbon – Europe Equity Large Cap	1.12	1.25	1.64
Low Carbon – Global Equity Large Cap	0.82	1.11	1.59
1-Year			
Core ESG – Europe Equity Large Cap	3.21	4.56	6.03
Core ESG – Global Equity Large Cap	3.95	5.38	6.42
Core ESG – U.S. Equity Large Cap	5.17	7.33	10.54
Low Carbon – Europe Equity Large Cap	4.17	5.03	6.41
Low Carbon – Global Equity Large Cap	3.27	5.46	6.52
3-Year			
Core ESG – Europe Equity Large Cap	3.89	5.20	7.22
Core ESG – Global Equity Large Cap	4.81	5.45	7.73
Core ESG – U.S. Equity Large Cap	5.63	7.30	10.49
Low Carbon – Europe Equity Large Cap	4.29	5.02	6.69
Low Carbon – Global Equity Large Cap	5.38	7.03	9.44

Source: Morningstar. Data as of Sept. 29, 2023. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Report 7: S&P DJI Comparison Indices and Benchmark Returns

SPIVA Sustainability Fund Category	Index Name	6-Month (%)	1-Year (%)	3-Year (%)
Core ESG – Europe Equity Large Cap	S&P Europe Developed LMC ESG Index	1.39%	20.97%	11.76%
Low Carbon – Europe Equity Large Cap	S&P Europe LMC Carbon Efficient Index	0.74%	20.20%	11.61%
Paris-Aligned Climate Transition – Europe Equity Large Cap	S&P Europe LMC Net Zero 2050 Paris-Aligned ESG Index	3.37%	22.82%	6.62%
	S&P Europe LMC (Benchmark)	0.67%	19.84%	10.15%
Core ESG – Global Equity Large Cap	S&P Global LMC ESG Index	3.82%	23.79%	8.58%
Low Carbon – Global Equity Large Cap	S&P Global LMC Carbon Efficient Index	3.11%	22.76%	7.54%
	S&P Global LMC (Benchmark)	3.07%	21.49%	7.20%
Paris-Aligned Climate Transition – Global Equity Large Cap	S&P Global LMC Net Zero 2050 Paris-Aligned ESG Index	1.45%	21.94%	10.31%
	S&P Global LMC (Benchmark)	3.07%	21.49%	7.20%
Core ESG – U.S. Equity Large Cap	S&P 500 ESG Index	6.03%	24.10%	11.39%
	S&P 500 TR (Benchmark)	5.18%	21.62%	11.28%

LMC stands for LargeMidCap.

Source: S&P Dow Jones Indices LLC, Morningstar. Data as of Sept. 29, 2023. Index performance based on total return in USD and EUR for the S&P Europe Developed LMC ESG Index, the S&P Europe Developed LMC Carbon Efficient Index, and the S&P Europe LMC Net Zero 2050 Paris-Aligned ESG Index. Past performance is no guarantee of future results. Table is provided for illustrative purposes.

Appendix A: SPIVA Methodology

Percentage of Funds Outperformed by the Index

To correct for survivorship bias, we use the opportunity set available at the beginning of the period as the denominator. We determine the count of funds that have survived and beat the index. We then report the index outperformance percentage.

Survivorship (%)

This measure represents the percentage of funds in existence at the beginning of the time period that are still active at the end of the time period.

Equal-Weighted Fund Performance

Equal-weighted returns for a particular style category are determined by calculating a simple average return of all active funds in that category in a particular month.

Asset-Weighted Fund Performance

Asset-weighted returns for a particular style category are determined by calculating a weighted average return of all funds in that category in a particular month, with each fund's return weighted by its total net assets. Asset-weighted returns are a better indicator of fund category

performance because they more accurately reflect the returns of the total money invested in that particular style category.

Quartiles Breakpoints

The p^{th} percentile for a set of data is the value that is greater than or equal to $p\%$ of the data, but is less than or equal to $(100-p)\%$ of the data. In other words, it is a value that divides the data into two parts: the lower $p\%$ of the values and the upper $(100-p)\%$ of the values. The first quartile is the 75th percentile, the value separating the elements of a population into the lower 75% and the upper 25%. The second quartile is the 50th percentile and the third quartile is the 25th percentile. For fund category quartiles in a particular time horizon, the data used is the return of the largest share class of the fund net of fees, excluding loads.

Survivorship Bias

Many funds might liquidate or merge during a period of study. This usually occurs due to continued poor performance by the fund. Therefore, if index returns were compared to fund returns using only surviving funds, the comparison would be biased in favor of the fund category. These reports remove this bias by (a) using the entire investment opportunity set, made up of all funds in that particular category at the outset of the period, as the denominator for outperformance calculations, (b) explicitly showing the survivorship rate in each category, and (c) constructing peer average return series for each category based on all available funds at the outset of the period.

Fees

The fund returns used are net of fees, excluding loads.

Indices

A comparison index provides an investment vehicle against which fund performance can be measured.

A benchmark index provides an investment vehicle against which fund tracking error can be measured.

S&P Europe Developed LargeMidCap ESG Index

The S&P Europe Developed LargeMidCap ESG Index is a broad-based, market-cap-weighted index that is designed to measure the performance of securities meeting sustainability criteria, while maintaining similar overall industry group weights as the S&P Europe Developed LargeMidCap Index.

S&P Europe LargeMidCap Carbon Efficient Index

The S&P Europe LargeMidCap Carbon Efficient Index is designed to measure the performance of companies in the S&P Europe LargeMidCap, while overweighting or underweighting those companies that have lower or higher levels of carbon emissions per unit of revenue.

S&P Europe LargeMidCap Net Zero 2050 Paris-Aligned ESG Index

The S&P Europe LargeMidCap Net Zero 2050 Paris-Aligned ESG Index is designed to measure the performance of eligible equity securities from the S&P Europe LargeMidCap, selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario at the index level.

S&P Europe LargeMidCap

The S&P Europe LargeMidCap is designed to measure large- and mid-cap constituents of the S&P Europe BMI.

S&P Global LargeMidCap ESG Index

The S&P Global LargeMidCap ESG Index is a broad-based, market-cap-weighted index that is designed to measure the performance of securities meeting sustainability criteria. The index is a composite index made up of multiple S&P ESG subindices.

S&P Global LargeMidCap Carbon Efficient Index

The S&P Global LargeMidCap Carbon Efficient Index is designed to measure the performance of companies in the S&P Global LargeMidCap, while overweighting or underweighting those companies that have lower or higher levels of carbon emissions per unit of revenue.

S&P Global LargeMidCap Net Zero 2050 Paris-Aligned ESG Index

The S&P Global LargeMidCap Net Zero 2050 Paris-Aligned ESG Index is designed to measure the performance of eligible equity securities from the S&P Global LargeMidCap, selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario at the index level.

S&P Global LargeMidCap

Combining the S&P Global LargeCap and S&P Global MidCap indices, the S&P Global LargeMidCap comprises the stocks representing the top 85% of float-adjusted market cap in each developed and emerging country. It is a subset of the S&P Global BMI, a comprehensive, rules-based index measuring global stock market performance.

S&P 500 ESG Index

The S&P 500 ESG Index is a broad-based, market-cap-weighted index that is designed to measure the performance of securities meeting sustainability criteria, while maintaining similar overall industry group weights as the S&P 500.

S&P 500 Carbon Efficient Index

The S&P 500 Carbon Efficient Index is designed to measure the performance of companies in the S&P 500, while overweighting or underweighting those companies that have lower or higher levels of carbon emissions per unit of revenue.

S&P 500 Net Zero 2050 Paris-Aligned ESG Index

The S&P 500 Net Zero 2050 Paris-Aligned ESG Index is designed to measure the performance of eligible equity securities from the S&P 500, selected and weighted to be collectively compatible with a 1.5°C global warming climate scenario at the index level.

S&P 500

The S&P 500 is widely regarded as the best single gauge of large-cap U.S. equities. The index includes 500 leading companies and covers approximately 80% of available market capitalization.

Appendix B

SPIVA Styles and Morningstar Fund Classifications

Data are obtained for all actively managed funds for which month-end data is available during the performance period. The data include funds domiciled in European markets. Funds are classified based on the Morningstar fund classification system.

Global and European Equity Funds Denominated in EUR and USD

The SPIVA Sustainability Scorecard covers regional, country-specific and global funds that are denominated in EUR and USD currencies, and they have been mapped to the relevant Morningstar fund categories as indicated in Exhibit 8. The Morningstar classification system produces narrow, style-based classifications for funds, particularly in relation to European and international equities. S&P Dow Jones Indices has consolidated the style-based categories in order to generate a larger sample size and develop a broad-market comparison to market-based benchmarks. A narrow, style-based comparison would yield a limited sample size, given that value and growth style segments are not consistently discernible over the past five years.

Morningstar categories have been mapped to SPIVA peer groups in the following manner:

Report 8: 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 C: 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
- CO₂ Reduction
- Greenhouse Gas Emissions Reduction

To scan with a “Not” condition:

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

This step is to make sure you don't tag along the Paris-Aligned Active Climate Funds as Low Carbon.

- Paris-Aligned:
 - Paris-Aligned
 - Net Zero
 - 2050
 - Paris-Agreement
 - 1.5°C

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