

# Sustainable Investment Insights

QUARTERLY REPORT: JANUARY 2024

FOR PROFESSIONAL INVESTORS ONLY

## Sustainable investment sees a strong end to 2023

Sustainable investments finished the year on a positive note, with all global SI indices outperforming their benchmarks in Q4, in stark contrast to 2022, where all but one strategy underperformed. Climate strategies saw the strongest full year performance, particularly Env Ops and PAB. However, going into 2024, the sector needs to manage weaker flows into SI funds and analyse the impact of COP28.

### Highlights

#### Global outperformance, but mixed regional results

While all of the global SI indices outperformed in Q4, the performance was mixed across geographies. ESG focused strategies generally registered the lowest returns, with ESG Low Carbon (which does not have a global index) underperforming within Developed Markets. Japan, which was the best performing region in Q3, saw all the SI indices underperform in Q4.

#### 2023 performance

2023 saw all global SI equity indices outperforming. This is in stark contrast with 2022, where all but one strategy, underperformed. Climate strategies fared best, while ESG strategies were weaker.

#### Energy vs Technology

Energy and Tech are two important industries that impact SI indices. Although the Q4 weakness in the oil price and Energy equities were a tailwind for SI indices, the recovery in Tech was the most influential in their outperformance over 2023.

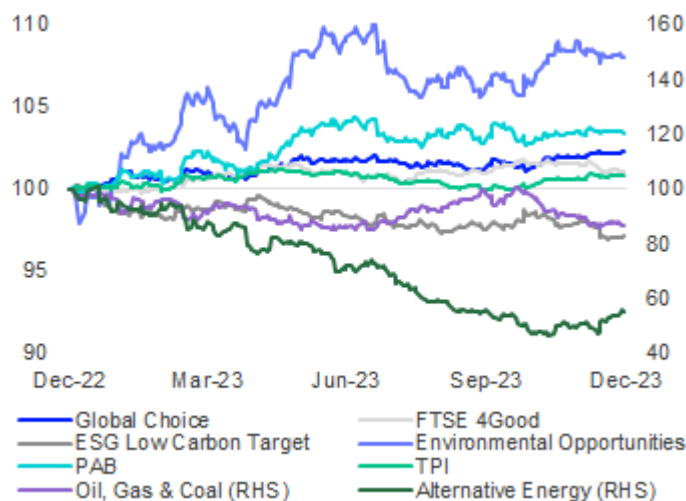
#### Macro

Falling inflation (albeit with weaker growth), combined with a more dovish Fed narrative, led to the sharp decline in bond yields, especially in long maturities, resulting in flatter curves. This led to a resurgence in risk assets, particularly equities, though high yield credits also held up well.

#### COP

COP28 became the focus of intense discussion, as fossil fuels were mentioned in the official statements for the first time, recommending countries transition away from their use in energy systems. Eight recommendations were agreed, including tripling the renewable energy capacity, doubling the annual rate of energy efficiency improvement and reducing methane emissions, all of which should have tangible impacts both for investors and the global environment.

Chart 1. 12-month relative performance Global SI indices, FTSE Oil Gas & Coal and FTSE Alternative Energy (TR, USD,%).



Note: Low Carbon covers developed markets.

**13.2%**

FTSE Env Ops  
Global 3M (TR, USD)

**11.5%**

FTSE4Good  
Global 3M (TR, USD)

**18.2%**

FTSE Env Ops  
Europe 3M (TR, USD)

**4.5%**

FTSE ESG Low Carbon  
UK 3M (TR, USD)

**16.5%**

FTSE Technology Sector  
Global 3M (TR, USD)

**-1.9%**

FTSE Energy Sector  
Global 3M (TR, USD)

Source: FTSE Russell / Refinitiv. Data as of December 31, 2023.

# Risk and Climate Characteristics – as of December 31, 2023

## Key Observations

Sustainable investing encompasses a range of strategies with different investment outcomes. In this section, we summarise the key risk and climate characteristics of the indices covered in this report. See next page for climate characteristic scores.

**Global Choice** divests from fossil fuels and other negative SI activities through product category screens. They lead to significant carbon intensity reductions (-44% to -59%) and underweights to Energy (-6% to -2%), except in the UK. Market-cap weighting the remaining stocks results in a risk profile close to the benchmark – a global beta of around 1 and low tracking error (1.7%). The UK is the most diversified, holding 98% of benchmark stocks, while Europe & US are the least diversified, holding 83% of benchmark stocks.

**FTSE4Good's** best-in-class ESG strategy results in significant ESG score uplifts (22% to 1%). The global tracking error is low (1.7%). Europe has the lowest ESG uplift (1%), but the highest absolute ESG score. By contrast, EM has the highest ESG uplift (22%), with a high tracking error (6.4%) but a low 0.9 beta.

**Environmental Opportunities (EO)** selects companies with significant green revenues (>20%), resulting in high active green revenues (absolute increase of 57% to 33%). However, the focus on Industrials, Utilities & Technology leads to higher carbon intensity in most regions (73% to -19%). The indices are highly concentrated (6% to 14% of benchmark) and have higher tracking errors (6% to 10%).

**ESG Low Carbon Target** targets carbon reduction and ESG uplifts. It achieves a significant carbon intensity reduction (-51% to -33%) and ESG score uplift (24% to 13%). Tracking errors are moderate (2.2% to 2.9%) and betas close to 1, except in the UK (6.4% and 0.9).

**Paris Aligned Benchmark (PAB)** has multiple SI targets. It reduces carbon intensity (-68% to -47%), increases the TPI MQ score (13% to 5%) , increases green revenues (absolute increase of 9% to 7%) and reduces Energy industry weighting (absolute reduction of -12% to -4%). The global tracking error is slightly higher than some other SI indices (2.3% to 5.8%) and the indices are more concentrated (52% to 28% of benchmark).

**TPI Climate Transition (TPI)** targets multiple climate related uplifts. Globally, it achieves a 48% reduction in carbon intensity, a 2% increase in green revenues and 13% increase in TPI MQ, while the tracking error is relatively modest at 1.6%. EM has the highest tracking error at 3.7%, but also the highest TPI MQ uplift of 29%.

**Risk characteristics:** In green are lower risk (tracking error, beta) and more diversified (high % of stocks in benchmark, low weight in Top 10) indices; in red are the more risky, concentrated indices.

Risk	FTSE Russell SI Index	US	UK	Europe	Japan	APAC	Emerging	Developed	Global
Tracking Error	Global Choice	2.0%	1.7%	2.3%		1.3%	1.6%	1.9%	1.7%
	FTSE4Good	2.3%	1.8%	2.2%	9.5%	2.5%	6.4%	1.7%	1.7%
	Environmental Ops	8.8%	9.2%	6.7%	6.6%	9.6%			6.1%
	ESG Low Carbon Target	2.8%	6.3%	2.9%	2.5%	2.5%	2.4%	2.2%	
	Paris Aligned		5.8%				3.3%	2.3%	2.5%
	Transition Pathway	1.9%			2.5%		3.7%	1.6%	1.6%
Beta	Global Choice	1.0	1.0	1.0		1.0	1.0	1.0	1.0
	FTSE4Good	1.0	1.0	1.0	0.8	1.0	0.9	1.0	1.0
	Environmental Ops	1.1	1.0	1.1	1.1	1.0			1.0
	ESG Low Carbon Target	1.0	0.9	1.0	1.0	1.0	1.0	1.0	
	Paris Aligned		1.0				1.0	1.0	1.0
	Transition Pathway	1.0			1.0		1.0	1.0	1.0
Number of stocks as % of benchmark	Global Choice	82.7%	98.0%	82.4%		87.8%	82.6%	84.7%	83.8%
	FTSE4Good	44.9%	37.2%	70.2%	46.8%	45.3%	27.4%	51.5%	39.7%
	Environmental Ops	8.9%	7.4%	13.9%	9.4%	8.1%			8.1%
	ESG Low Carbon Target	75.5%	57.5%	52.3%	60.0%	39.5%	44.1%	42.4%	
	Paris Aligned		51.9%				50.0%	42.0%	28.1%
	Transition Pathway	58.8%			70.6%		45.1%	52.2%	35.6%
Weight in Top 10 relative to benchmark	Global Choice	120.7%	100.1%	128.8%		114.2%	98.8%	125.1%	125.3%
	FTSE4Good	154.1%	122.5%	120.6%	135.1%	122.8%	125.9%	138.2%	142.1%
	Environmental Ops	276.2%	146.2%	253.7%	360.6%	305.0%			330.0%
	ESG Low Carbon Target	167.0%	143.4%	187.1%	193.7%	166.3%	137.6%	180.7%	
	Paris Aligned		102.8%				119.2%	177.7%	183.6%
	Transition Pathway	130.7%			159.1%		129.0%	142.4%	135.1%

Note: Tracking error and beta calculations are based on five-years of daily data, all other calculations are 12-month averages.

# Risk and Climate Characteristics – as of December 31, 2023

**Climate Characteristics:** In green are indices achieving the highest uplift relative to the benchmark in the E,S,G and ESG Score, Green Revenues, TPI MQ and the largest carbon reduction. These reflect the different objectives embedded in the indices.

Climate	FTSE Russell SI Index	US	UK	Europe	Japan	APAC	Emerging	Developed	Global
Active E score	Global Choice	2.8%	-3.8%	-3.0%		-3.5%	-2.5%	1.0%	0.7%
	FTSE4Good	12.9%	5.8%	1.4%	12.1%	10.2%	26.8%	10.2%	11.9%
	Environmental Ops	32.8%	-24.9%	-3.7%	13.8%	25.4%			25.4%
	ESG Low Carbon Target	20.0%	29.2%	26.2%	27.7%	20.4%	20.4%	21.7%	
	Paris Aligned		-4.0%				7.7%	10.3%	11.0%
	Transition Pathway	11.2%			8.7%		19.1%	9.7%	10.6%
Active S score	Global Choice	3.6%	-3.9%	0.1%		-2.5%	-0.4%	2.1%	2.0%
	FTSE4Good	8.7%	5.5%	1.1%	12.0%	9.8%	27.8%	7.7%	9.6%
	Environmental Ops	21.4%	-10.3%	-8.5%	-2.3%	24.4%			15.6%
	ESG Low Carbon Target	14.3%	24.6%	15.6%	24.3%	17.6%	20.2%	14.3%	
	Paris Aligned		-3.4%				8.0%	7.0%	8.5%
	Transition Pathway	6.1%			3.8%		14.5%	4.3%	6.0%
Active G score	Global Choice	0.5%	-4.5%	-0.8%		-3.0%	-0.7%	-0.3%	-0.4%
	FTSE4Good	1.7%	3.2%	-0.8%	7.8%	7.3%	14.9%	2.5%	3.7%
	Environmental Ops	15.9%	-12.8%	-5.5%	-1.8%	10.7%			10.3%
	ESG Low Carbon Target	6.3%	14.5%	7.2%	18.7%	8.0%	9.5%	6.2%	
	Paris Aligned		-5.7%				6.2%	3.0%	3.5%
	Transition Pathway	0.3%			1.6%		9.1%	-0.2%	1.5%
Active ESG score	Global Choice	2.3%	-4.2%	-1.1%		-2.9%	-1.1%	1.0%	0.8%
	FTSE4Good	7.8%	4.9%	0.6%	10.6%	9.1%	22.3%	6.8%	8.4%
	Environmental Ops	22.9%	-10.1%	-6.1%	3.3%	18.8%			16.5%
	ESG Low Carbon Target	13.4%	22.3%	15.8%	23.8%	14.9%	16.1%	13.9%	
	Paris Aligned		-4.7%				7.0%	6.7%	7.6%
	Transition Pathway	5.6%			4.7%		13.6%	4.5%	5.9%
Carbon Reduction	Global Choice	-59.0%	5.7%	-48.0%		-46.5%	-44.1%	-55.8%	-53.4%
	FTSE4Good	-36.0%	6.7%	-1.1%	1.8%	-7.4%	13.0%	-24.1%	-18.9%
	Environmental Ops	32.7%	-19.4%	73.1%	20.1%	43.8%			38.5%
	ESG Low Carbon Target	-51.4%	-32.6%	-48.2%	-47.8%	-45.1%	-41.8%	-49.7%	
	Paris Aligned		-47.3%				-67.8%	-63.2%	-63.4%
	Transition Pathway	-44.6%			-30.5%		-45.9%	-54.4%	-48.3%
Active Green Revenues	Global Choice	0.11	0.24	-1.30		-0.38	0.79	-0.05	0.04
	FTSE4Good	-0.24	-0.17	0.08	-0.85	-0.62	3.88	-0.25	0.08
	Environmental Ops	33.53	57.41	33.63	34.71	43.12			35.53
	ESG Low Carbon Target	-0.32	0.43	2.91	-1.08	2.09	2.52	0.11	
	Paris Aligned		9.19				7.34	7.69	7.95
	Transition Pathway	-0.13			4.23		4.70	0.93	1.85
Active TPI Management Quality Score	Global Choice	-0.9%	0.6%	-4.6%		-2.6%	-3.9%	-2.0%	-2.1%
	FTSE4Good	12.8%	7.4%	3.1%	10.0%	10.5%	25.1%	10.8%	12.3%
	Environmental Ops	10.3%	-16.0%	-0.2%	15.5%	21.6%			10.7%
	ESG Low Carbon Target	15.0%	5.1%	10.9%	14.9%	19.3%	18.4%	15.6%	
	Paris Aligned		5.0%				12.5%	6.1%	7.0%
	Transition Pathway	12.9%			13.4%		29.1%	13.0%	13.4%

Note: All calculations are 12-month averages.

\*TPI MQ is the TPI Management Quality score. Carbon reductions are normalised by revenues, except for the PAB benchmarks, where European law requires normalisation by EVIC. ESG Low Carbon Target index series target the minimum of a standard deviation of market capitalisation averaged index ESG score and a 20% uplift.

# Macroeconomic Backdrop – Q4 2023

Markets staged a strong recovery in Q4 as yields fell in response to falling inflation figures and more dovish commentary from the US Federal Reserve. The market narrative moved from “higher for longer” to anticipating multiple interest rate cuts in 2024. US 10Y and 2Y yields ended the year at a similar level to which they started.

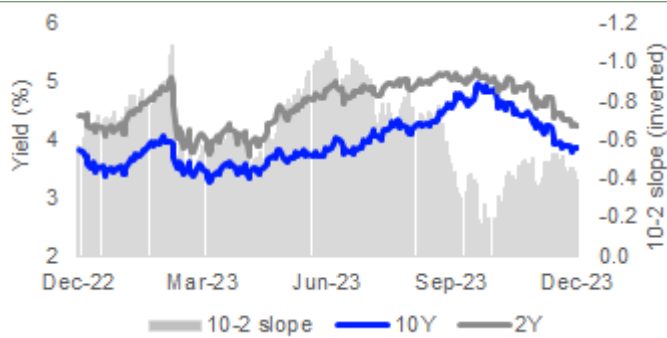
12M EPS growth estimates have been growing since the beginning of 2023. Estimate for US companies were twice those of European companies, reflecting a much stronger US economy, which weathered rising interest rates and other challenges better than in Europe. However in Q4, US EPS growth estimates began to decline, reflecting a slowly cooling economy.

Equity markets reacted strongly to the falling yields, rising across all regions, particularly in the US. All industries were up in Q4, with the exception of Energy. Cyclical, growth industries, such as Tech or Real Estate did particularly well in Q4, after underperforming in Q3. Fund flow data shows investor embracing the “risk on” trade, with capital going into equities and into growth industries like Tech.

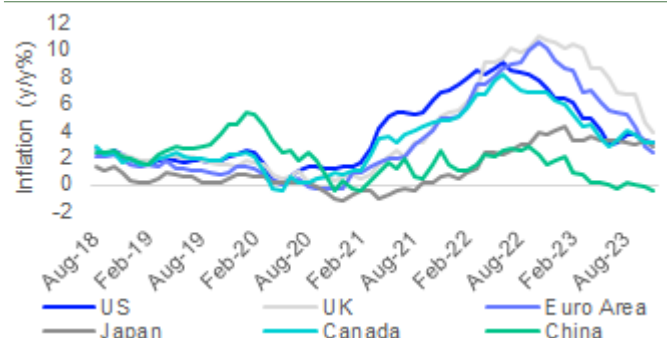
Energy prices fell in Q4, reversing the rise in Q3. This came despite further OPEC supply cuts in December, as markets were concerned both with a weak demand outlook, particularly from China, and growing non-OPEC supply, particularly from the US. This resulted in Energy being the worst performing industry in the FTSE All World.

For further in depth analysis of the macro background see [Asset Allocation Insights - December 2023 | LSEG](#)

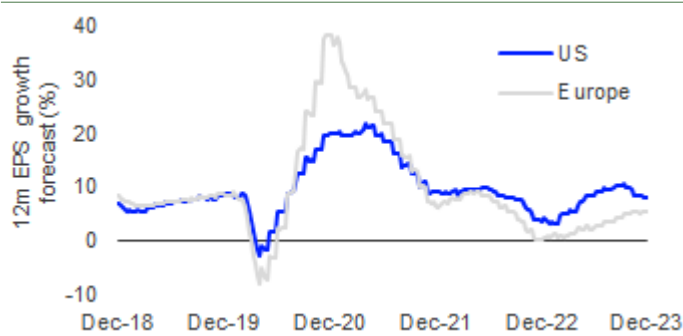
**Chart 1: US 10Y & 2Y Treasury Yields** – yields fell sharply, while curve steepened.



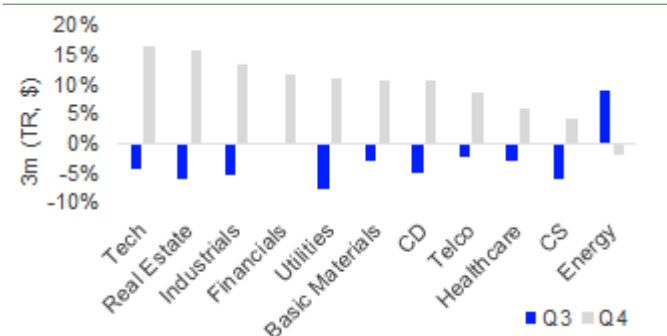
**Chart 2: Regional Inflation** – US, European and UK inflation fell, while it was flat in Japan and negative in China.



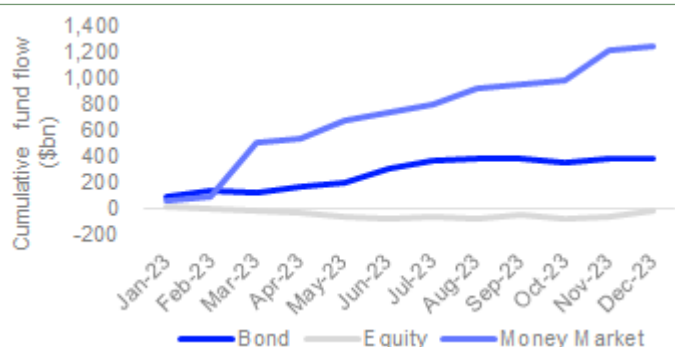
**Chart 3: 12m EPS growth estimates** – US estimates are higher than Europe, though they started to ease in Q4.



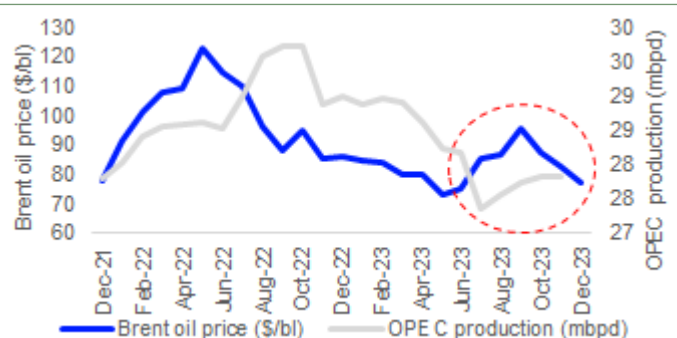
**Chart 4: FTSE All World Q3/4 Industry Performance** – Q3 underperformers became Q4 outperformers.



**Chart 5: Global Bond, Equity & Money Market Fund Flows** – investors returned to equities in November and December.



**Chart 6: Brent Oil Price** – the oil price fell on demand concerns and non-OPEC production.



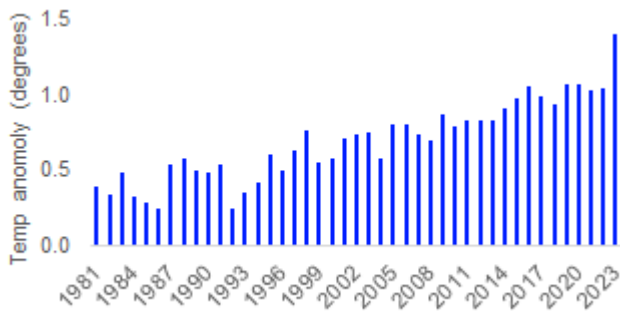
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# SI Backdrop – Q4 2023

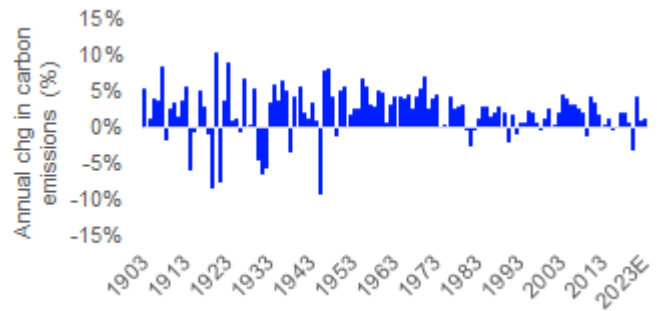
The key event for sustainable investment in Q4 was COP28, which was held in Dubai and where countries gather to discuss the global response to climate change. The conference took place against a backdrop of a summer, where global temperatures rose further, such that the global July-September temperature anomaly vs pre-industrial averages jumped to 1.4 degrees. Although global carbon emission growth has been trending down in recent years, it is still positive, rather than falling at the rate needed to achieve net zero. Methane, a potent green house gas responsible for up to 30% of global temperature rises, is still rising, and satellite data shows it is often under reported. Eight key recommendations were agreed, with the recommendation to transition away from fossil fuels in energy systems getting the most attention, as it is the first time fossil fuels have been mentioned in a COP statement. However, significant other recommendations were also made, notably tripling renewable energy capacity, doubling the annual rate of energy efficiency improvements and substantially reducing global methane emissions, all by 2030.

Despite the many challenges facing sustainable investors, there are grounds for optimism. Recent FTSE Russell research shows that, while the average company is seeing roughly neutral on carbon emission growth (in line to slightly better than global carbon emissions), the top quartile of companies are cutting emission in line with a net zero trajectory (~6-7%). Performance of companies with exposure to green products and services, captured by the Environmental Opportunities index, outperformed in Q4. While this was driven again by Energy Efficiency companies, the performance of Renewable & Alternative Energy companies, which have been dogged by profitability issues, saw their first positive performance quarter in 2023. However, challenges remain as both green bond issuance volume and SI fund flows remained subdued in Q4.

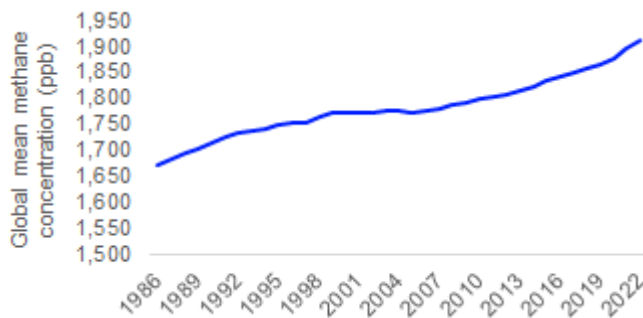
**Chart 1: Rising global summer temperatures – temperature anomaly was 1.4% for July-September 2023<sup>1</sup>.**



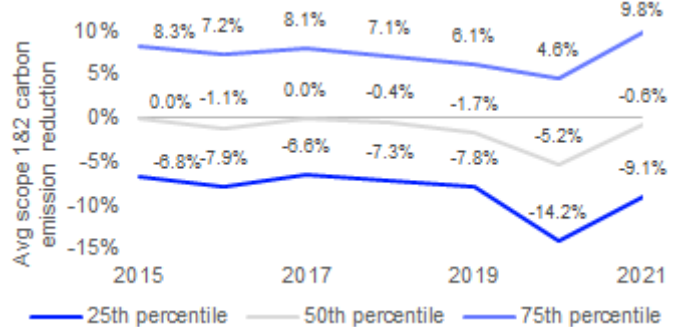
**Chart 2: Global carbon emissions – Slowing, but still growing<sup>2</sup>.**



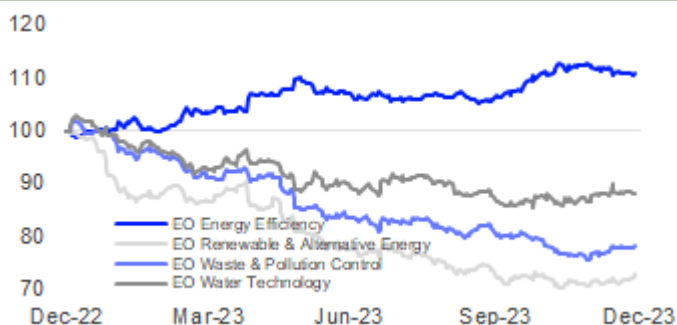
**Chart 3: Global methane emission – potent GHG rising quickly, but subject to intense recent focus<sup>3</sup>.**



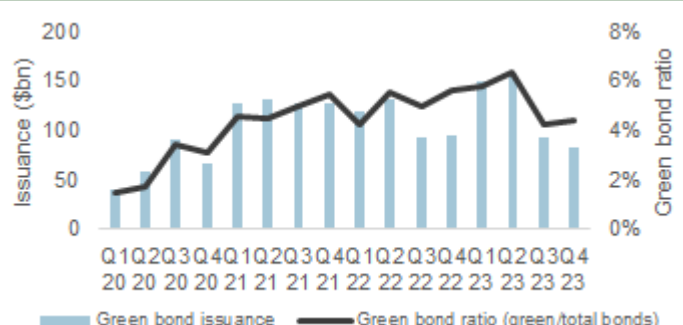
**Chart 4: Global scope 1&2 corporate carbon emissions – top quartile cut in line with net zero, but average is ~ flat.**



**Chart 5: Env Ops green sectors relative performance – weakness in renewable energy and waste.**



**Chart 6: Green bond issuance – green bond issuance remains weak in Q4.**

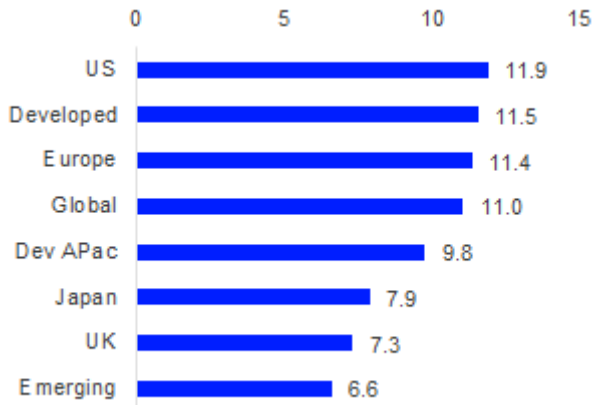


1. July-September temperature anomaly from pre-industrial average. ERA5, C3S/ECMWF.  
 2. Gütschow, Johannes ; Pflüger, Mika (2023): The PRIMAP-hist national historical emissions time series (1750-2022) v2.5. Zenodo.  
 3. Lan, X., K.W. Thoning, and E.J. Dlugokencky: Trends in globally-averaged CH<sub>4</sub>, N<sub>2</sub>O, and SF<sub>6</sub> determined from NOAA Global Monitoring Laboratory measurements. Version 2023-12, <https://doi.org/10.15138/P8XG-AA10>.  
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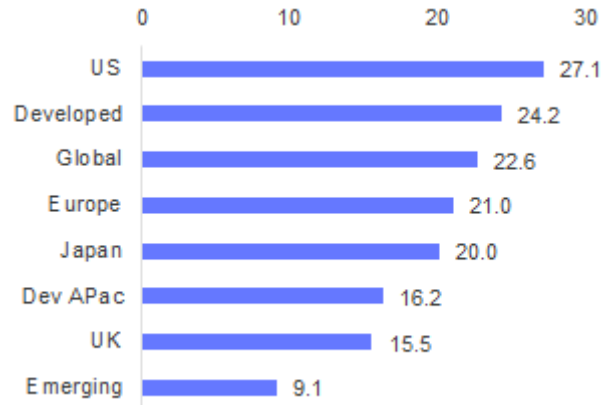
# Absolute Returns – 3M & 12M (TR, USD %) as of December 31, 2023

Q4 was marked by falling yields and a “risk on” narrative, leading to strong equity market performance. All regions saw positive returns, with US and Europe performing best, while Japan, the UK and EM were weaker performers. Over the whole of 2023, equity markets were strong, up 22.6% globally in US dollars, but with more dispersion with the US up 27.1%, and EM up 9.1%. Over both Q4 and the year, Environmental Opportunities strategies, which are typically more concentrated and growth focused, performed best, while ESG Low Carbon strategies were the worst performers.

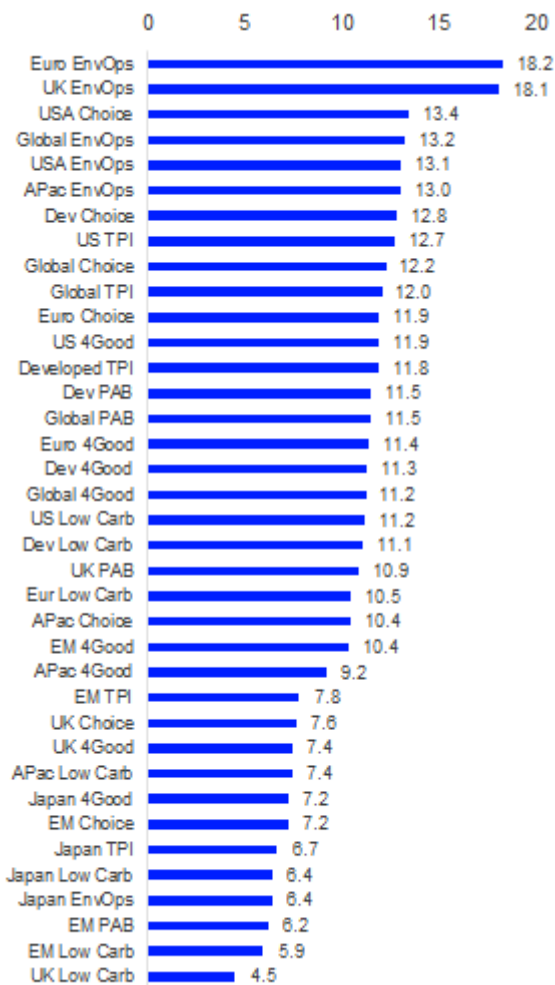
**Regional 3M Absolute Returns\* (TR, USD %).** The US was the strongest performer in a strong market.



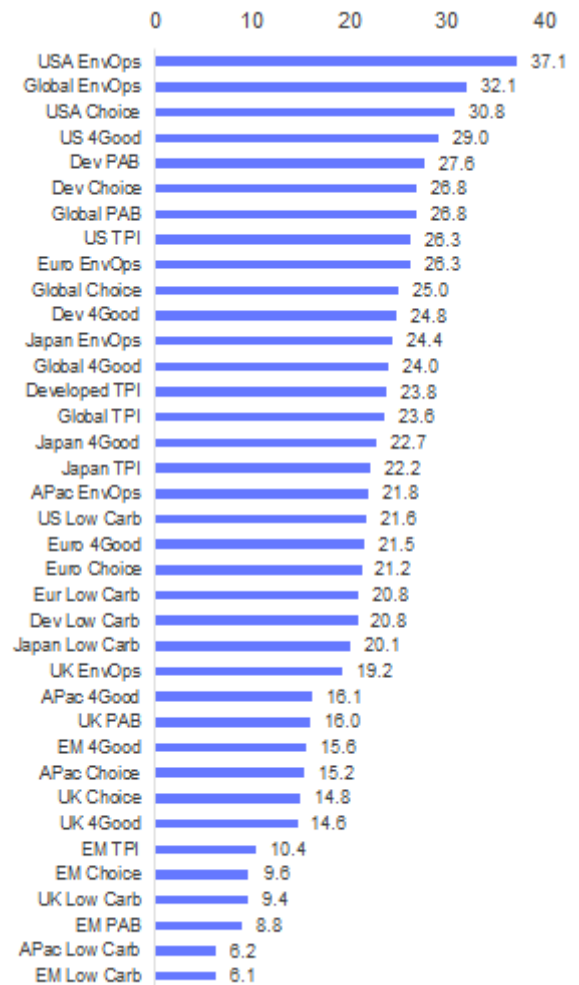
**Regional 12M Absolute Returns\* (TR, USD %).** The US was significantly stronger than other regions in 2023.



**SI Index 3M Absolute Returns (TR, USD %).** EnvOps and Choice were strong, whilst EM, Japan and Low Carb were weak.



**SI Index 12M Absolute Returns (TR, USD %).** US and EnvOps were strong, whilst EM and Low Carb were weak.



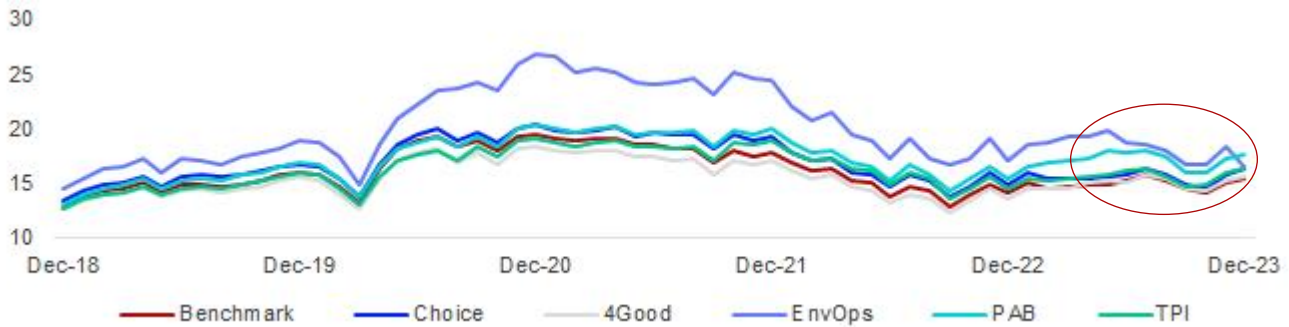
\*The Broad regional indices above are: FTSE USA, FTSE UK, FTSE Developed Europe, FTSE Japan, FTSE Developed Asia-Pacific and FTSE Emerging Markets. Benchmarks for the listed SI indices may vary. Appendix 1 shows the appropriate benchmark and market-cap coverage for the SI indices covered in this report.

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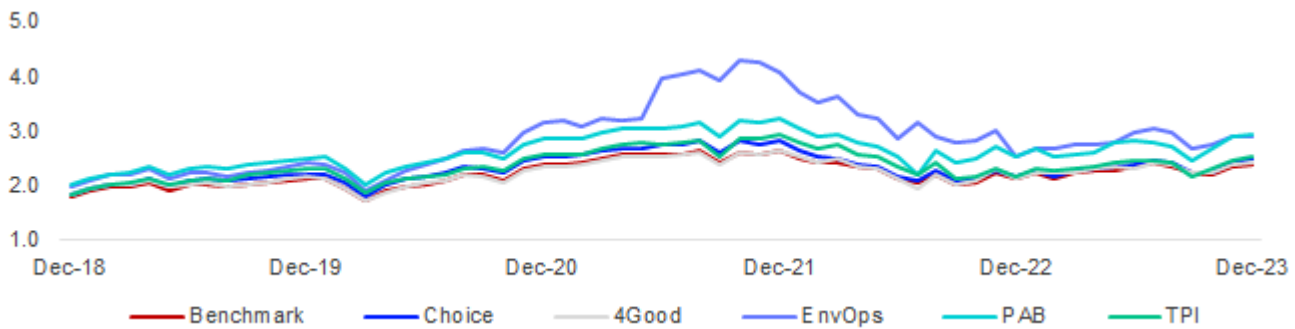
# SI Index Valuation – December 31, 2023

Despite a strong SI performance in 2023, P/E valuations for most SI indices went sideways over the year, in line with the market, although they rose slightly in Q4. The key outliers were Environmental Ops, which saw a falling valuation over the H2 2023, and PAB where valuation rose. This left Environmental Ops, which historically has traded at a premium to other strategies, with a valuation broadly in line with them at the end of 2023 and PAB the most expensive strategy, in terms of both P/E and Price to Book. All SI indices are now trading above the market P/E, with FTSE4Good the closest. Environmental Ops is below its five year average absolute and market relative P/E, while other SI indices are broadly in line. Dividend yields have also gone sideways over the year, with Environmental Ops offering the lowest yields (53bps behind the market), and FTSE4Good the highest (20bps ahead of the market).

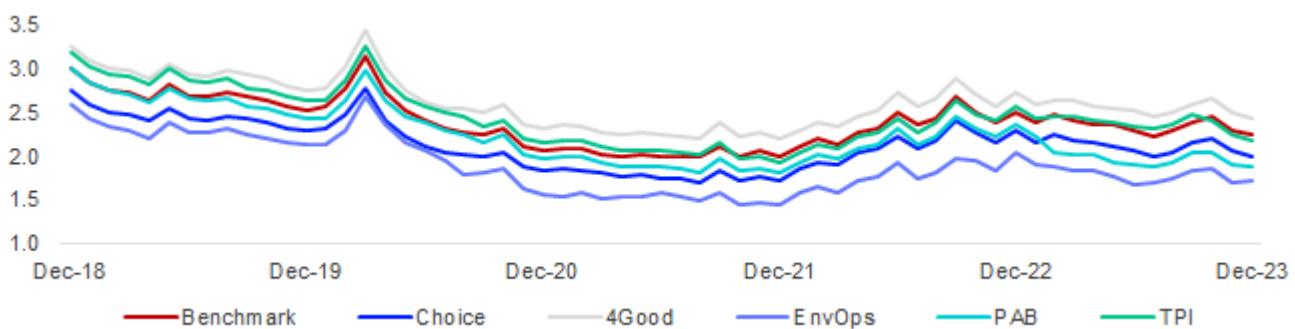
## Global Markets – 12-month forward factor P/E ratios



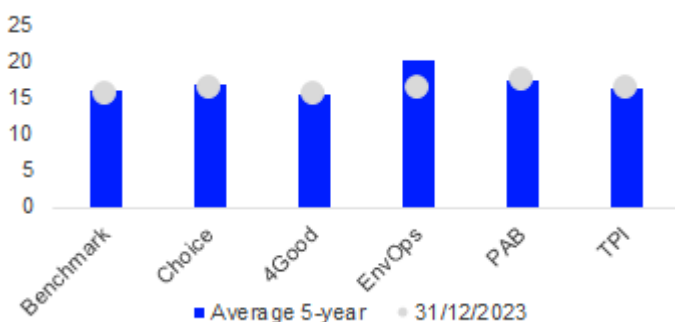
## Global Markets – 12-month forward factor Price to Book ratios



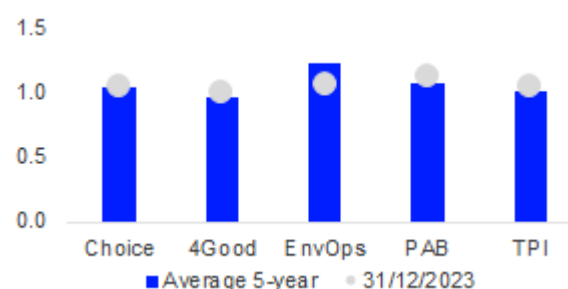
## Global Markets – Dividend Yield



## 12-month forward P/E vs history



## 12-month forward P/E premium vs history

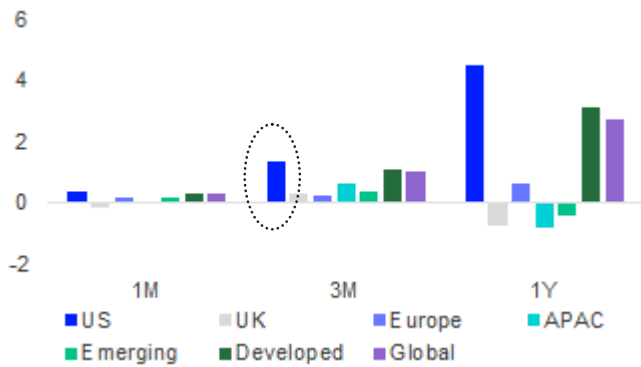


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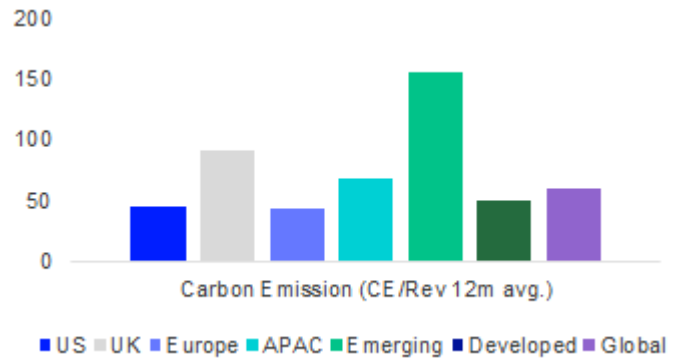
# FTSE Global Choice indices – Q4 2023

Global Choice outperformed at the global level in Q4, particularly in the US. The majority of the outperformance came from the 5% underweight allocation in Energy. US outperformance came from the underweight allocation in Energy and overweight in Tech. Europe, the lowest performing region, was negatively impacted by its overweight in Healthcare and Industrials. In addition to exclusions, Global Choice indices are effective at reducing carbon intensity across all regions, except in the UK, through underweights in Energy, Utilities and Basic Materials.

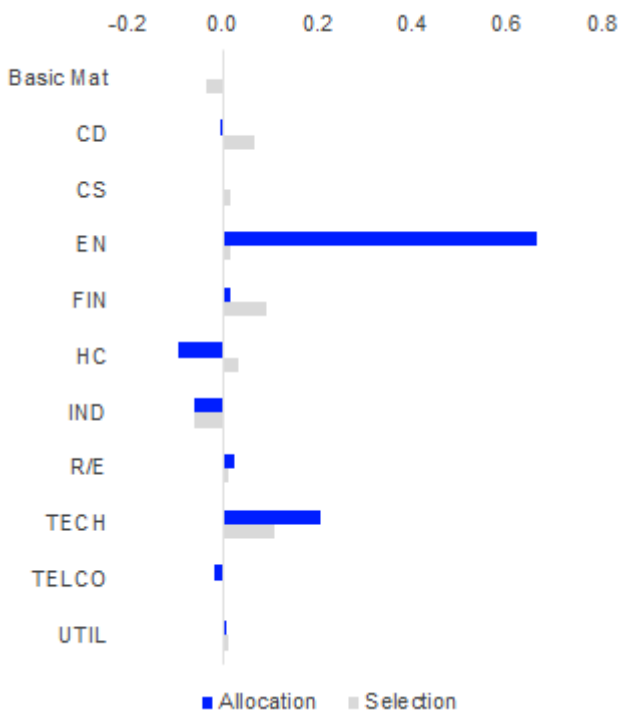
**Chart 1: Active performance (TR, USD %)**



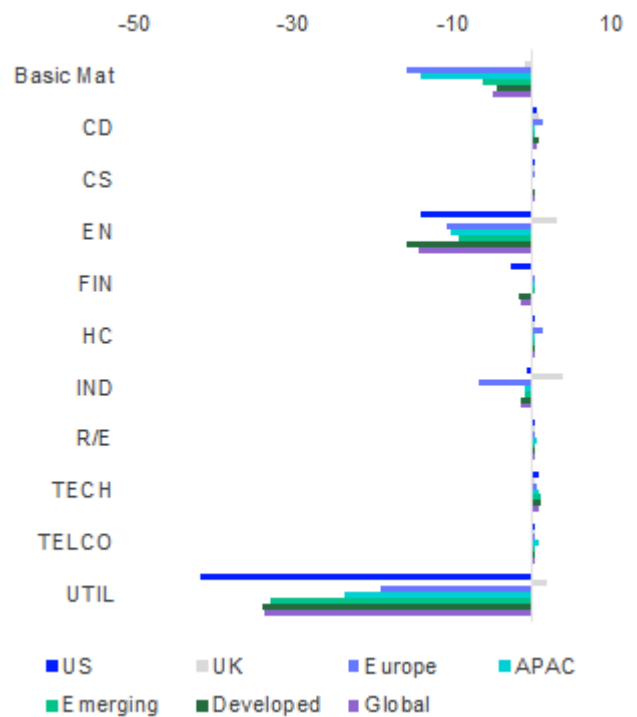
**Chart 2: Global Choice carbon emissions / revenues**



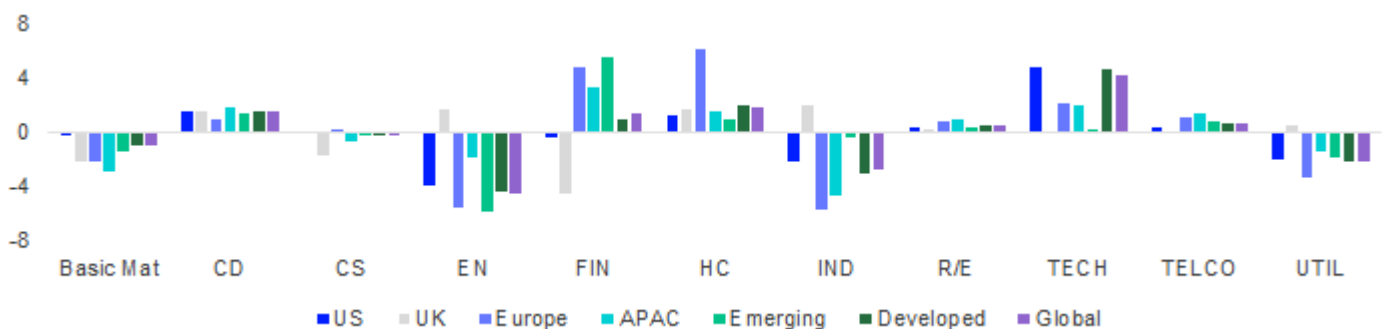
**Chart 3: 3M Attribution of global index (%)**



**Chart 4: Contribution to carbon reduction (%)**



**Chart 5: Active industry weights (%)**



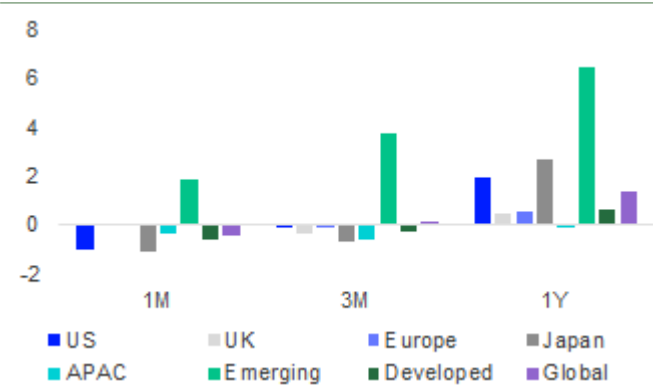
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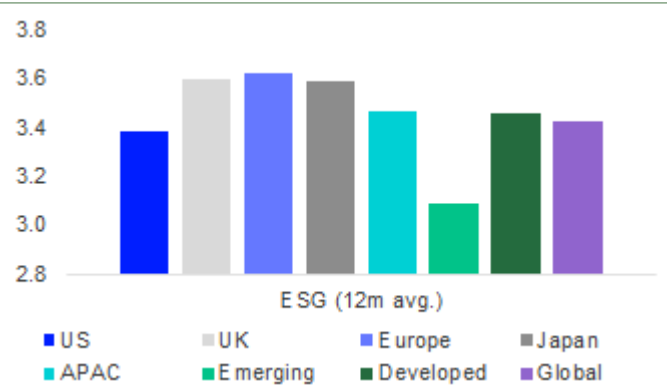
# FTSE4Good indices – Q4 2023

FTSE4Good performance was narrowly ahead of the market at the global level in Q4, with most geographies underperforming, Europe in line, and EM significantly ahead of the market. Positive allocation effects in Energy and Tech were offset by negative selection effects across multiple industries, particularly Tech. Outperformance in EM came from positive selection effect across multiple industries, particularly Tech. UK, European and Japanese indices have the highest ESG scores, while EM has the lowest. The index's ESG uplift came from Tech and Financials, which are the main industry overweights.

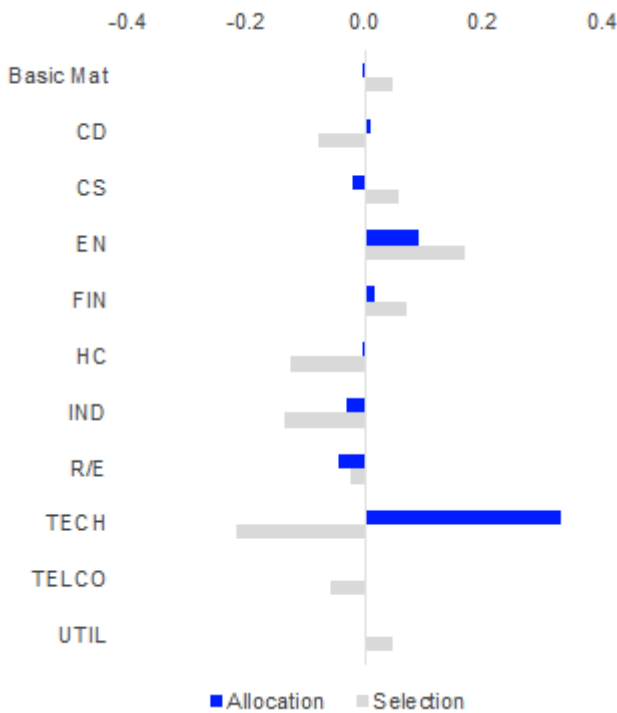
**Chart 1: Active performance (TR, USD %)**



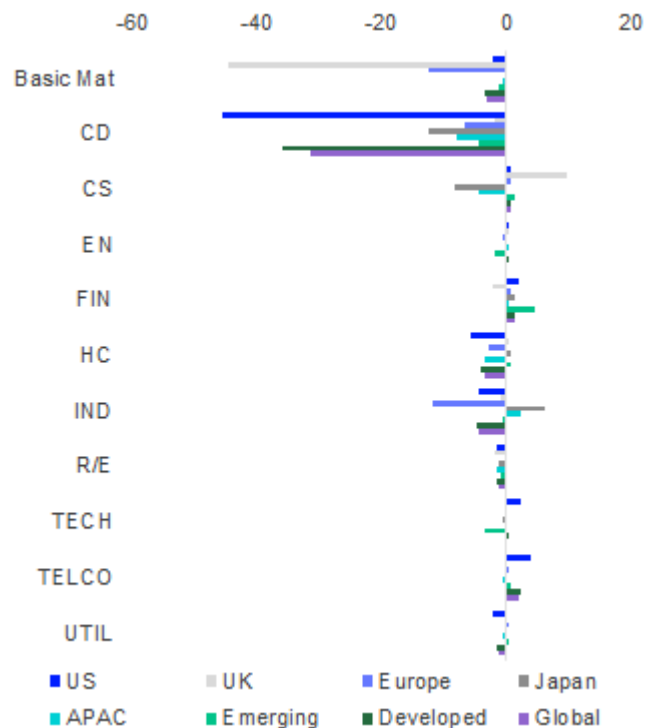
**Chart 2: FTSE4Good ESG scores**



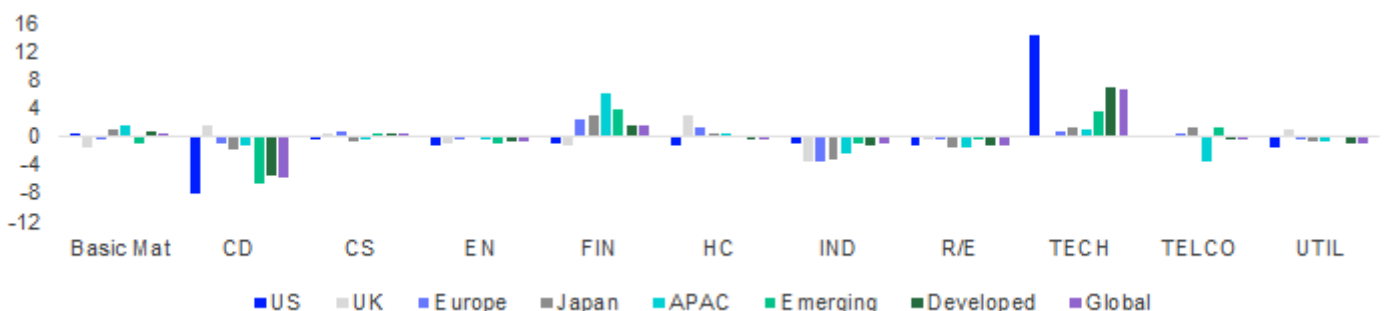
**Chart 3: 3M Attribution of global index (TR, USD %)**



**Chart 4: Contribution to ESG uplift (%)**



**Chart 5: Active industry weights (%)**

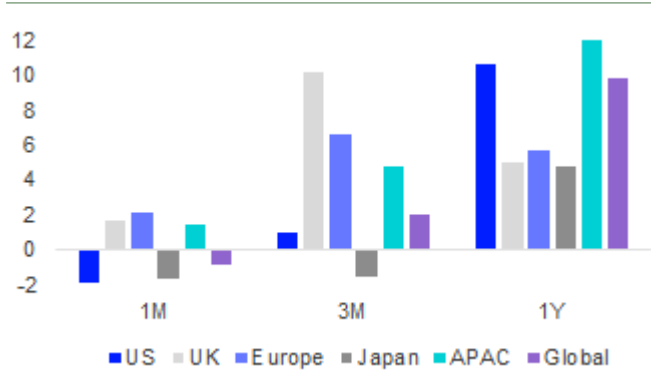


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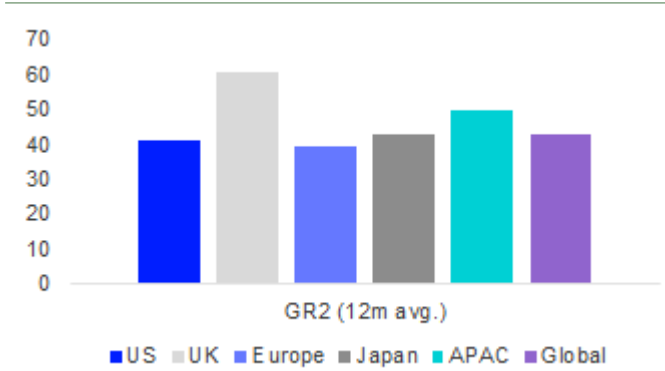
# FTSE Environmental Opportunities (EO) indices – Q4 2023

EO indices outperformed at the global level in Q4, with positive performance across all geographies, except Japan and notably in the UK and Europe. Global outperformance came from an overweight in Tech and underweights in Energy, Healthcare and Consumer Staples, offset by negative selection in Consumer Discretionary. In terms of green sectors, outperformance came from Energy Efficiency, while Waste & Pollution underperformed. European outperformance came from overweight allocation in Industrials & Tech, while Japanese underperformance came from negative allocation and selection in Consumer Discretionary. EO indices are heavily overweight Industrials, Technology and Utilities (& Consumer Discretionary in Japan).

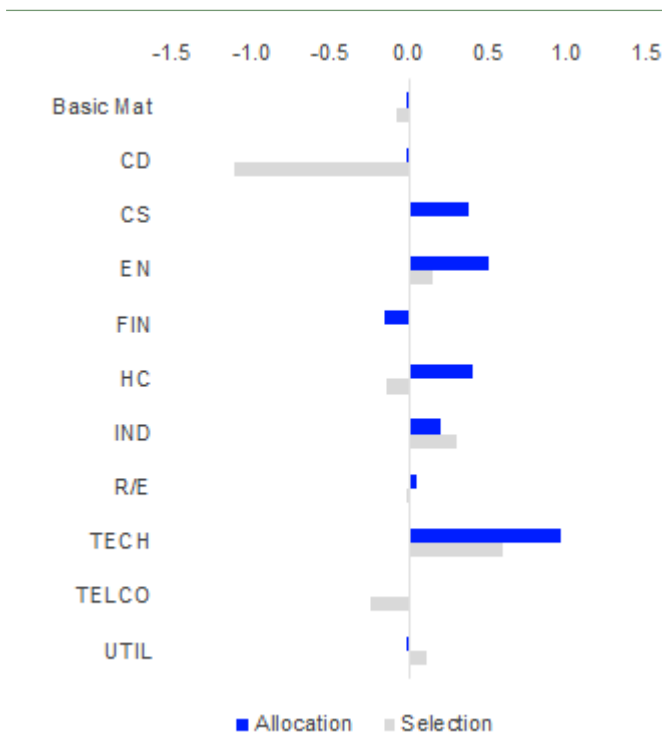
**Chart 1: Active Performance (TR, USD %)**



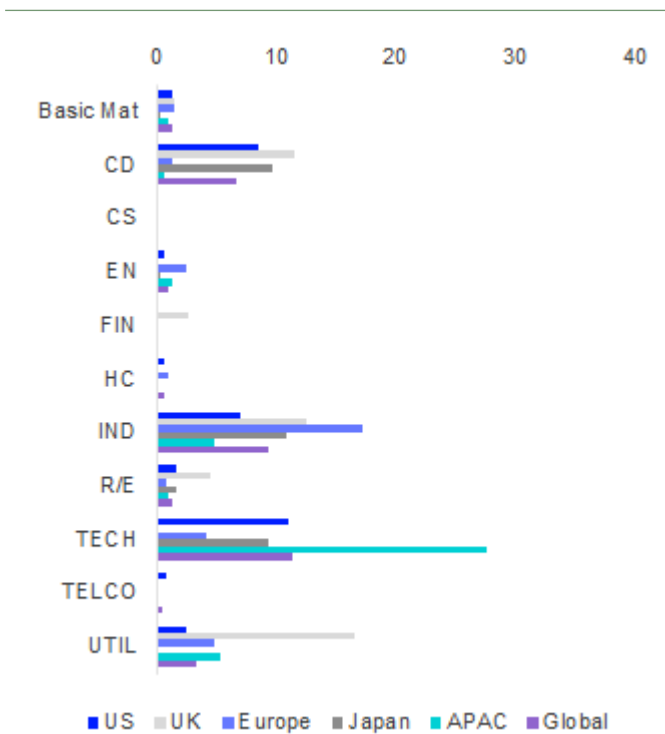
**Chart 2: Environmental Ops Green Revenues scores**



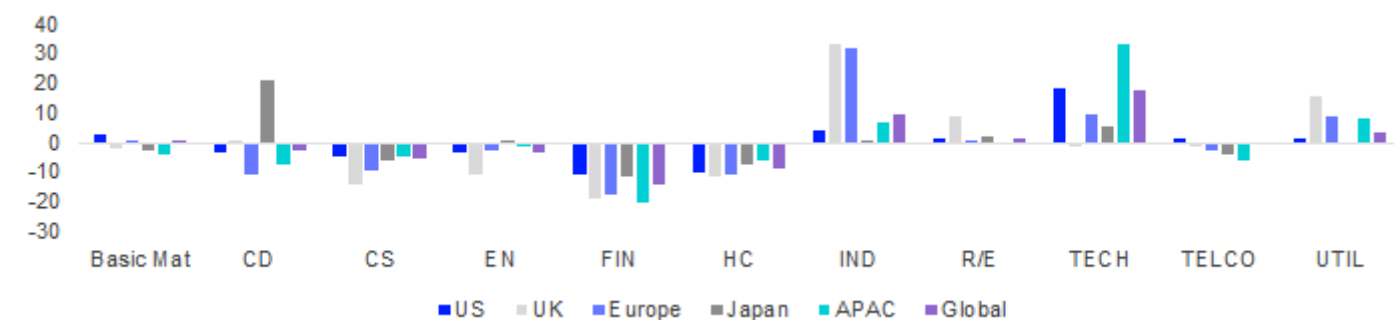
**Chart 3: 3M Attribution of global index (TR, USD %)**



**Chart 4: Contribution to Green Revenues uplift (%)**



**Chart 5: Active industry weights (%)**

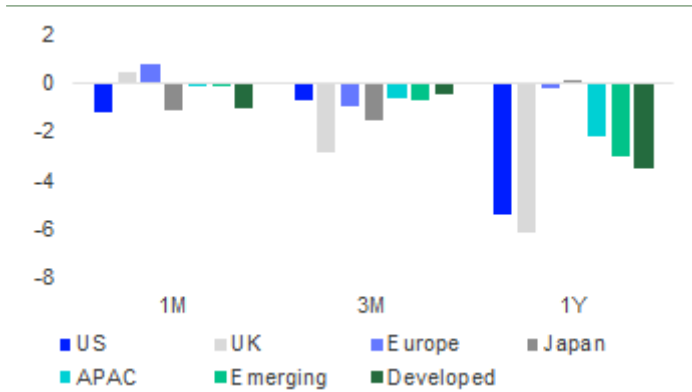


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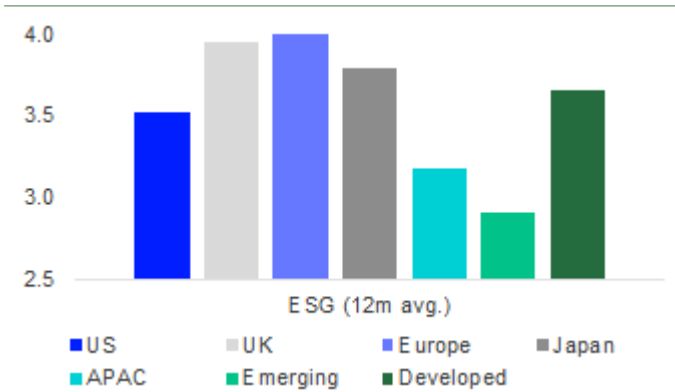
# FTSE ESG Low Carbon Target Exposure indices – Q4 2023

FTSE ESG Low Carbon underperformed in the developed markets in Q4, with all geographies underperforming, notably the UK and Japan. Underperformance was driven by negative selection effect across multiple industries, in particular Healthcare. Offset by positive selection in Tech and allocation in Energy, ESG Low Carbon has one of the lowest overweights in Tech. Underperformance in the UK came from a mix of allocation and selection effects, across multiple industries, the largest being the selection in Consumer Discretionary. ESG Low Carbon generates both lower carbon intensities and higher ESG scores from multiple industries.

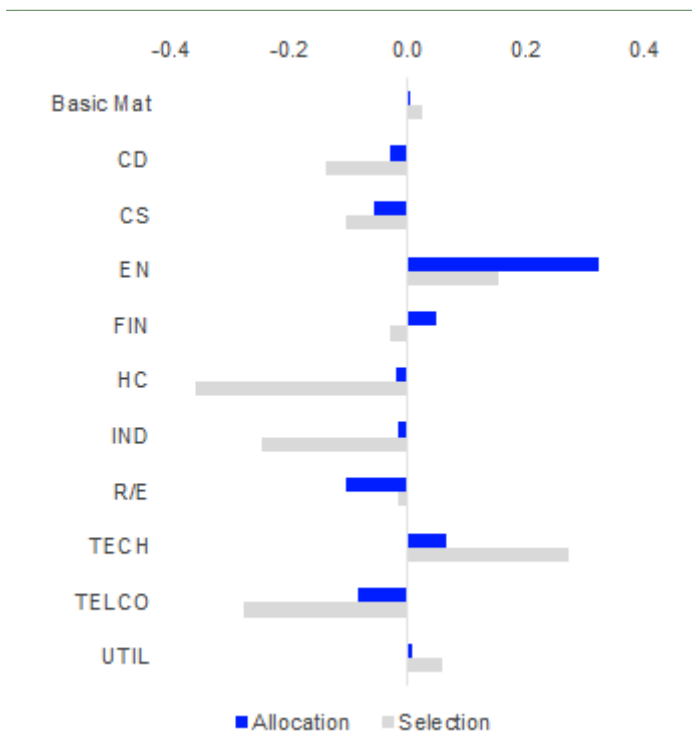
**Chart 1: Active Performance (TR, USD %)**



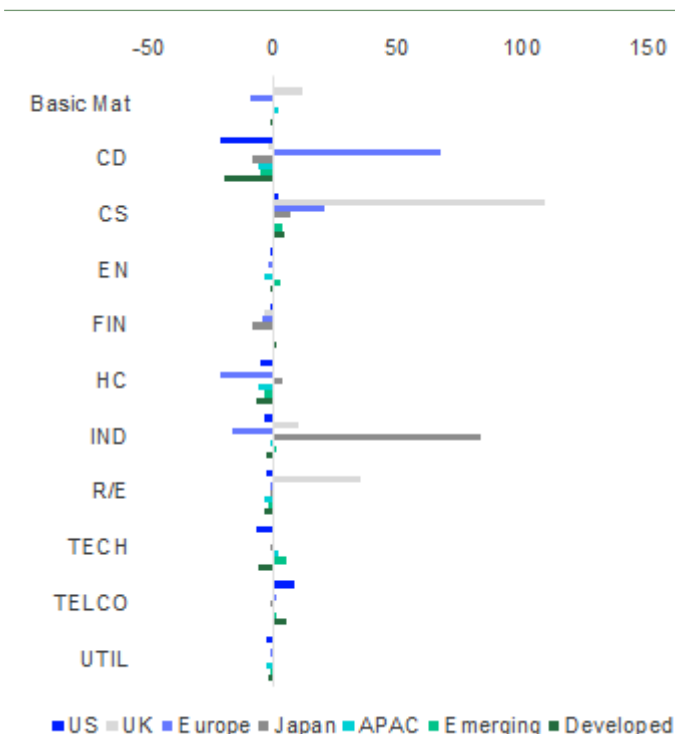
**Chart 2: ESG Low Carbon ESG scores**



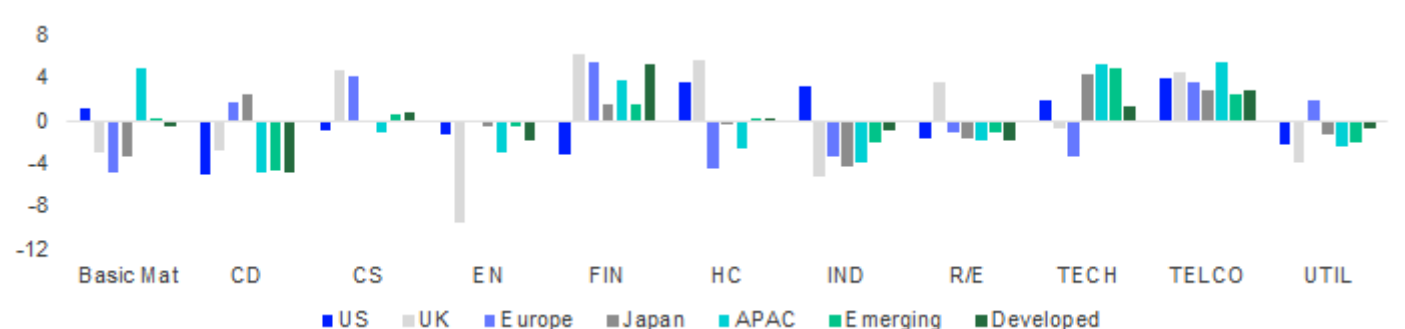
**Chart 3: 3M Attribution of developed index (TR, USD %)**



**Chart 4: Contribution to ESG uplift (%)**



**Chart 5: Active industry weights (%)**

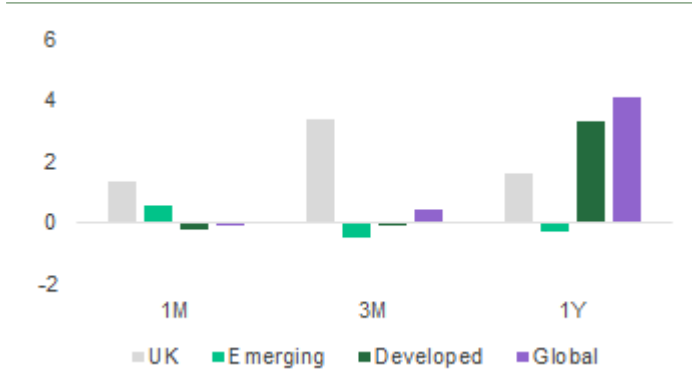


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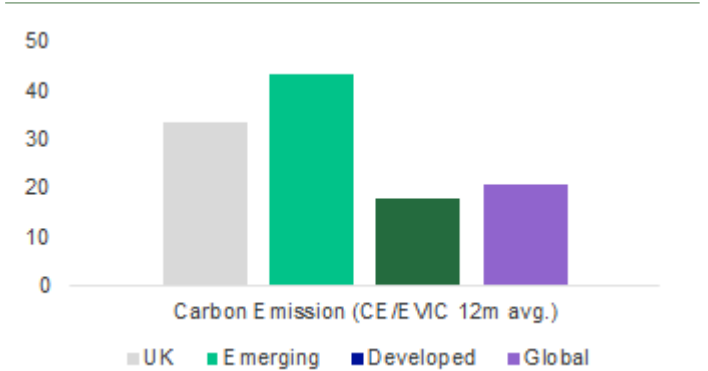
# FTSE EU Paris-Aligned Benchmark (PAB) indices – Q4 2023

Paris-Aligned Benchmark (PAB) outperformed at the global level in Q4: the UK outperformed, EM underperformed; and Developed performed in line with the market. Outperformance predominantly came from the 5% underweight in Energy, offset by negative selection in Consumer Discretionary. Outperformance in the UK was driven by a 11.5% underweight in Energy and positive selection in Consumer Staples. EM underperformance was driven by a negative allocation and selection in Energy. The carbon reduction in PAB comes primarily from underweights in Energy and Basic Materials, and a tilting towards lower carbon Utilities.

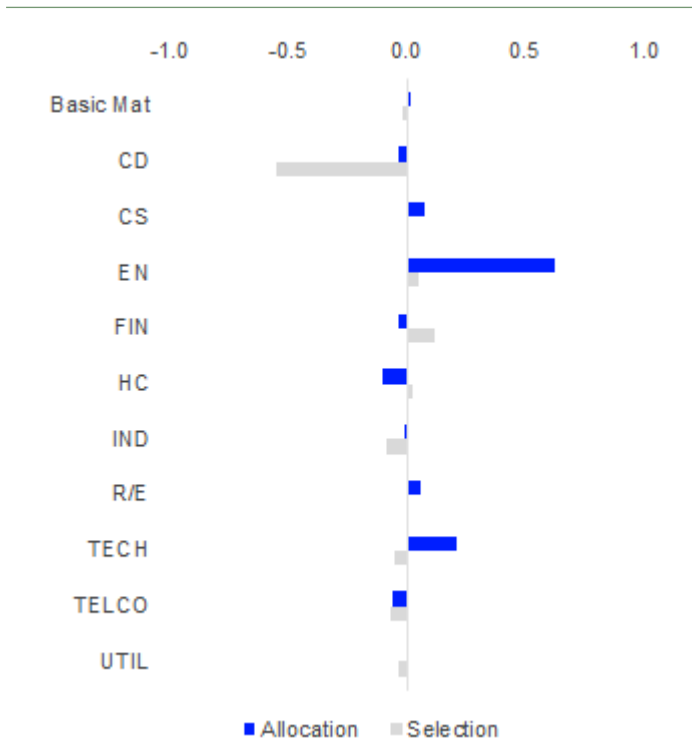
**Chart 1: Active Performance (TR, USD %)**



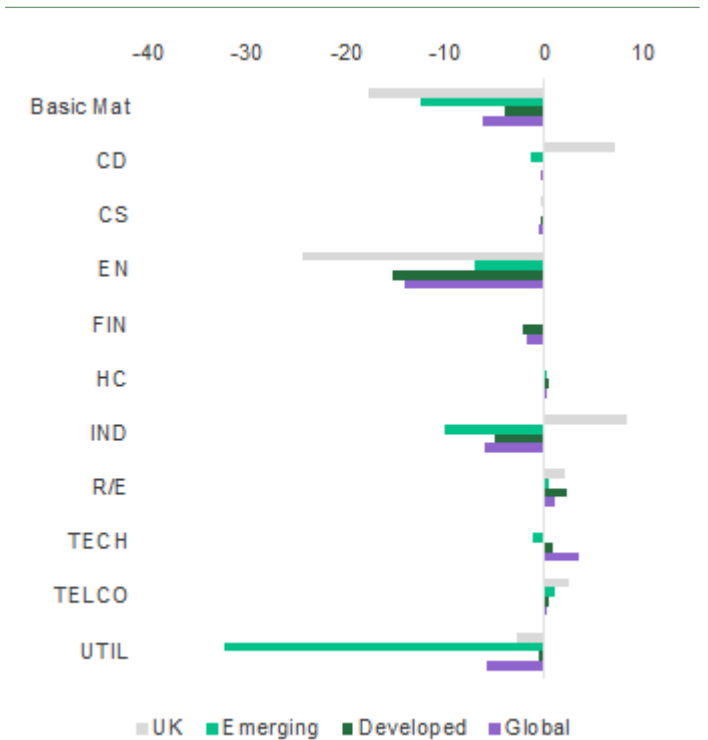
**Chart 2: PAB Carbon emission / EVIC**



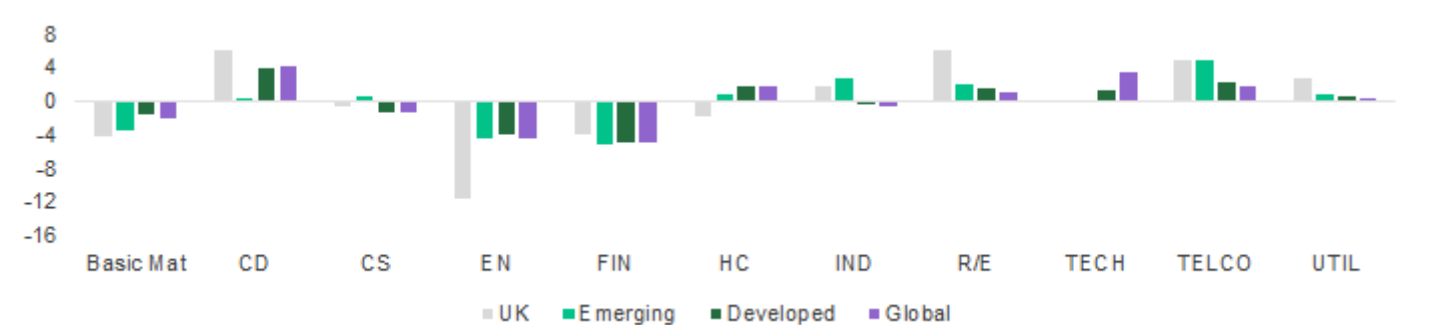
**Chart 3: 3M Attribution of global index (TR, USD %)**



**Chart 4: Contribution to Carbon reduction (%)**



**Chart 5: Active industry weights (%)**

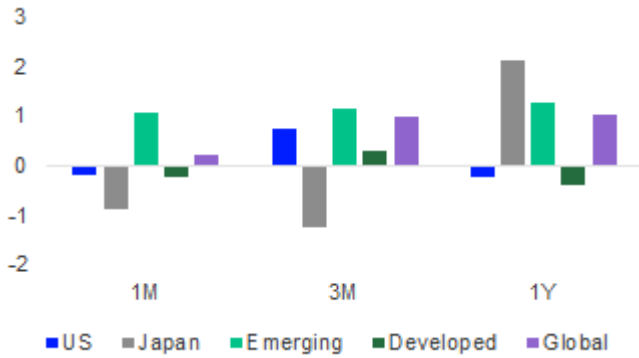


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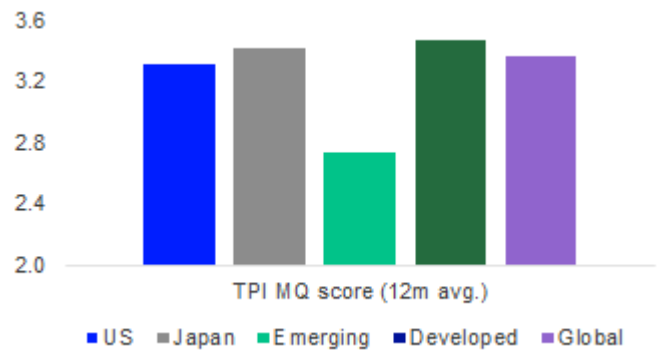
# FTSE TPI Climate Transition indices – Q4 2023

TPI indices outperformed at the global level in Q4, with an outperformance in all geographies, except in Japan. Global outperformance was driven by a 4% underweight in Energy and positive selection in Financials. Strong EM performance came from selection in Tech, despite limited allocation effect from the 5% underweight in Energy. Japan's underperformance was driven by negative selection in Consumer Discretionary. TPI MQ scores are similar across developed markets, while the EM score is materially lower. Uplift came from a wide range of industries, offset by the underweight in Energy.

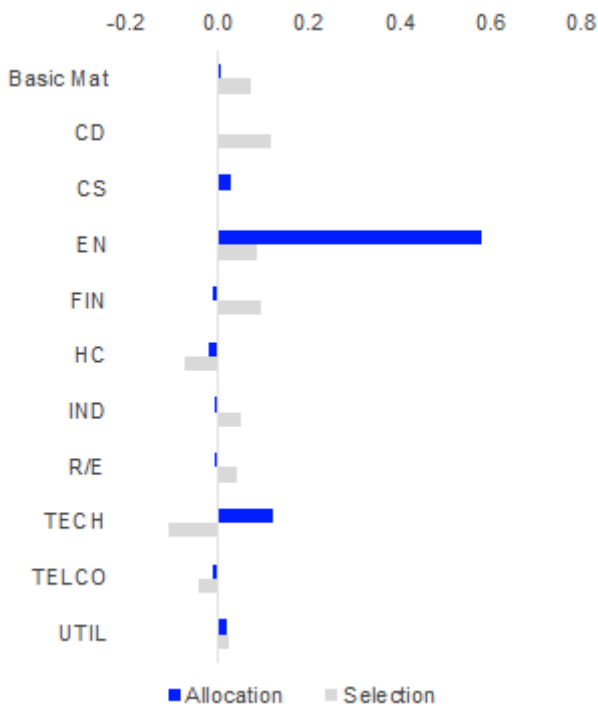
**Chart 1: Active Performance (TR, USD %)**



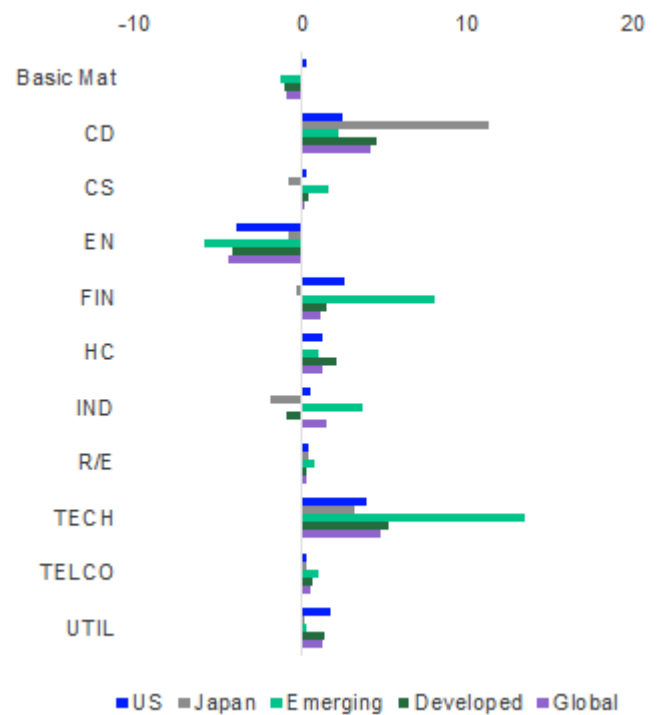
**Chart 2: TPI Index TPI Management Quality Score**



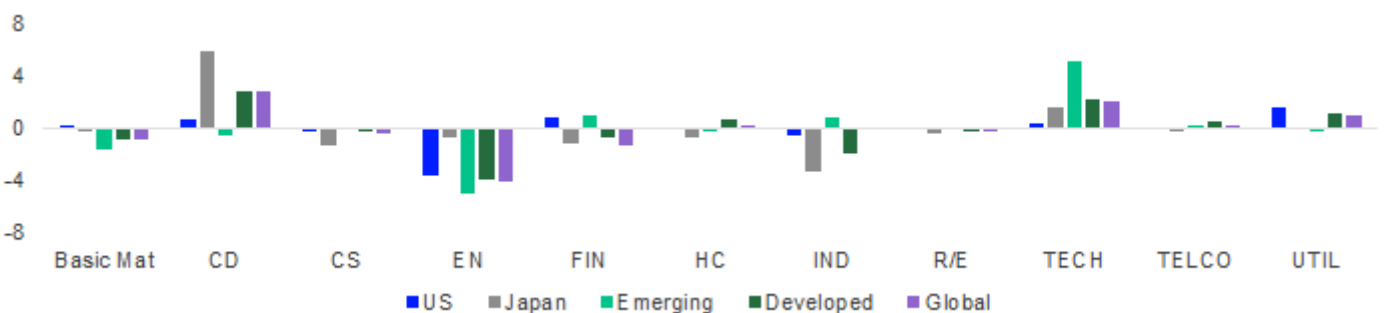
**Chart 3: Attribution of global index (TR, USD %)**



**Chart 4: Contribution to TPI MQ uplift (%)**



**Chart 5: Active industry weights (%)**

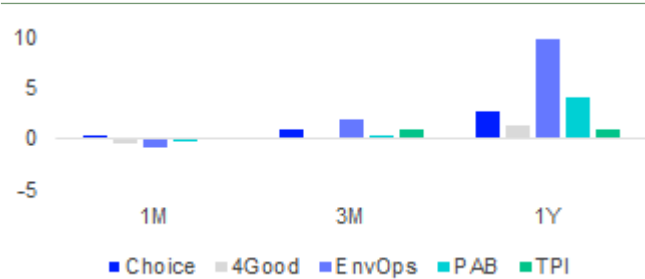


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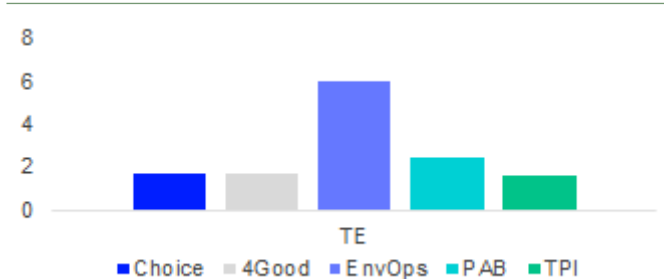
# Global Index Comparisons – Q4 2023

Global SI indices outperformed the market in Q4. The best performer was Environmental Opportunities, which was 2% ahead of the market, driven by the overweight allocation to Tech and underweight to Energy, though this was offset by negative selection in Consumer Discretionary. Choice and TPI were also driven by their underweight allocation in Energy, however PAB saw performance offset by negative selection effect in Consumer Discretionary. FTSE4Good saw the weakest performance due to the lowest Energy underweight. Globally, SI indices are trading at close to their five year relative P/E premium, except Environmental Opportunities, which is below the average. During Q4, Environmental Opportunities saw a particularly significant fall in premium.

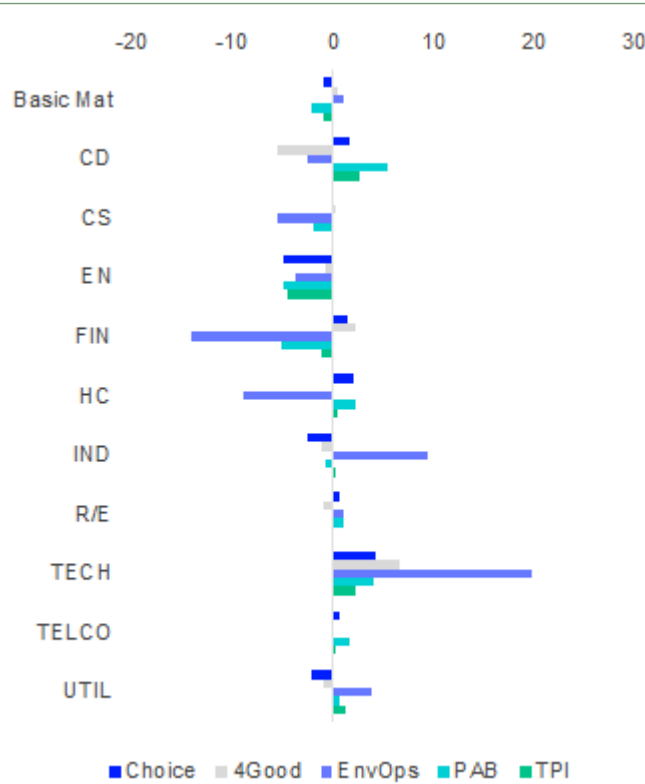
**Chart 1: Active Performance (TR, USD %)**



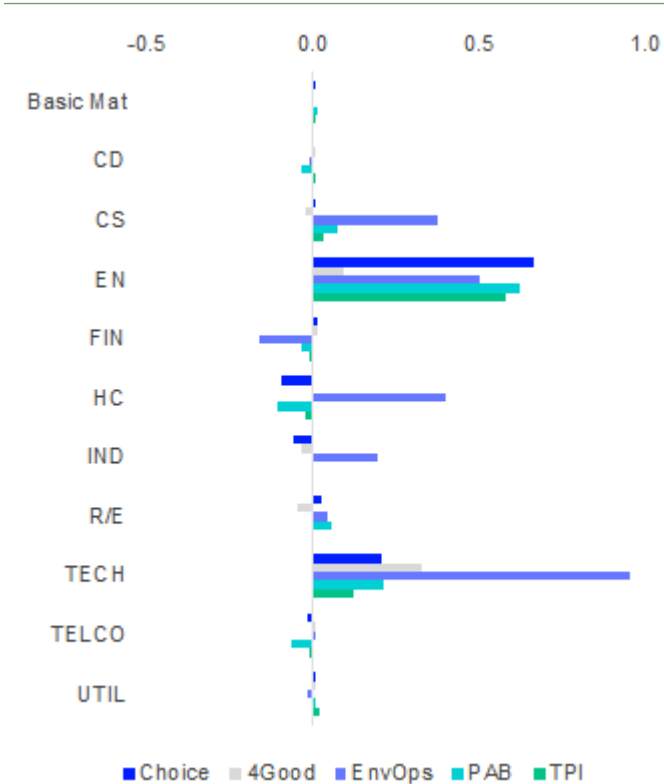
**Chart 2: Index tracking error (%)**



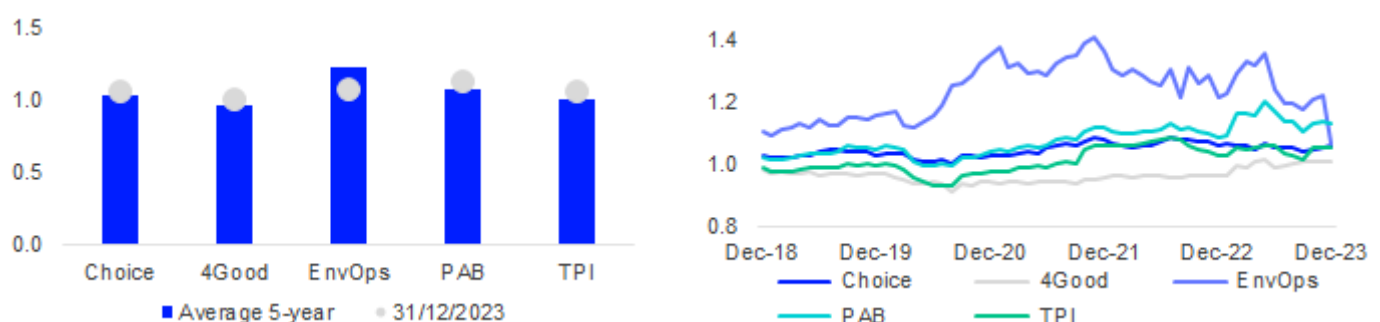
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: Global indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

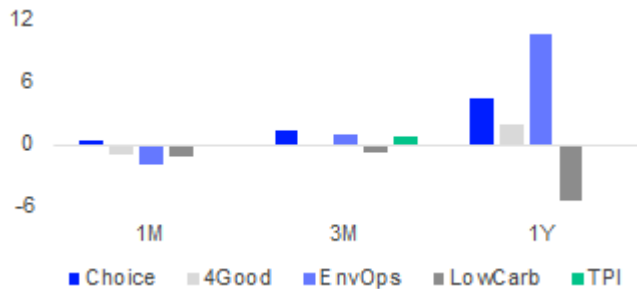


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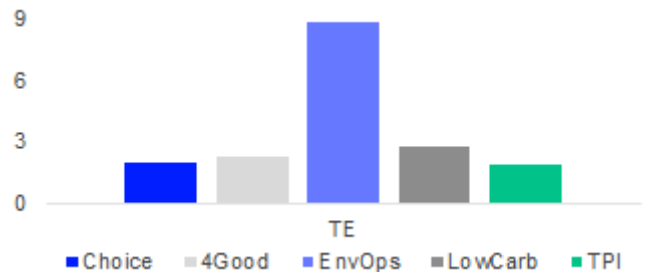
# US Index Comparisons – Q4 2023

Most US SI strategies outperformed the market in Q4, except for FTSE4Good which was in line and ESG Low Carbon, which was 0.7% behind. The best performer was Choice, 1.35% ahead of the market, driven by underweight allocation to Energy and an overweight allocation to Tech. Underperformance in ESG Low Carbon came from negative selection effects in Consumer Discretionary, Financials and Utilities. FTSE4Good was impacted by negative selection in Tech, and Environmental Opportunities by negative selection in Consumer Discretionary. Most US SI indices trade at a premium, slightly above their five-year averages, and have seen higher premia in Q4.

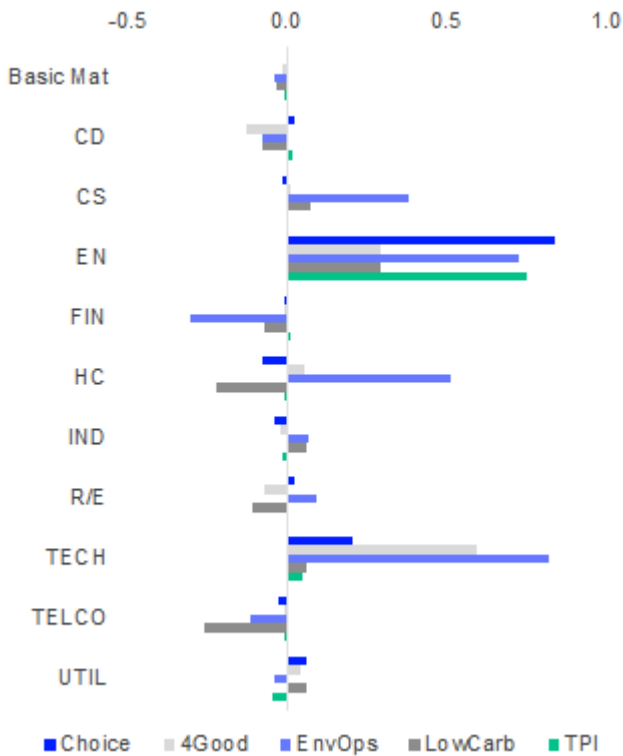
**Chart 1: Active Performance (TR, USD %)**



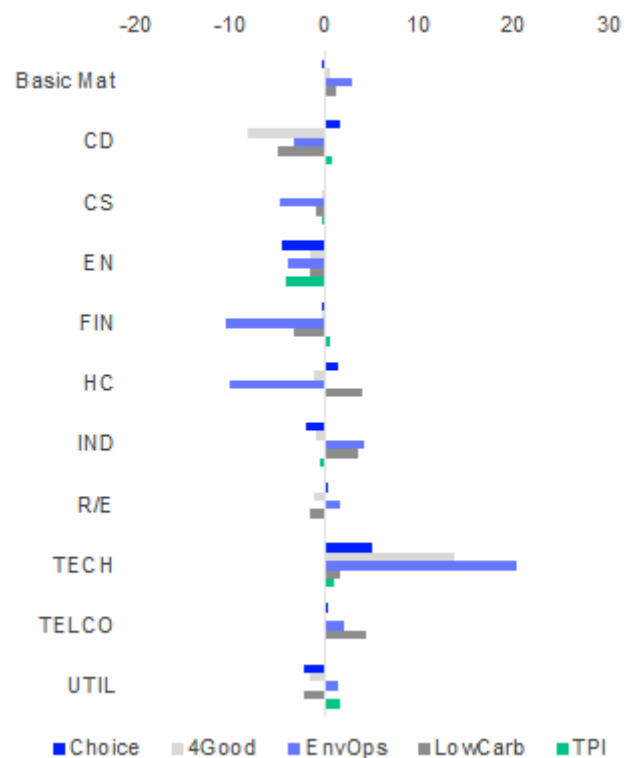
**Chart 2: Index tracking error (%)**



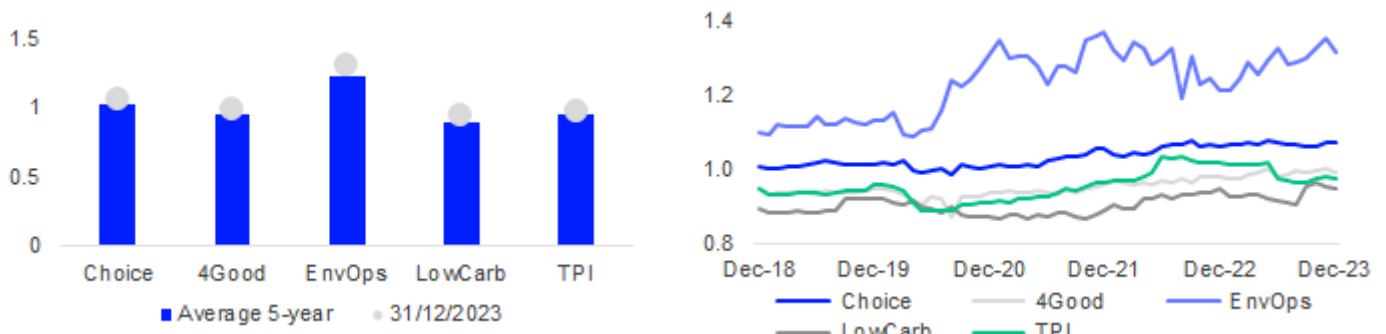
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: US indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

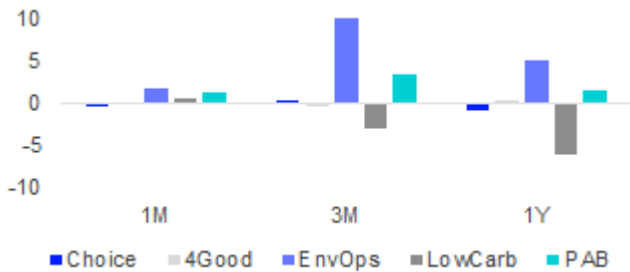


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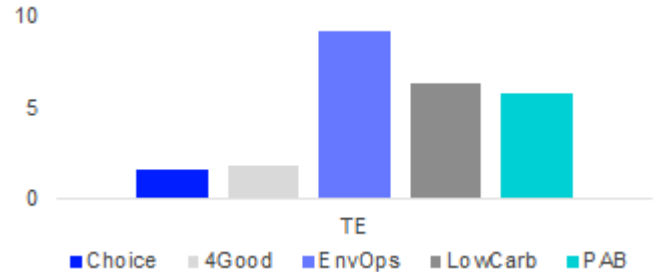
# UK Index Comparisons – Q4 2023

UK SI indices saw a mixed performance in Q4. Environmental Opportunities and PAB saw a strong outperformance, while ESG Low Carbon and FTSE4Good underperformed. Environmental Opportunities outperformance came from overweights in Industrials, Real Estate and Utilities and underweights in Consumer Staples, Energy and Healthcare, and a positive selection effect in Consumer Discretionary. ESG Low Carbon underperformance was driven by negative selection in Consumer Discretionary and Consumer Staples. In the UK, Choice and FTSE4Good traded in line with their five-year P/E premium, while PAB is above, and Env Ops and Low Carbon are below.

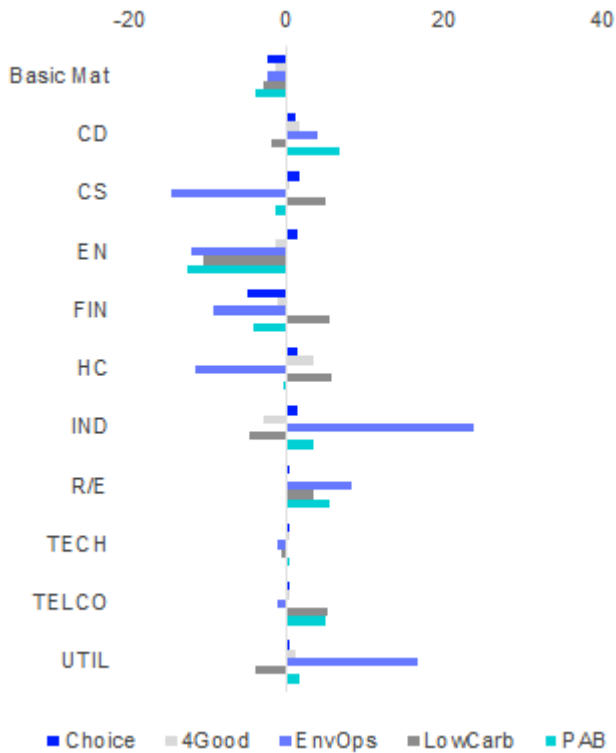
**Chart 1: Active Performance (TR, USD %)**



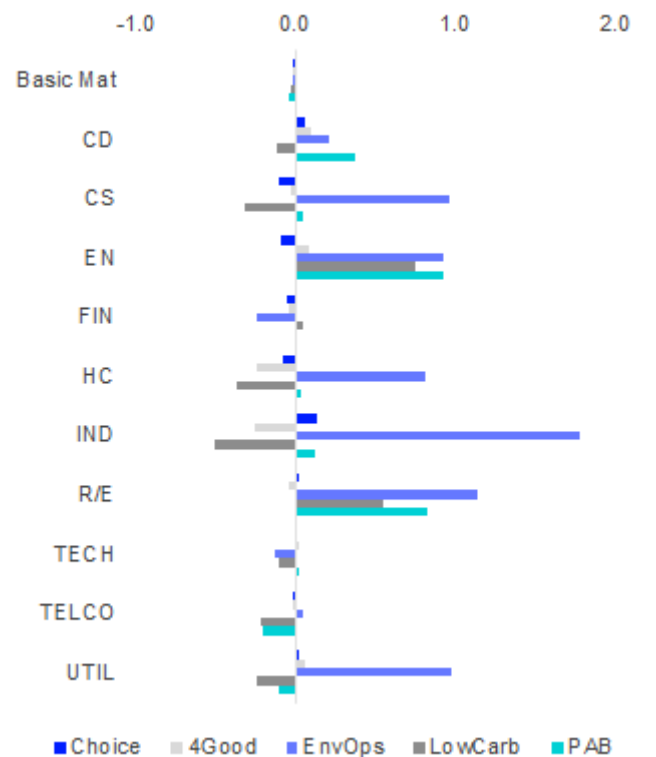
**Chart 2: Index tracking error (%)**



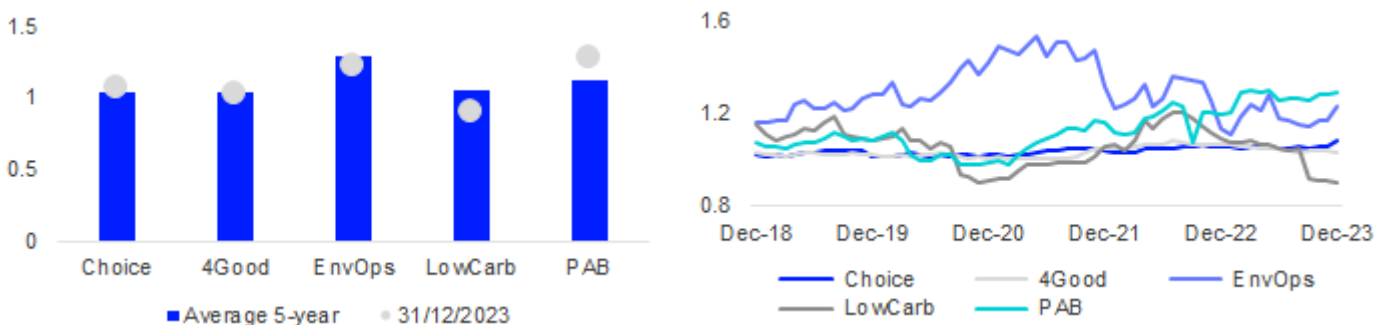
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: UK indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**



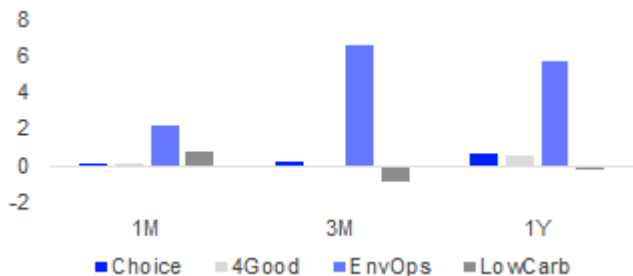
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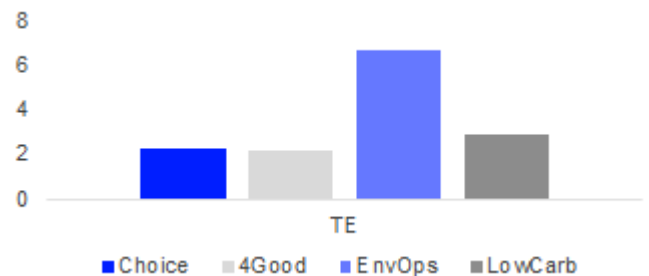
# Europe Index Comparisons – Q4 2023

European SI indices saw a mixed performance in Q4. Environmental Opportunities strongly outperformed the market, while FTSE4Good was in line, and ESG Low Carbon underperformed. Environmental Opportunities outperformance was driven by an overweight allocation in Industrials and Tech, underweights in Consumer Staples and Healthcare, and positive selection in Industrials and Energy. Underperformance in ESG Low Carbon came from underweights in Industrials and Tech and an overweight allocation and a negative selection in Consumer Staples. SI index relative valuations are in line with their five-year averages, Environmental Opportunities saw rising premium in Q4, while others have registered falling premia.

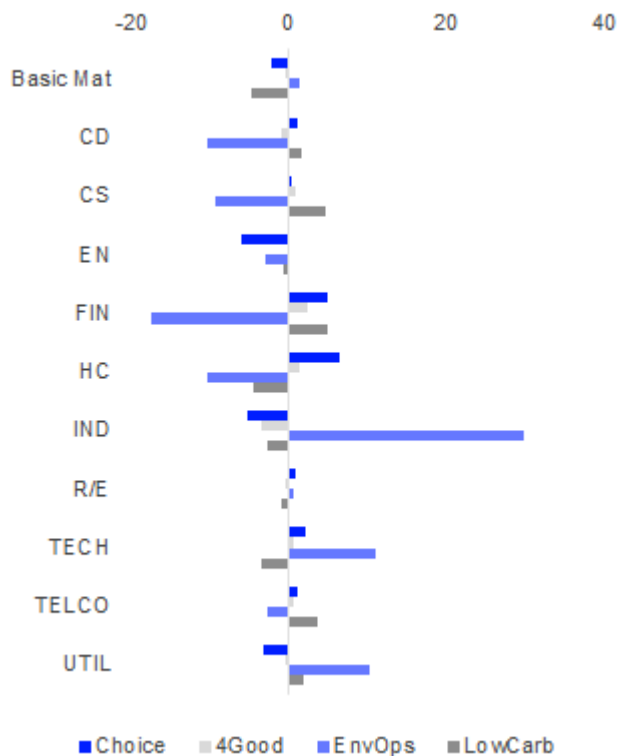
**Chart 1: Active Performance (TR, USD %)**



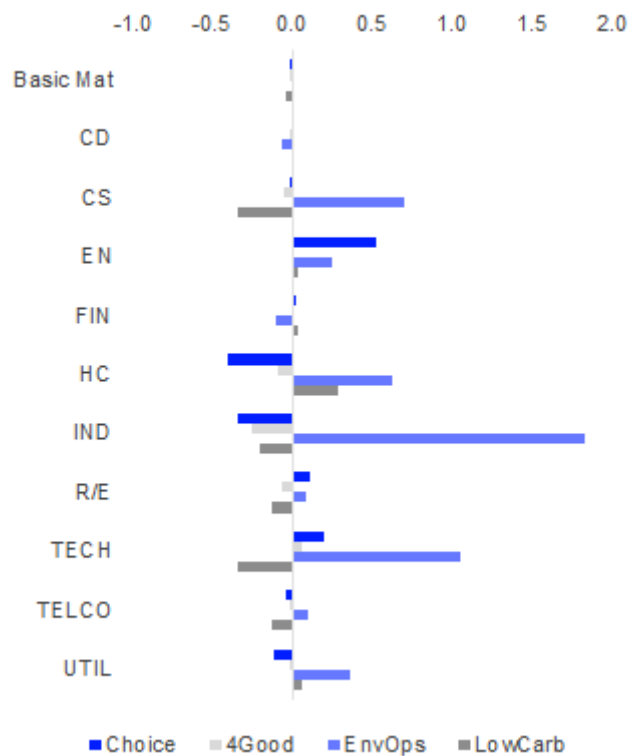
**Chart 2: Index tracking error (%)**



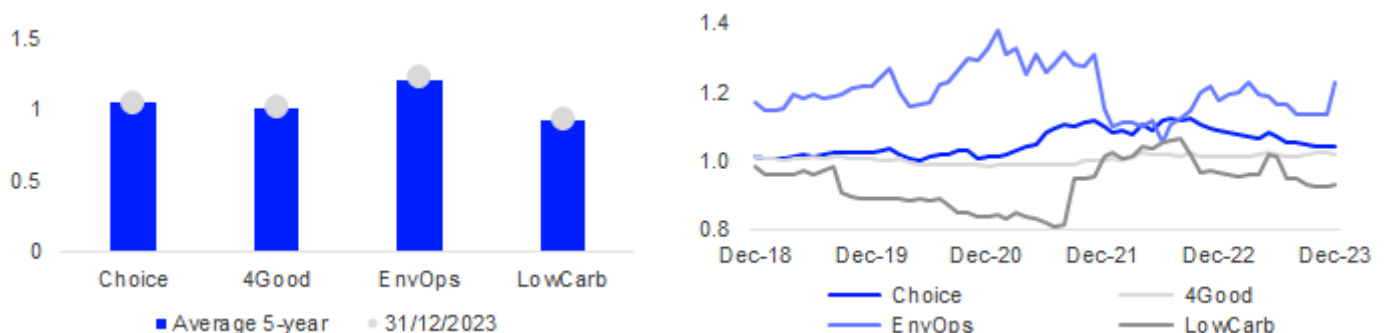
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: European indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

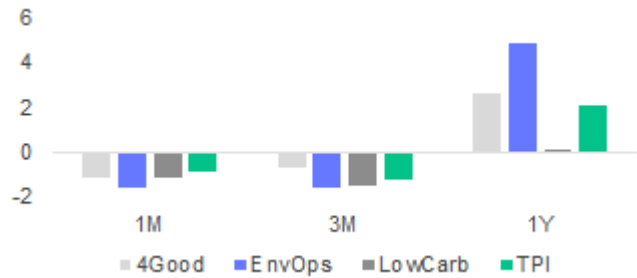


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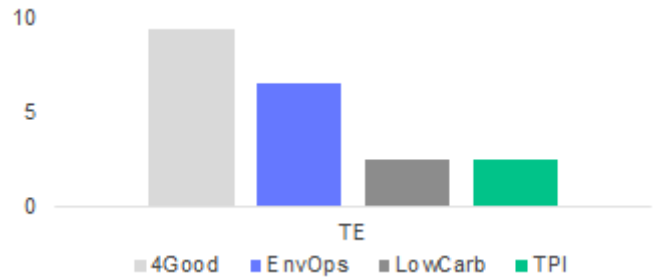
# Japan Index Comparisons – Q4 2023

Japan SI indices underperformed in Q4, having been the best performing region in Q3, though all of the SI indices outperformed the market over the last 12 months. Environmental Opportunities saw negative selection in Consumer Discretionary and Industrials, and ESG Low Carbon saw negative selection in Tech and Healthcare. SI indices in Japan saw limited benefit from weak Energy markets, which was a tailwind in other geographies, as Japan has limited exposure to Energy (~0.8%). FTSE4 Good, ESG Low Carbon and TPI trade at a P/E premium ahead of their five-year average, while that of Environmental Opportunities is below its 5-year average, and falling.

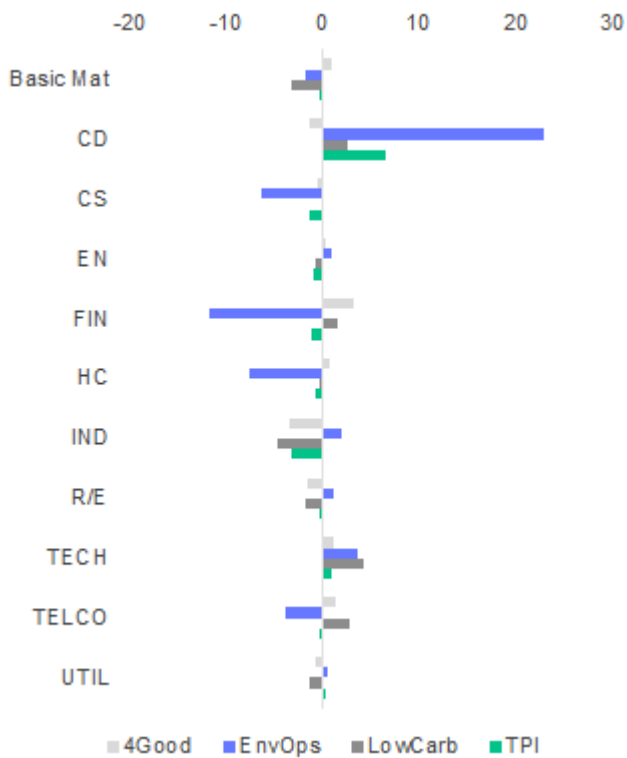
**Chart 1: Active Performance (TR, USD %)**



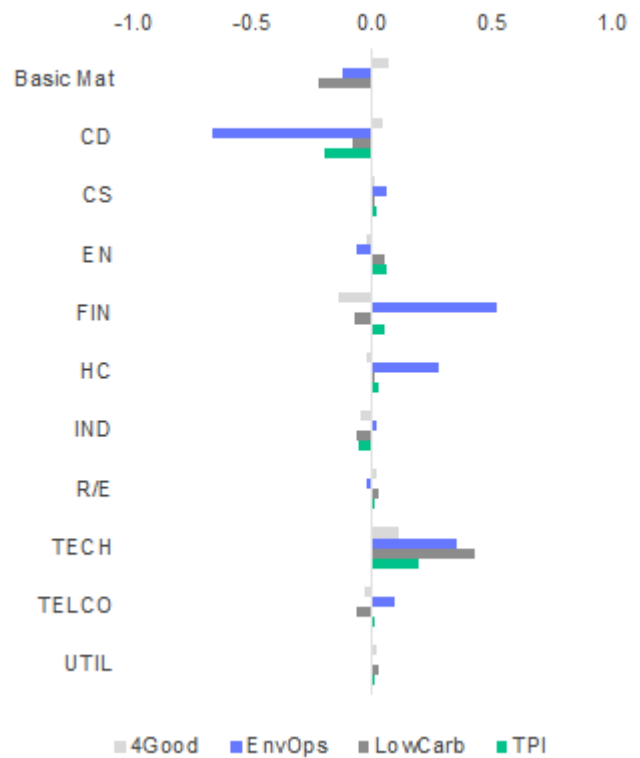
**Chart 2: Index tracking error (%)**



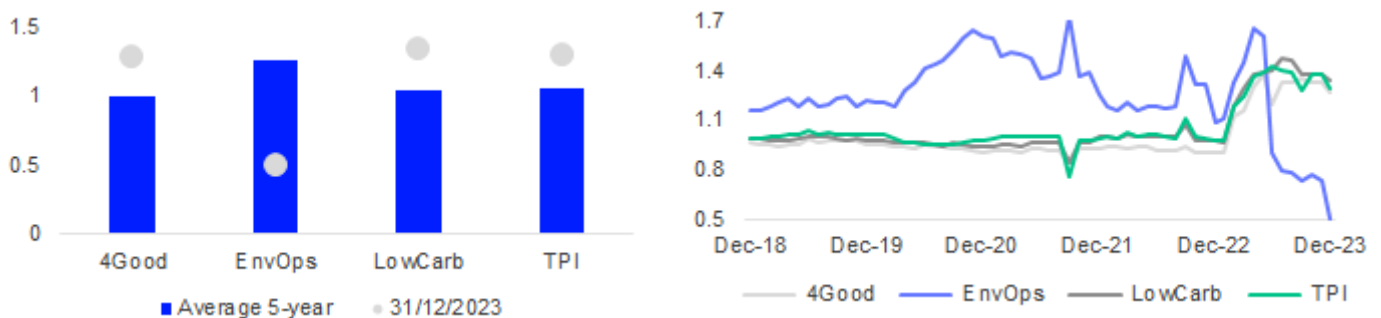
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: Japan indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

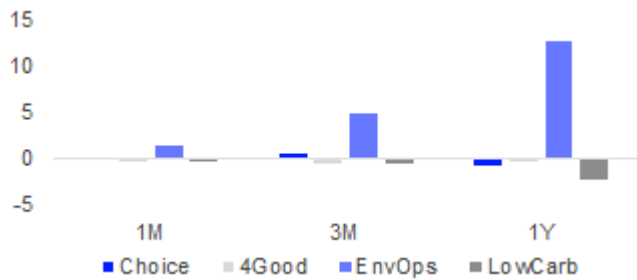


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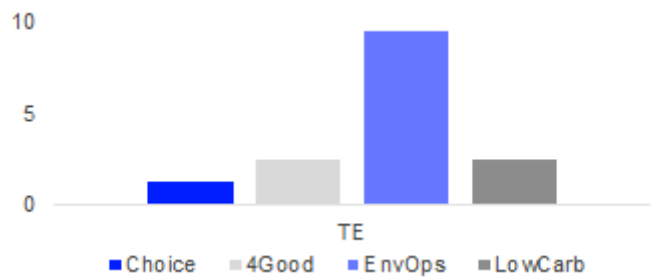
# Asia Pacific Index Comparisons – Q4 2023

SI indices in the Asia Pacific region saw a mixed performance in Q4. Environmental Opportunities and Choice outperformed the market, while FTSE4Good and ESG Low Carbon underperformed. Environmental Opportunities outperformance was driven by overweight allocation and positive selection in Tech, while Choice benefited from positive selection in Industrials. ESG Low Carbon saw negative selection in Financials, Healthcare and Consumer Discretionary and FTSE4Good saw negative selection from Telco and Healthcare. FTSE4Good has seen a significant rise in P/E premium in recent quarters, putting it ahead of its five-year average, while other SI indices are in line with their historical averages.

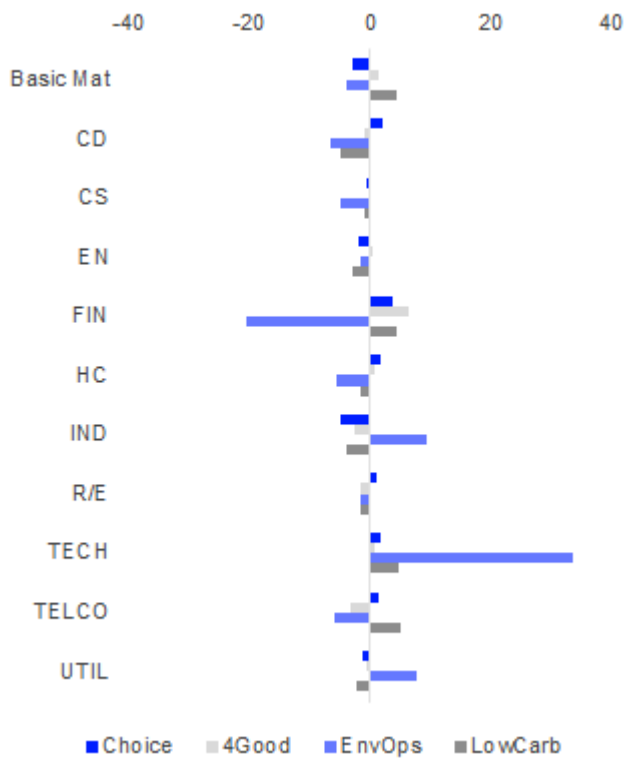
**Chart 1: Active Performance (TR, USD %)**



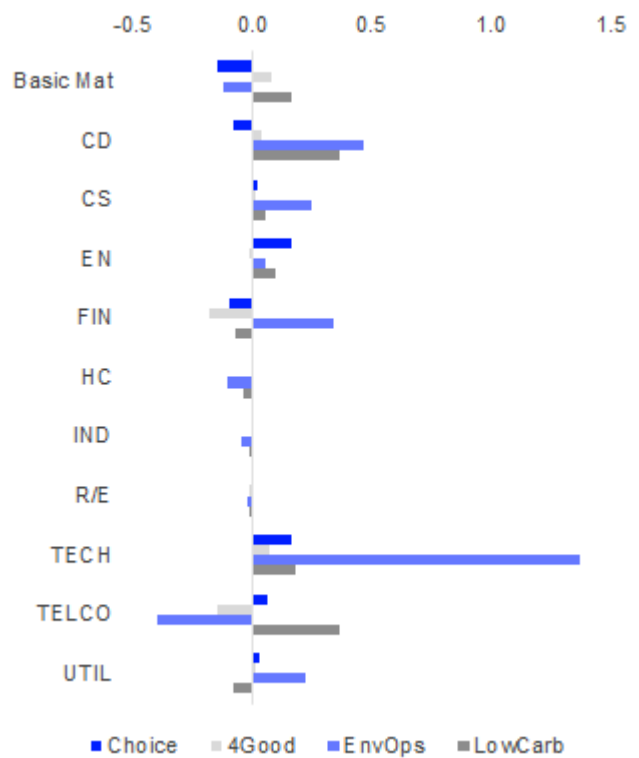
**Chart 2: Index tracking error (%)**



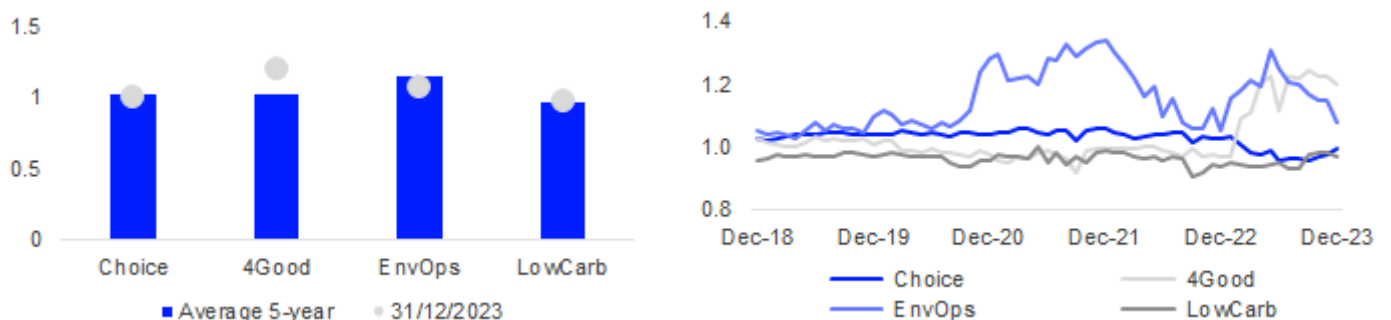
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: Asia Pacific indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

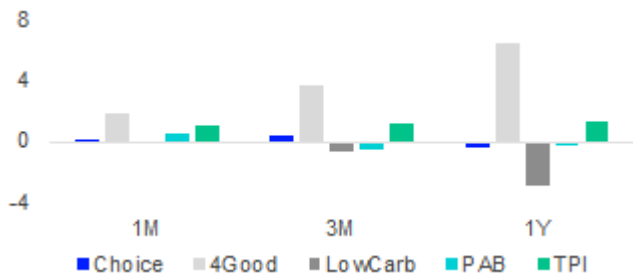


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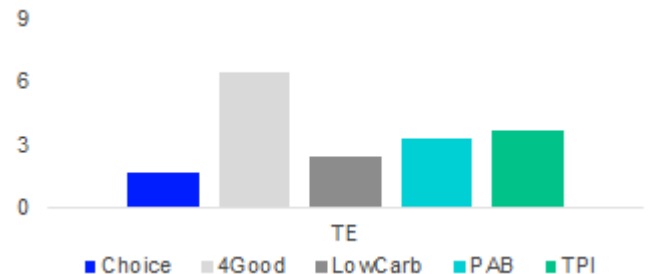
# Emerging Index Comparisons – Q4 2023

SI indices in EM saw a mixed performance in Q4. FTSE4Good, TPI and Choice outperformed the market, while ESG Low Carbon and PAB underperformed. FTSE4Good outperformance was driven by an underweight allocation in Consumer Discretionary and positive selection in Tech. Underperformance in ESG Low Carbon came from negative selection in Healthcare, Consumer Discretionary and Financials, while underperformance in PAB came from very mixed positive and negative selection effects across multiple industries. SI valuation premia are relatively modest in EM, with PAB being the highest and above its historical average.

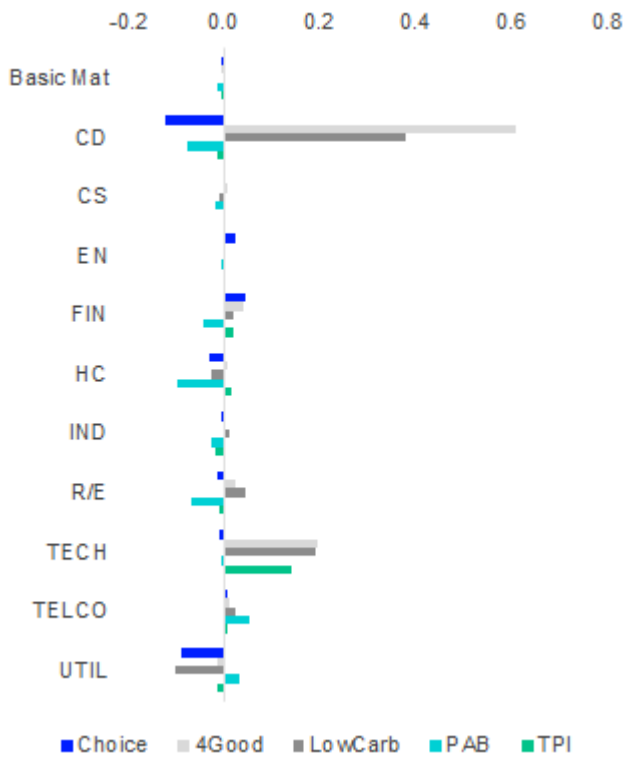
**Chart 1: Active Performance (TR, USD %)**



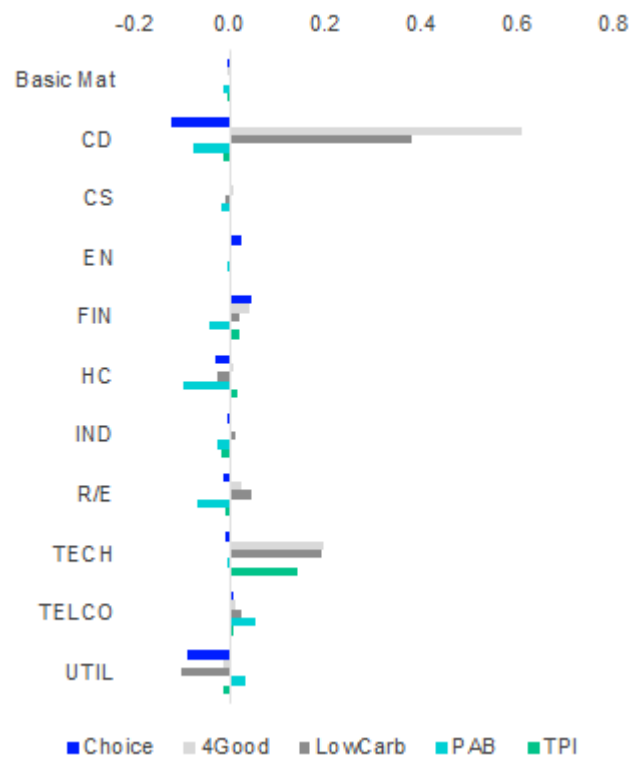
**Chart 2: Index tracking error (%)**



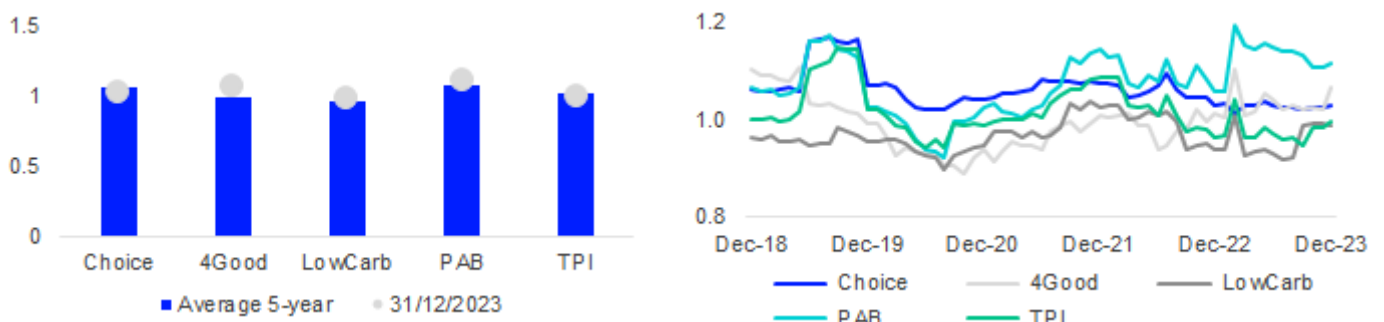
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: Emerging indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

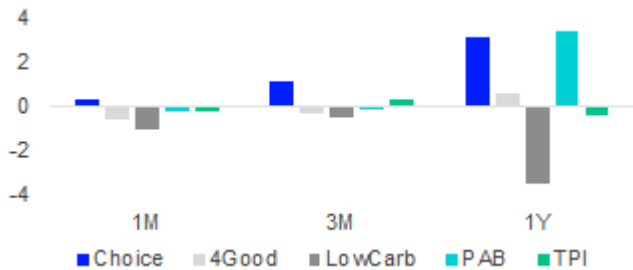


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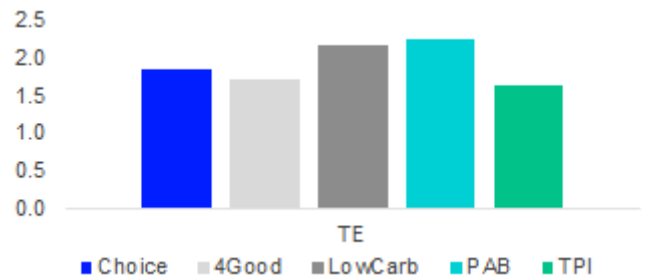
# Developed Index Comparisons – Q4 2023

Developed market SI indices saw a mixed performance in Q4. Choice and TPI outperformed the market, PAB was in line and FTSE4Good and ESG Low Carbon underperformed. Choice outperformance was driven by a 5% underweight allocation in Energy. ESG Low Carbon underperformance was driven by negative selection in Telcos, Industrials and Healthcare, offset by positive allocation from a 2% underweight in Energy. Valuation premia have been relatively stable in 2023, in line to slightly above history, except for PAB, where the premium has been rising.

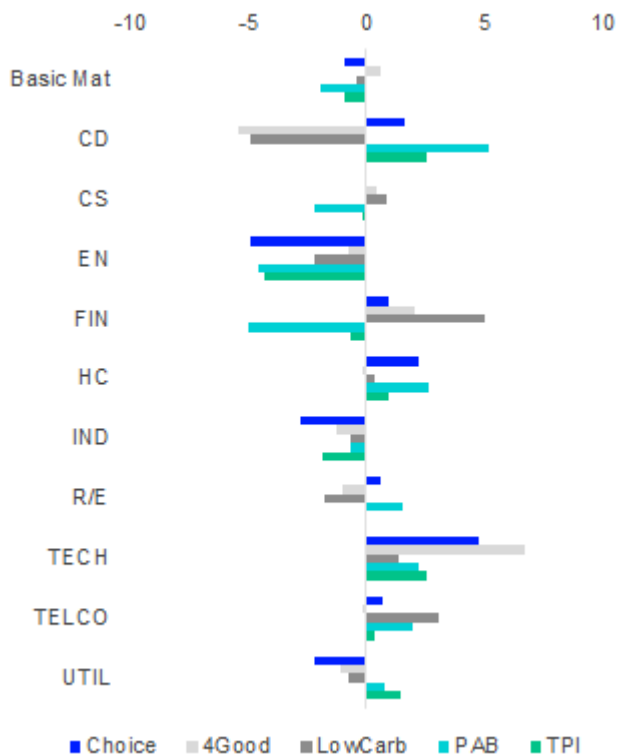
**Chart 1: Active Performance (TR, USD %)**



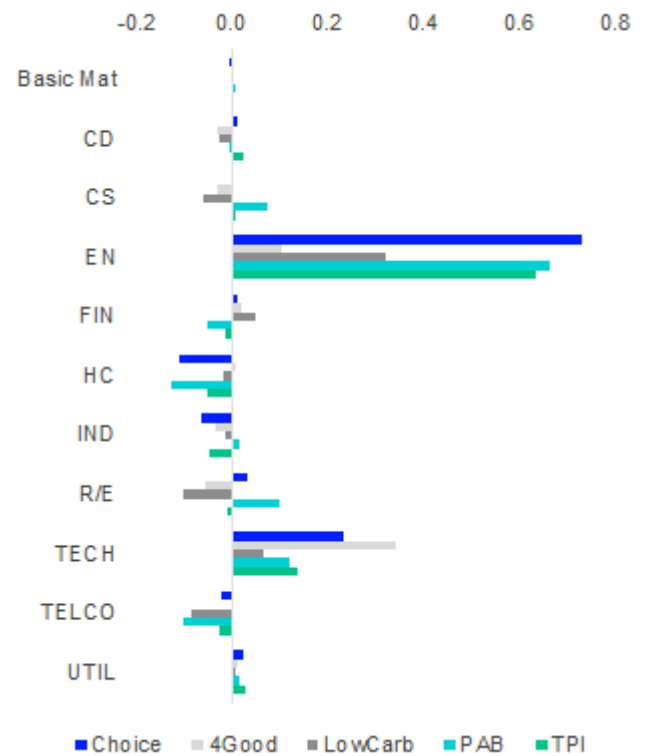
**Chart 2: Index tracking error (%)**



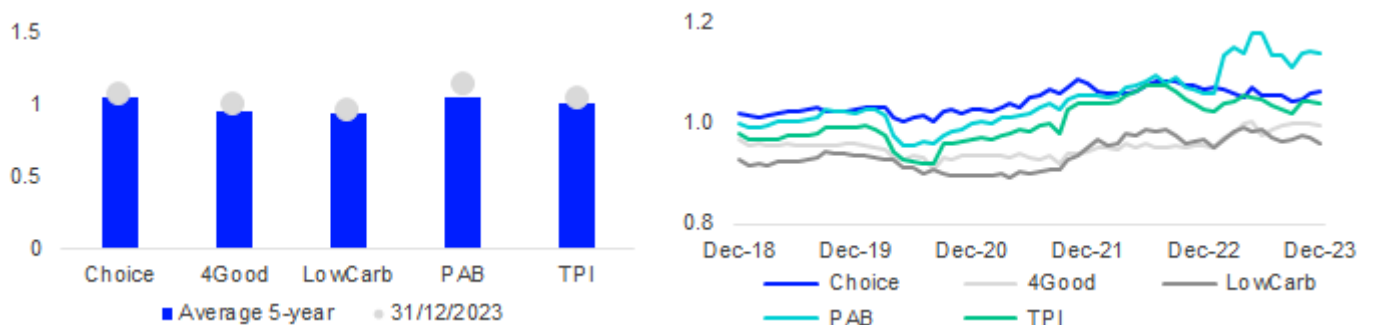
**Chart 3: Active Industry weights (3M ave %)**



**Chart 4: 3M Industry allocation effect (TR, USD %)**



**Chart 5: Developed indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**



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## Appendix 1: SI Index Coverage and Benchmarks

At FTSE Russell, sustainable investing includes a range of index strategies that aim to provide purpose-driven outcomes aligned with investors' sustainable investment policies. Investors seeking close alignment with the benchmark can choose to apply screens to exclude companies with undesirable features or to overweight those with strong ESG practices. A more concentrated option, Thematic indices, can help address specific social or environmental issues, and the transition to a greener economy, focusing on particular sectors. These indices share rules-based selection methodologies and are market-cap weighted.

The FTSE Russell Target exposure methodology is for investors looking to integrate multiple climate-change objectives, such as hedging specific climate risks, into an index, while gaining exposure to potential upsides from rising demand for green products. It is also used to support investor's decarbonization or net-zero strategies, such as European investors' requirement to align with the minimum standards for EU Low Carbon Benchmarks Requirements.



### Market-Cap Weighted indices\*

**FTSE Global Choice indices** select companies based on the impact of their products and conduct on society and the environment.

**FTSE4Good indices** include companies with an ESG and climate-change scores above a minimum threshold, with exclusions.

**FTSE Environmental Opportunities indices** include companies that derive at least 20% of their revenue from green products.

### Target Exposure indices\*

**FTSE ESG Low Carbon Target Exposure indices** target a 20% uplift in the ESG score \*\* and a 50% reduction in carbon emissions, controlling for country and ICB industry exposures.

**FTSE EU Climate Transition Benchmarks (CTB)** target a 30% reduction in carbon emissions, 100% uplift in Green Revenues (70% in Japan) and high climate governance as measured by the Transition Pathway Initiative (TPI).

**FTSE Paris Aligned Benchmarks (PAB)** target a 50% reduction in carbon emissions, 100% uplift in Green Revenues and high climate governance.

**FTSE TPI Climate Transition** over/underweights companies based on fossil fuel reserves, carbon emissions, green revenues, TPI management quality and TPI carbon performance.

\*Please refer to the Appendix 1: Glossary Products and Methodology for further methodological details. See [Sustainable investment category | FTSE Russell](#) for the full range of FTSE Russell sustainable investment products

\*\* ESG uplift target is the minimum of a standard deviation of market capitalization averaged index ESG score and a 20% uplift.

# Appendix 1: SI Index Coverage and Benchmarks

REGION	SI FAMILY	FTSE Russell Index	FTSE Russell Benchmark	Regional Coverage		Market Cap Coverage	
				DM	EM	Large + Mid Cap	Large + Mid + Small Cap
<b>US</b>	Global Choice	FTSE USA All Cap Choice	FTSE Global Equity USA All Cap	✓			✓
	FTSE4Good	FTSE4Good US	<b>FTSE USA</b>	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities USA	FTSE Global Equity USA All Cap	✓			✓
	ESG Low Carbon Target	FTSE USA ESG Low Carbon Target Exposure	<b>FTSE USA</b>	✓		✓	
	TPI Climate Transition	Russell 1000 TPI Climate Transition	<b>Russell 1000</b>	✓		✓	
<b>UK</b>	Global Choice	FTSE UK ex Controversies ex CW	<b>FTSE UK</b>	✓		✓	
	FTSE4Good	FTSE4Good UK	FTSE All-Share	✓			✓
	Environmental Ops	FTSE Environmental Opportunities UK	FTSE All-Share	✓			✓
	ESG Low Carbon Target	FTSE UK ESG Low Carbon Target Exposure	<b>FTSE UK</b>	✓		✓	
	Climate Transition	FTS Climate Transition Benchmark	FTSE All-Share ex Investment Trusts	✓			✓
	Paris Aligned	FTSE Paris Aligned Benchmark	FTSE All-Share ex Investment Trusts	✓			✓
<b>Europe</b>	Global Choice	FTSE Developed Europe All Cap Choice	FTSE Developed Europe All Cap	✓			✓
	FTSE4Good	FTSE4Good Europe	<b>FTSE Developed Europe</b>	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities Europe	FTSE Developed Europe All Cap	✓			✓
	ESG Low Carbon Target	FTSE Developed Europe ESG Low Carbon Target Exposure	<b>FTSE Developed Europe</b>	✓		✓	
<b>Japan</b>	FTSE4Good	FTSE4Good Japan	<b>FTSE Japan</b>	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities Japan	FTSE Global Equity Series Japan All Cap	✓			✓
	ESG Low Carbon Target	FTSE Japan ESG Low Carbon Target Exposure	<b>FTSE Japan</b>	✓		✓	
	Climate Transition	FTSE Japan Climate Transition Benchmark	FTSE JPX Japan 500	✓		✓	
	TPI Climate Transition	FTSE Japan TPI Climate Transition	<b>FTSE Japan</b>	✓		✓	
<b>APAC</b>	Global Choice	FTSE Developed Asia Pacific All Cap Choice	FTSE Developed Asia Pacific All Cap	✓			✓
	FTSE4Good	FTSE4Good Developed Asia Pacific	<b>FTSE Developed Asia Pacific</b>	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities Asia-Pacific Ex Japan	FTSE Asia Pacific All Cap ex Japan	✓	✓		✓
	ESG Low Carbon Target	FTSE Asia ex Japan ESG Low Carbon Target Exposure	FTSE Asia Pacific ex Japan	✓	✓	✓	
<b>EM</b>	Global Choice	FTSE Emerging All Cap Choice	FTSE Emerging All Cap		✓		✓
	FTSE4Good	FTSE4Good Emerging	<b>FTSE Emerging</b>		✓	✓	
	ESG Low Carbon Target	FTSE Emerging ESG Low Carbon Target Exposure	<b>FTSE Emerging</b>		✓	✓	
<b>Global</b>	Global Choice	FTSE Developed All Cap Choice	FTSE Developed All-Cap	✓			✓
	FTSE4Good	FTSE4Good Developed	FTSE Developed	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities All-Share	FTSE Global All Cap	✓	✓		✓
	ESG Low Carbon Target	FTSE Developed ESG Low Carbon Target Exposure	FTSE Developed	✓		✓	
	TPI Climate Transition	FTSE Developed TPI Climate Transition ex Coal ex Controversies ex Nuclear ex Tobacco	FTSE Developed	✓		✓	

\*The indices in bold are used as representative benchmarks on page 6

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## Appendix 1: Glossary Products and Methodology

INDEX SERIES	INVESTMENT SOLUTION	METHODOLOGY
<b>Screened</b>	<b>Filter out controversial business areas</b>	<b>Market-Cap Weighted</b>
<b>FTSE Global Choice</b>	The FTSE Global Choice Index Series is designed to help investors align their portfolios with their individual values by selecting companies based on the impact of their conduct and products on society and the environment.	Market-cap weighted series and can include negative screens in three product categories and two conduct categories. Individual indices within the series may only apply a subset of the screening categories.
<b>Thresholds</b>	<b>Apply Minimum Inclusion standards</b>	<b>Market-Cap Weighted</b>
<b>FTSE4Good</b>	The FTSE4Good Index Series is designed to measure the performance of companies demonstrating strong Environmental, Social and Governance (ESG) practices.	Companies in the investment universe are given an ESG score ranging from 0 to 5, with 5 being the highest. A minimum score is applied for inclusion and stocks fall out of the index if their score falls below a threshold. In addition a minimum Climate Change Score is applied. An exclusion list covers sectors like Tobacco, Controversial weapons, Coal and Investment Trusts.
<b>FTSE Environmental Opportunities</b>	The FTSE EO Index Series measures the performance of global companies that have significant involvement in environmental business activities, including renewable and alternative energy, energy efficiency, water technology and waste and pollution control.	To be included in the index, companies are required to have at least 20% of their business derived from environmental products and services, including renewable and alternative energy, energy management and efficiency, water infrastructure and technology, and waste and pollution control.
<b>Target Exposure</b>	<b>Target climate change objectives</b>	<b>Non Market-Cap Weighted</b>
<b>FTSE ESG Low Carbon Target</b>	The FTSE ESG Low Carbon indices target a percentage reduction in index level carbon emissions and a significant improvement in the aggregate ESG score.	FTSE Russell's Target Exposure methodology is applied to target an uplift of 20% in the ESG score, a 50% reduction in operational carbon emissions intensity and a 50% reduction in fossil fuel reserves intensity, remaining country neutral and limiting the maximum deviation from the ICB industry weights of the underlying index.
<b>FTSE SDG-Aligned</b>	The FTSE SDG Aligned indices adjust constituent weights to create alignment with United Nations Sustainable Development Goals (SDGs)	FTSE Russell's Tilt methodology is applied to overweight stocks to SDG-aligned ESG theme scores and the global green economy. Climate related aspects of the SDG's are further captured tilting away from company exposure to fossil fuels and operational carbon emissions.
<b>FTSE Global Climate</b>	The FTSE Global Climate Index Series is designed to reflect the performance of indices incorporating Climate Change considerations. The index incorporates both the risks and the opportunities associated with climate change and the transition to a green economy.	FTSE Global Climate constituent weights are determined by adjusting the market capitalisation weight for three aspects of climate change: (1) Fossil Fuel Reserves (2) Operational Carbon Emissions (3) Green Revenues.
<b>FTSE Smart Sustainability</b>	The FTSE Smart Sustainability Index Series is designed to reflect the performance of stocks representing a specific set of factor characteristics, climate change considerations and or ESG practices.	FTSE Russell's Target Exposure and FTSE Russell's Tilt methodology are applied to achieve the sustainability and factor exposure profile sought.



## Appendix 2: Reference Guide

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### Report calculations

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- Unless noted otherwise, all performance calculations are in US dollar currency terms.
- Tracking error and Beta are calculated from 5-years of daily returns. All other calculations on pages 2 & 3 are 12-month averages.
- Page 6: Regional benchmark performance are for representative benchmarks of the region and not the official benchmark for all listed SI indices. Appendix 1 shows the full list of SI indices covered in this report with their official benchmarks, which are used in the calculations throughout the report.
- Index climate exposures are calculated as the index weighted average. Benchmark climate aggregates are absolute climate exposures. The percent deviations of index exposures from benchmark exposures are labelled “uplift” for ESG and Green Revenues and “reduction” for carbon.
- Contributions to climate “uplift” or “reduction” are the share of total index percent deviation such that the sum over industries equals the total index percent deviation. For Green Revenues it is the absolute increase in weighted average green revenues
- Three-month industry allocation & stock selection effect is based on a Brinson attribution.

### Sustainable Investment data inputs

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- Carbon emissions: estimated annual CO2 equivalent GHG emissions (Scope 1 and 2) in metric tons scaled by annual sales (in USD) (metric tons/\$m), with the exception of EU Regulated Climate Benchmarks which use CO2 equivalent GHG emissions (Scope 1 and 2) scaled by enterprise value including cash (EVIC).
- Green Revenues: the ratio of green revenues as classified by the FTSE Green Revenues Classification System to total revenues.
- FTSE Russell's ESG Data Model scores are objective measures of ESG exposure and performance in multiple dimensions.
- TPI Management Quality Data from the Transition Pathway Initiative
- An introduction to the FTSE ESG scores can be found in the following guide:  
[Guide to FTSE Sustainable Investment Data used in FTSE Russell indices.pdf](#)

### Naming convention

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FTSE Russell Sustainable indices are abbreviated in the report as follows

Official Name	Report Abbreviation
FTSE Global Choice	Choice
FTSE4Good	4Good
FTSE Environmental Opportunities	Env Ops or EO
FTSE ESG Low Carbon Target Exposure	Low Carb
FTSE Paris-Aligned Benchmark	PAB
FTSE Climate Transition Benchmark	CTB
FTSE TPI Climate Transition	TPI

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