Sustainable Investment Insights

QUARTERLY REPORT: **JULY 2023**

Green equities continue strong recovery in Q2

Sustainable investment (SI) strategies continued to outperform in Q2, after a strong recovery in Q1, with all global strategies, except ESG Low Carbon, beating their benchmarks. Environmental Opportunities (EO) was the best performer in Q2, with EU Paris-Aligned Benchmark (PAB) also strong. Strength in Technology and weakness in Energy, in which SI strategies are respectively over and underweight helped drive performance.

Highlights

Technology
Technology was by far the best performing global industry. This benefited SI, as all of the global SI strategies in this report are overweight the industry. This led to a relatively concentrated market performance (particularly in the US) in large tech names, driven by better than expected Q1 results and artificial intelligence (AI) speculation.

Energy
Energy equities continued to underperform in Q2, despite two OPEC production cuts. This benefited SI strategies, which are all underweight Energy, however it was less influential to SI in Q2 than Q1. Green equities outperformed energy equities for a second quarter in a row, after underperforming in 2021 and 2022.

Regional dispersion
US and Japan saw the strongest SI active performance, whereas UK saw the weakest.

Volatile macro quarter
Q2 saw multiple macro issues; concerns over the US debt ceiling, and interest rate rise; weakness in Chinese economic re-opening; and OPEC oil production cuts. However the market largely looked through these issues, posting a strong, positive performance, particularly in the US, driven by Growth.

Performance leads valuation premia up
Strong SI performance against a backdrop of a relatively weak macroeconomic environment in the last six months has resulted in an increase in both absolute valuations and SI premium over the broader market, particularly for EO and PAB. This may be something to watch in Q3 given previous SI premium issues in 2020 and 2021.

Green investment capital remains strong
Despite cautious equity investors, Q2 SI fund flows show investment capital from green bond issuance and government support for clean energy have stayed strong.

Chart 1. 12-month relative performance Global SI indices, FTSE Oil Gas & Coal and FTSE Alternative Energy (TR, USD,%).
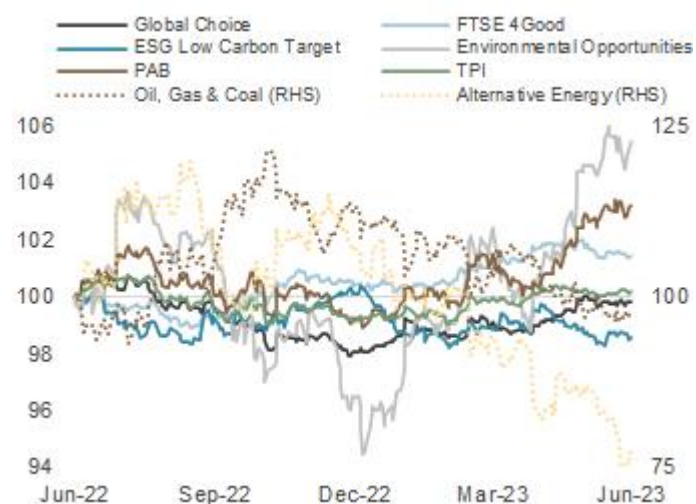
Note: Low Carbon covers developed markets.

9.2% FTSE Env Ops Global 3M (TR, USD)	**6.6%** FTSE ESG Low Carb Developed 3M (TR, USD)
9.5% FTSE Global Choice US 3M (TR, USD)	**1.6%** FTSE PAB EM 3M (TR, USD)
15.2% FTSE Technology Sector Global 3M (TR, USD)	**0.8%** Oil, Gas & Coal Sector Global 3M (TR, USD)

Source: FTSE Russell / Refinitiv. Data as of June 30, 2023.

Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.
Index performance in this report is now in USD, unless otherwise noted

Risk and Climate Characteristics – as of June 30, 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 obtain significant carbon intensity reductions (-48% to -60%) and underweights to Energy (-5.5% to -1.7%), except in the UK. Market-cap weighting the remaining stocks results in a risk profile close to the benchmark, global betas 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 82% of benchmark stocks.

FTSE4Good's best-in-class ESG strategy results in significant ESG score uplifts (24.2% to 3.6%). The global tracking error is low (1.7%). Europe has the lowest ESG uplift (3.6%), but the highest absolute ESG score. By contrast, EM has the highest ESG uplift (24.2%), with a high tracking error (6.5%) but a 0.9 beta.

Environmental Opportunities (EO) selects companies with significant green revenues (>20%), resulting in high active green revenues (absolute increase of 55.8% to 33.4%). However, the focus on Industrials, Utilities & Technology leads to higher carbon intensity in most regions (92.5% to minus 17%). The indices are highly concentrated (5.6% to 13.1% of benchmark) and have higher tracking errors (6.0% to 9.4%).

ESG Low Carbon Target targets carbon reduction and ESG uplifts. It achieves significant carbon intensity reduction (-53% to -42%) and ESG score uplift (18.8% to 10.1%). Tracking errors are moderate (2.1% to 3.0%) 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 (-63.4% to -57.3%), increases TPI MQ score (24.6% to 5.2%) , increases green revenues (absolute increase of 6.6% to 6.0%) and reduces Energy industry weighting (absolute reduction of -11.4% to -4.3%). Global tracking error is slightly higher than some other SI indices (2.1% to 5.9%) and the indices are more concentrated (47.2% to 27.2% of benchmark).

TPI Climate Transition (TPI) targets multiple climate related uplifts. Globally, it achieves a 49.7% reduction in carbon intensity, 1.6% increase in green revenues and 15.7% increase in TPI MQ, while the tracking error is relatively modest at 1.7%. EM has the highest tracking error at 3.8%, but also has the highest TPI MQ uplift of 33.3%.

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%	1.8%	2.3%		1.3%	1.7%	1.9%	1.7%
	FTSE4Good	2.3%	1.8%	2.1%	9.3%	2.5%	6.5%	1.7%	1.7%
	Environmental Ops	8.8%	9.1%	6.6%	6.6%	9.4%			6.0%
	ESG Low Carbon Target	2.7%	6.4%	3.0%	2.4%	2.4%	2.5%	2.1%	
	Paris Aligned		5.9%				3.3%	2.1%	2.4%
	Transition Pathway	1.9%			2.4%		3.8%	1.7%	1.7%
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	82.4%	98.2%	82.4%		87.6%	84.7%	84.6%	84.6%
	FTSE4Good	43.8%	37.0%	69.1%	44.5%	43.3%	28.3%	50.1%	39.7%
	Environmental Ops	8.5%	7.2%	13.1%	8.0%	5.6%			7.5%
	ESG Low Carbon Target	76.9%	56.6%	54.7%	67.1%	44.4%	48.9%	44.1%	
	Paris Aligned		40.9%				47.2%	41.5%	27.2%
	Transition Pathway	59.1%			67.6%		47.5%	51.6%	35.9%
Weight in Top 10 relative to benchmark	Global Choice	120.7%	100.0%	128.1%		113.8%	100.8%	124.4%	124.6%
	FTSE4Good	154.7%	121.0%	121.2%	138.0%	126.2%	128.3%	139.0%	142.7%
	Environmental Ops	296.8%	145.4%	248.2%	340.8%	310.7%			356.0%
	ESG Low Carbon Target	168.2%	141.5%	193.7%	187.3%	162.8%	141.0%	183.6%	
	Paris Aligned		112.0%				118.6%	175.1%	186.0%
	Transition Pathway	134.2%			160.6%		123.5%	146.8%	138.6%

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 June 30, 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.

ate	FTSE Russell SI Index	US	UK	Europe	Japan	APAC	Emerging	Developed	Global
Active E score	Global Choice	2.1%	-0.3%	-4.7%		-1.5%	-2.5%	0.2%	0.0%
	FTSE4Good	18.5%	10.3%	4.6%	15.8%	13.1%	30.9%	15.1%	16.6%
	Environmental Ops	29.1%	-24.0%	0.1%	8.2%	31.8%			23.9%
	ESG Low Carbon Target	26.4%	18.7%	24.3%	21.3%	23.3%	22.9%	27.1%	
	Paris Aligned		5.4%				16.5%	9.6%	11.8%
	Transition Pathway	13.4%			13.6%		22.0%	12.8%	13.0%
Active S score	Global Choice	3.4%	-0.6%	-0.9%		-0.6%	-0.4%	1.8%	1.6%
	FTSE4Good	13.2%	9.9%	4.1%	16.1%	13.1%	29.6%	12.0%	13.6%
	Environmental Ops	16.3%	-17.4%	-4.2%	-8.2%	27.2%			12.6%
	ESG Low Carbon Target	19.8%	11.1%	13.2%	20.4%	20.2%	22.0%	19.1%	
	Paris Aligned		1.2%				14.1%	5.6%	7.9%
	Transition Pathway	7.5%			8.1%		15.1%	6.6%	7.3%
Active G score	Global Choice	-0.2%	-0.8%	-2.3%		-1.5%	0.0%	-1.0%	-0.9%
	FTSE4Good	5.7%	8.0%	2.1%	10.3%	9.4%	15.1%	6.2%	7.0%
	Environmental Ops	11.3%	-9.7%	-1.5%	-2.5%	9.1%			7.5%
	ESG Low Carbon Target	10.7%	2.2%	5.5%	13.2%	9.1%	9.5%	10.0%	
	Paris Aligned		-1.5%				9.3%	0.4%	1.3%
	Transition Pathway	0.7%			5.2%		9.6%	1.4%	2.1%
Active ESG score	Global Choice	1.8%	-0.7%	-2.4%		-1.2%	-0.7%	0.4%	0.3%
	FTSE4Good	12.4%	9.5%	3.6%	14.1%	11.9%	24.2%	11.1%	12.3%
	Environmental Ops	18.2%	-17.3%	-2.2%	-0.8%	21.0%			13.9%
	ESG Low Carbon Target	18.8%	10.1%	13.9%	18.4%	17.0%	17.3%	18.6%	
	Paris Aligned		1.3%				12.6%	5.0%	6.7%
	Transition Pathway	7.0%			9.0%		14.7%	6.8%	7.3%
Carbon Reduction	Global Choice	-59.9%	4.9%	-53.8%		-48.4%	-49.3%	-57.5%	-55.7%
	FTSE4Good	-36.2%	9.0%	-2.8%	8.2%	-6.0%	3.8%	-24.6%	-20.7%
	Environmental Ops	60.3%	-17.0%	92.5%	47.3%	51.8%			58.7%
	ESG Low Carbon Target	-52.6%	-42.3%	-48.3%	-47.3%	-51.0%	-49.4%	-50.8%	
	Paris Aligned		-57.3%				-63.4%	-60.7%	-60.5%
	Transition Pathway	-41.7%			-33.7%		-50.2%	-55.8%	-49.7%
Active Green Revenues	Global Choice	0.12	0.20	-1.22		-0.55	0.67	-0.05	0.02
	FTSE4Good	-0.48	-0.27	0.08	-1.17	-0.91	2.88	-0.42	-0.14
	Environmental Ops	33.47	55.84	34.62	38.22	41.42			35.74
	ESG Low Carbon Target	-0.34	-0.37	2.86	-0.88	1.48	2.05	0.19	
	Paris Aligned		6.51				6.17	6.01	6.60
	Transition Pathway	0.36			3.57		3.31	0.80	1.55
Active TPI Management Quality Score	Global Choice	-1.5%	0.6%	-5.8%		-3.1%	-4.2%	-2.8%	-2.9%
	FTSE4Good	13.5%	7.8%	3.7%	12.7%	13.6%	29.9%	11.8%	13.4%
	Environmental Ops	9.6%	-20.3%	-1.4%	13.5%	23.0%			10.3%
	ESG Low Carbon Target	15.5%	4.6%	11.8%	16.0%	20.1%	20.4%	15.9%	
	Paris Aligned		5.2%				24.6%	9.5%	11.4%
	Transition Pathway	14.2%			15.6%		33.3%	14.7%	15.7%

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.

Global View - Macroeconomic Backdrop – Q2 2023

Q2 saw a diverse set of macro issues as investors faced renewed banking concerns, worries about a possible US default around the debt ceiling, weakness in both the US and Chinese manufacturing sector, and conversely stronger than expected US jobs and inflation data, leading to speculation of renewed rate hikes.

US bond yields rose during Q2, after a sharp fall in March, notably at the short end, leading to a steepening of the inverted yield curve. However, the Fed did not raise rates in June, suggesting the tightening rate cycle may be close to a peak.

Equity markets looked through any concerns about rising rates or recessions, and were strongly up in most regions, particularly in the US, where investors became enthusiastic on the potential benefits of new artificial intelligence technology, and interest rates coming to an end. Earnings growth forecasts for global equities began to rise, after a long period of falling estimates. The Russell 1000 Growth strongly outperformed Value, and Tech was by far the best performing industry in the FTSE All World.

Despite strong equity market performance in 2023, year-to-date fund flows show investors are still cautious on equities, with capital flowing out of the asset class and into bonds and money markets.

For further, in depth analysis of the macro background see Asset Allocation Insights - June 2023 | FTSE Russell.

Chart 1: US 10Y & 2Y Treasury Yields – rising yields in Q2 amid debt ceiling and rate hike concerns
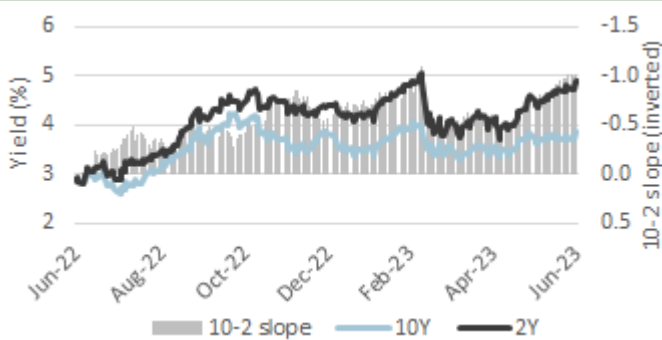
Chart 2: US & China Manufacturing PMI – manufacturing was weak in major economies
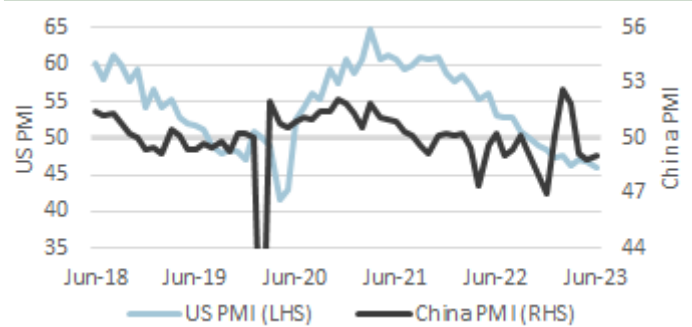
Chart 3: Earnings Growth Forecasts – started to increase after falling since pandemic
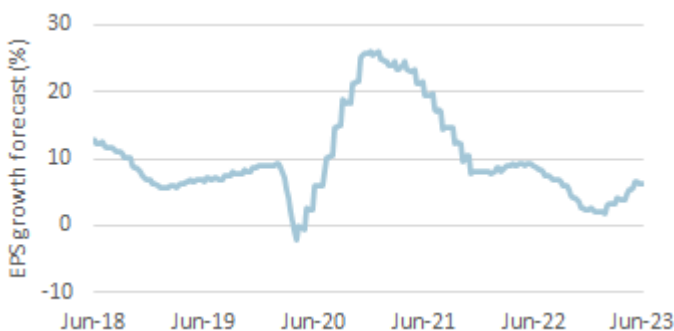
Chart 4: Russell 1000 Growth vs Value – Growth strongly outperformed Value in Q2

Chart 5: FTSE All World Q2 Industry Performance – Technology significantly outperforms in Q2
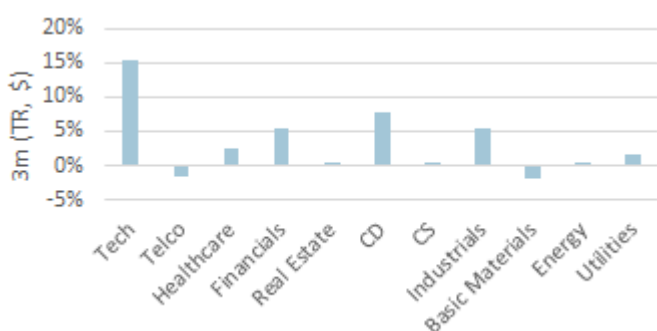
Chart 6: Global Bond & Equity Fund Flows – funds have been flowing out of equites and into bonds in 2023
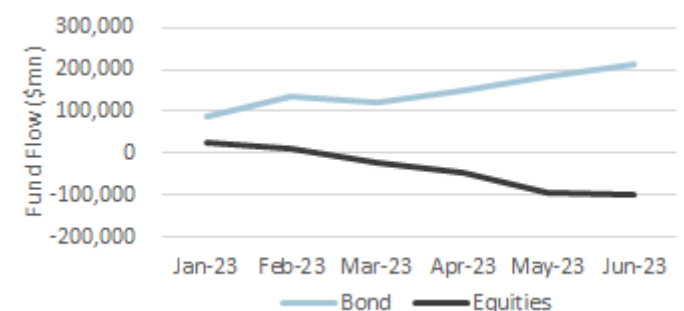
Global View - SI Index Macro Insights – Q2 2023

A positive equity market performance, Growth vs Value outperformance, a strong Tech market and a weak Energy market created a positive backdrop for the broad outperformance of SI indices. The latter typically have a positive beta, are Growth focused, and are overweight Technology and underweight Energy (with FTSE4Good having notably different characteristics).

Env Ops performance was again dominated by energy efficiency, which is exposed to cyclical Industrials, Consumer Discretionary and Technology, while renewable energy continued to underperform as it struggles with profitability issues.

The energy market saw two OPEC production cuts in the quarter, however demand concerns from recession worries and a slower than expected industrial recovery in China led to a very muted oil price performance. European gas prices also continued to fall in the quarter, following the significant spike in 2022 due to the Ukraine war, with prices today close to pre-war levels. The lower energy costs should help reduce inflation, and, in Europe, are prompting a switch from coal power generation to gas, which ultimately will reduce carbon emissions.

The International Energy Agency estimated that clean energy investment should reach record levels in 2023, having set a previous record in 2022. In spite of inflation impacting the price of clean energy equipment and financing costs going up, there is a lot of capital going into clean energy, with record green bond issuance levels in Q1 and Q2, and high levels of government support since 2022. The performance of the renewable energy sector will be interesting to watch over the next couple of years as this capital is put to work.

Chart 1: Env Ops Green Sectors – energy efficiency remains strong
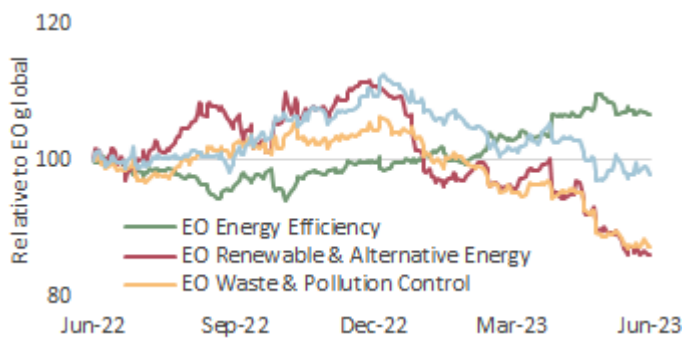
Chart 2: Brent Oil Price – oil price weak despite OPEC cuts

Chart 3: European (TTF) Gas Price – falling prices reducing energy prices and switching from coal back to gas

Chart 4: Green Bond Issuance – Q2 sees continued record volumes
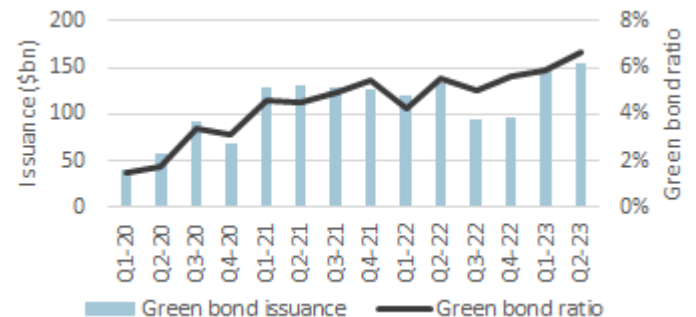
Chart 5: Clean Energy vs Fossil Fuel Investment[1] – surging clean energy investment now higher than fossil fuels
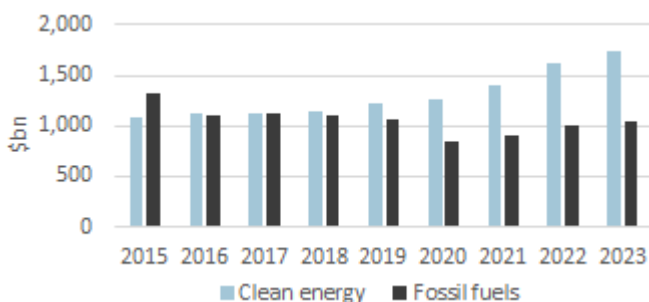
Chart 6: Government Clean Energy Support[1] – rising support since pandemic
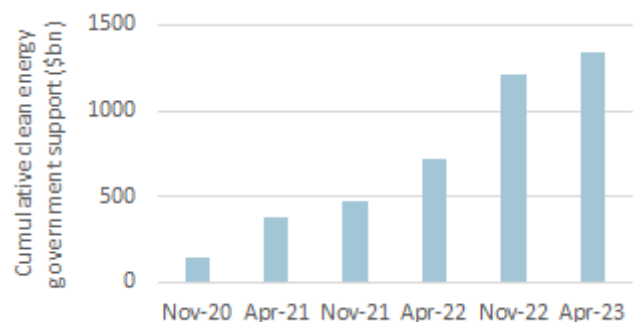
1. International Energy Agency

Absolute Returns – 3M & 12M (TR, USD %) as of June 30, 2023

Amid a volatile macro economic environment, US equities outperformed in Q2, driven by a strong Tech rally and investors looking for companies with an 'artificial intelligence' theme. UK and European performance was weaker due to concern about sticky inflation, leading to further rate rises and weaker economic performance. SI strategy performance across regions was relatively mixed, with UK & EM strategies generally being the weakest.

Regional 3M Absolute Returns* (TR, USD %). US performed strongly in Q2, lead by a Tech rally

Region	Value
US	8.7
Developed	6.9
Global	6.3
Japan	5.9
Dev APac	3.6
Europe	3.3
UK	2.8
Emerging	0.9
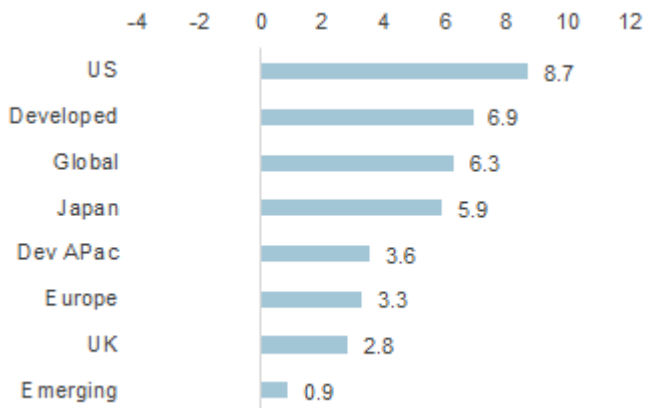
Regional 12M Absolute Returns* (TR, USD %). Europe remains best over 12M after Q1 rally, but US is catching up

Region	Value
Europe	22.4
US	19.6
Developed	18.9
Japan	17.9
Global	16.9
UK	14.9
Dev APac	13.5
Emerging	1.3
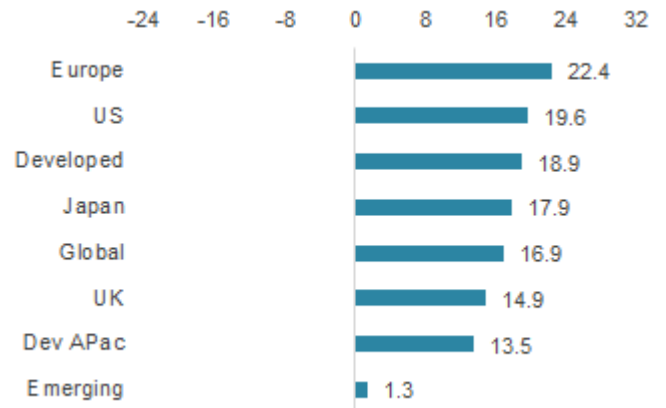
SI Index 3M Absolute Returns (TR, USD %). US strategies performed best, UK worst. In most regions Env Ops was strong

Index	Value
USA EnvOps	11.4
USA Choice	9.5
US 4Good	9.4
Global EnvOps	9.2
US TPI	8.7
Dev PAB	8.4
Japan EnvOps	8.1
Global PAB	8.1
US Low Carb	7.7
Dev Choice	7.4
Japan TPI	7.2
Dev 4Good	7.0
Japan 4Good	6.9
Developed TPI	6.9
Global Choice	6.8
Global 4Good	6.7
Dev Low Carb	6.6
Global TPI	6.5
Japan Low Carb	6.4
APac EnvOps	5.1
EM 4Good	4.4
Eur Low Carb	4.2
APac 4Good	3.9
Euro 4Good	3.5
Euro EnvOps	3.3
Euro Choice	3.1
UK 4Good	3.0
APac Choice	2.6
UK Choice	1.9
EM PAB	1.6
EM TPI	1.6
EM Choice	1.5
EM Low Carb	1.4
UK Low Carb	1.4
UK PAB	0.1
UK EnvOps	0.0
APac Low Carb	-0.2

SI Index 12M Absolute Returns (TR, USD %). Europe & US strong, EM weak. Env Ops, 4Good & PAB all strong.

Index	Value
Euro EnvOps	32.0
USA EnvOps	24.5
Eur Low Carb	23.3
Global EnvOps	23.0
Euro 4Good	22.4
Dev PAB	22.2
Global PAB	20.7
US 4Good	20.6
USA Choice	19.9
Dev 4Good	19.6
Euro Choice	19.5
Japan 4Good	19.5
Global 4Good	18.6
US TPI	18.5
Dev Choice	18.4
Japan Low Carb	18.1
Developed TPI	17.8
Global TPI	17.2
Dev Low Carb	17.2
US Low Carb	16.8
Japan TPI	16.5
Global Choice	16.4
Japan EnvOps	15.7
APac 4Good	14.4
UK Choice	14.1
UK 4Good	14.0
APac Choice	11.9
APac EnvOps	10.8
EM 4Good	9.2
UK Low Carb	7.2
UK EnvOps	6.7
UK PAB	5.1
EM TPI	4.8
APac Low Carb	3.4
EM PAB	3.2
EM Low Carb	2.0
EM Choice	0.3

*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.
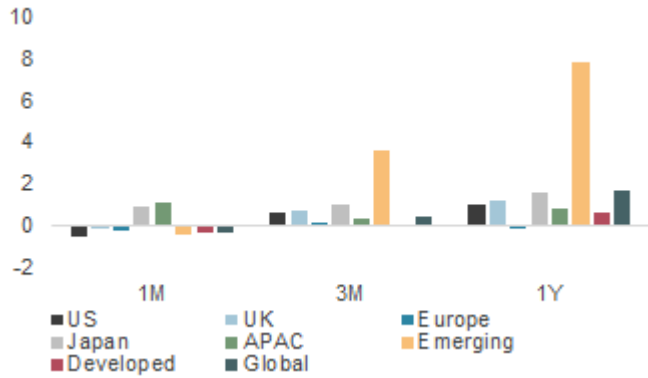
Source: FTSE Russell/Refinitiv. All data as of June 30, 2023. Past performance is no guarantee of future results. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures. Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.

Global View – SI Index Valuation Insights – June 30, 2023

SI P/E valuations continued to rise in Q2. While remaining below their 2020-2021 highs, most SI strategies are close to their 5-year average valuations except Env Ops, which is still below, while PAB is above. The premium of SI strategies over their parent indices were in line, or slightly lower in Q2, except for PAB, but all remain above their 5-year average premium. FTSE4Good is the only strategy, which is less expensive than the market, while EO is the most expensive, but PAB is catching up. US SI strategies are the most expensive by absolute P/E, but only a 1.05x premium over the market. By contrast, Japan is the cheapest, but trades at a premium of 1.24x over the market. Price to Book ratios have followed a similar pattern to P/Es. Dividend yields fell in Q2 and are at, or below, their 5-year averages.

Global Markets—12-month forward factor P/E ratios
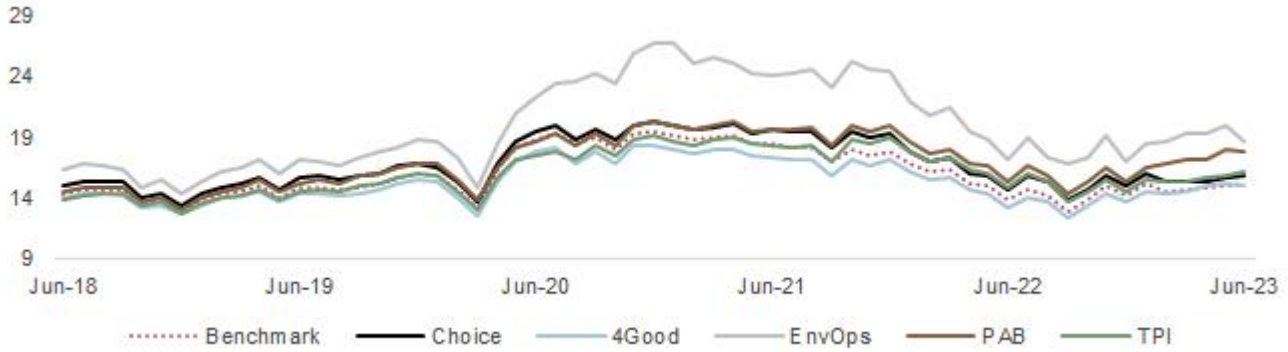
Global Markets—12-month forward factor Price to Book ratios
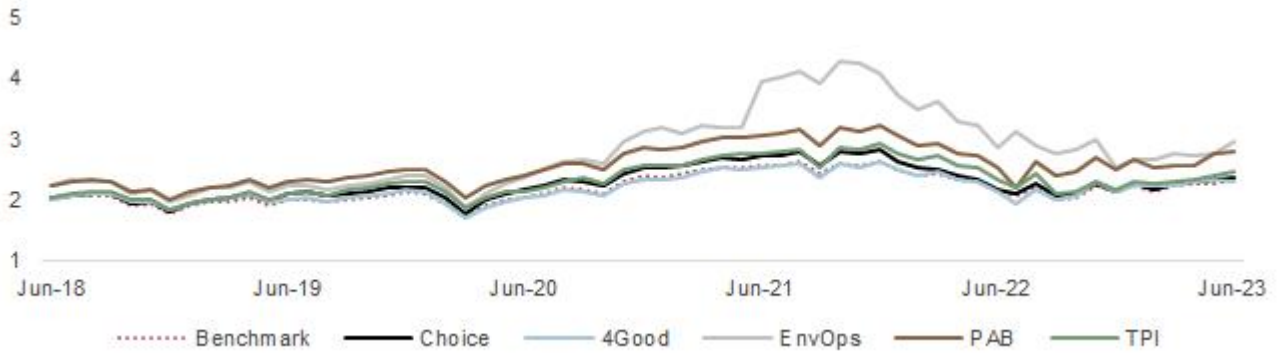
Global Markets— Dividend Yield
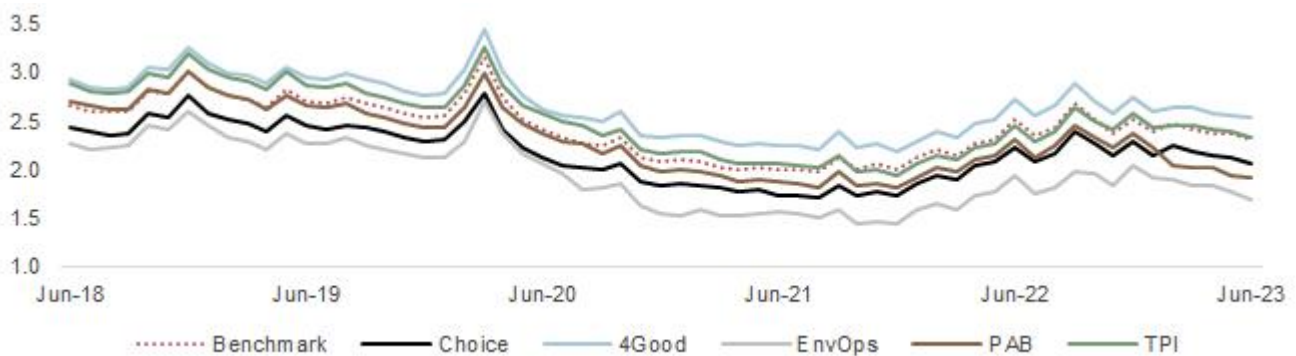
12-month forward P/E vs history
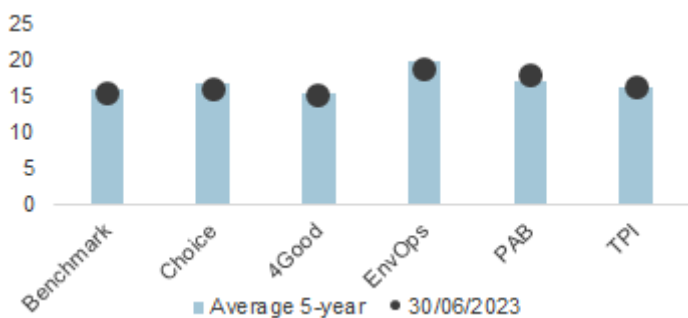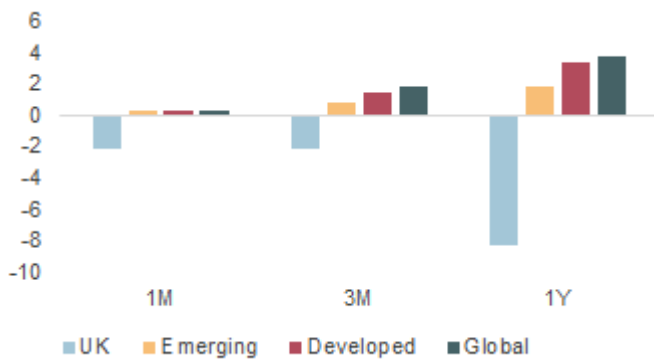

12-month forward P/E premium vs history
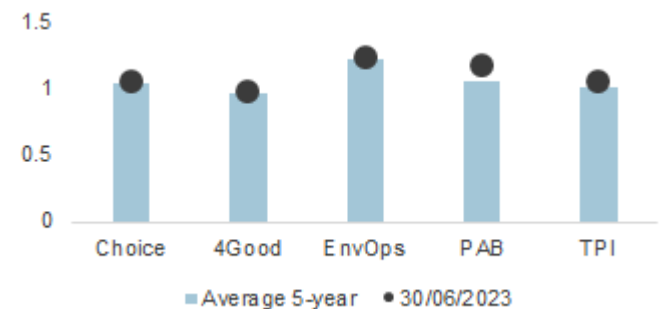
Source: FTSE Russell/Refinitiv. All data as of June 30, 2023. Past performance is no guarantee of future results. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures. Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.

FTSE Global Choice indices – Q2 2023

Within Global Choice, global/developed outperformance in Q2 came mostly from the US, while Europe was in line with the market performance and the UK and APAC below. Performance came from both allocation and selection effects in the Tech overweight and allocation effects in the Energy underweight. APAC underperformance resulted from selection effects in Industrials, while the UK underperformance came from an underweight in Financials. In addition to exclusions, the Global Choice indices are effective in reducing carbon intensity across all regions, except the UK, through underweights in Energy, Utilities and Basic Materials.

Chart 1: Active performance (TR, USD %)
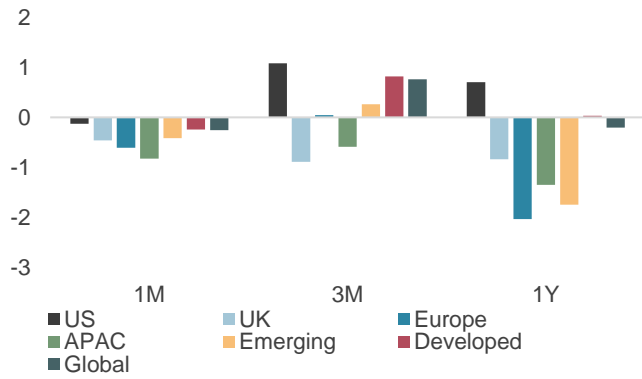

Chart 2: Global Choice carbon emissions / revenues
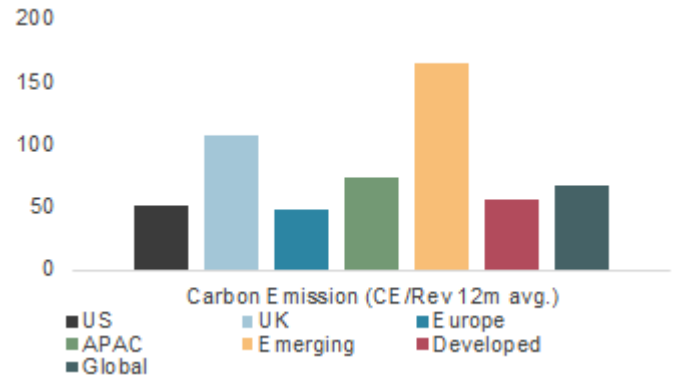
Chart 3: 3M Attribution of global index (%)
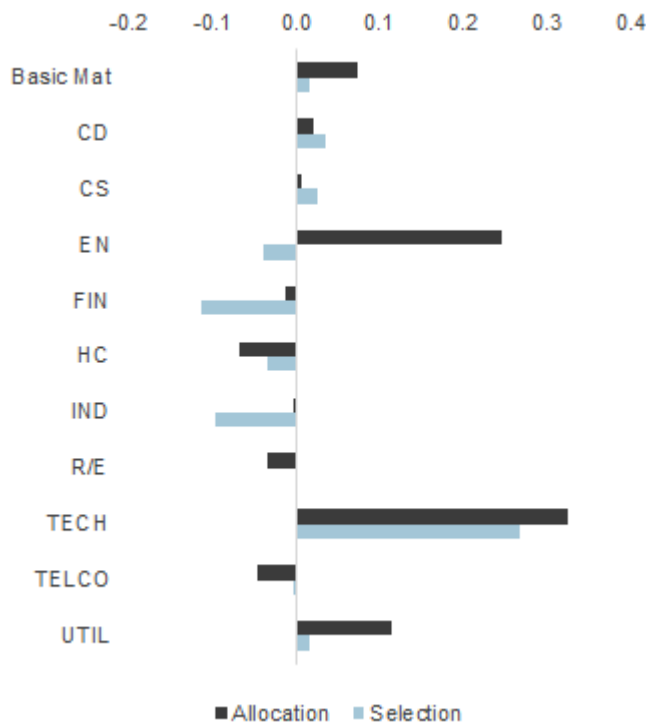
Chart 4 : Contribution to carbon reduction (%)
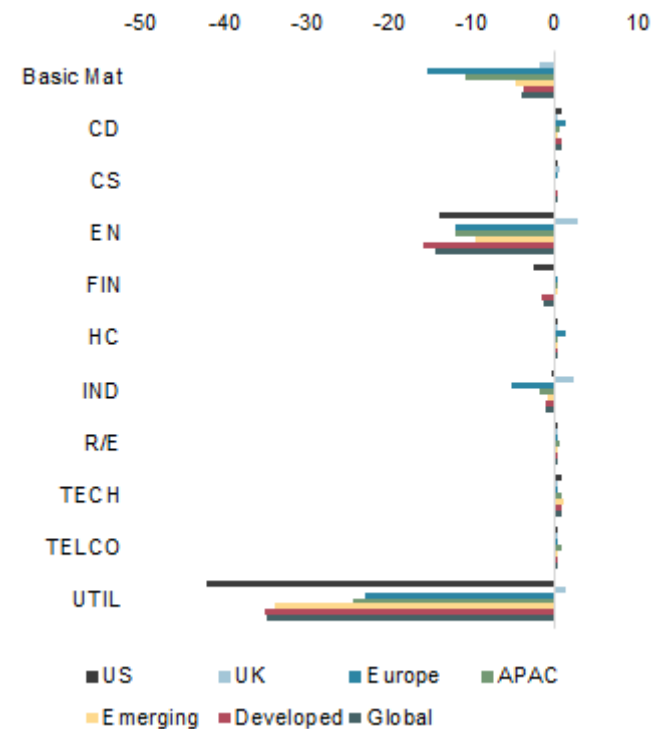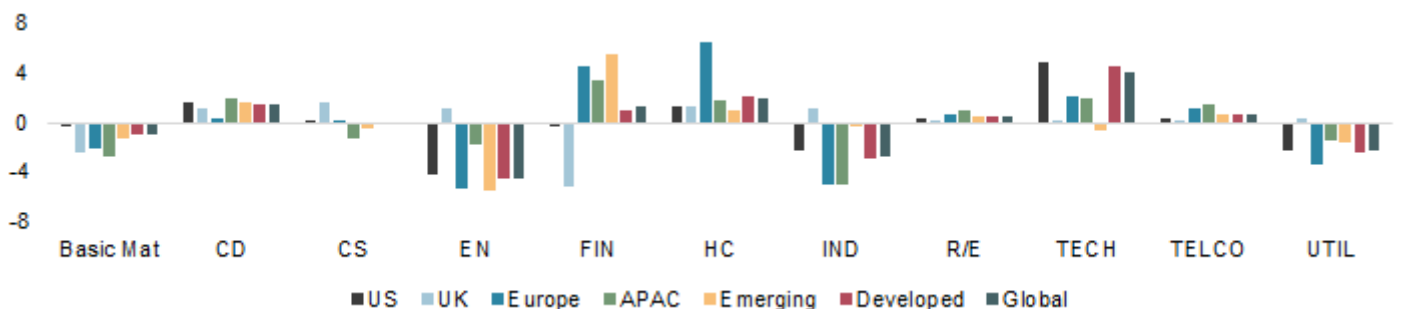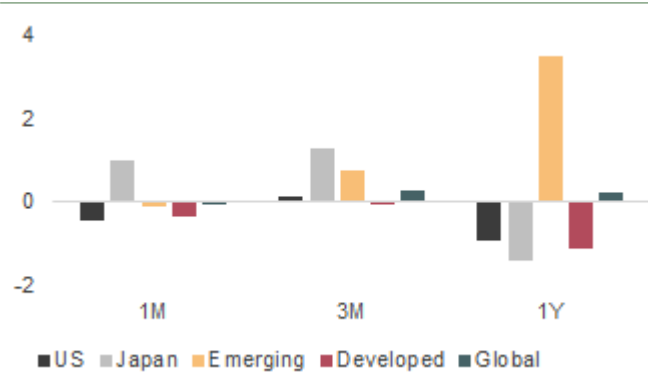

Chart 5: Active industry weights (%)

FTSE4Good indices – Q2 2023

FTSE4Good saw global/developed outperformed in Q2, with positive contributions from Emerging Markets, US, UK and Japan, while returns for Europe and APAC were in line with the market. Performance came primarily from allocation and selection in overweight Tech, which was offset by negative selection in Consumer Discretionary. EM outperformance came particularly from selection in Tech, while in the US it came from the Tech allocation. UK, European and Japanese indices have the highest ESG scores, while EM has the lowest. The index's ESG uplift came mostly from Tech and Financials, which are also main industry overweights.

Chart 1: Active performance (TR, USD %)

Chart 2: FTSE4Good ESG scores
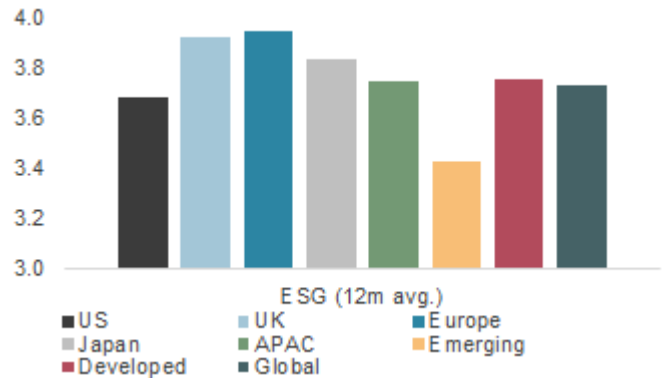
Chart 3: 3M Attribution of global index (TR, USD %)
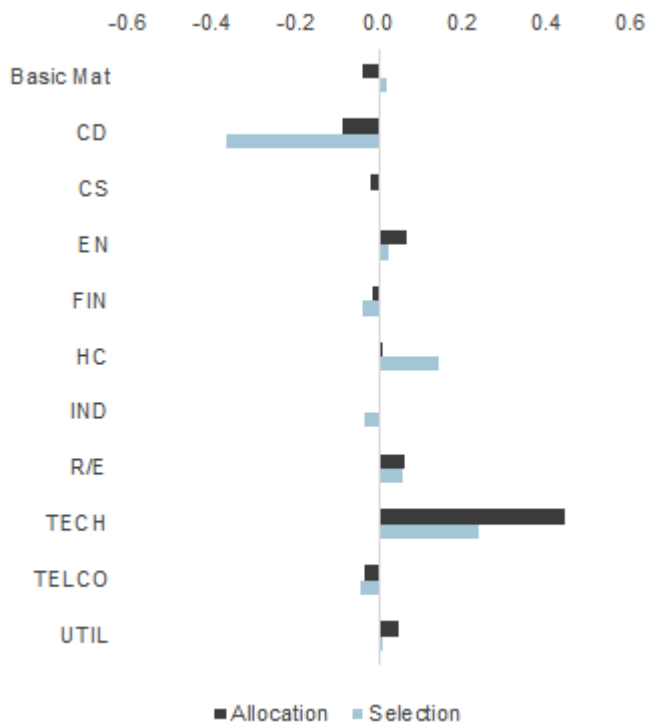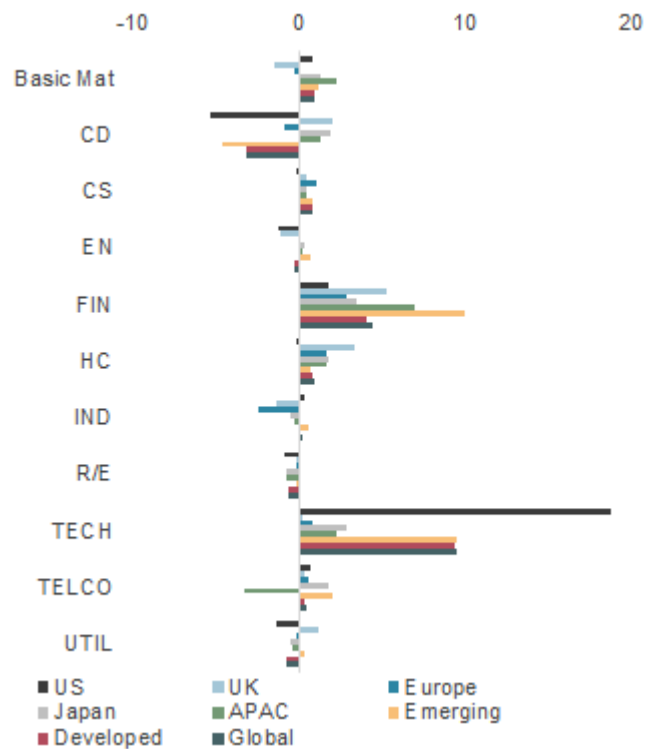
Chart 4: Contribution to ESG uplift (%)

Chart 5: Active industry weights (%)

FTSE Environmental Opportunities indices – Q2 2023

EO indices saw continued strong performance in Q2, outperforming across all geographies, except the UK, notably in APAC and the US. Global performance was particularly focused in allocation effect from Tech overweight and selection effect in Consumer Discretionary and Industrials. In terms of green sectors, Energy Efficiency, the largest and most cyclical green sector, was the best performer, followed by Water. Renewable Energy, the best performer in 2022, was the worst performer, registering an absolute loss in Q2, as did the Waste & Pollution Control sector, which is impacted by falling commodity prices. EO indices are heavily overweight Industrials, Tech and Utilities (& Consumer Discretionary in Japan).

Chart 1: Active Performance (TR, USD %)
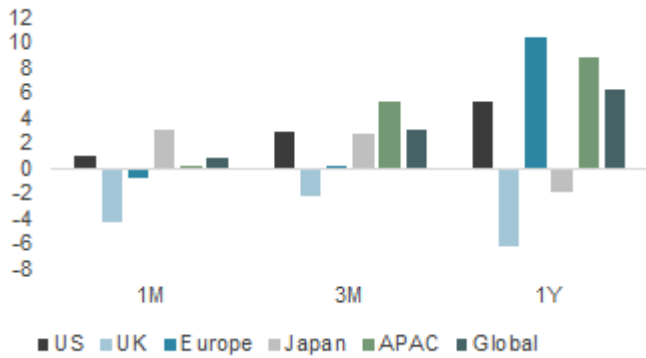
Chart 2: Environmental Ops Green Revenues scores
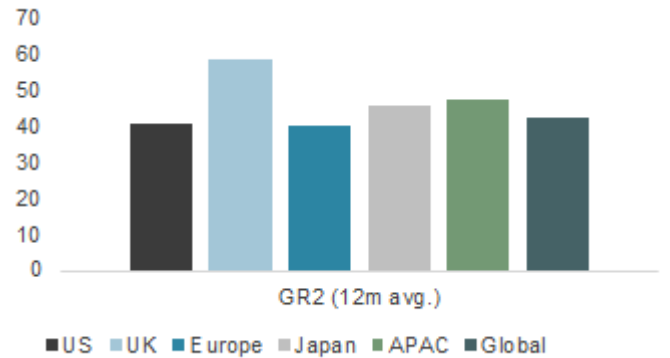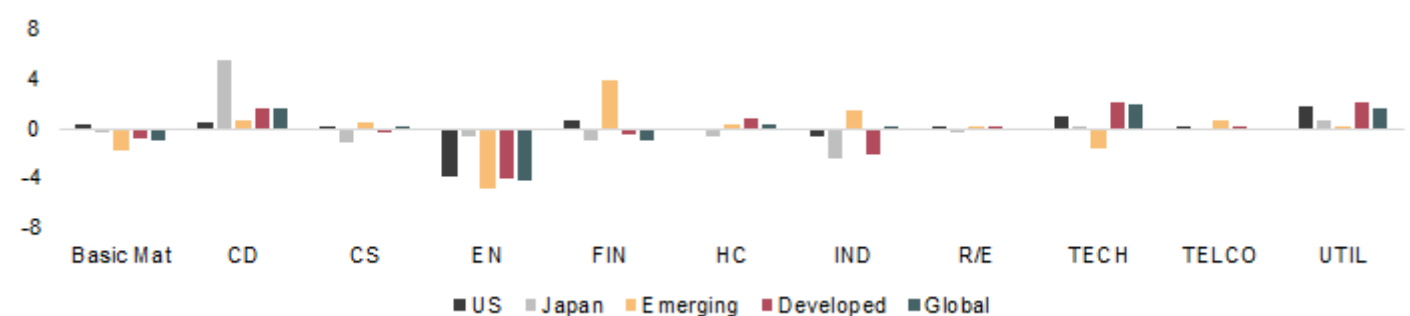

Chart 3: 3M Attribution of global index (TR, USD %)
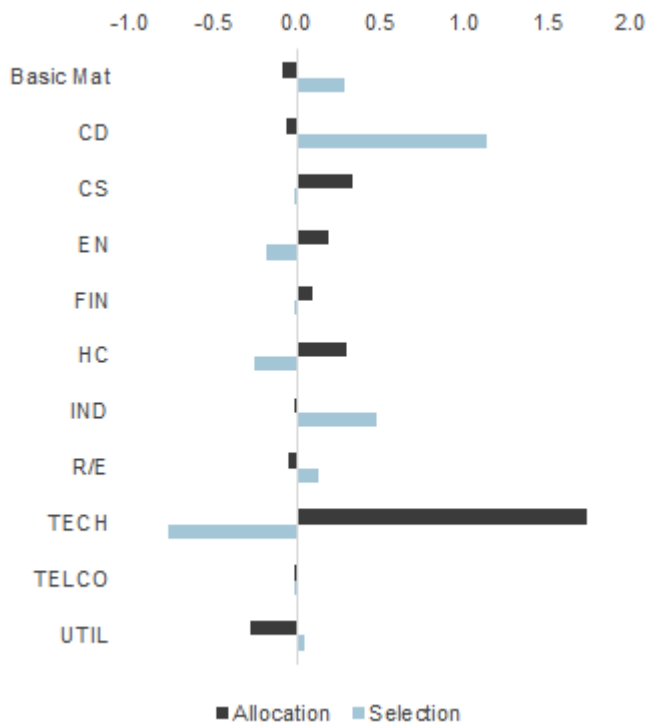
Chart 4: Contribution to Green Revenues uplift (%)
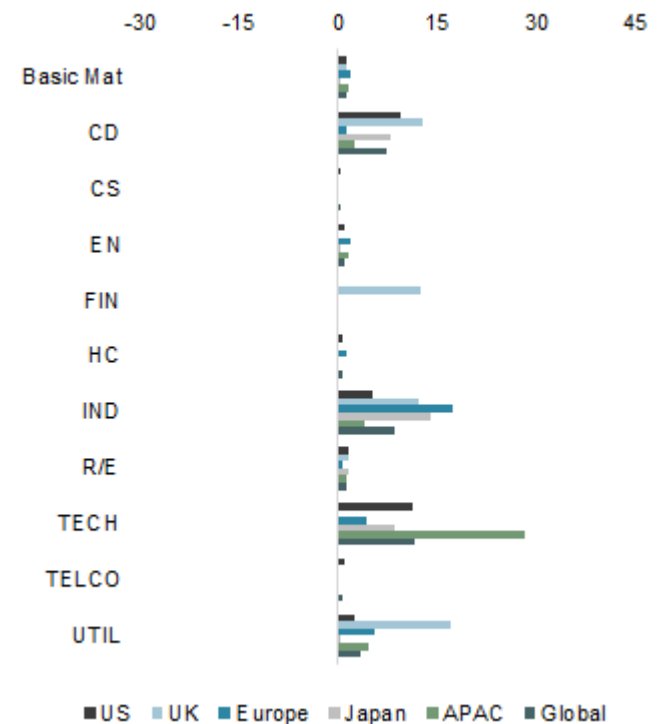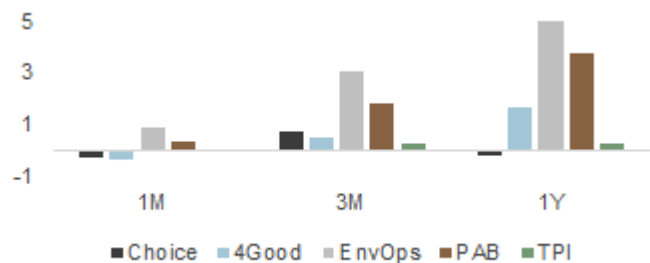

Chart 5: Active industry weights (%)
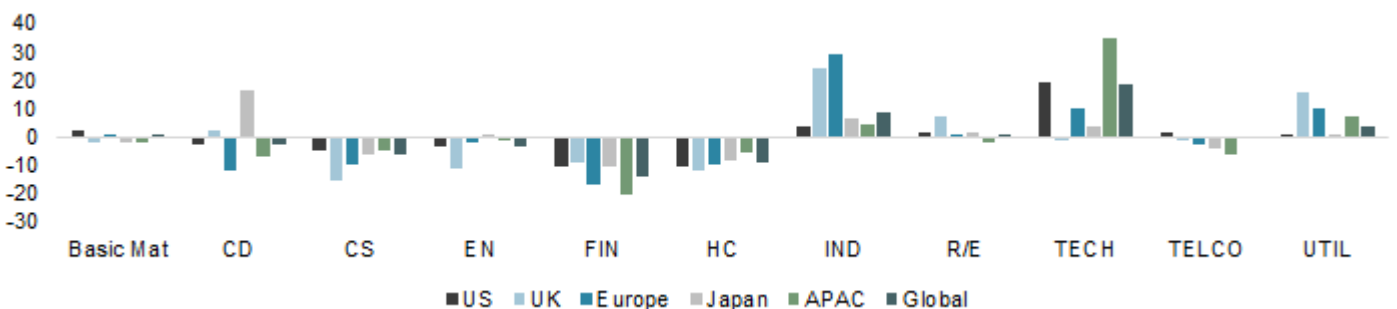
FTSE ESG Low Carbon Target Exposure indices – Q2 2023

FTSE ESG Low Carbon was the only global/developed underperforming SI strategy in Q2, with notable underperformance from the US and UK, while Japan, APAC, EM and Europe slightly outperformed. The largest driver of underperformance were selection effects in Consumer Discretionary and Financials, in which the Developed index is underweight and overweight respectively, and allocation effect in Consumer Staples, which is overweight. The US was also impacted by weak selection in Tech. Uplift in ESG scores is spread across multiple industries, in particular overweight Tech, Telco & Financials and underweight Energy.

Chart 1: Active Performance (TR, USD %)
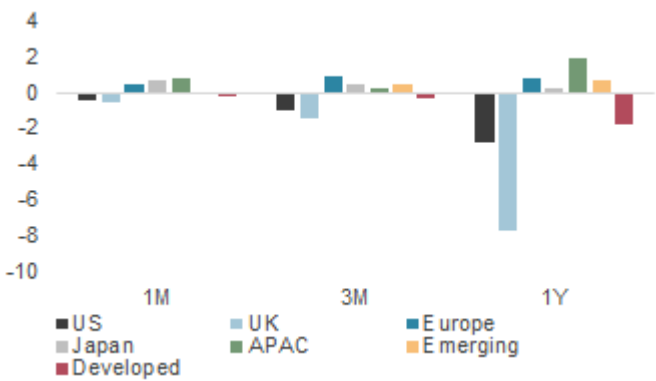
Chart 2: ESG Low Carbon ESG scores
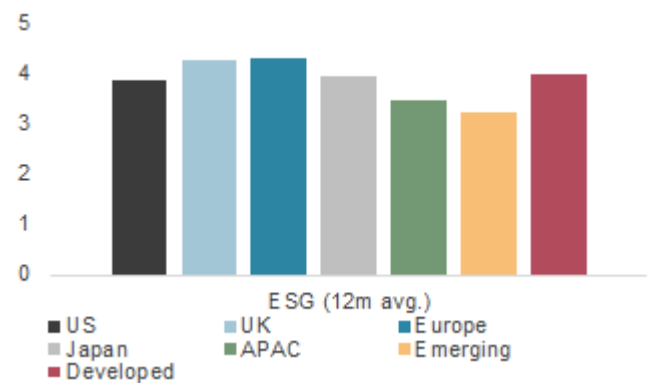
Chart 3: 3M Attribution of developed index (TR, USD %)
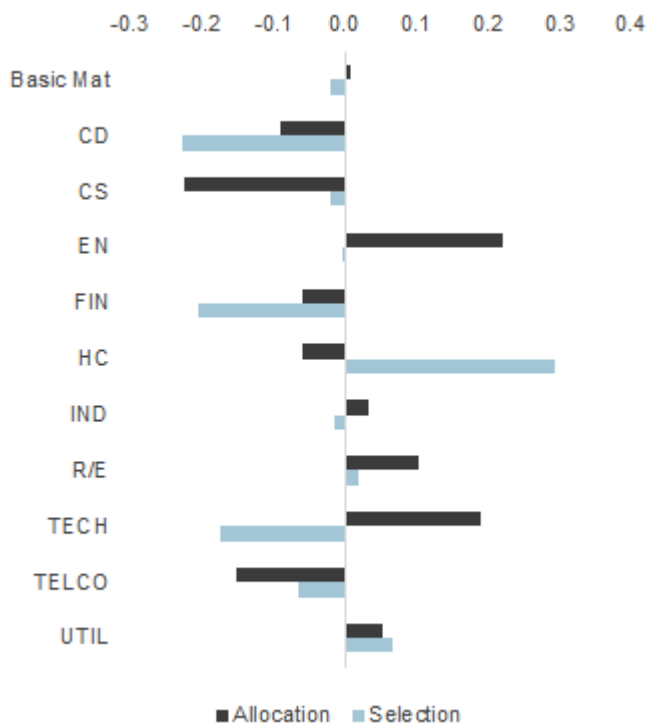
Chart 4: Contribution to ESG uplift (%)
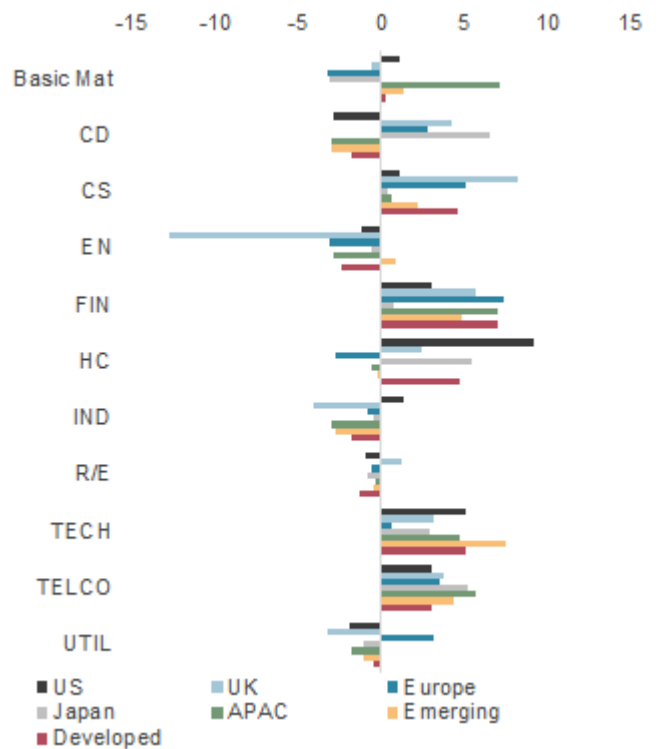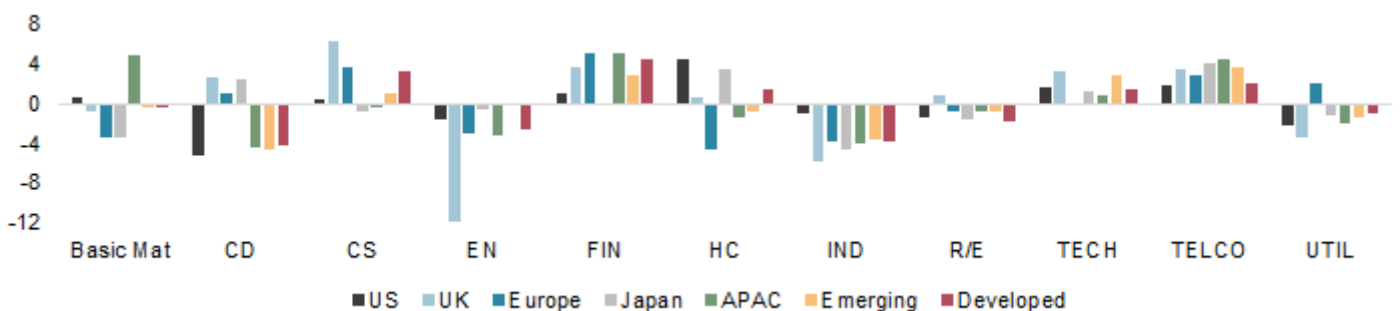
Chart 5: Active industry weights (%)

FTSE EU Paris-Aligned Benchmark indices – Q2 2023

Paris-Aligned Benchmark experienced a strong global/developed outperformance in Q2, while the UK underperformed. Global performance was driven by selection in Consumer Discretionary and allocation effects from the overweight in Tech and underweight in Energy. Underperformance in the UK was complex, with both allocation and selection effects impacting Basic Materials, Energy, Financials, Industrials and Telcos. The carbon reduction in PAB comes primarily from underweights in Energy and Basic Materials as well as a tilting towards lower carbon Utilities.

Chart 1: Active Performance (TR, USD %)

Chart 2: PAB Carbon emission / EVIC
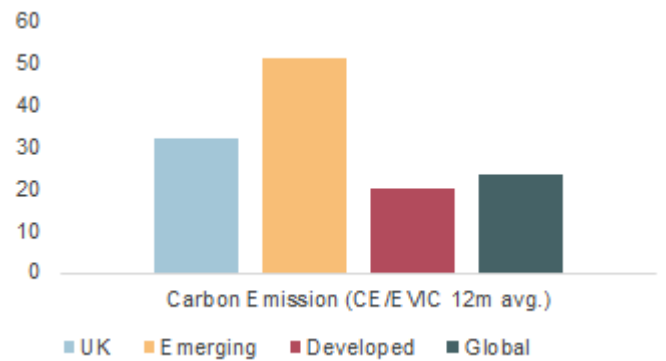
Chart 3: 3M Attribution of global index (TR, USD %)
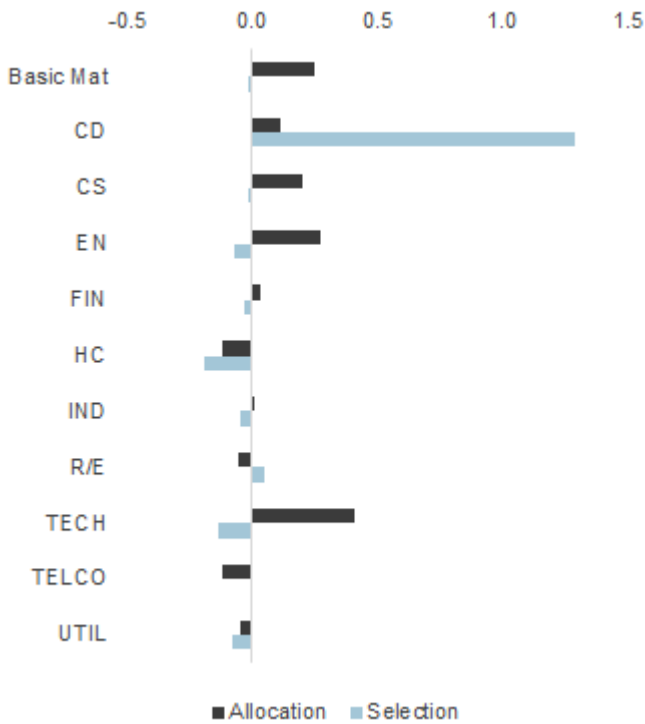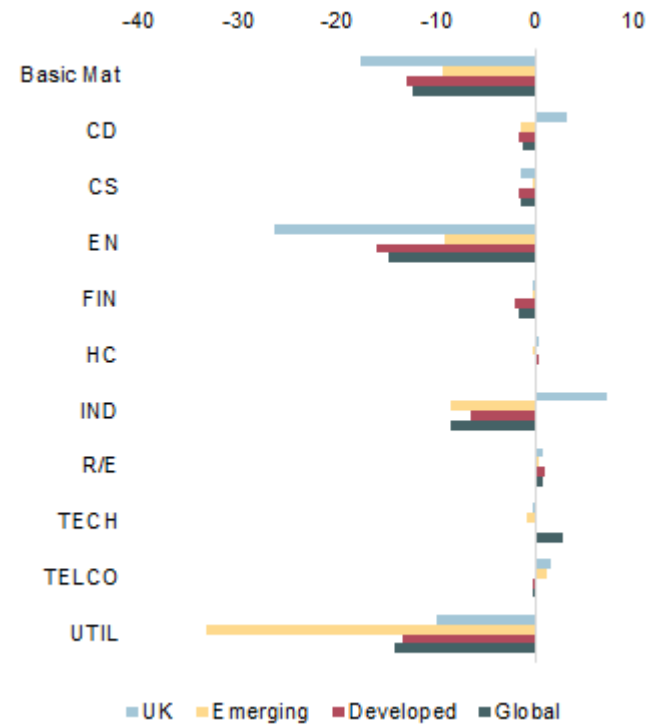
Chart 4: Contribution to Carbon reduction (%)
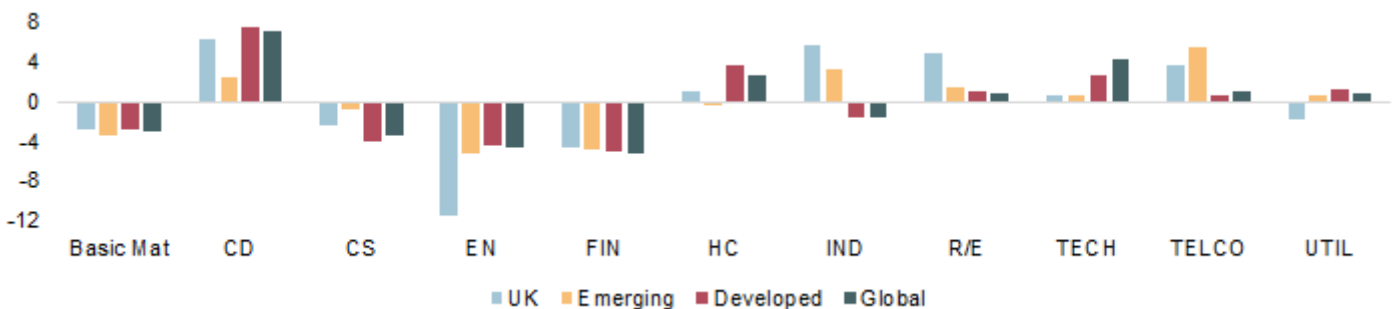
Chart 5: Active industry weights (%)

FTSE TPI Climate Transition indices – Q2 2023

Global TPI indices slightly outperformed in Q2, while Developed and the US were in line with market performance, and Japan and EM outperformed. Global performance was driven by overweight in Tech and underweight in Energy and Basic Materials, offset by negative allocation from overweight Utilities and selection in Healthcare. Japan's outperformance was driven by positive selection in Consumer Discretionary and EM by positive selection in Tech. TPI MQ scores are similar across developed markets, while EM is materially lower. Uplift came from a wide range of industries, offset by the underweight in Energy.

Chart 1: Active Performance (TR, USD %)

■US ■Japan ■Emerging ■Developed ■Global

Chart 2: TPI Index TPI Management Quality Score

TPI MQ score (12m avg.)

■US ■Japan ■Emerging ■Developed ■Global
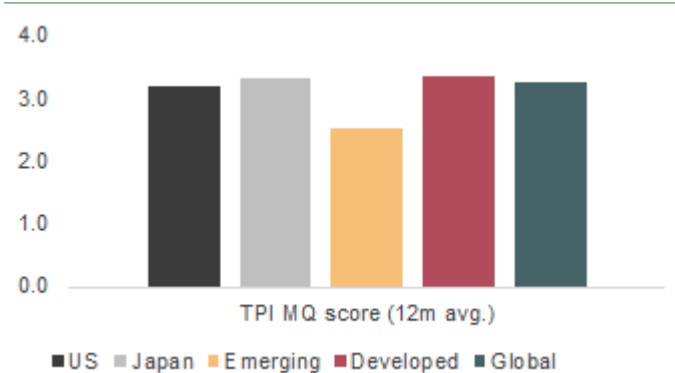
Chart 3: Attribution of global index (TR, USD %)

■Allocation ■Selection
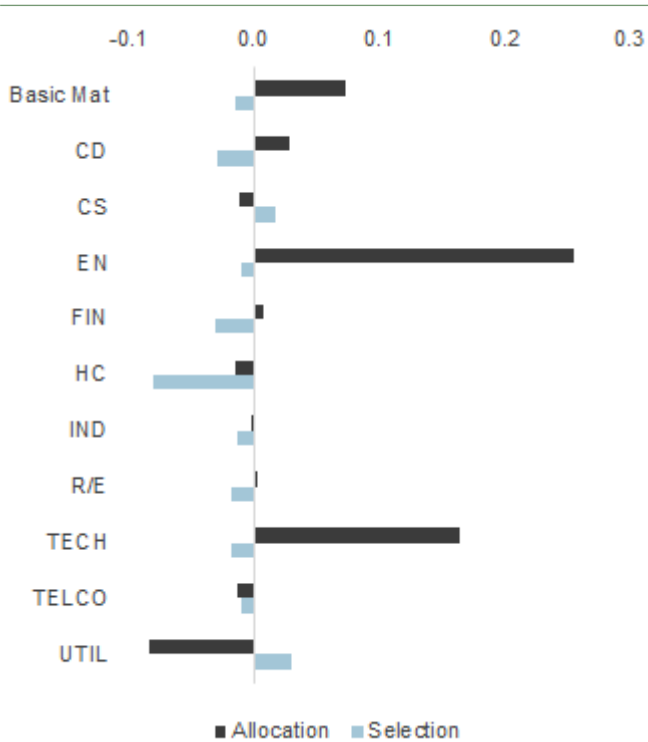
Chart 4: Contribution to TPI MQ uplift (%)
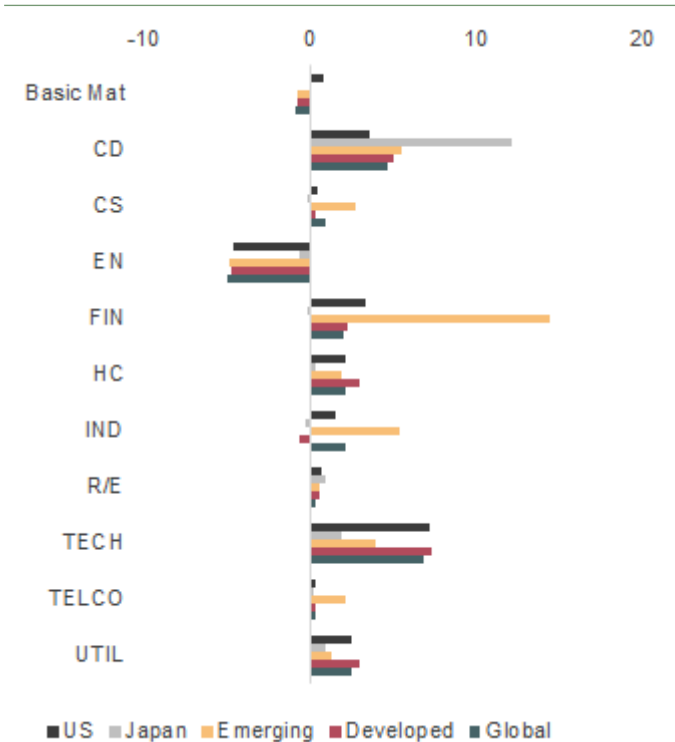
■US ■Japan ■Emerging ■Developed ■Global

Chart 5: Active industry weights (%)

■US ■Japan ■Emerging ■Developed ■Global

Global Index Comparisons – Q2 2023

Global SI strategies performance was positive in Q2. The best performer was Env Ops (3.1%), driven by its large overweight in Technology and positive selection in Consumer Discretionary. TPI outperformed the least (0.3%), due to negative selection across a range of industries. Env Ops has a higher tracking error of 6.0%, because of a smaller universe of constituents. Globally, SI strategies are trading at close to their 5-year relative premium, except PAB and TPI, which are higher. Except for the FTSE4Good, all SI premia appreciated during Covid, but fell back in 2022, only to regain that premium in 2023. FTSE4Good is the cheapest strategy, whereas Env Ops remains the most expensive.

Chart 1: Active Performance (TR, USD %)

Chart 2: Index tracking error (%)
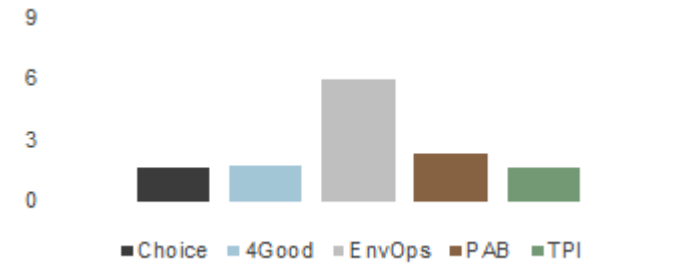
Chart 3: Active Industry weights (3M ave %)
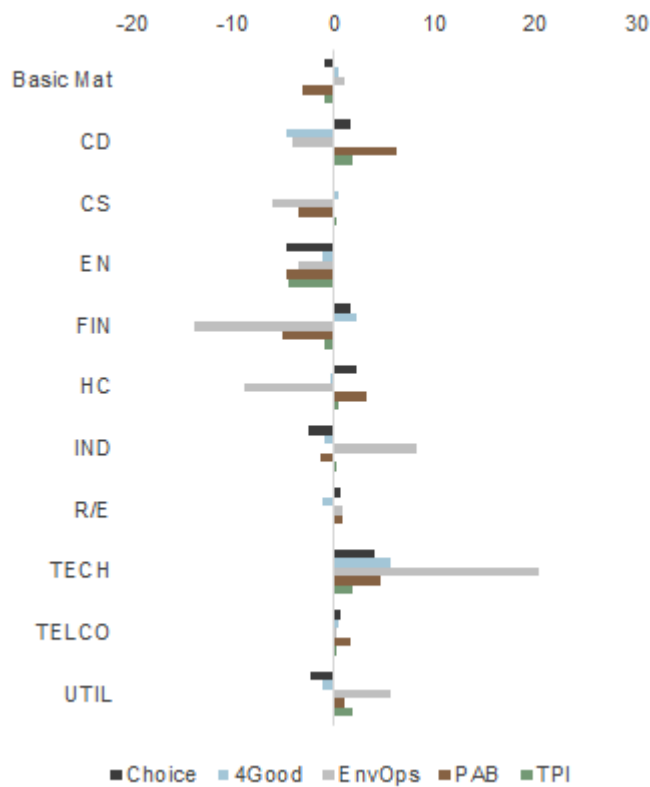
Chart 4: 3m Industry allocation effect (TR, USD %)
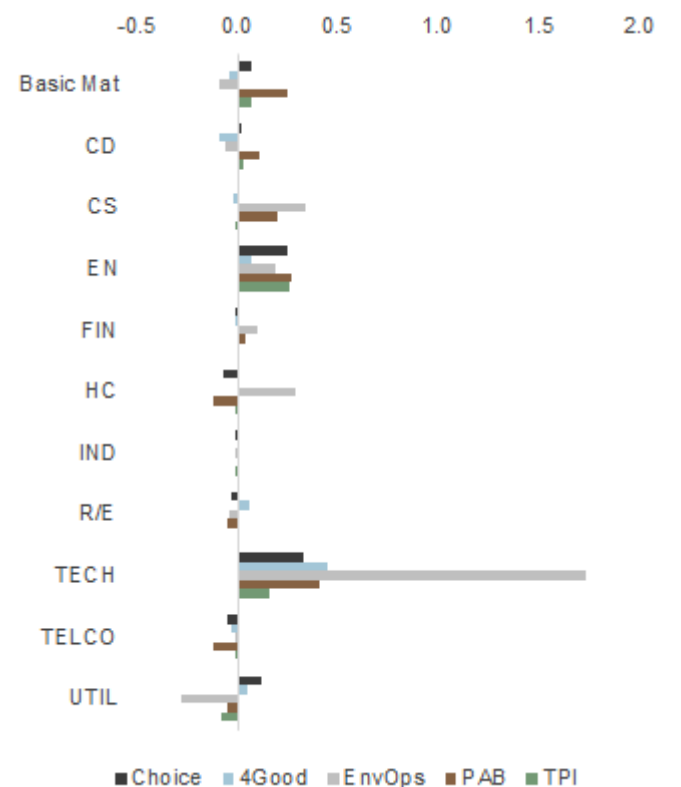
Chart 5: Global indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average
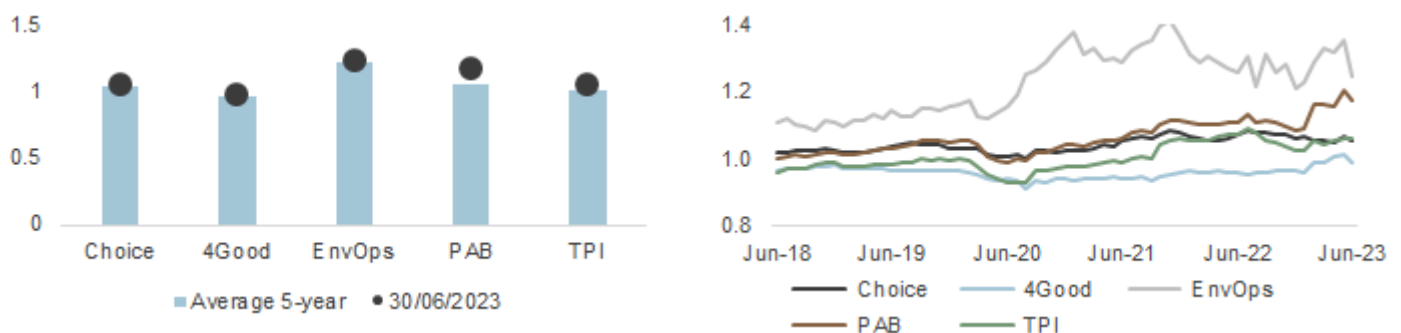
US Index Comparisons – Q2 2023

US SI strategies generally outperformed the benchmark in Q2, except for Low Carb (-1.0%). Env Ops was the best performer (3.0%) helped by a large overweight in Technology, underweight in Consumer Staples, Health Care and Financials. Positive selection in Consumer Discretionary was offset by negative selection in Tech. Low Carb performance was impacted primarily by weak selection in Tech, Consumer Discretionary and Financials, partially compensated by positive selection in Healthcare. All strategies benefited from an underweight in Energy and overweight in Tech. Most US SI indices trade at a premium, slightly above their 5-year averages, except Env Ops, where the premium is higher and has been increasing.

Chart 1: Active Performance (TR, USD %)
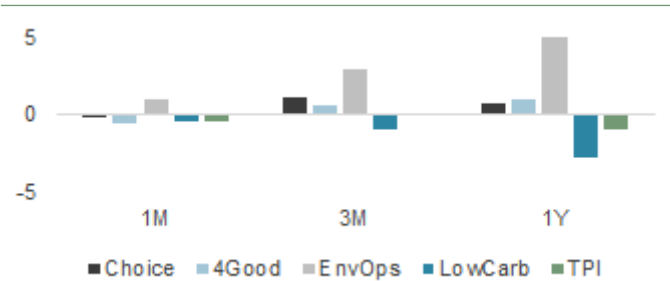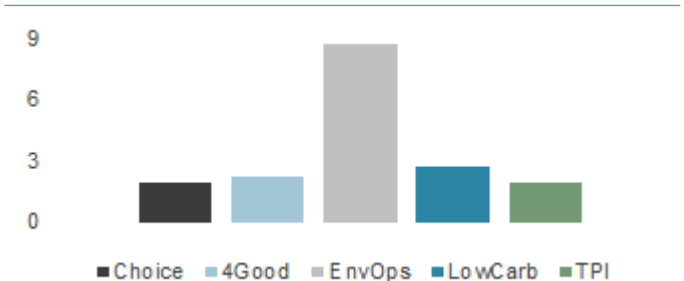

Chart 2: Index tracking error (%)

Chart 3: Active Industry weights (3M ave %)
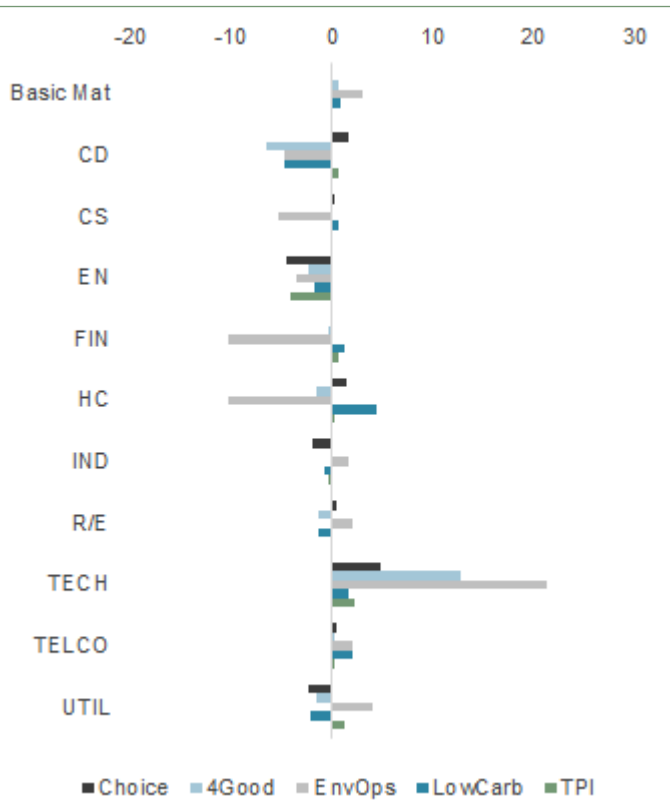
Chart 4: 3m Industry allocation effect (TR, USD %)
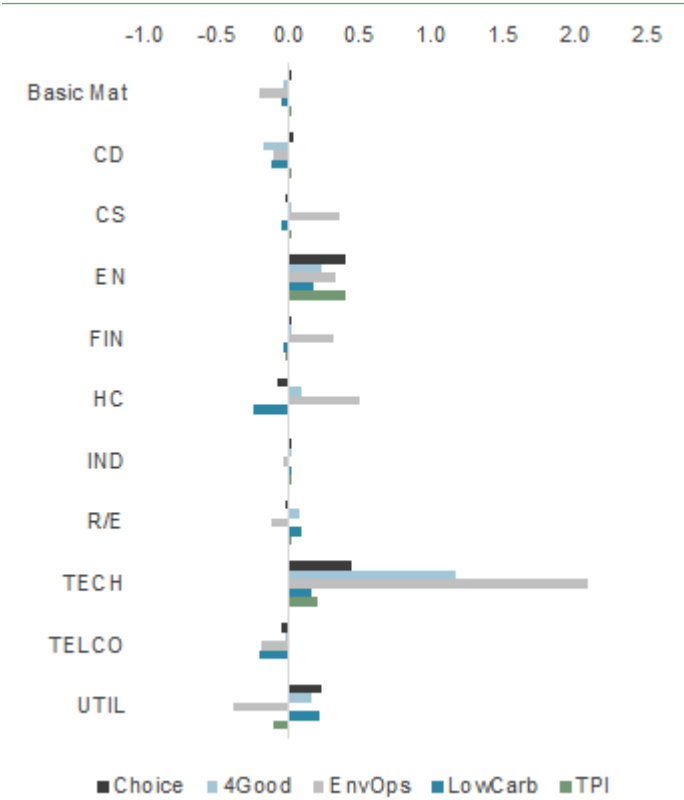
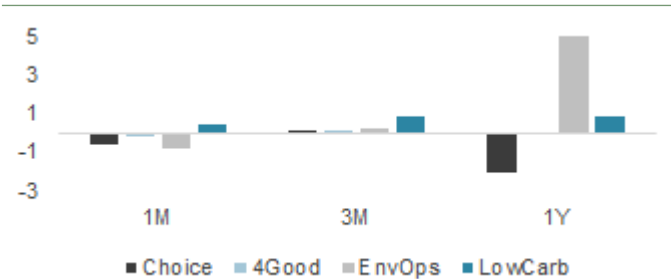### Chart 5: US indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average
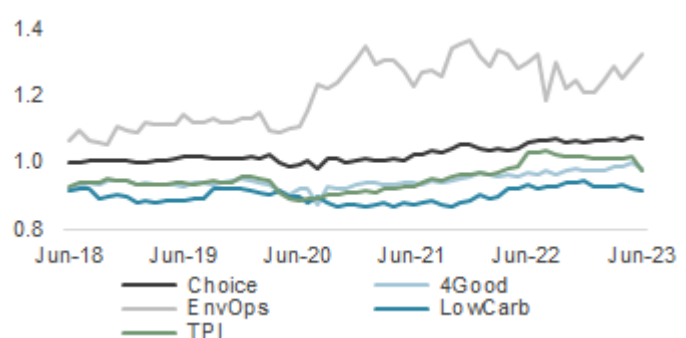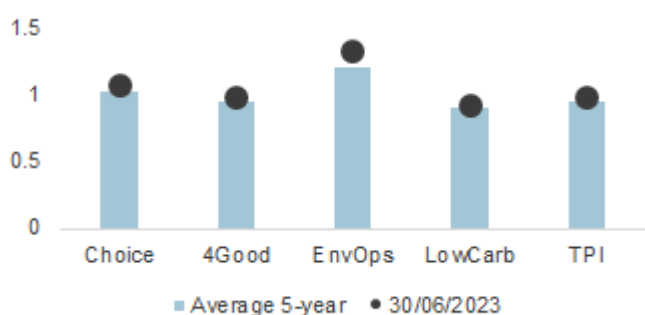
UK Index Comparisons – Q2 2023

In the UK, SI strategies have been weak over both 3M and 1Y, except FTSE4Good which has slightly outperformed (0.8%), driven by positive selection in Energy and Financials. UK benchmarks are characterised by large Energy weights, however Env Ops, Low Carb and PAB have large Energy underweights, leading to large tracking errors. The Energy and Basic Materials underweights were positive, whereas underweights in Financials and overweights in Telcos were negative for selected strategies. The UK SI strategies trade broadly at their 5-year valuation levels, with PAB slightly above, having increased over recent years.

Chart 1: Active Performance (TR, USD %)
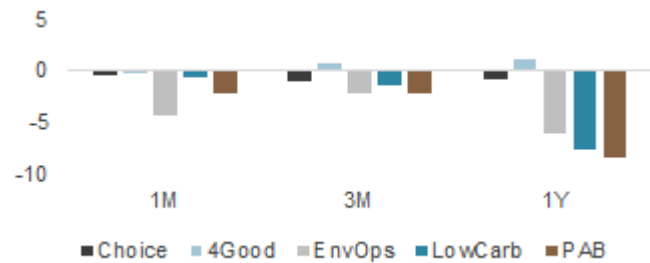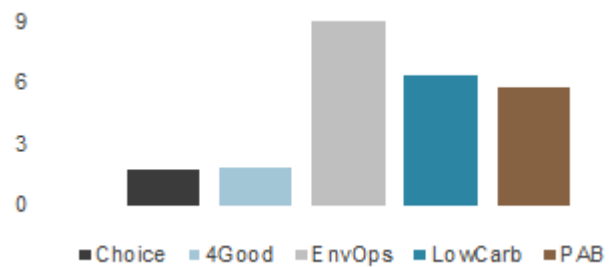
Chart 2: Index tracking error (%)


Chart 3: Active Industry weights (3M ave %)
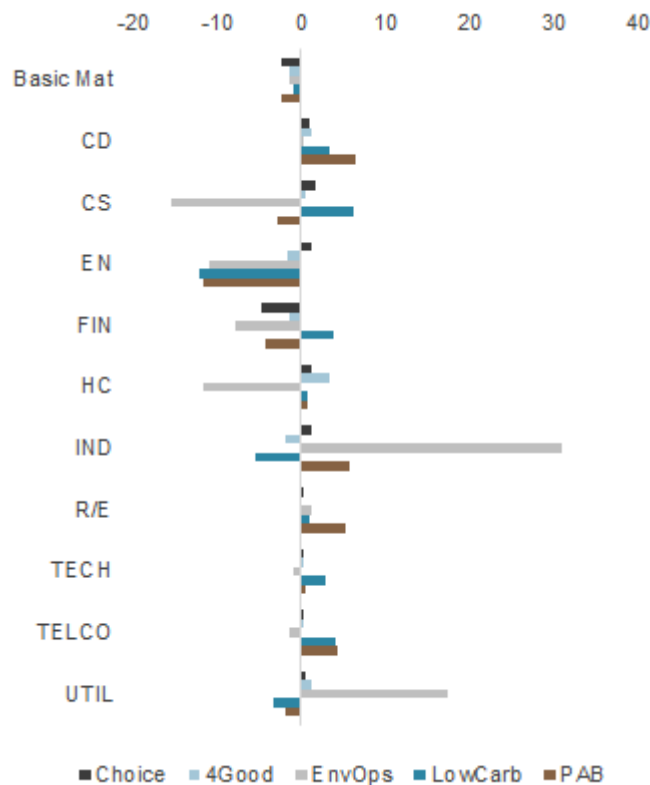
Chart 4: 3M Industry allocation effect (TR, USD %)
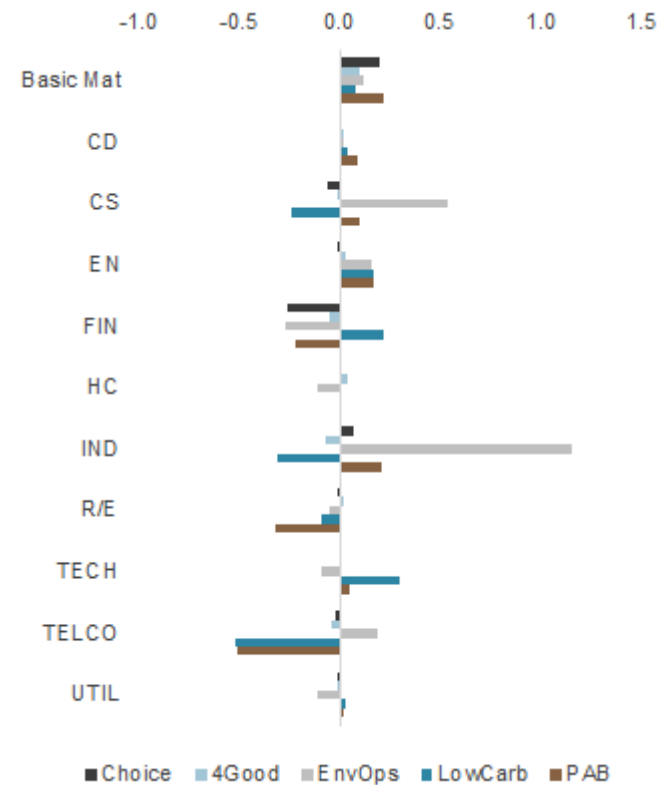
Chart 5: UK indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average
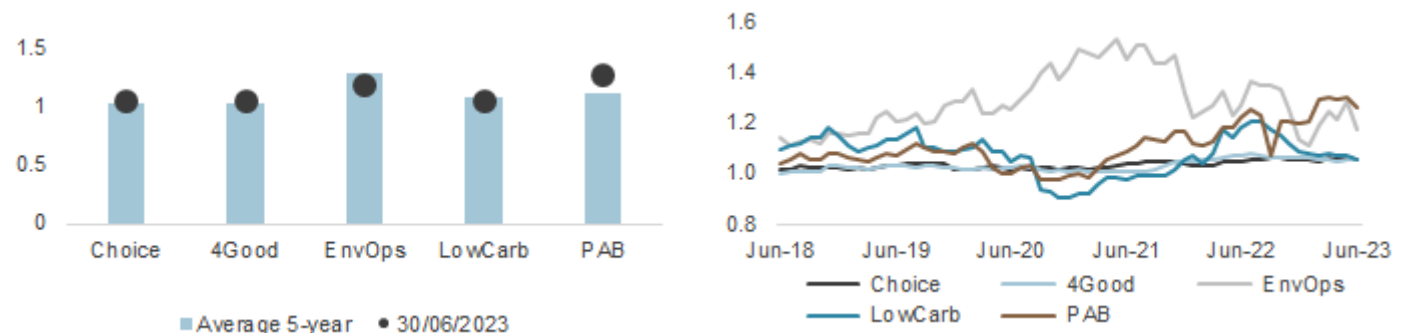
Europe Index Comparisons – Q2 2023

European SI strategies all saw small outperformance in Q2. Low Carb was the best performing strategy in Europe, leading its benchmark by 0.9%, driven by positive selection in Consumer Discretionary. Env Ops, which is more concentrated than the other indices, and therefore has a higher tracking error, saw mixed effects, with positives from overweight Industrials and underweight Consumer Staples, and negatives from underweight Financials and Consumer Discretionary. SI indices relative valuations are in line with their historical averages. The EO premium shrank considerably in 2022, but has picked up again in 2023. FTSE4Good and Low Carb are in line with the market valuation.

Chart 1: Active Performance (TR, USD %)
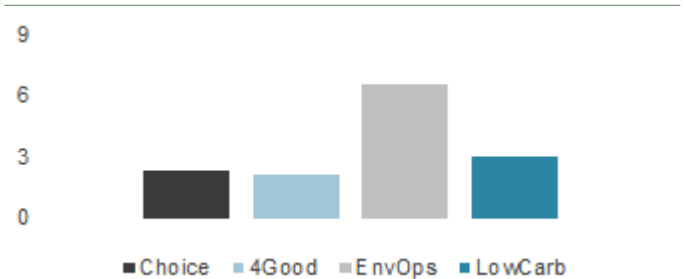
Chart 2: Index tracking error (%)

Chart 3: Active Industry weights (3M ave %)
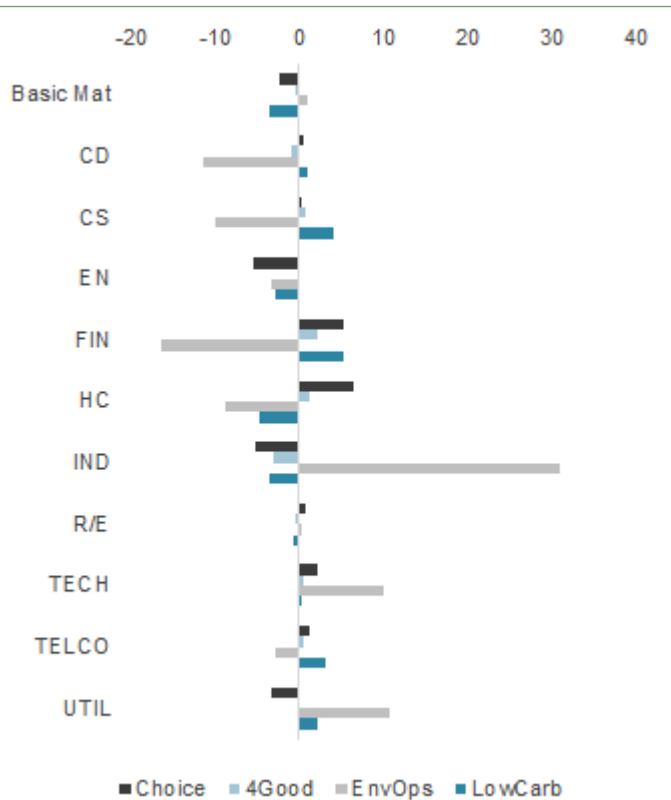
Chart 4: 3M Industry allocation effect (TR, USD %)
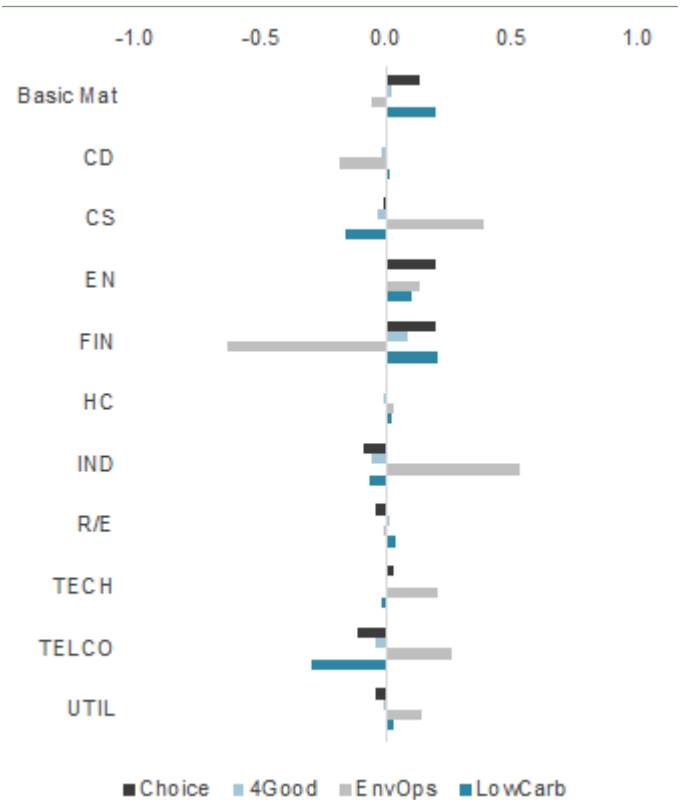
Chart 5: European indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average
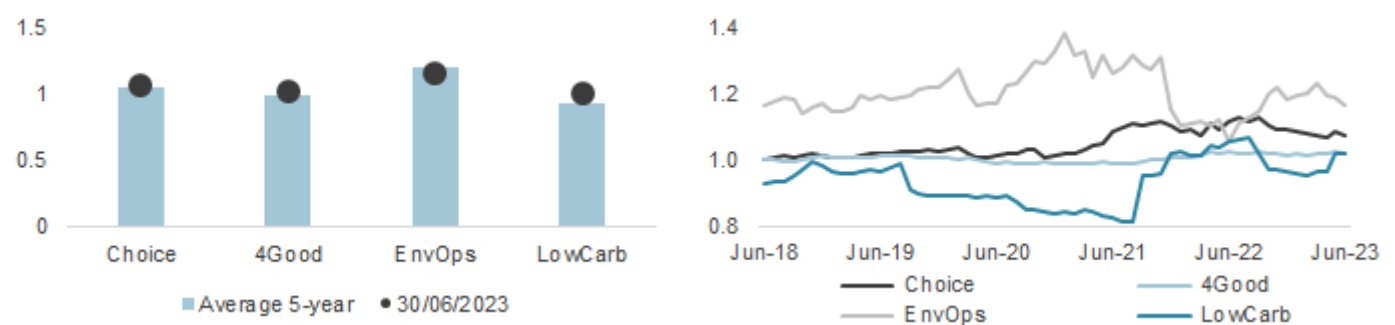
Japan Index Comparisons – Q2 2023

All Japan SI strategies outperformed in Q2, with Env Ops the strongest outperformer (2.8%), partially compensating for a weak performance in 2022, which leaves it still negative over 1Y. Env Ops performance was driven by overweights in Consumer Discretionary and Industrials, and underweights in Healthcare, Real Estate and Consumer Staples, plus positive selection in Consumer Discretionary. FTSE4Good, which outperformed over 1Y, is driven more by selection than allocation, particularly in Consumer Discretionary, Financials and Industrials. SI strategies trade at a relative premium in Japan compared to the historical average, except for Env Ops, which saw a recent fall from a premium to discount due to recent index turnover.

Chart 1: Active Performance (TR, USD %)

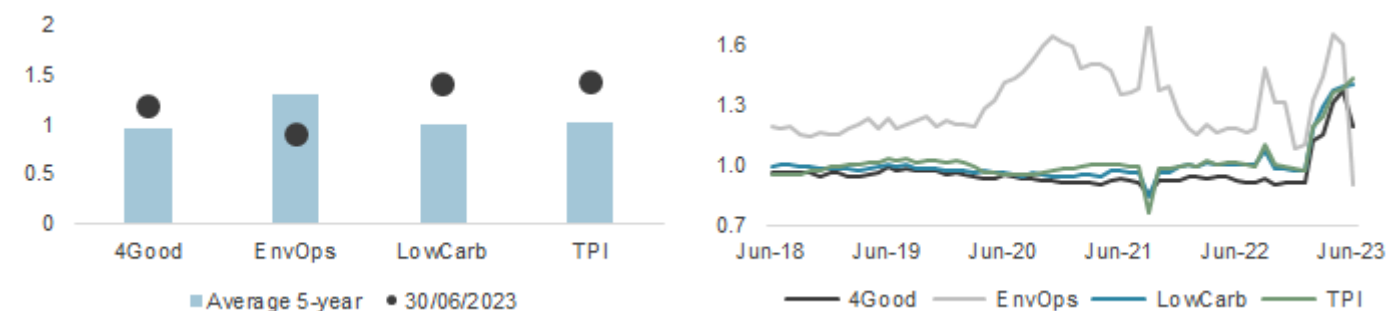**Chart 2: Index tracking error (%)**
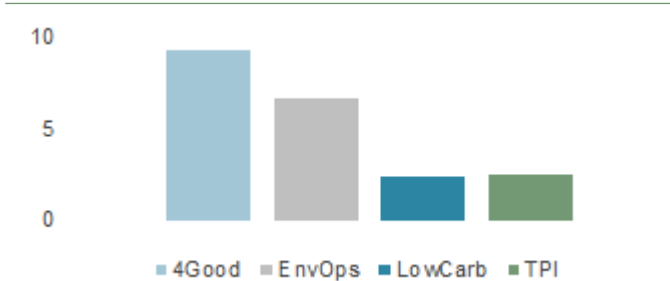
Chart 3: Active Industry weights (3M ave %)
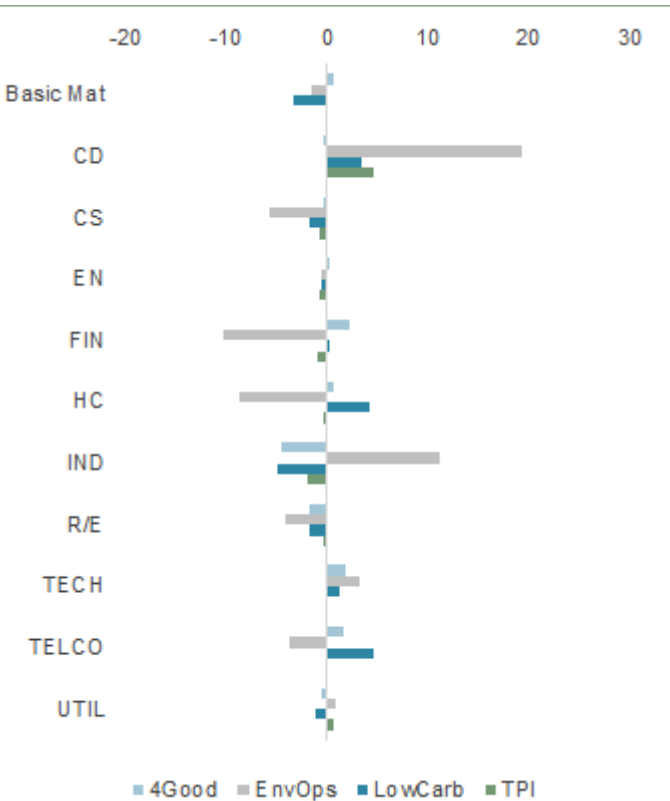
Chart 4: 3M Industry allocation effect (TR, USD %)
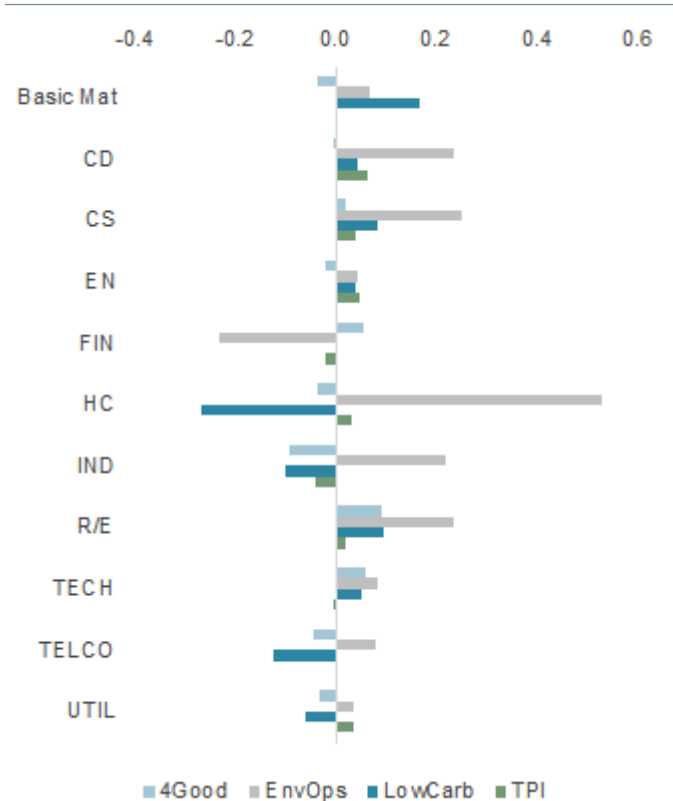
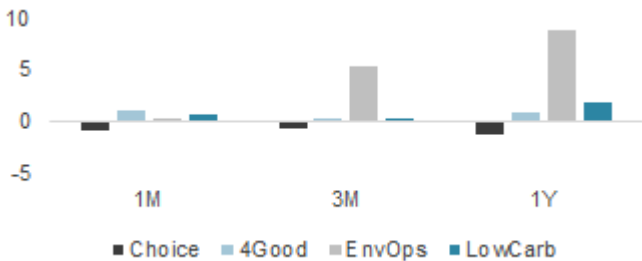**Chart 5: Japan indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average**

Asia Pacific Index Comparisons – Q2 2023

In the Asia Pacific region in Q2, Env Ops strongly outperformed the benchmark (5.3%), whereas FTSE4Good and Low Carb modestly outperformed (both 0.3%) and Global Choice slightly underperformed (-0.6%). Env Ops has a much higher tracking error than the other indices, driven by large overweight in Tech and underweight in Financials, which were positive and negative to Q2 performance respectively. Smaller underweights in Consumer Discretionary, Staples and Healthcare also added to performance. Global Choice underperformance was driven by negative selection in Industrials. Rising premia in FTSE4Good and Env Ops have put them higher than the historical average, while Low Carb is in line and Global Choice slightly below.

Chart 1: Active Performance (TR, USD %)
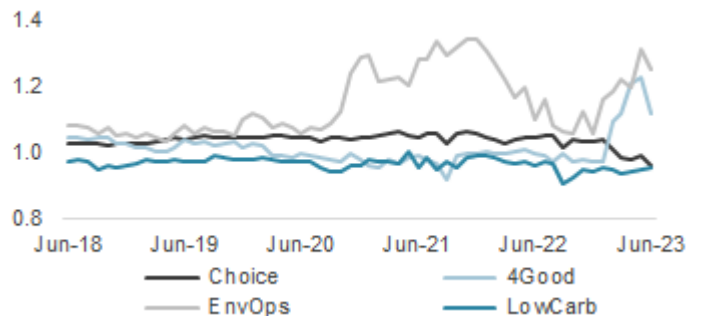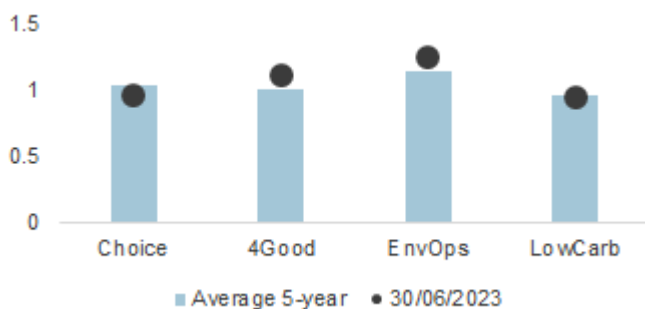

Chart 2: Index tracking error (%)
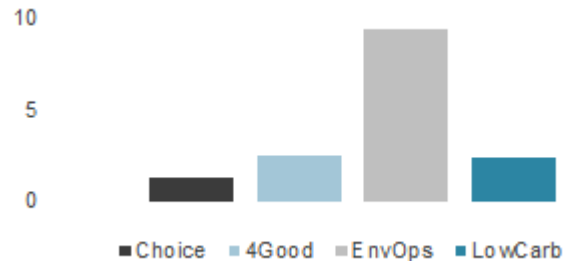
Chart 3: Active Industry weights (3M ave %)
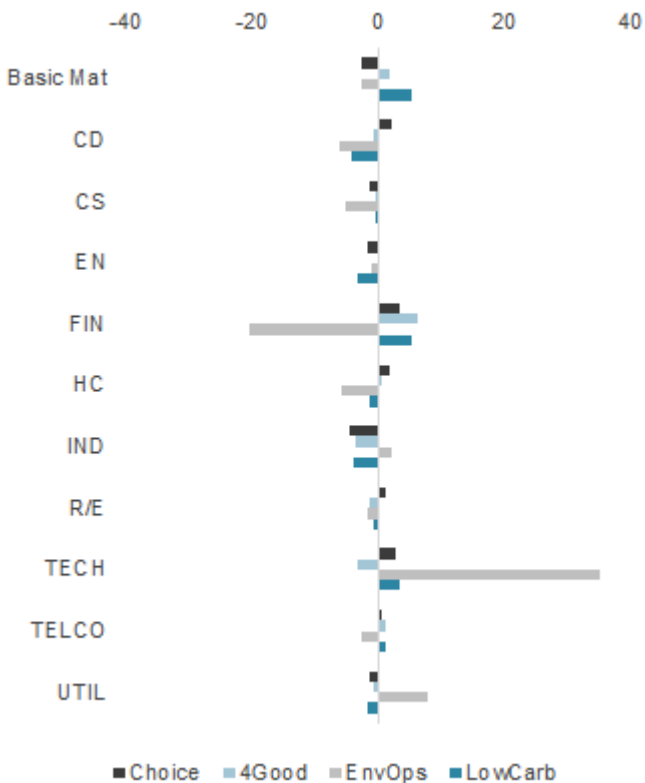
Chart 4: 3m Industry allocation effect (TR, USD %)
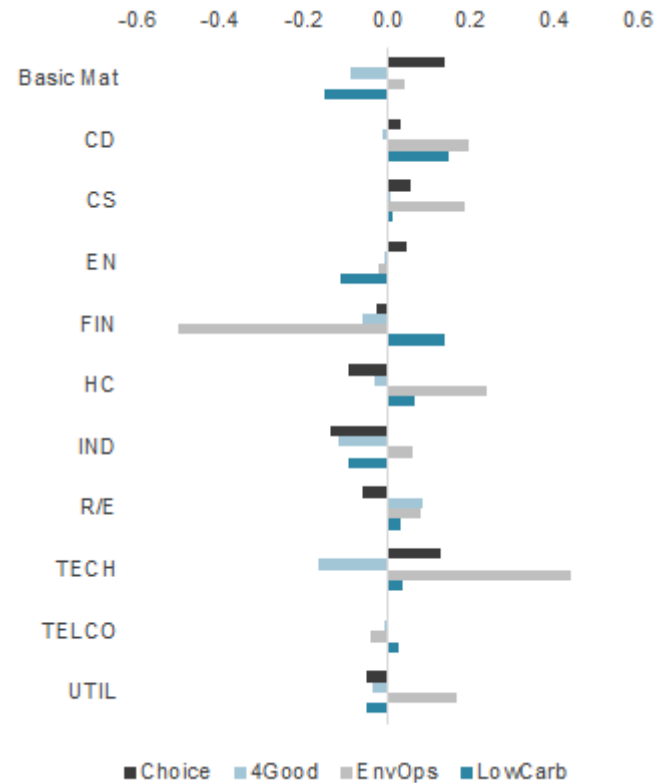
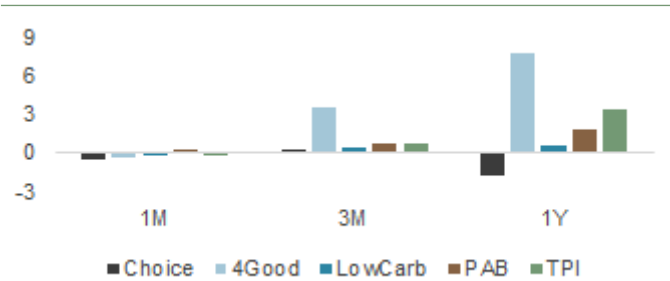## Chart 5: Asia Pacific indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average

Emerging Index Comparisons – Q2 2023

All SI strategies in EM outperformed in Q2, however FTSE4Good outperformance was by far the strongest (3.6%), while the other strategies only saw a modest outperformance. FTSE4Good has a higher tracking error than the other strategies, due to a high underweight in Consumer Discretionary and overweight in Financials, which were both positive for performance in Q2. These were augmented by strong selection effects in Tech, Financials and Consumer Discretionary. Other strategies saw multiple offsetting effects, particularly in Energy, Financials and Consumer Discretionary. SI valuation premium are relatively modest in EM, with PAB being the highest and over its historical average.
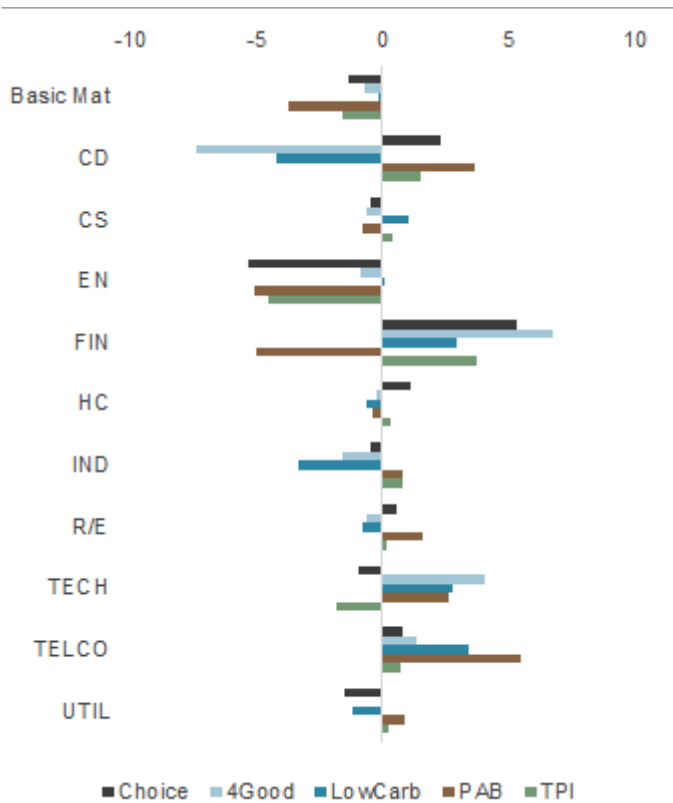
Chart 1: Active Performance (TR, USD %)
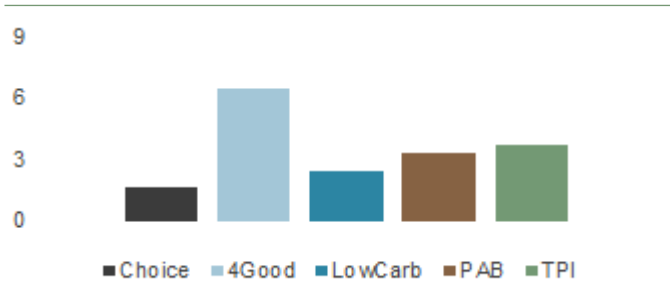
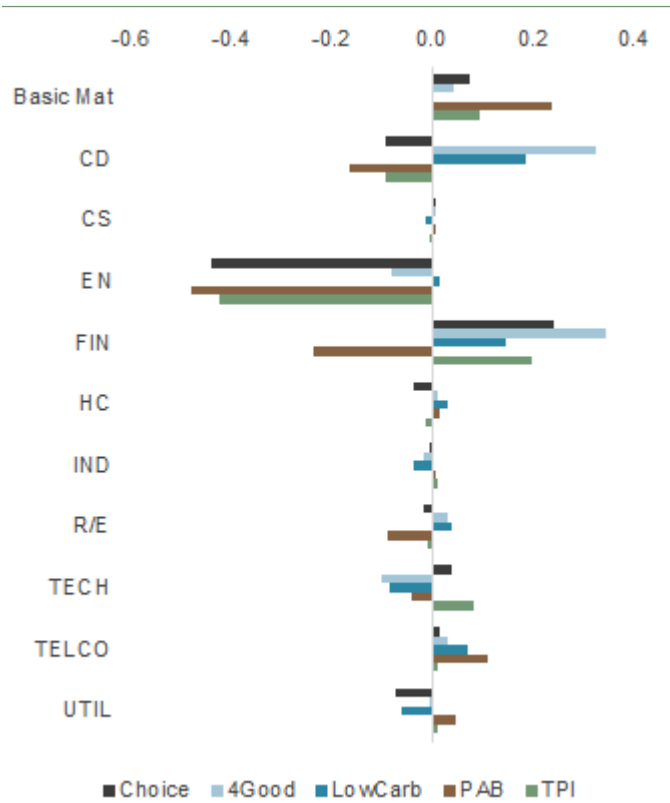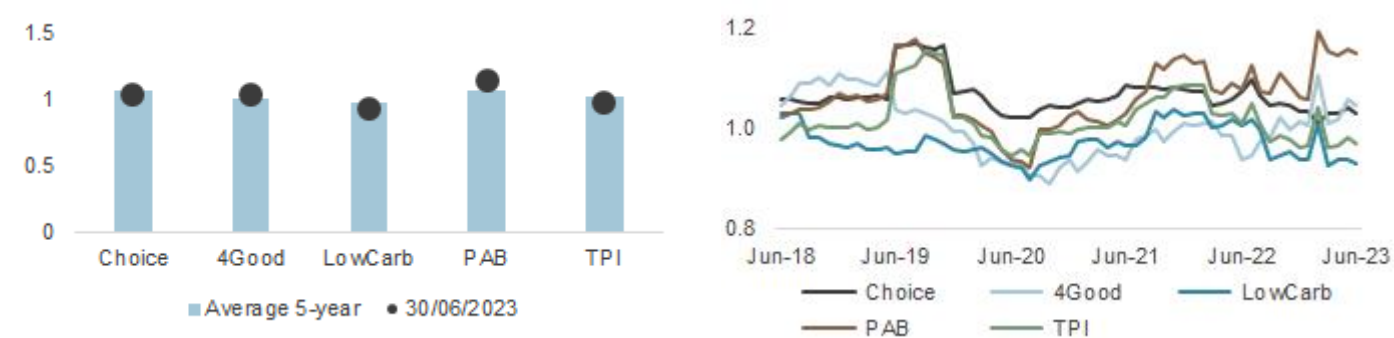## Chart 2: Index tracking error (%)

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

Developed Index Comparisons – Q2 2023

Developed Market SI indices saw a mixed performance in Q2, with PAB and Global Choice outperforming (1.5% & 0.8%) and Low Carb underperforming (-0.4%) and FTSE4Good and TPI in line with the market. All of the strategies are overweight Tech and underweight Energy, both of which were positive for performance in Q2. Underweight Basic Materials, Consumer Staples, Financials, Healthcare, Real Estate and Utilities where all positive for the strategies, which took those positions. Selection effect was also significant in Consumer Discretionary, giving a positive performance for PAB and a negative one for FTSE4Good. Valuation premium has been relatively stable, 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 %)
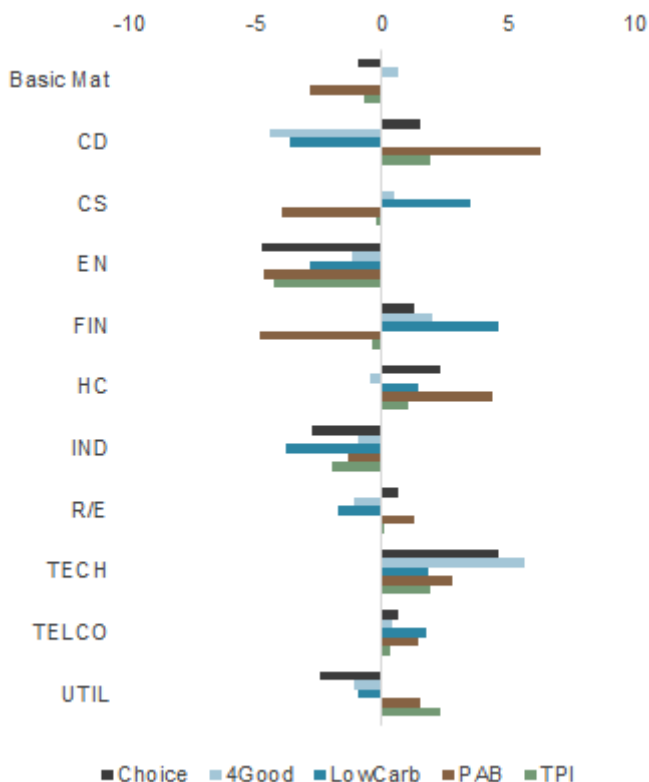
Chart 4: 3M Industry allocation effect (TR, USD %)
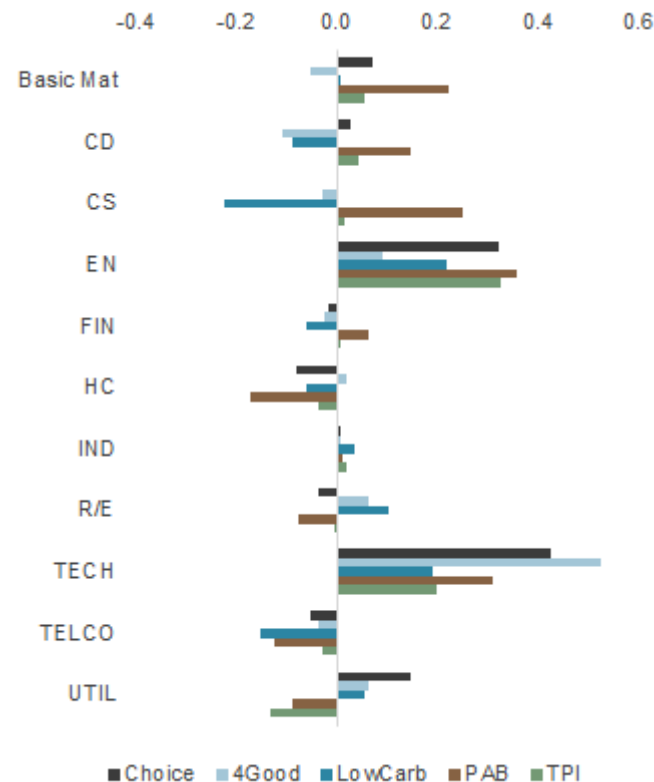
Chart 5: Developed indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average
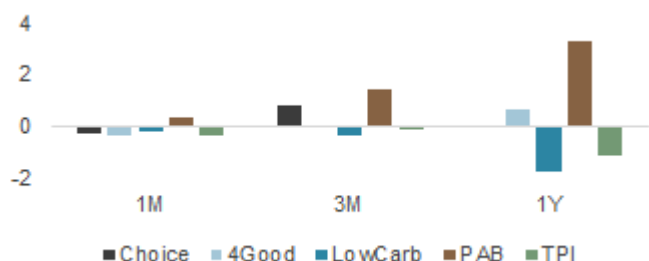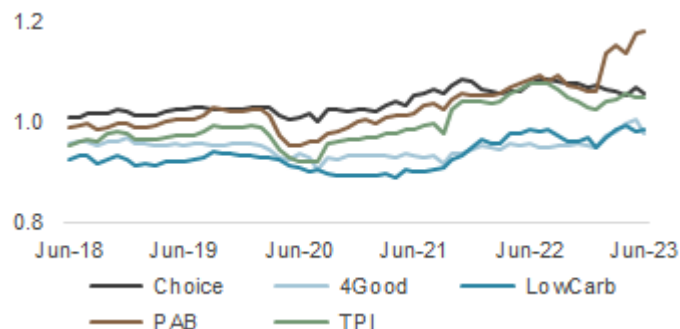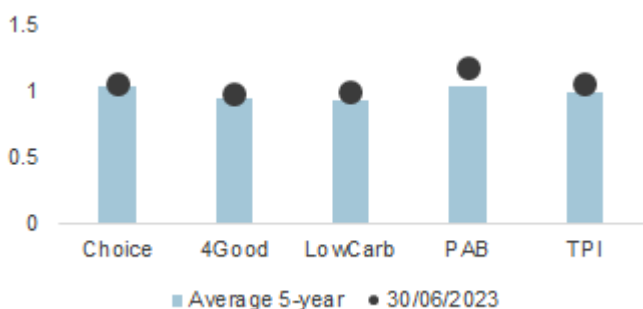

Source: FTSE Russell/Refinitiv. All data as of June 30, 2023. Past performance is no guarantee of future results. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures. Results in this report are for research / illustrative purposes and do not represent the official performance of the indices.
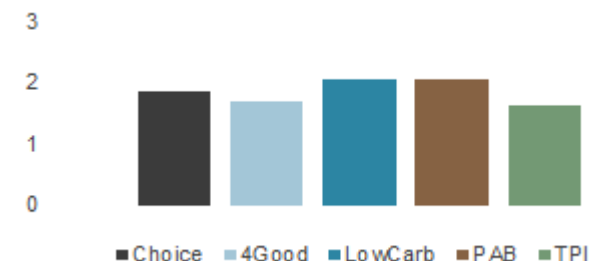
Appendix 1: SI Index Coverage and Benchmarks

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.

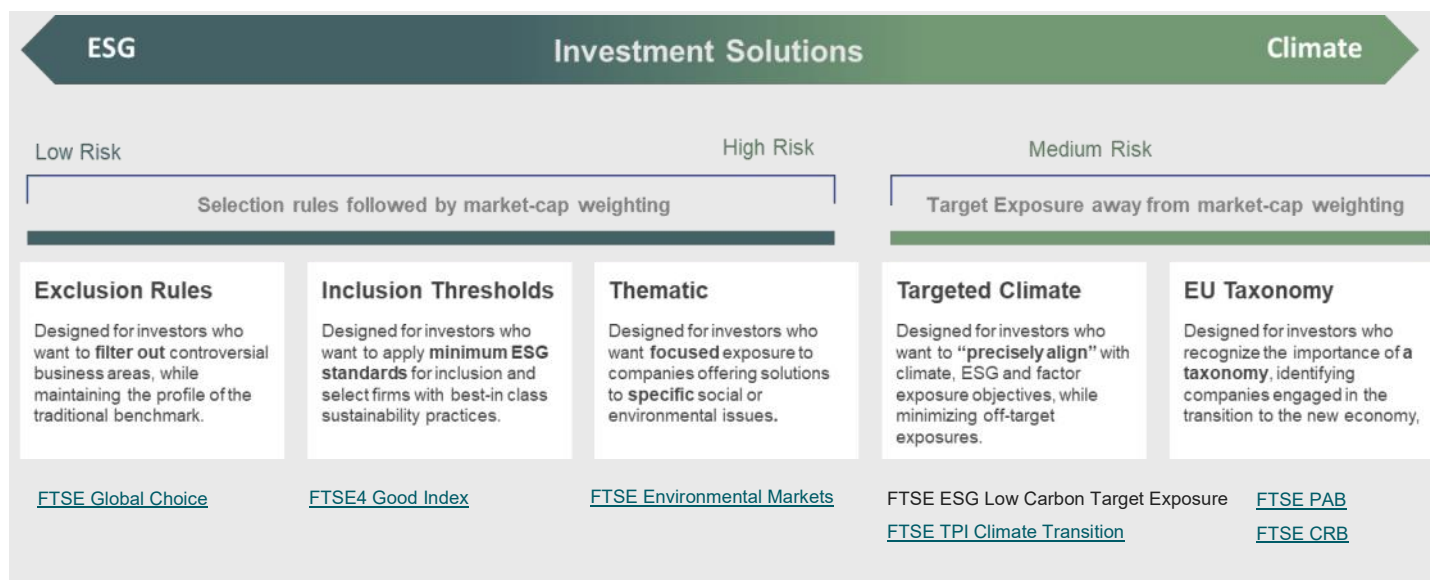The FTSE Russell Target exposure methodology is for investors looking to integrate multiple climate-change objectives, such as hedging specific climate risks, into an index, while gaining exposure to potential upsides from rising demand for green products. It is also used to support investor's decarbonization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

ESG	Investment Solutions			Climate
Low Risk		High Risk	Medium Risk	
Selection rules followed by market-cap weighting			**Target Exposure away from market-cap weighting**	
Exclusion Rules	**Inclusion Thresholds**	**Thematic**	**Targeted Climate**	**EU Taxonomy**
Designed for investors who want to **filter out** controversial business areas, while maintaining the profile of the traditional benchmark.	Designed for investors who want to apply **minimum ESG standards** for inclusion and select firms with best-in class sustainability practices.	Designed for investors who want **focused** exposure to companies offering solutions to **specific** social or environmental issues.	Designed for investors who want to **"precisely align"** with climate, ESG and factor exposure objectives, while minimizing off-target exposures.	Designed for investors who recognize the importance of **a taxonomy**, identifying companies engaged in the transition to the new economy,
FTSE Global Choice	FTSE4 Good Index	FTSE Environmental Markets	FTSE ESG Low Carbon Target Exposure FTSE TPI Climate Transition	FTSE PAB FTSE CRB

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
US	Global Choice	FTSE USA All Cap Choice	FTSE Global Equity USA All Cap	✓			✓
	FTSE4Good	FTSE4Good US	**FTSE USA**	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities USA	FTSE Global Equity USA All Cap	✓			✓
	ESG Low Carbon Target	FTSE USA ESG Low Carbon Target Exposure	**FTSE USA**	✓		✓	
	TPI Climate Transition	Russell 1000 TPI Climate Transition	**Russell 1000**	✓		✓	
UK	Global Choice	FTSE UK ex Controversies ex CW	**FTSE UK**	✓		✓	
	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	**FTSE UK**	✓		✓	
	Climate Transition	FTS Climate Transition Benchmark	FTSE All-Share ex Investment Trusts	✓			✓
	Paris Aligned	FTSE Paris Aligned Benchmark	FTSE All-Share ex Investment Trusts	✓			✓
Europe	Global Choice	FTSE Developed Europe All Cap Choice	FTSE Developed Europe All Cap	✓			✓
	FTSE4Good	FTSE4Good Europe	**FTSE Developed Europe**	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities Europe	FTSE Developed Europe All Cap	✓			✓
	ESG Low Carbon Target	FTSE Developed Europe ESG Low Carbon Target Exposure	**FTSE Developed Europe**	✓		✓	
Japan	FTSE4Good	FTSE4Good Japan	**FTSE Japan**	✓		✓	
	Environmental Ops	FTSE Environmental Opportunities Japan	FTSE Global Equity Series Japan All Cap	✓			✓
	ESG Low Carbon Target	FTSE Japan ESG Low Carbon Target Exposure	**FTSE Japan**	✓		✓	
	Climate Transition	FTSE Japan Climate Transition Benchmark	FTSE JPX Japan 500	✓		✓	
	TPI Climate Transition	FTSE Japan TPI Climate Transition	**FTSE Japan**	✓		✓	
APAC	Global Choice	FTSE Developed Asia Pacific All Cap Choice	FTSE Developed Asia Pacific All Cap	✓			✓
	FTSE4Good	FTSE4Good Developed Asia Pacific	**FTSE Developed Asia Pacific**	✓		✓	
	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	✓	✓	✓	
EM	Global Choice	FTSE Emerging All Cap Choice	FTSE Emerging All Cap		✓		✓
	FTSE4Good	FTSE4Good Emerging	**FTSE Emerging**		✓	✓	
	ESG Low Carbon Target	FTSE Emerging ESG Low Carbon Target Exposure	**FTSE Emerging**		✓	✓	
Global	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 4.

Appendix 1: Glossary Products and Methodology

INDEX SERIES	INVESTMENT SOLUTION	METHODOLOGY
Screened	**Filter out controversial business areas**	**Market-Cap Weighted**
FTSE Global Choice	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.
Thresholds	**Apply Minimum Inclusion standards**	**Market-Cap Weighted**
FTSE4Good	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.
FTSE Environmental Opportunities	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.
Target Exposure	**Target climate change objectives**	**Non Market-Cap Weighted**
FTSE ESG Low Carbon Target	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.
FTSE SDG-Aligned	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.
FTSE Global Climate	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.
FTSE Smart Sustainability	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

Report calculations

- 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 officials 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

- 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

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

Receive all research reports

Global Investment Research reports offer investors timely capital-market analysis and insights across asset classes, regions, currencies, industries and styles for better investment decision-making. Subscribers are notified by email when each report is published.

Subscribe now: Market Maps Registration

To learn more, visit ftserussell.com; email info@ftserussell.com or call your regional Client Service Team office:

EMEA +44 (0) 20 7866 1810

North America +1 877 503 6437

Asia Pacific
Hong Kong +852 2164 3333
Tokyo +81 3 4563 6346
Sydney +61 (0) 2 8823 3521