Sustainable Investment Insights

QUARTERLY REPORT | **OCTOBER 2024**

Volatile quarter proves challenging for SI

Q3 was volatile, with uncertainty over the timing of Fed easing, concerns about global growth and both Tech and Energy equities underperforming. All SI equity strategies underperformed, with the SI fixed income performance broadly in line. The bright spot was the rate-sensitive alternatives market, which was very strong, with EPRA Nareit Green outperforming. Green Sovereigns also outperformed due to longer duration.

Highlights

Volatile quarter impacts SI equities

Q3 saw volatility, the first US rate cut and a change in focus from inflation to growth concerns. The uncertainty led to all global SI equity strategies underperforming the market, with the FTSE4Good, a strong performer in Q1 and Q2, and growth-focused EnvOps seeing the largest underperformance. Understanding how SI performed in different historical market cycles is important for investors. In this edition, we add 10 years of historical relative performance for all SI strategies.

Alternatives see strong rebound

Real estate and infrastructure markets were very strong in Q3, up well ahead of equity and fixed income markets. EPRA Nareit Green continued to improve in performance, outperforming in Q3, while Green Infrastructure underperformed.

Tech & Energy underperform

The quarter saw both Tech and Energy underperform the market. As they are a key over and underweight in SI indices the effects broadly cancelled each other out, but were net negative for FTSE4Good and EnvOps.

Most SI Bond strategies are in line; Green Sovereigns outperform

Returns for both sovereigns and corporate bonds were positive, with SI strategies broadly in line with market performance, except in the green bond market, where green sovereigns strongly outperformed, due to their longer duration, and green corporates underperformed, due to their shorter duration.

SI Flows

SI fund flows, which had been under pressure in early 2024, have stabilised in Q3 seeing consistent monthly inflows to both equity and bond SI funds.

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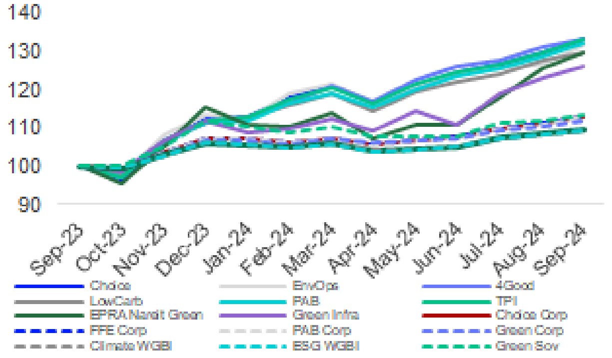
Chart 1. 12-month absolute performance of global SI equity, fixed income and alternatives indices, (TR, USD,%).



6.7% FTSE PAB Global 3M (TR, USD)	**5.7%** FTSE4Good Global 3M (TR, USD)
16.6% FTSE EPRA Nareit Green Dev 3M (TR, USD)	**13.8%** FTSE Green Infra Global 3M (TR, USD)
5.2% FTSE Green Sov Global 3M (TR, USD)	**4.0%** FTSE Green Corp Global 3M (TR, USD)

Note: Low Carbon & EPRA Nareit Green covers developed markets.

Source: FTSE Russell / LSEG. Data as of September 30, 2024.

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

SI Equity Risk and Climate Characteristics – Q3 2024

Key Observations

Sustainable investing encompasses a range of strategies with different investment outcomes. In this section, we summarise the main 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 (-44% to -55%) and underweights to Energy (-5.3% to -1.5%), 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 a low tracking error (1.8%). The UK is the most diversified, holding 97% of benchmark stocks, while Europe is the least diversified, holding 82% of benchmark stocks

FTSE4Good's best-in-class ESG strategy results in significant ESG score uplifts (20% to 3%). The global tracking error is low (1.8%). Europe has the lowest ESG uplift (3%), but the highest absolute ESG score. By contrast, EM has the highest ESG uplift (20%), with a high tracking error (6.6%) but a 0.9 beta.

Environmental Opportunities (EO) selects companies with significant green revenues (>20%), resulting in high active green revenues (absolute increase of 49% to 29%). However, the focus on Industrials, Utilities & Technology leads to higher carbon intensity in most regions (42% to 6%). The indices are highly concentrated (7% to 14% of benchmark) and have higher tracking errors (6% to 11%).

ESG Low Carbon Target targets carbon reduction and ESG uplifts. It achieves significant carbon intensity reduction (-51% to -38%) and ESG score uplift (19% to 12%). Tracking errors are moderate (2.3% to 2.9%) and betas close to 1, except in the UK (6.3% and 0.9).

Paris Aligned Benchmark (PAB) has multiple SI targets. It reduces carbon intensity (-71% to -49%), increases TPI MQ score (10% to 5%), increases green revenues (absolute increase of 11% to 6%) and reduces Energy industry weighting (absolute reduction of -10% to -3%). Tracking error is slightly higher than some other SI indices (2.3% to 5.8%) and the indices are more concentrated (67% to 31% of benchmark).

TPI Climate Transition (TPI) targets multiple climate related uplifts. It achieves strong reduction in carbon intensity (-54% to -31%), significant increase in TPI MQ score (25% to 9%), while the global tracking error is relatively modest at 1.6%. EM has the highest tracking error at 4.1%, but also has the highest TPI MQ uplift of 25%.

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.

	FTSE Russell SI Index	US	UK	Europe	Japan	APAC	Emerging	Developed	Global
Tracking Error	Global Choice	2.1%	1.6%	2.3%		1.3%	1.7%	1.9%	1.8%
	FTSE4Good	2.5%	1.9%	2.2%	10.1%	2.5%	6.6%	1.8%	1.8%
	Environmental Ops	8.9%	9.4%	6.9%	6.9%	11.1%			6.2%
	ESG Low Carbon Target	2.9%	6.3%	2.9%	2.7%	2.7%	2.6%	2.3%	
	Paris Aligned		5.8%				3.3%	2.3%	2.6%
	Transition Pathway	1.9%			2.6%		4.1%	1.7%	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	1.1			1.1
	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	82.6%	96.5%	82.3%		87.6%	82.6%	84.5%	83.7%
	FTSE4Good	46.8%	38.7%	72.2%	50.0%	48.6%	28.9%	53.9%	41.1%
	Environmental Ops	9.1%	7.5%	14.4%	11.0%	7.4%			8.9%
	ESG Low Carbon Target	72.6%	58.7%	46.1%	51.0%	29.4%	36.2%	39.3%	
	Paris Aligned		67.3%				46.5%	49.4%	30.7%
	Transition Pathway	59.3%			80.2%		41.4%	52.7%	35.2%
Weight in Top 10 relative to benchmark	Global Choice	119.8%	102.2%	130.1%		116.2%	103.5%	124.2%	124.5%
	FTSE4Good	148.0%	125.2%	119.4%	132.2%	123.0%	124.7%	134.3%	138.0%
	Environmental Ops	248.1%	149.9%	260.1%	310.2%	303.1%			292.7%
	ESG Low Carbon Target	165.5%	150.2%	166.8%	199.2%	173.9%	131.0%	176.4%	
	Paris Aligned		97.3%				115.9%	139.8%	152.6%
	Transition Pathway	123.1%			152.5%		145.7%	132.8%	128.2%

Source: FTSE Russell/LSEG. All data as of September 30, 2024. 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.

Risk and Climate Characteristics – Q3 2024

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	2.5%	0.0%	-3.5%		-1.5%	-2.5%	0.8%	0.7%
	FTSE4Good	15.0%	9.9%	3.8%	10.4%	10.2%	23.4%	12.7%	13.7%
	Environmental Ops	11.0%	-8.5%	0.3%	11.6%	28.8%			11.6%
	ESG Low Carbon Target	25.5%	20.4%	24.1%	21.1%	25.2%	22.6%	26.2%	
	Paris Aligned		0.6%				9.9%	5.1%	6.2%
	Transition Pathway	9.9%			10.4%		22.2%	11.7%	10.4%
Active S score	Global Choice	3.1%	-1.4%	-1.2%		-0.5%	0.5%	1.8%	1.8%
	FTSE4Good	12.7%	9.0%	2.8%	11.5%	9.9%	23.8%	10.9%	12.0%
	Environmental Ops	17.0%	-5.1%	-4.6%	-0.4%	29.0%			13.7%
	ESG Low Carbon Target	19.4%	12.8%	13.5%	19.2%	21.1%	22.7%	18.9%	
	Paris Aligned		1.6%				10.4%	3.3%	5.1%
	Transition Pathway	6.0%			5.9%		18.6%	6.1%	6.1%
Active G score	Global Choice	0.5%	-0.7%	-1.3%		-1.3%	-0.2%	-0.2%	-0.2%
	FTSE4Good	4.8%	7.2%	1.6%	8.6%	8.6%	14.0%	5.4%	6.1%
	Environmental Ops	13.1%	-1.7%	-1.7%	-2.0%	15.9%			9.5%
	ESG Low Carbon Target	10.5%	3.5%	5.2%	14.5%	11.9%	12.9%	10.5%	
	Paris Aligned		-1.0%				7.7%	0.2%	1.5%
	Transition Pathway	0.9%			4.2%		11.8%	1.4%	2.0%
Active ESG score	Global Choice	2.1%	-0.9%	-2.0%		-1.0%	-0.4%	0.9%	0.8%
	FTSE4Good	11.1%	8.8%	2.7%	10.1%	9.5%	19.7%	9.8%	10.7%
	Environmental Ops	13.3%	-5.3%	-1.8%	3.5%	22.9%			11.1%
	ESG Low Carbon Target	18.6%	11.8%	14.0%	18.4%	18.8%	18.7%	18.6%	
	Paris Aligned		0.1%				9.0%	2.7%	4.0%
	Transition Pathway	5.6%			6.9%		16.6%	6.3%	6.0%
Carbon Reduction	Global Choice	-55.4%	8.2%	-47.7%		-43.9%	-48.6%	-53.3%	-52.3%
	FTSE4Good	-35.7%	6.4%	1.3%	-0.6%	-10.1%	17.7%	-22.6%	-15.3%
	Environmental Ops	30.8%	10.2%	42.4%	6.3%	37.5%			33.0%
	ESG Low Carbon Target	-46.6%	-38.4%	-51.2%	-48.0%	-45.6%	-41.5%	-47.7%	
	Paris Aligned		-48.5%				-70.7%	-57.2%	-59.2%
	Transition Pathway	-46.4%			-31.3%		-41.9%	-54.2%	-45.0%
Active Green Revenues	Global Choice	0.01	0.42	-1.35		-0.11	0.96	-0.12	-0.02
	FTSE4Good	-0.39	-0.16	0.19	-1.09	-0.64	4.40	-0.29	0.07
	Environmental Ops	29.24	49.31	32.91	36.76	47.22			33.37
	ESG Low Carbon Target	-0.83	-0.13	3.31	-2.13	3.12	2.62	-0.66	
	Paris Aligned		10.73				7.05	6.38	7.02
	Transition Pathway	0.28			4.03		8.73	1.56	2.89
Active TPI Management Quality Score	Global Choice	0.1%	1.2%	-3.1%		-1.6%	-4.2%	-0.8%	-1.0%
	FTSE4Good	9.9%	6.8%	2.4%	6.7%	6.1%	20.4%	8.4%	9.6%
	Environmental Ops	13.7%	-4.7%	1.4%	8.2%	27.6%			13.2%
	ESG Low Carbon Target	15.5%	3.7%	9.2%	13.7%	20.5%	17.3%	15.6%	
	Paris Aligned		4.6%				9.8%	6.1%	6.8%
	Transition Pathway	9.0%			11.1%		25.3%	10.8%	10.4%

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.

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Macroeconomic Backdrop – Q3 2024

Despite some volatility in August, Q3 2024 was a solid quarter for markets. Global equity returns were broadly positive, with emerging markets leading, closely followed by the UK. USD-hedged returns were also helped by a weakening dollar, as markets discounted rate expectations before the US Federal Reserve cut rates by 0.50% in September. At an industry level, rate-sensitive sectors led performance during Q3, with Real Estate and Utilities, both seeing double-digit returns. Industry leadership for the quarter marked a significant deviation from the trend of AI and technology dominance, which has been so persistent in recent years.

Except Japan, all G7 economies saw cuts to their respective policy rates in Q3. This shift towards policy easing was fuelled by disinflation in most developed economies. However, headline CPI remains above the 2% target in several economies, such as Australia, and with still strong service inflation, the pace of future policy easing remains uncertain. Looking forward, global growth is expected to remain stable in 2024 and 2025, with no major changes to these forecasts in Q3.

Global fund flows largely continued their positive trend seen since November 2023, albeit with some volatility – notably in August, where equities saw net outflows.

For further in-depth analysis of asset classes see [Asset Allocation Insights - September 2024 | LSEG]

Chart 1: Select FTSE Equity Indices (TR %, USD) – EM and UK equities led the way in Q3, with a weaker US dollar helping USD-hedged returns.

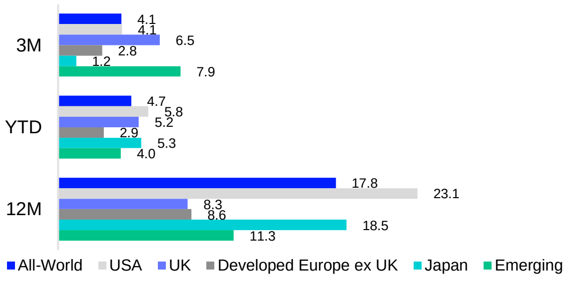


Chart 2: FTSE All World 3M Industry Returns (TR %, USD) – rate-sensitive industries led industry performance in Q3, with Real Estate and Utilities both seeing double-digit % returns.

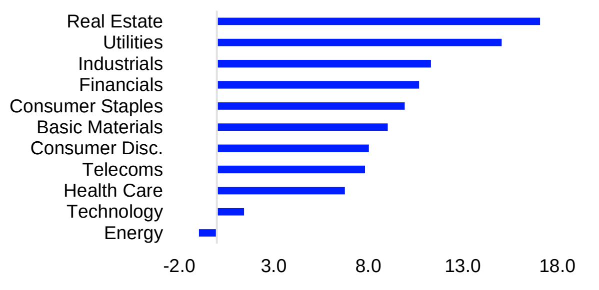


Chart 3: Historical GDP and forecasts across regions (%) – global growth to be stable in 2024 & 2025. Resilience in the UK & Eurozone led to small upward revisions in Q3.

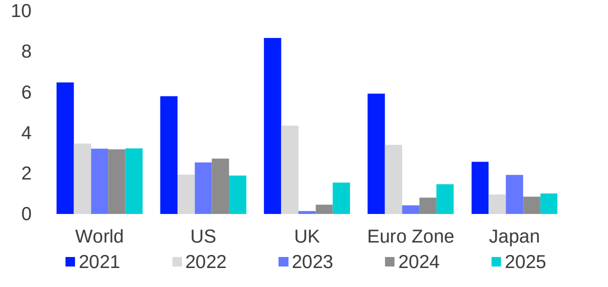


Chart 4: Regional Inflation (%) – disinflation continued in Q3 in the US, Eurozone and Canada; however, headline CPI remains above 2% in most developed economies.

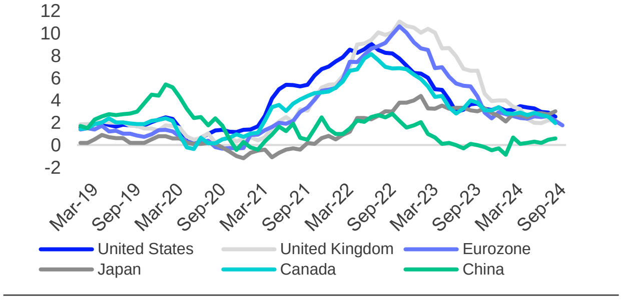


Chart 5: Central Bank Policy Rates – Except Japan, all G7 economies saw cuts to their respective policy rates in Q3.

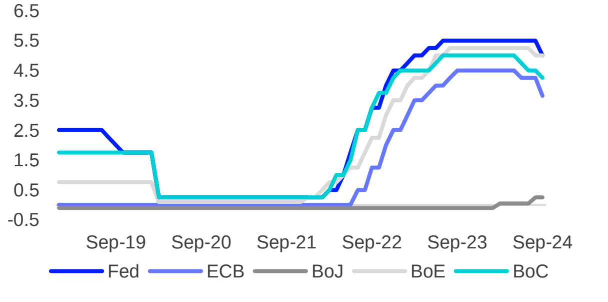
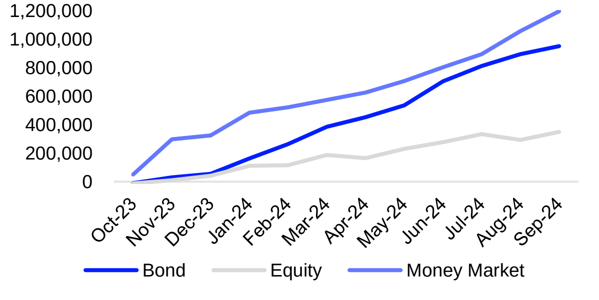


Chart 6: Global Bond, Equity & Money Market Fund Flows – market volatility was a headwind to equity fund flows in August, but cumulative flows remain positive over 12 months.



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SI Backdrop – Q3 2024

In Q3, renewable energy stocks continued their recovery (+9.8%) from previously very depressed levels, with the highest gains after the water index (12.3%) (chart 1). The recovery in renewables is understandable given strong current and forecast growth in renewable energy generation (chart 2), with the previous falls having been driven by over capacity and interest rates issues in 2022-23. However, while the growth in renewables is covering the growing global demand for power generation, it is not leading to a material reduction in other forms of power generation, in particular fossil fuel-based generation. This is leading to a situation where global carbon emissions from electricity generation are forecast to be flat between 2023-25. Emissions from Europe are forecast to fall, be neutral in the US and China, and grow, particularly in India (chart 3). While broader than just electricity generation, we see a similar pattern in scope 1 & 2 emissions from global equity and corporate bond indices. Both saw near 0% growth in emissions in 2022 and limited net growth over 2016-22 (chart 4).

SI funds have seen weaker fund flows than the broader market since late in 2023, however the limited outflows seen in early 2024 have stabilised with inflows in Q3 (chart 5). Mirroring the broader investment market, the recent FTSE Russell sustainable investment asset owner survey shows a growing focus on passive solutions for sustainable investments (chart 6), as sustainable investors become more sensitive to performance and costs.

Chart 1: Env Ops Green Sectors Performance – Water and Renewables were strong in Q3, while Energy Efficiency was volatile.

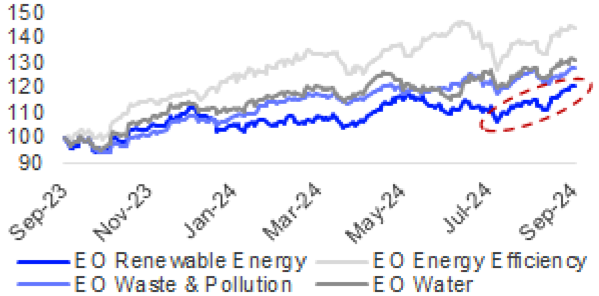


Chart 2: Global Electricity Generation by Technology[1] (TWh) – significant growth in renewable energy generation, but limited fall in fossil generation.

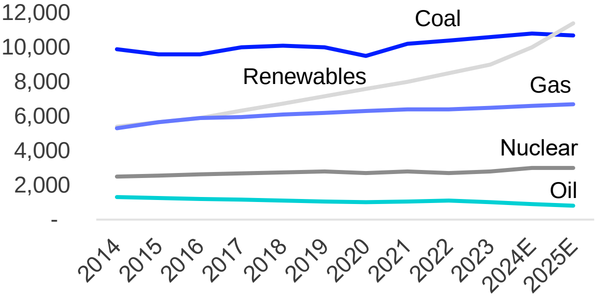


Chart 3: Change in Global CO_2 Emissions from Electricity Generation[1] (Mt CO_2) – ~ flat between 2023-25.

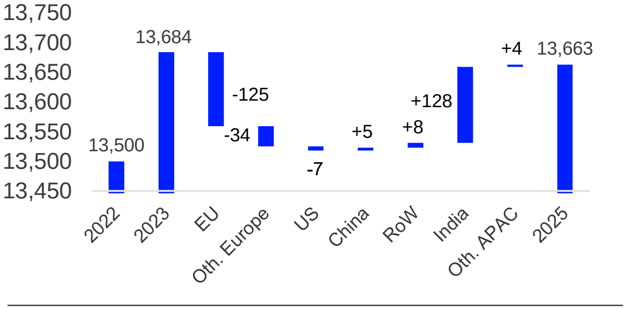


Chart 4: Change in Global Carbon Emissions from Equities & Corporate Bonds[2] – emission stopped growing (apart from 2021) but not materially falling.

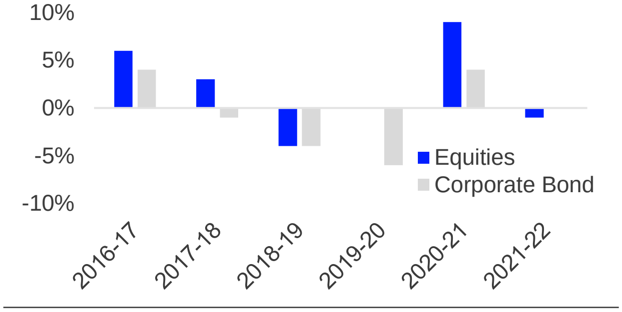


Chart 5: Sustainable Investment Bond & Equity Monthly Fund Flow – SI flows slowly recovering in Q3.

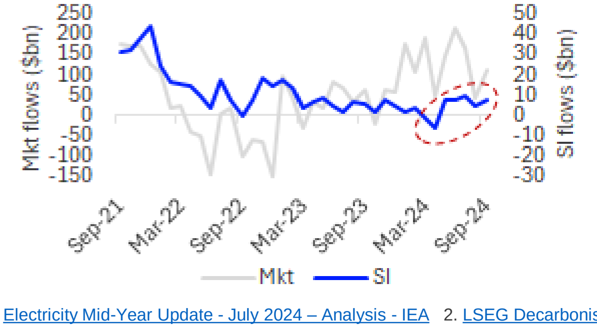
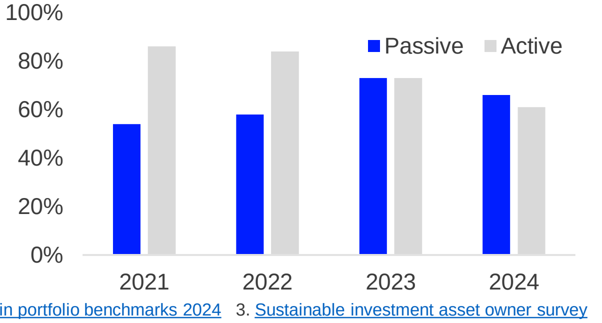


Chart 6: Investors increasingly Using Passive Solutions for Sustainable Investment[3] – asset owners where SI considerations have been implemented or considered



1. Electricity Mid-Year Update - July 2024 – Analysis - IEA 2. LSEG Decarbonisation in portfolio benchmarks 2024 3. Sustainable investment asset owner survey 2024 | LSEG chained scope 1&2 carbon emission from FTSE All World (equities) and FTSE WorldBIG Corporate (corporate bond)

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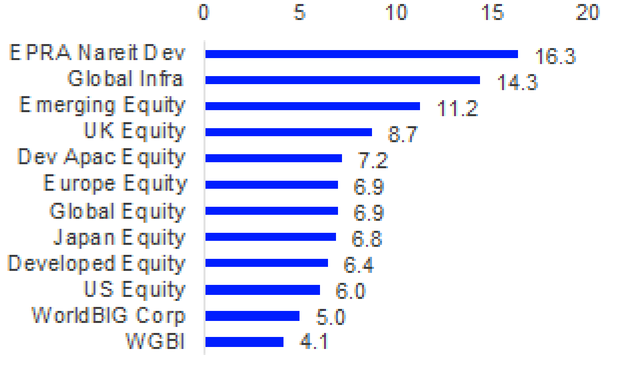
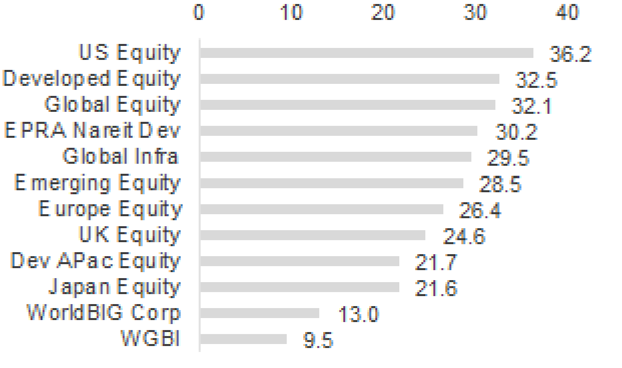
Absolute Returns – 3M & 12M (TR, USD %) Q3 2024

Q3 saw strong positive returns across most asset classes, with alternatives performing particularly well across both SI and non-SI strategies. Despite concerns over US growth and a partial unwinding of the JPY carry trade causing some volatility in August, global asset prices were largely supported by lower interest rate expectations. This was particularly beneficial to fixed income markets and helped the WGBI return ~4.1% in Q3. Regionally, despite some broadening of equity performance over the last three months, the US remains the best performer over 12 months. Quarterly SI performance was also mostly positive, with the exception of Japan EnvOps.

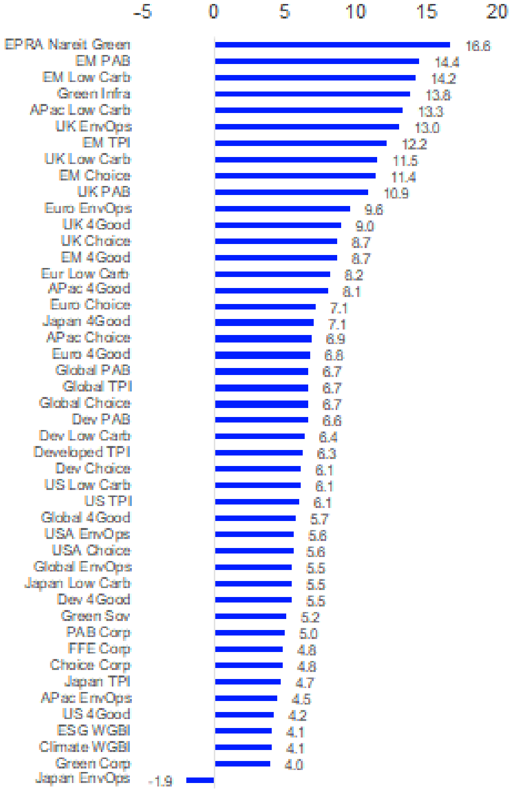
Regional 3M Absolute Returns* (TR, USD %): Alternatives (real estate & infrastructure) saw strong performance, while sovereigns saw the lowest performance



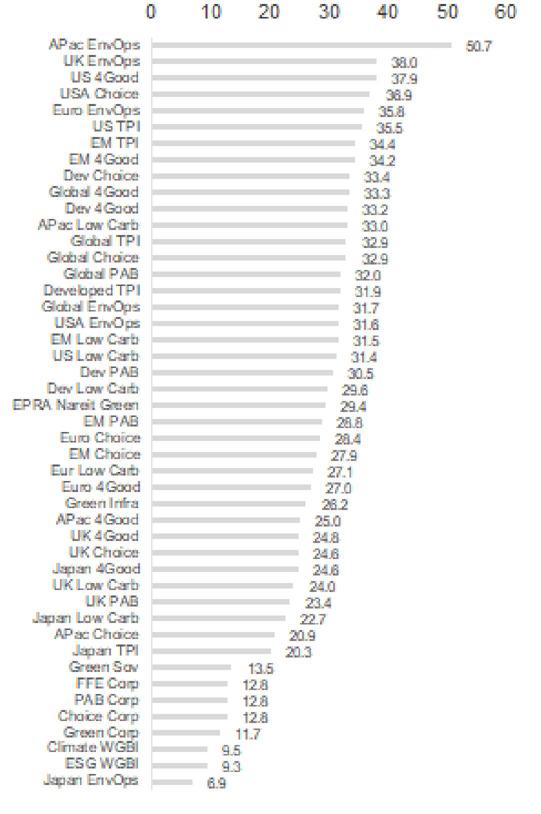
Regional 12M Absolute Returns* (TR, USD %): US equities remain the best performer over 12M, despite a weaker Q3. Sovereigns had the lowest performance.



SI Index 3M Absolute Returns (TR, USD %): EPRA Nareit Green (green real estate) had the strongest performance, while Japan EnvOps had a negative performance.



SI Index 12M Absolute Returns (TR, USD %): APAC EnvOps was the best performer, while Japan EnvOps and WGBI strategies were the weakest.



*The Broad regional indices above are: The 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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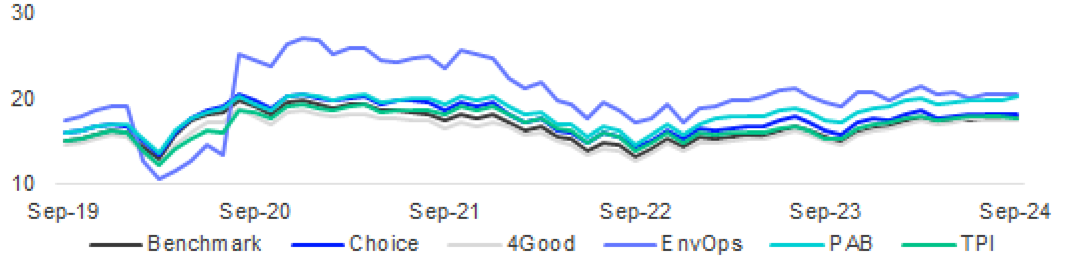
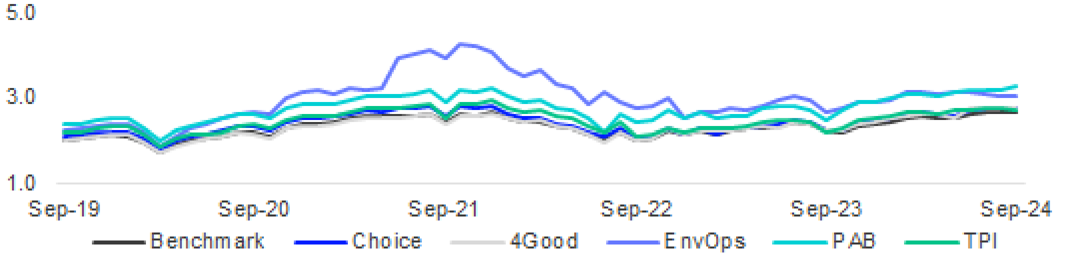
SI Equity Index Valuation – Q3 2024

Supported by lower interest rate expectations and resilient growth, equity markets performed well in Q3, resulting in an increase to P/E valuations for all SI equity indices, except PAB. The increase in forward P/Es meant that SI indices retained their higher valuations versus the broader equity market, except for FTSE4Good, which remains cheap vs the FTSE All World. EnvOps was again the SI index with the highest valuation premium at the end of the quarter and saw the largest increase in valuation in Q3. Most SI indices, except FTSE4Good, retained their lower dividend yield than the market, with Env Ops the lowest. At a regional level, the US is the most expensive market, although SI UK strategies exhibit the highest premia.

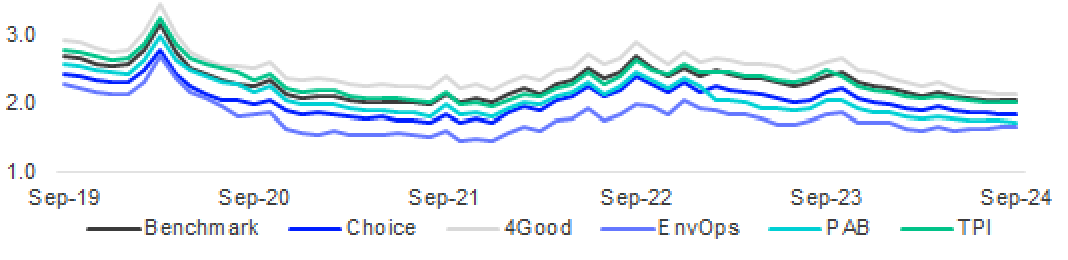
Global Markets – 12-month forward factor P/E ratios



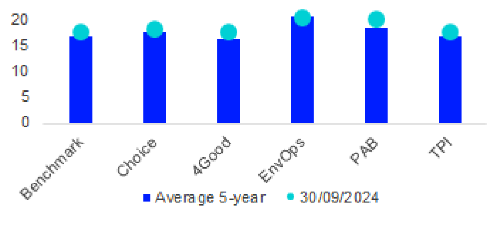
Global Markets – 12-month forward factor Price to Book ratios



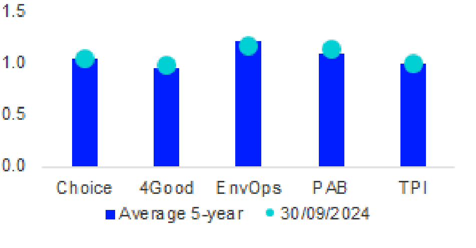
Global Markets – Dividend Yield



12-month forward P/E vs history



12-month forward P/E premium vs history



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SI Sovereigns – Q3 2024

SI sovereign performance was solid in Q3, with returns supported by additional central bank easing across most DM economies. However, performance was mixed on a relative basis, as the benefits of higher duration in a falling rate environment and strong USD-hedged performance of select European overweights were offset by yields declining by less than WGBI. Climate WGBI and ESG WGBI were joint leaders in performance for the quarter. Over the last two years, the higher duration of SI indices has been a headwind to performance, as yields have increased. However, with interest rates beginning to fall, this headwind has begun to fade.

While the ESG WGBI has a slight overweight to US government bonds, the climate indices are both heavily underweight the US in favour of European sovereigns. With central bank policies likely to diverge over the coming months, this should remain a key determinant of relative performance. Relative to WGBI, the ESG WGBI exhibits a clear quality bias, implying that more developed, lower risk sovereigns are likely to have higher ESG scores than their less developed counterparts.

Despite a history of lower relative yields vs WGBI, SI yields have seen a relative improvement over the last two years. In Q3, more rapid repricing of interest rate expectations in the US vs Europe meant that the climate indices saw their relative yields rise, on account of their overweight towards European sovereigns.

Except for a brief period of negative active duration for ESG WGBI in 2022, SI sovereign indices have consistently seen positive active duration. There were no major changes to duration for any of the indices in Q3.

Chart 1: Selected SI Sovereign Returns (TR, USD Hedged) – returns were solid in Q3, fueled by additional central bank easing and consequently lower interest rate expectations.

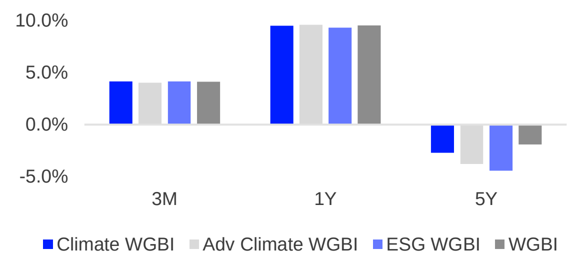


Chart 2: Selected SI Sovereign Relative Performance vs. WGBI (TR, USD Hedged) – Adv Climate underperformed in Q3 on the back of country allocation effects.

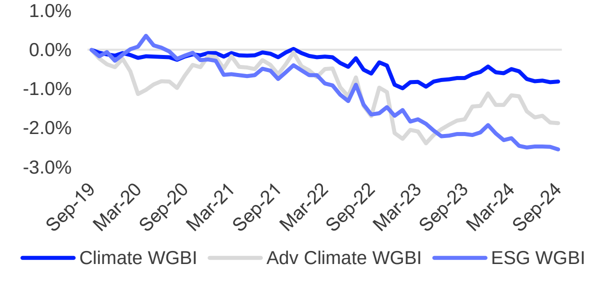


Chart 3: Selected SI Sovereign Active Weights vs WGBI – while ESG WGBI is slightly overweight the US, climate indices remain heavily underweight in favour of European sovereigns.

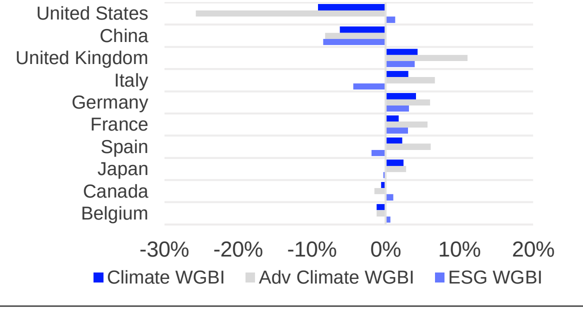


Chart 4: Selected SI Sovereign Relative Credit Weighting vs WGBI – ESG WGBI exhibits a clear quality bias.

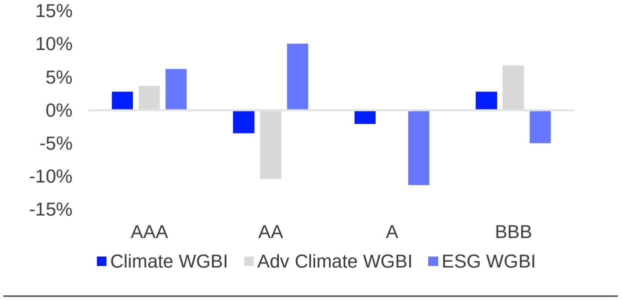


Chart 5: Selected SI Sovereign Relative Yield vs WGBI – SI yields fell by less than WBGI in Q3, resulting in relative yields continuing their trend higher.

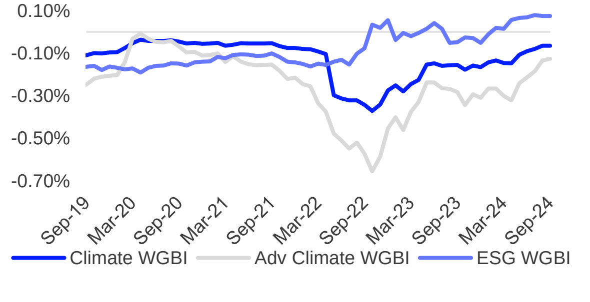
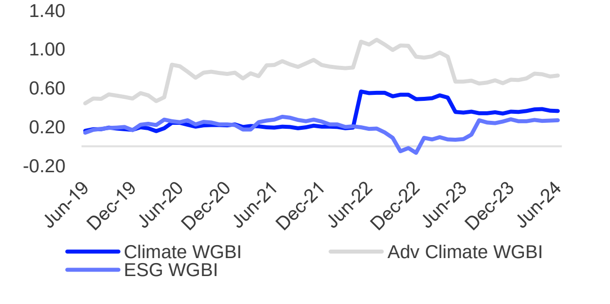


Chart 6: Selected SI Sovereign Active Duration vs WGBI – SI sovereigns have consistently exhibited positive active duration and seen no major changes to duration in Q3.



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SI Corporate Bonds – Q3 2024

SI corporate returns were positive across the board over 3M, with PAB Corp the top performer, returning ~5.0% and other indices close behind. Strong returns in Q3 helped deliver a 12-month performance of ~12.8% for all three of the indices. Despite similar performance over both 3- and 12-month periods, performance has been more divergent between Choice/FFE and PAB over five years. This variation in performance has largely been due to differences in duration as yields have continued to increase. With central bank policy set to remain a key theme in the coming months, differences in duration are likely to continue to dictate relative performance going forward.

Although the SI corporate indices take a varied approach to active weights in the financials, electric and manufacturing sectors, all three indices continue to exhibit an overweight in services and an underweight in energy versus WBIG Corp. Relative to WBIG Corp, the SI Indices also exhibit lower BBB exposure in favour of AAA and AA, indicating a quality bias. PAB Corp exhibits the most drastic increase in quality versus WBIG Corp, although we note that PAB Corp's exposure to AAA credit fell slightly in Q3.

With growth remaining resilient and lower interest rate expectations in Q3, SI corporate yields fell, while credit spreads were largely unchanged. Active duration for PAB Corp has been mostly positive over the last five years, despite exhibiting some volatility. In contrast, Choice Corp and FFE Corp have exhibited low volatility and a consistently negative active duration. PAB Corp saw a small increase in duration in September but there were no major changes to active duration in Q3.

Chart 1: Selected SI Corporate Returns (TR, USD Hedged) – SI corporate returns were strong in Q3, thanks to falling interest rates and resilient credit spreads.

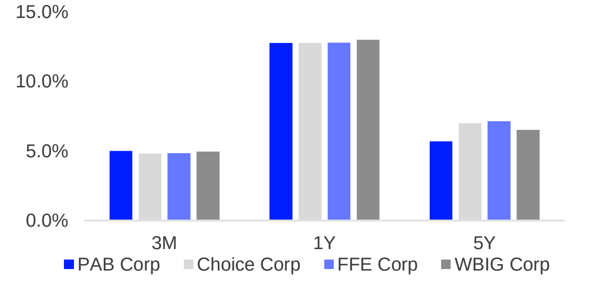


Chart 2: Selected SI Corporate Relative Performance vs. WBIG Corp (TR, USD Hedged) – PAB Corp's relative performance stabilised in Q3.

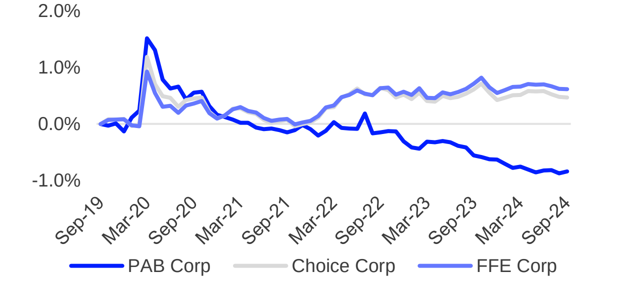


Chart 3: Selected SI Corporate Active Weights vs WBIG Corp – SI corporate indices take a varied approach to active weights in the Financials, Electric and Manufacturing sectors.

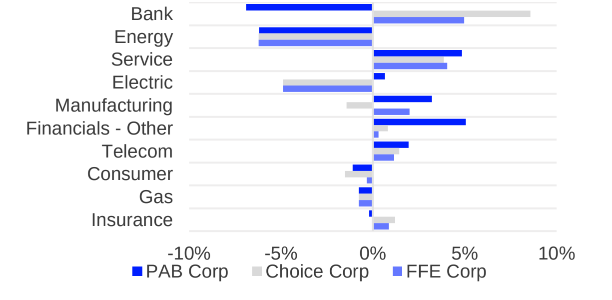


Chart 4: Selected SI Corporate Relative Credit Weighting vs WBIG Corp – PAB Corp saw an increase in active AA exposure at the expense of AAA in Q3.

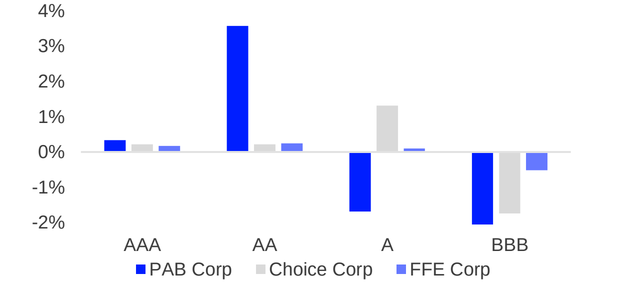


Chart 5: Selected SI Corporate OAS (bps) vs YTM (%) – yields fell across all three indices in Q3, while credit spreads were largely unchanged during the quarter.

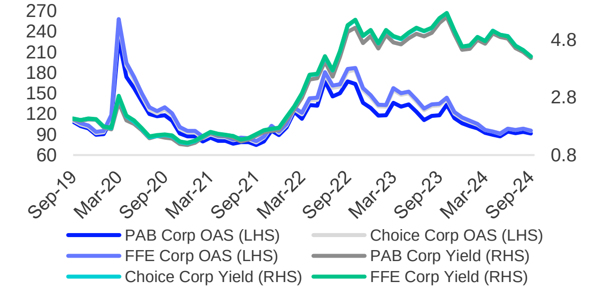
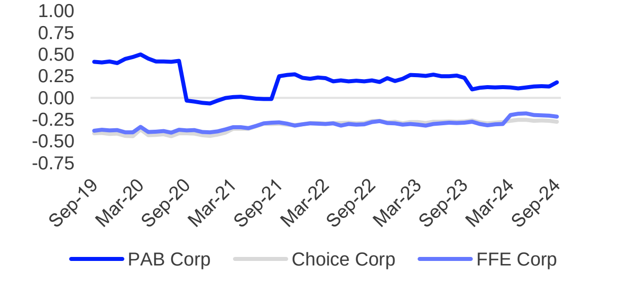


Chart 6: Selected SI Corporate Active Duration vs WBIG Corp – although PAB Corp saw a small increase in September there were no major changes to active duration in Q3.



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Green Bonds – Q3 2024

Green bond performance has been broadly positive over both 3- and 12-month periods, with returns over both periods led by Green Sov. However, Green Sov remains the worst performer over five years, as credit has outperformed in an environment of rising yields, but credit spreads have remained tight. On a relative basis, Green Bond indices have largely underperformed their non-green counterparts over five years. However, recent relative performance has been more positive, especially for Green Sov, which has started to benefit from positive active duration in a falling rate environment in Q3.

Within Green Sov, currency exposure is heavily weighted towards EUR due to the large amount of sovereign green bond issuance in Europe and a lack of sovereign green bond issuance in the US (resulting in no USD holdings in the index). GBP holdings are also significant for Green Sov, with SGD and NZD rounding out the main currency overweights. On the corporate side, sectoral exposures include an overweight in banks and financials, as well as electric utilities. We also note that in Q3, Green Corp's underweight in Service industrials increased in Q3, as did its overweight in electric utilities.

Active duration for Green Sov has been trending lower over the last five years and continued this trend in Q3. Green Sov's large positive active duration stands as a clear contrast to corporate green bonds, which have had a consistently lower duration than their non-green bond counterparts. Green bond issuance was solid in Q3, particularly in September. Although issuance as a percentage of total bond issuance has been volatile on month-to-month basis, the ratio has seen a broadly positive trend since mid-2023.

Chart 1: Selected SI Green Bond Returns (TR Rebased, USD Hedged) – SI green bond performance was positive across the board over 3M.

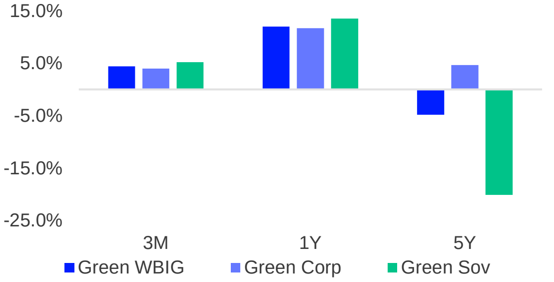


Chart 2: Selected SI Green Bond Index Relative Performance vs. WBIG, WBIG Corp, WBIG Sov (TR, USD Hedged) – Green Bonds underperformed in Q3.

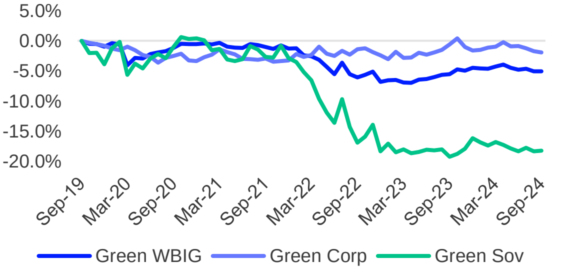


Chart 3: WBIG Sov and Green Sov Absolute Weight by Currency – currency exposure remains heavily weighted towards EUR due to high green bond issuance in the region.

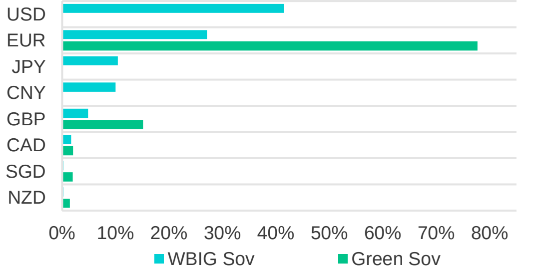


Chart 4: WBIG Corp and Green Corp Absolute Weight by Sector – Green Corp's underweight in Industrials – Service increased slightly in Q3, as did its overweight in Electric.

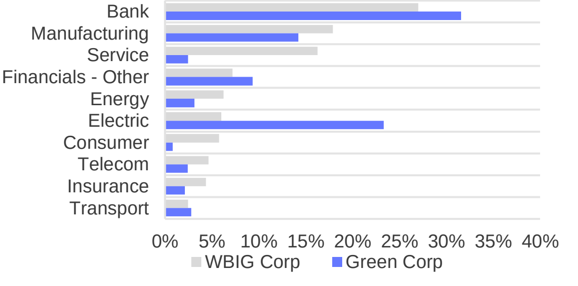


Chart 5: Selected SI Green Bond Active Duration vs WBIG, WBIG Corp, WBIG Sov – sovereign green bond active duration continued to trend lower in Q3.

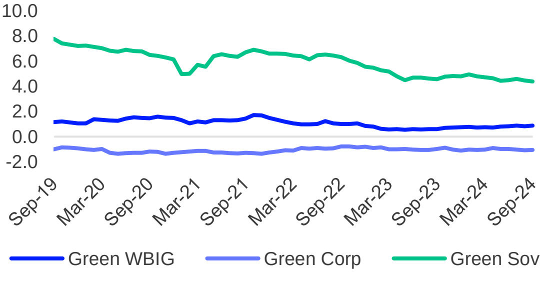
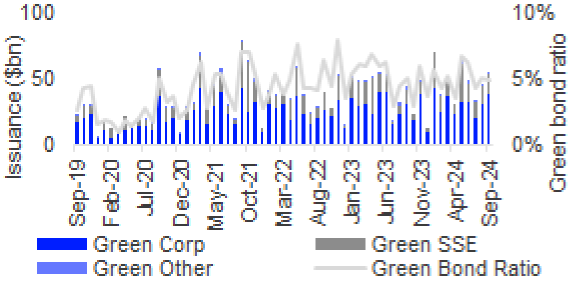


Chart 6: Green Bond Issuance – the green bond issuance ratio been volatile but generally improving since mid-2023.



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SI Alternatives (Real Estate & Infrastructure) – Q3 2024

SI alternatives offer different options for investors looking to diversify their portfolio, while also implementing an SI philosophy and maintaining exposure to liquid assets. FTSE Global Core Infrastructure TPI Climate Transition Index (‘Green Infra’) adjusts weights in the Global Core Infrastructure index based on risks & opportunities related to the climate transition, using TPI data. FTSE EPRA Nareit Developed Green Low Carbon Target (‘EPRA Nareit Green’) index adjusts the weights of listed real estate stocks based on energy usage and green building certification.

The listed real estate market was very strong in Q3, as the US started to reduce rates, which had weighed on the sector over the previous year. EPRA Nareit Green outperformed the broader market in Q3, having previously underperformed over time, particularly in the 2021 post covid period, though recently, the performance has been more in line with the market and tracking error returned to ~1%. The main reason for historic underperformance was the ~2% overweight in Office REITs, which recovered in Q3.

The listed infrastructure also performed strongly in Q3 due to the falling interest rates. However Green Infra underperformed the market in Q3, being underweight the strongly performing Conventional Electricity sector. Green Infra also outperformed over five year and one year due to an overweight in Alternative Electricity and Railroads. During the quarter Green Infra underwent a change in methodology, reducing exposure to Alternative Electricity stocks, which are not in the parent FTSE Global Core Infrastructure index.

Chart 1: FTSE Global Core Infrastructure TPI Climate Transition Active Performance – underperforming over time.

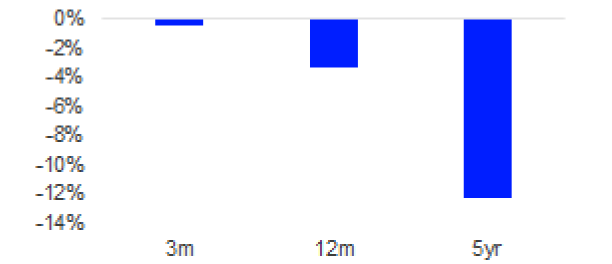


Chart 2: FTSE EPRA Nareit Developed Green Low Carbon Target Active Performance – underperformance over longer term but outperformed in the Q3 rally.

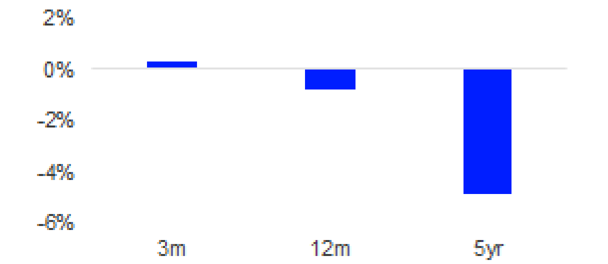


Chart 3: 12m Attribution vs FTSE Global Infrastructure – underperformance came from a railroads overweight and a previous underweight in alternative electricity.

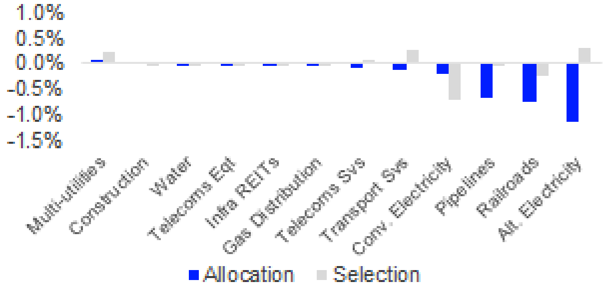


Chart 4: 12m Attribution vs FTSE EPRA Nareit Developed – performance primarily from selection, positive in Office and Residential, negative in Specialty and Holdings & Dev.

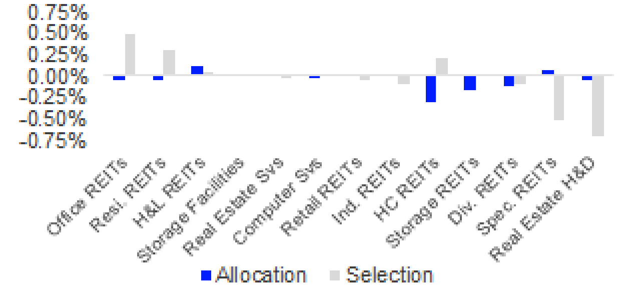


Chart 5: Active weights vs FTSE Global Infrastructure – overweight railroads and underweight in conventional electricity utilities.

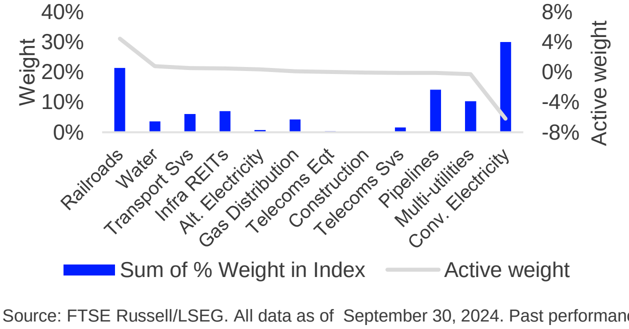
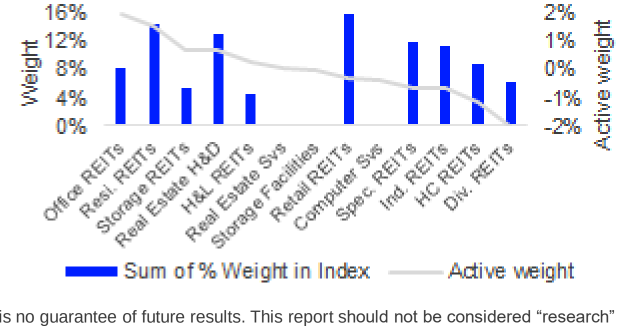


Chart 6: Active weights vs FTSE EPRA Nareit Developed – overweight residential & office, underweight healthcare.



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SI Risk / Return – Q3 2024

SI equity risk/returns were relatively clustered together, both over one and five years, and similar to gold over five years (but behind over one year). EnvOps has the highest return over five years, but in both one and five years has a higher risk. 4Good has one of the highest returns in both periods, with medium to lower risk. In both periods, SI equities had a stronger return and a lower risk than oil.

SI bonds saw better risk/return, over one year compared with five years, particularly for corporate bonds, as rate rises stopped. Corporate risk/returns are very similar, with Choice Corp and FFE Corp having slightly a lower risk than the market (WorldBIG Corp) in both periods, and PAB Corp's was in line. Green corporate has similar returns and a lower risk in both periods. SI Sovereigns saw lower returns and risk than SI Corporates over both periods, Climate and ESG WGBI had similar returns and a slightly higher volatility than the market (WGBI) in both periods. Green Sovereigns saw lower returns than the market over five years and higher returns over one year, but with higher risk in both periods.

EPRA Nareit Green saw strong returns (similar to equities) over one year, but was behind over five years, with a higher risk in both periods. Green Infra saw weaker performance and higher risk than Global Infra in both periods.

Chart 1: 1 year risk vs return – 4Good saw the strongest return, after gold, with a lower volatility than other equity strategies. EPRA Nareit saw strong returns, but high volatility; Green Corp saw lower volatility than other credit strategies, whils Green Sov had higher returns, but higher volatility than other sovereign strategies.

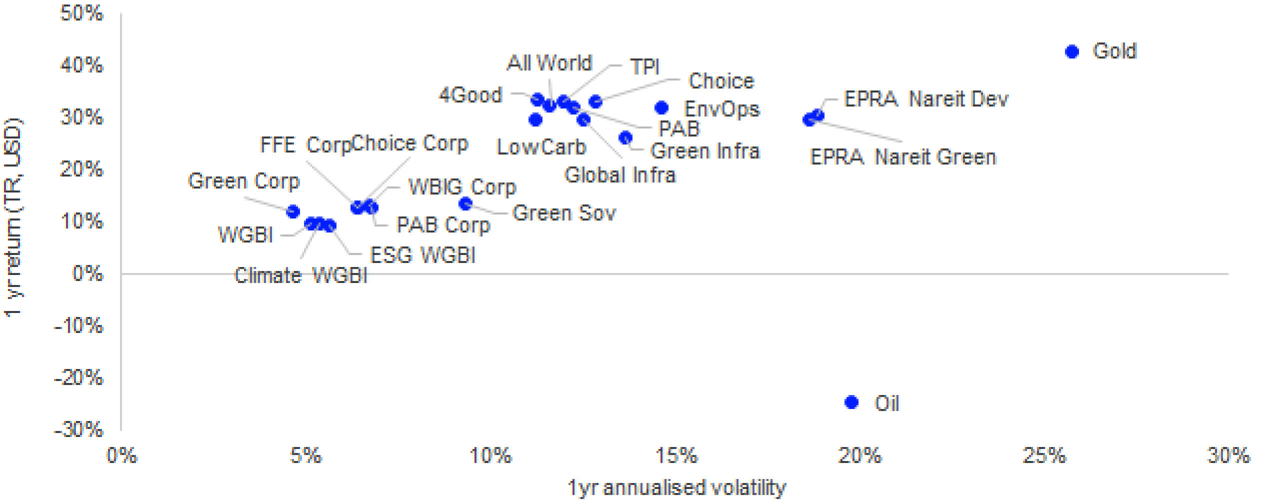
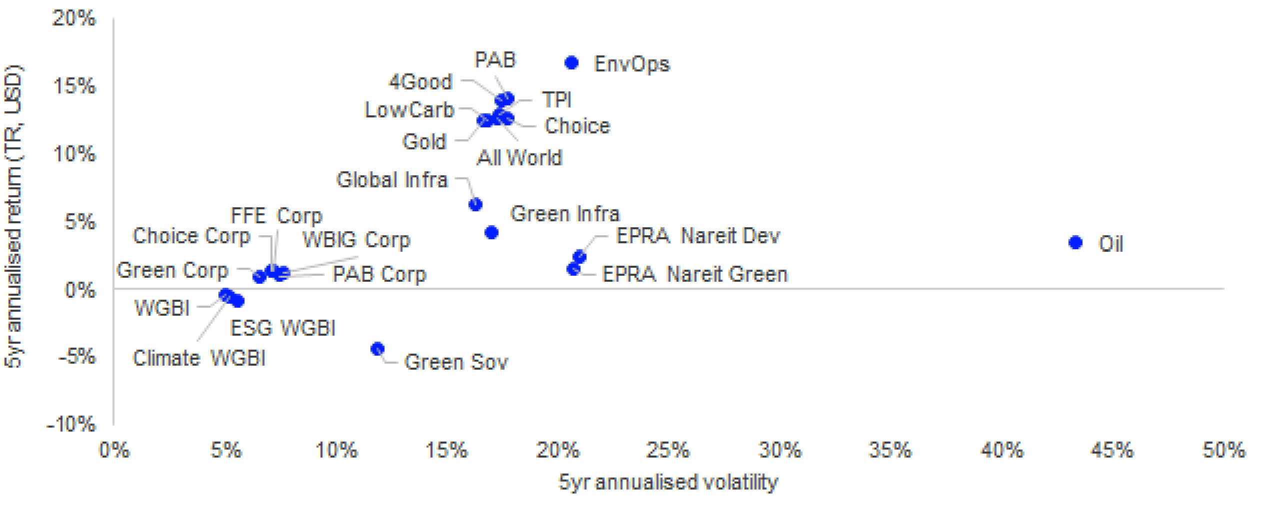


Chart 2: 5 year risk vs return – EnvOps had the strongest return, but with a higher risk than other equity strategies. SI bond strategies have similar risk/return, except Green Sov, while Green Infra and EPRA Nareit Green are behind parents. Oil has a weak return and considerably greater risk, particularly compared to equity or fixed income.



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Risk calculated as the annualized monthly volatility

SI Correlation – Q3 2024

SI/broad market correlations are high over both periods, with EnvOps, Green Infrastructure and EPRA Nareit Green seeing the lowest correlations with the All World of all the SI equity related strategies. Correlations with oil were low over five years and turned negative over one year.

SI fixed income strategies saw a lower correlation to SI equities (although higher over 1 year) but remain highly correlated to the broad market. EPRA Nareit indices, in particular, have become highly correlated with corporate bonds over one year, reflecting the exposure of real estate to the interest rate cycle. Green bonds saw slightly lower correlations to bond markets over five years, but correlation increased over one year.

Chart 1: 1 year cross correlation– high SI/broad market correlations remain within assets classes, with correlation between equities and fixed income rising (particularly in listed real estate). Oil negatively correlated over 1 year.

	Choice	EnvOps	4Good	LowCarb	PAB	TPI	All World	EPRA Nareit Green	EPRA Nareit Dev	Green Infra	Global Infra	Choice Corp	FFE Corp	PAB Corp	Green Corp	WBIG Corp	Climate WGBI	ESG WGBI	Green Sov	WGBI	Gold	Oil
Choice	100%																					
EnvOps	97%	100%																				
4Good	98%	94%	100%																			
LowCarb	97%	92%	99%	100%																		
PAB	100%	98%	98%	96%	100%																	
TPI	100%	97%	99%	98%	99%	100%																
All World	100%	96%	98%	98%	99%	100%	100%															
EPRA Nareit Green	81%	71%	78%	80%	80%	81%	82%	100%														
EPRA Nareit Dev	83%	73%	80%	82%	81%	83%	83%	100%	100%													
Green Infra	70%	65%	68%	74%	69%	72%	73%	89%	89%	100%												
Global Infra	65%	59%	64%	70%	64%	67%	68%	86%	87%	99%	100%											
Choice Corp	79%	71%	78%	80%	78%	79%	79%	92%	93%	82%	78%	100%										
FFE Corp	79%	71%	78%	80%	78%	79%	79%	93%	93%	82%	78%	100%	100%									
PAB Corp	79%	71%	78%	80%	78%	79%	78%	93%	93%	81%	78%	100%	100%	100%								
Green Corp	69%	60%	66%	68%	67%	68%	67%	88%	88%	75%	72%	97%	97%	97%	100%							
WBIG Corp	80%	71%	78%	81%	78%	79%	79%	93%	93%	82%	78%	100%	100%	100%	97%	100%						
Climate WGBI	75%	67%	71%	74%	74%	74%	74%	93%	94%	79%	76%	97%	97%	98%	98%	97%	100%					
ESG WGBI	76%	67%	72%	75%	75%	75%	74%	94%	94%	79%	76%	98%	98%	98%	98%	98%	100%	100%				
Green Sov	67%	60%	62%	65%	65%	66%	66%	88%	88%	76%	72%	94%	94%	94%	98%	93%	98%	97%	100%			
WGBI	77%	68%	73%	76%	76%	76%	75%	94%	94%	79%	76%	98%	98%	98%	98%	98%	100%	100%	96%	100%		
Gold	15%	15%	20%	21%	13%	16%	18%	24%	27%	26%	31%	24%	24%	24%	32%	23%	26%	25%	29%	24%	100%	
Oil	-14%	-19%	-8%	-19%	-14%	-16%	-14%	-44%	-43%	-61%	-61%	-44%	-44%	-43%	-46%	-43%	-45%	-45%	-49%	-44%	-6%	100%

Chart 2: 5 year cross correlation– high correlations between SI strategies and broader market within similar asset classes.

	Choice	EnvOps	4Good	LowCarb	PAB	TPI	All World	EPRA Nareit Green	EPRA Nareit Dev	Green Infra	Global Infra	Choice Corp	FFE Corp	PAB Corp	Green Corp	WBIG Corp	Climate WGBI	ESG WGBI	Green Sov	WGBI	Gold	Oil
Choice	100%																					
EnvOps	96%	100%																				
4Good	99%	94%	100%																			
LowCarb	98%	94%	100%	100%																		
PAB	99%	97%	99%	98%	100%																	
TPI	99%	95%	100%	99%	99%	100%																
All World	100%	95%	100%	99%	99%	100%	100%															
EPRA Nareit Green	90%	84%	90%	90%	89%	91%	91%	100%														
EPRA Nareit Dev	90%	84%	90%	90%	89%	91%	91%	100%	100%													
Green Infra	83%	80%	84%	85%	83%	85%	85%	87%	86%	100%												
Global Infra	82%	79%	84%	85%	83%	85%	85%	86%	86%	99%	100%											
Choice Corp	79%	74%	75%	74%	77%	76%	76%	78%	77%	71%	67%	100%										
FFE Corp	79%	75%	75%	74%	77%	77%	77%	78%	78%	71%	68%	100%	100%									
PAB Corp	78%	74%	74%	73%	76%	75%	75%	77%	76%	70%	67%	100%	100%	100%								
Green Corp	76%	73%	73%	72%	75%	74%	74%	77%	77%	67%	64%	96%	96%	96%	100%							
WBIG Corp	79%	75%	76%	75%	77%	77%	77%	79%	78%	72%	69%	100%	100%	100%	96%	100%						
Climate WGBI	50%	51%	45%	46%	52%	49%	47%	50%	49%	46%	44%	82%	82%	84%	78%	80%	100%					
ESG WGBI	49%	49%	44%	45%	50%	48%	45%	49%	48%	45%	43%	82%	82%	84%	78%	80%	100%	100%				
Green Sov	56%	57%	51%	51%	57%	55%	52%	56%	55%	49%	47%	84%	83%	85%	86%	82%	94%	93%	100%			
WGBI	50%	50%	45%	46%	51%	49%	46%	49%	48%	46%	44%	83%	83%	85%	78%	81%	100%	100%	92%	100%		
Gold	30%	27%	29%	28%	29%	29%	29%	30%	29%	39%	37%	41%	41%	41%	36%	40%	40%	41%	33%	41%	100%	
Oil	44%	39%	48%	46%	41%	44%	47%	43%	44%	36%	35%	19%	20%	16%	21%	22%	-22%	-24%	-8%	-23%	-4%	100%

Source: FTSE Russell/LSEG. All data as of September 30, 2024. 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.
Correlation calculated based on monthly performance

3m & 12m rolling relative performance (equities & alternatives) – Q3 2024

10 years (or longest available) of rolling 12M and 3M performance relative to parent benchmark.

Chart 1: Choice – outperforming ahead of covid, with lower quarterly volatility; relative performance fell in 2021/22 and recovered in 2023/24.

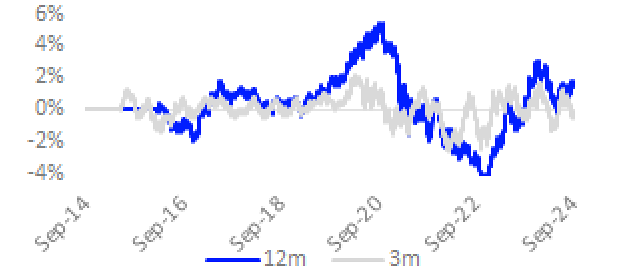


Chart 2: EnvOps – after seeing significant outperformance in 2020, EnvOps underperformed through 2021/22, strongly recovered in 2023 and was again weak in 2024 to date.

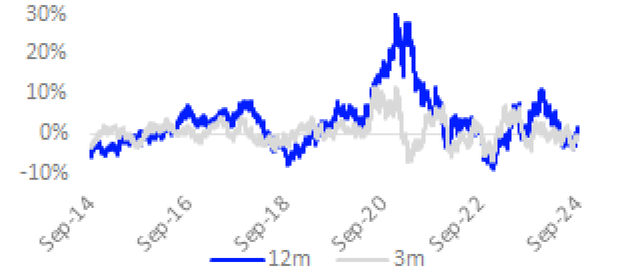


Chart 3: 4Good – underperformed in early covid period, recovering strongly in 2021, and continuing to outperform in 2022 and most of the period to 2024.

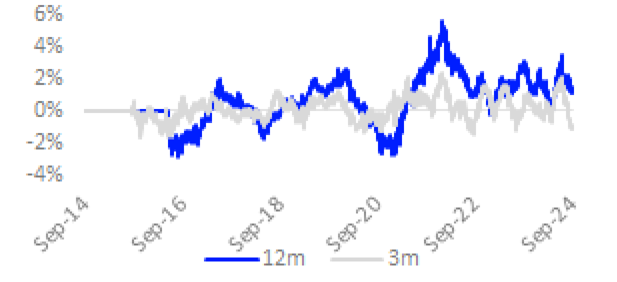


Chart 4: LowCarb – after a consistent pre-covid performance, LowCarb fell in 2020, before recovering in 2021 and falling through 2022/23. However, performance recovered in Q3 24.

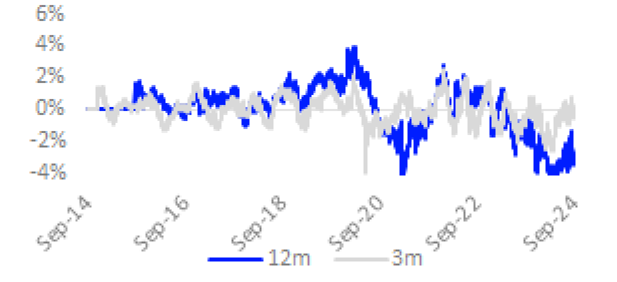


Chart 5: PAB – strong performance from 2017 to late 2020, fell and underperformed in 2021/22. The strategy recovered in 2023 but was weak in 2024.

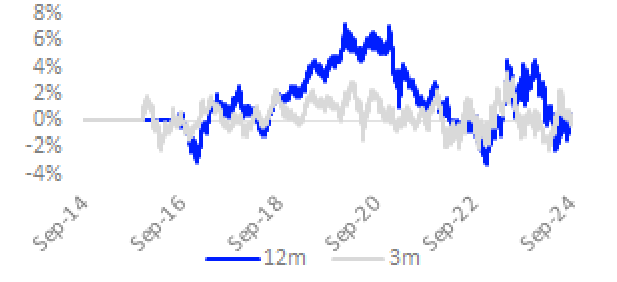


Chart 6: TPI – relative performance typically lower than other strategies, with underperformance in 2018-2021, performed in line in 2022 and has had a neutral performance since 2022.

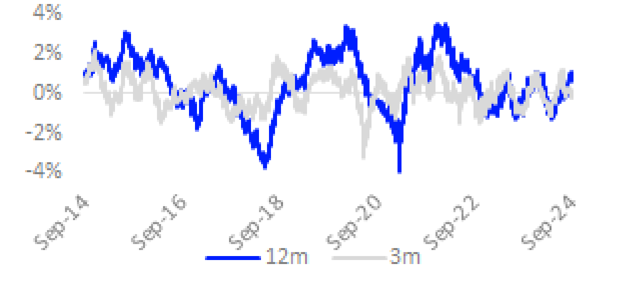


Chart 7: EPRA Nareit Green – lower tracking error, except during sharp underperformance in mid 2021, which persisted through 2022. Recent outperformance in Q3 24 .

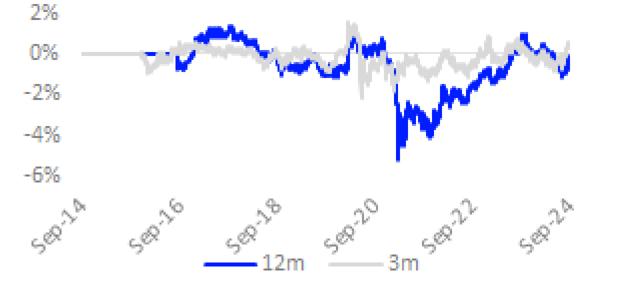
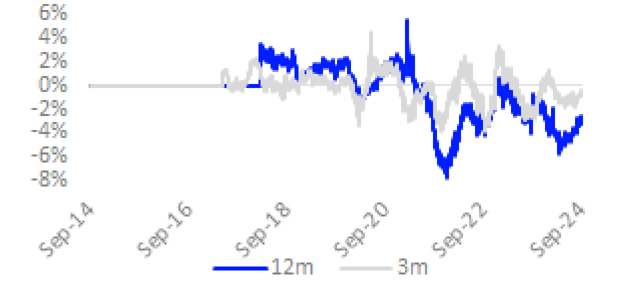


Chart 8: Green Infra – weak relative performance in 2021, recovered in 2022, but continued to underperform since early 2023.



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1. Vs FTSE Global Core Infrastructure + ICB Alternative Electricity

Relative performance over time (fixed income) – Q3 2024

10 years (or longest available) of rolling 12M and 3M performance relative to parent benchmark.

Chart 1: Climate WGBI – performed closely to the market until early 2022, when higher duration European overweight led to weakness, a strong 2023 recovery and the recent fall.

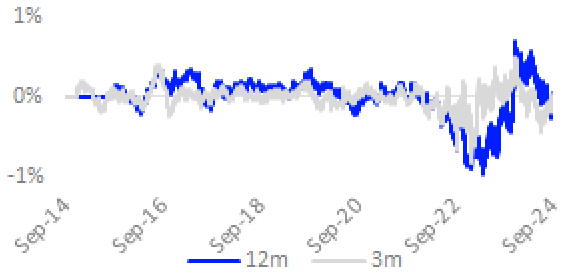


Chart 2: ESG WGBI – gradual underperformance from mid 2019, particularly from early 2022, before recovering from mid 2023.

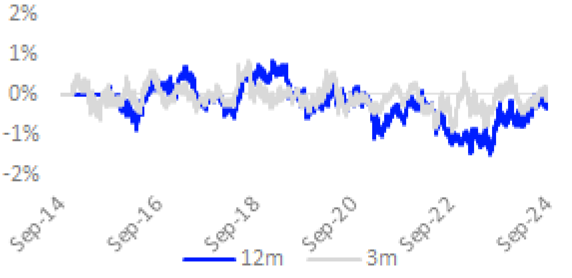


Chart 3: Choice Corp – tracking closely with market, out/underperformance typically <1%, except for in 2016/17.

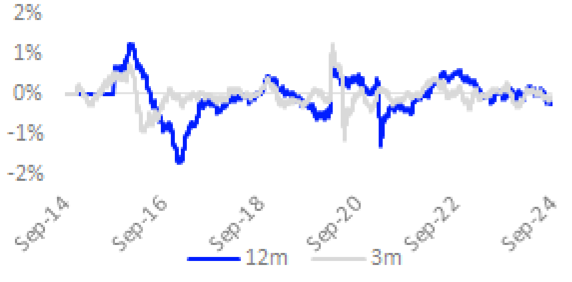


Chart 4: FFE Corp – tracking closely with market, out/underperformance typically <1%, except for in 2016/17.

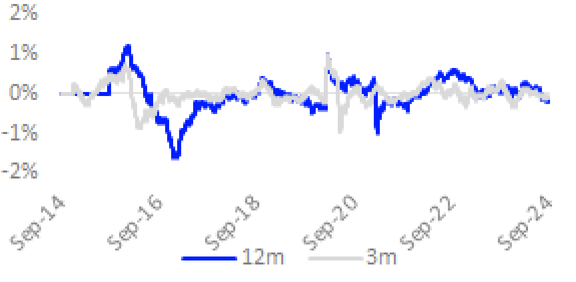


Chart 5: PAB Corp – larger underperformance spikes in 2017 and 2021 and outperformance in 2020, with performance close to market in other periods & slightly below market recently.

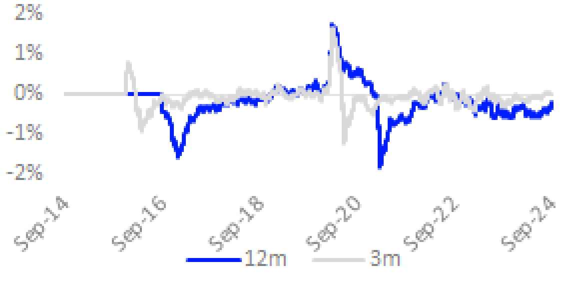


Chart 6: Green Sov – outperforming pre-covid, before underperforming from 2020 to 2022, due to longer duration. Strategy recovered in 2023.

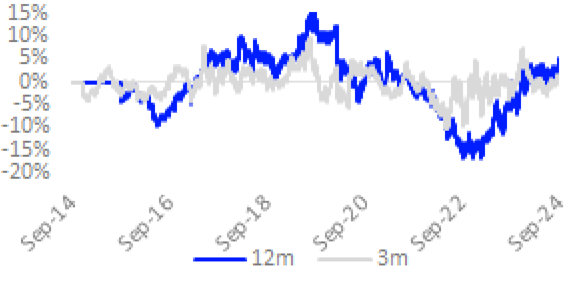


Chart 7: Green Corp – performed closer to the market than green sovereigns. Predominantly outperforming since 2021 but underperforming in Q3 24.

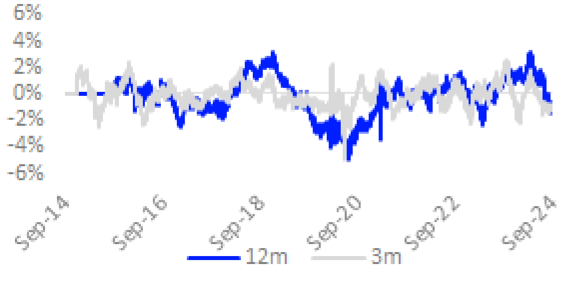
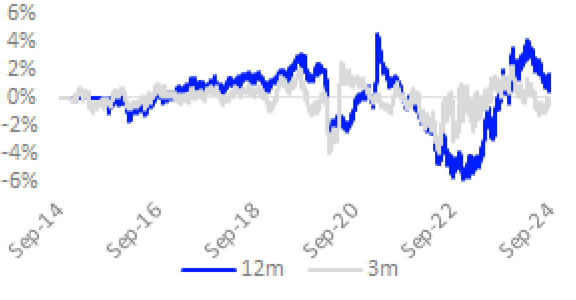


Chart 8: Green WBIG – overall green bonds outperformed up to 2019, before going through a series of cycles, notably an underperformance in 2021/22 and outperformance in 2023/4.



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1. Vs FTSE Global Core Infrastructure + ICB Alternative Electricity

Global Index Comparisons – Q3 2024

Global SI indices saw mixed performance in Q3. PAB and TPI both performed slightly ahead of the market, both driven by underweight allocation in Energy and PAB, was also driven by positive selection in Tech, and TPI by positive selection in Finance. EnvOps saw the largest underperformance, driven by overweight allocation in Tech and underweight allocation in Finance. 4Good underperformed, after strong outperformance in previous quarters, but remains a strong performer over 12M. TPI and Choice are trading at close to their 5-year relative P/E premium, while PAB and FTSE4Good levels are slightly higher, and Env Ops, lower. During Q2, premia remained largely unchanged. FTSE4Good is the cheapest strategy, whereas PAB remains the most expensive.

Chart 1: Active Performance (TR, USD %)

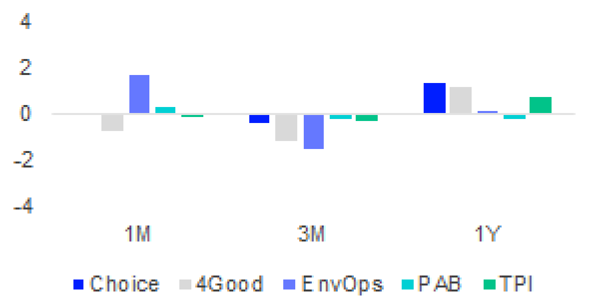


Chart 2: Index tracking error (%)

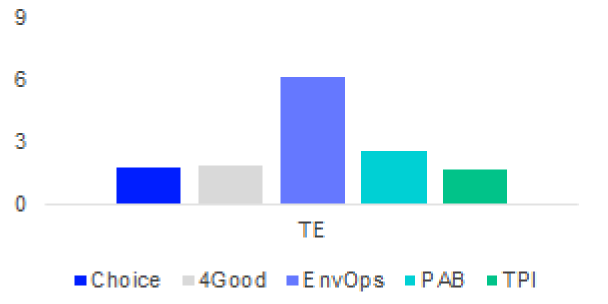


Chart 3: Industry active weight (3M average %)

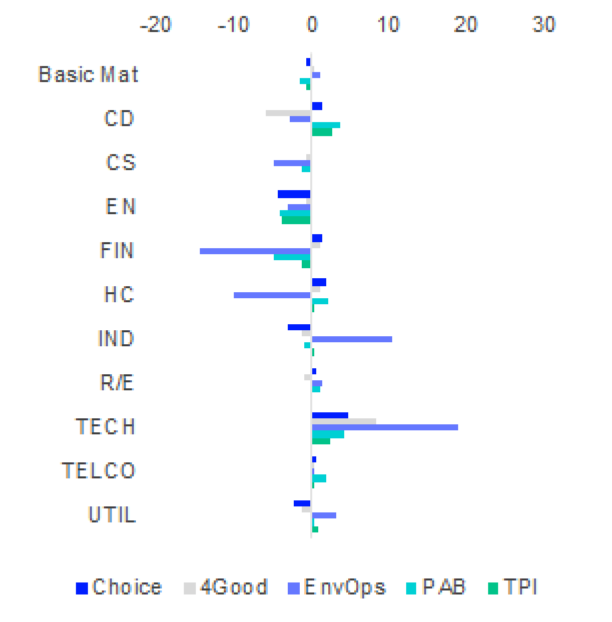


Chart 4: 3M industry allocation effect (%)

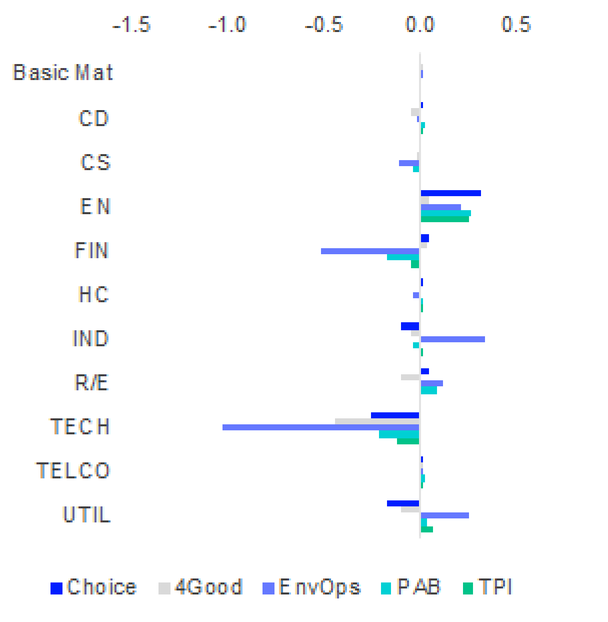
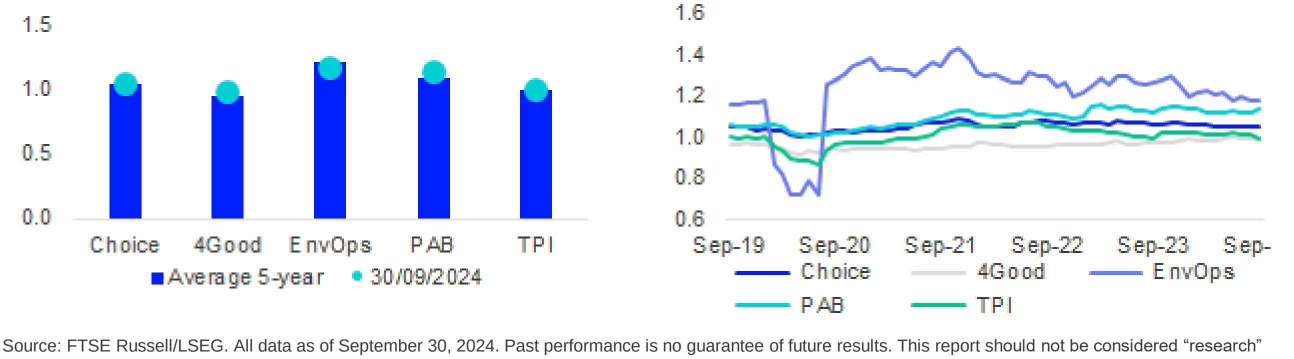


Chart 5: Global indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average



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FTSE Global Choice indices – Q3 2024

Global Choice was behind the market at the global level in Q3, however, geographical performance was mixed, with Emerging, APAC and Europe outperforming, and the US, UK and Developed underperforming. The majority of underperformance came from an overweight allocation in Tech and Consumer Discretionary and underweight allocation in Utilities, partially compensated by an underweight allocation in Energy. Emerging outperformance was driven by the overweight allocation in Financials and underweight allocation in Energy. 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 %)

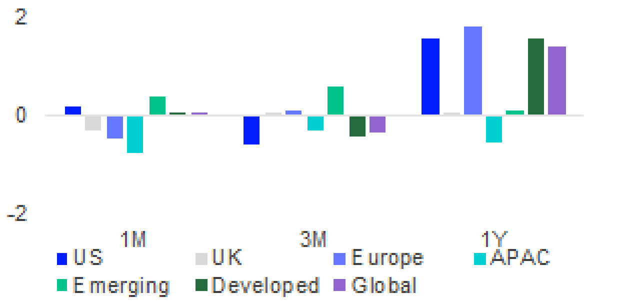


Chart 2: Global Choice carbon emissions / revenues

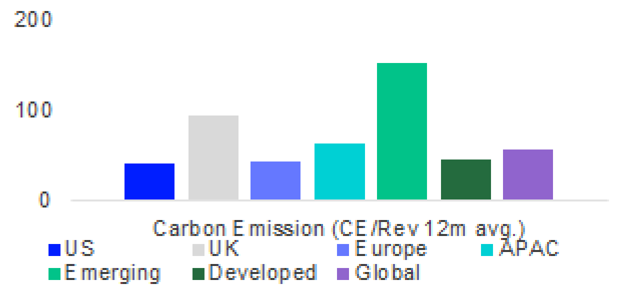


Chart 3: 3M Attribution of global index (TR, USD %)

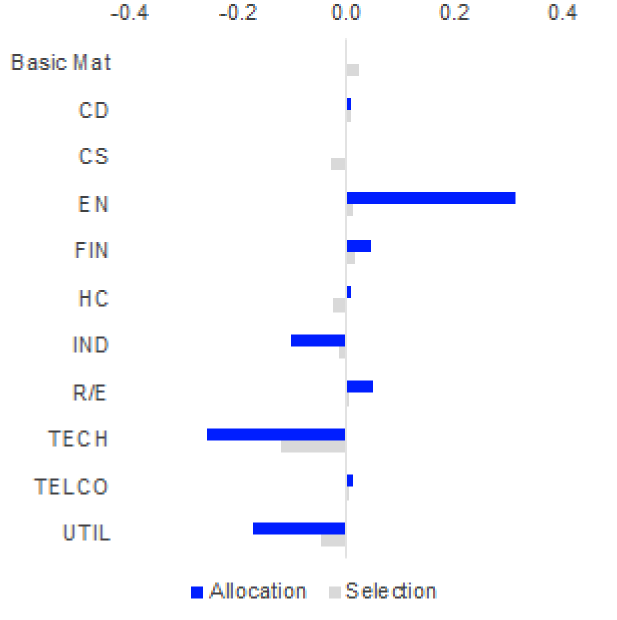


Chart 4: Contribution to carbon reduction (%)

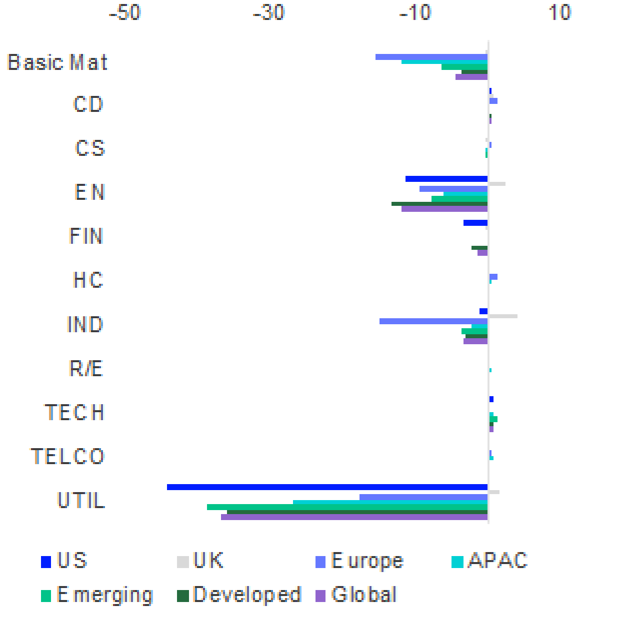
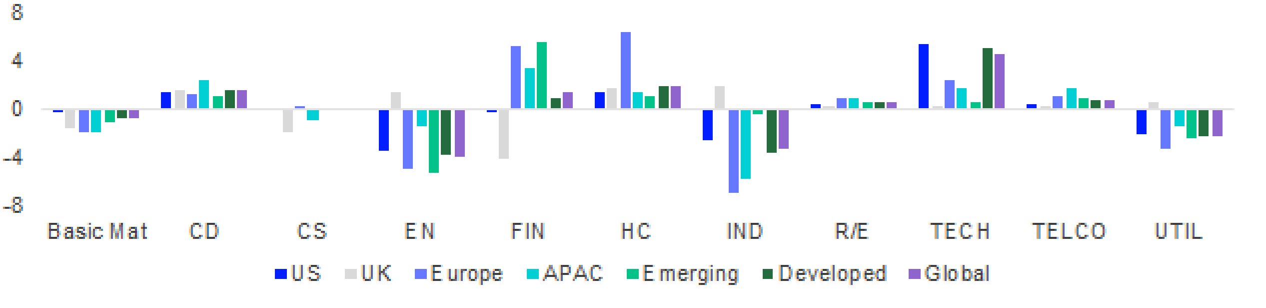


Chart 5: Active industry weights (%)



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FTSE4Good indices – Q3 2024

FTSE4Good underperformed at the global level in Q3. Geographical performance was mixed, with the US and Emerging seeing the largest underperformance, while the UK and APAC outperformed. The majority of underperformance came from an overweight allocation and negative selection in Tech. Outperformance came from positive selection in Financials and Telecoms. US underperformance was similar to Global, driven by both allocation and selection in Tech. UK, European and Japanese indices have the highest ESG scores, while EM has the lowest. The majority of ESG uplift came from overweights in Tech and Financials, and underweights in Consumer Discretionary.

Chart 1: Active Performance (TR, USD %)

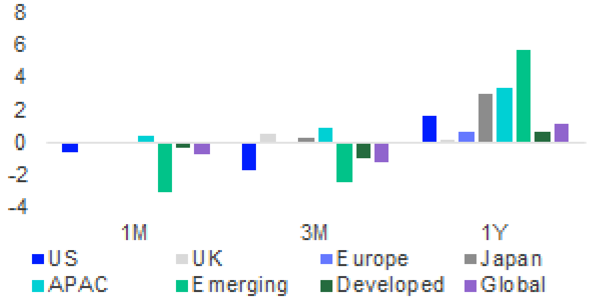


Chart 2: FTSE4Good ESG scores

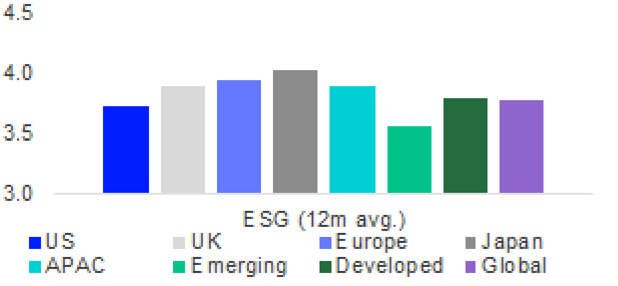


Chart 3: 3M Attribution of global index (TR, USD %)

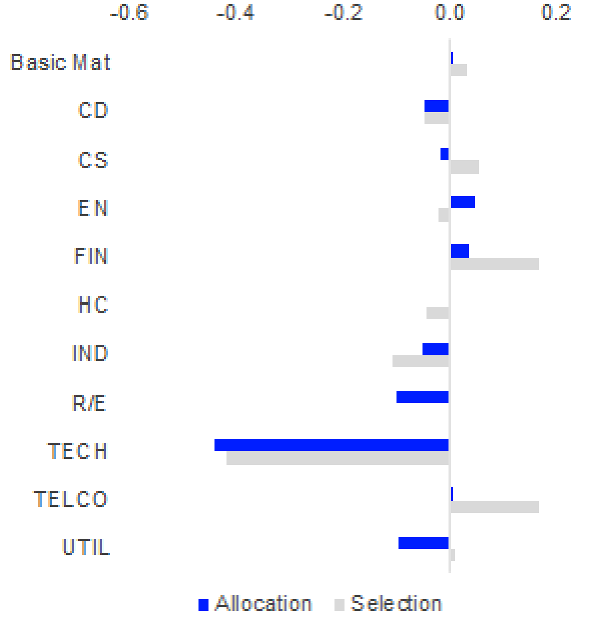


Chart 4: Contribution to ESG uplift (%)

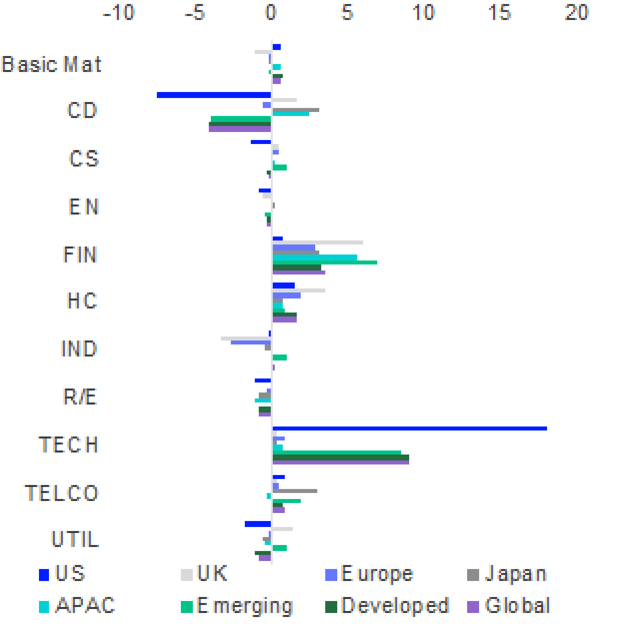
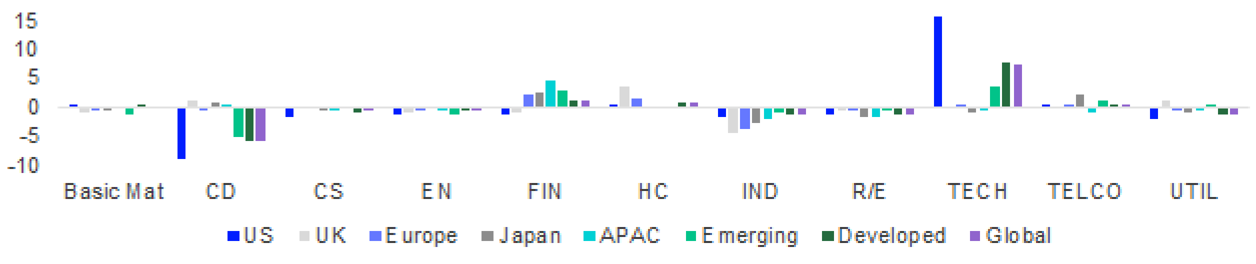


Chart 5: Active industry weights (%)



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FTSE Environmental Opportunities (EO) indices – Q3 2024

EnvOps underperformed the market at the global level in Q3, however the capped version outperformed due to a lower weight in Tech. Geographical performance was mixed, with Japan and APAC strongly underperforming, while the UK and Europe outperformed, and the US returns were slightly behind the market. The majority of underperformance came from overweight allocation and negative selection in Tech. Japanese underperformance came from negative selection in Tech and Consumer Discretionary; European outperformance came from overweight allocation in Industrials and positive selection in Tech. EO indices are heavily overweight Industrials, Technology and Utilities (& Consumer Discretionary in Japan).

Chart 1: Active Performance (TR, USD %)

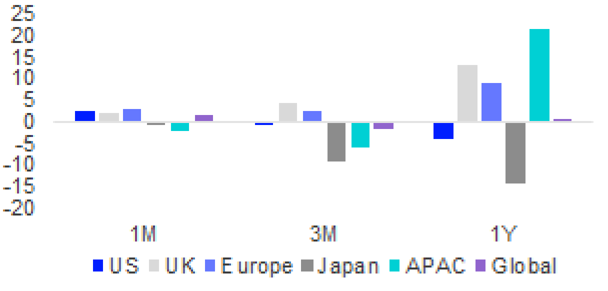


Chart 2: Environmental Ops Green Revenues scores

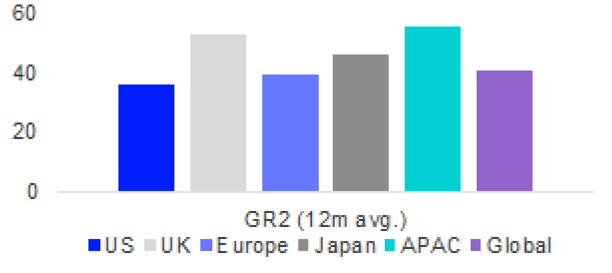


Chart 3: 3M Attribution of global index (TR, USD %)

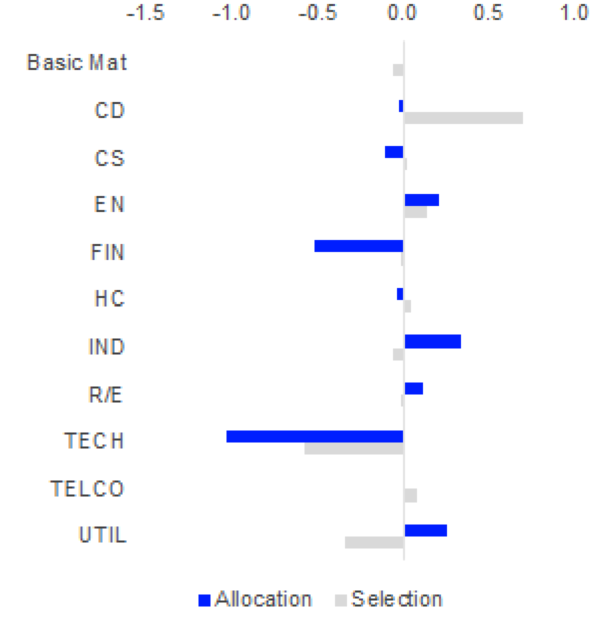


Chart 4: Contribution to Green Revenues uplift (%)

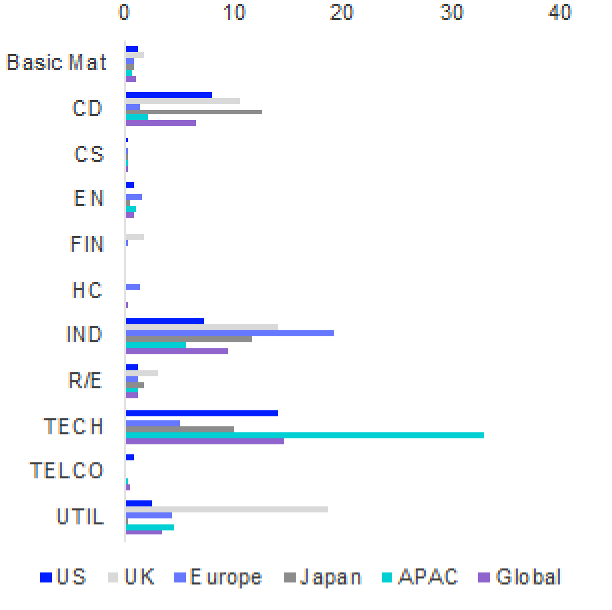
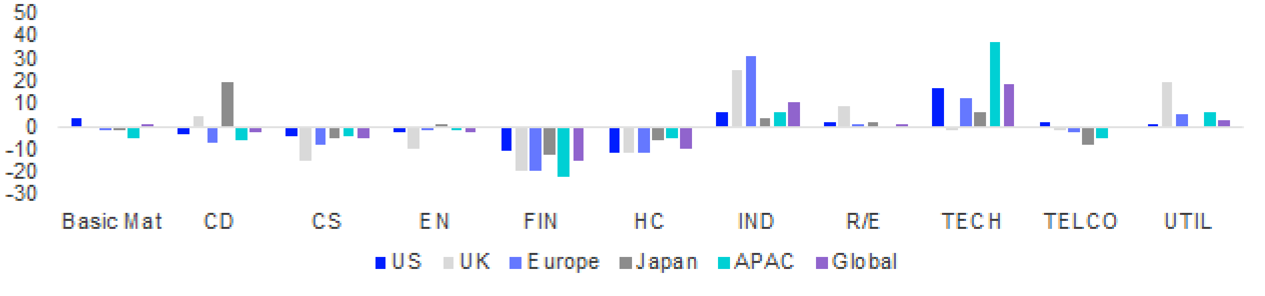


Chart 5: Active industry weights (%)



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FTSE ESG Low Carbon Target Exposure indices – Q3 2024

FTSE ESG Low Carbon performance was in line with the Developed market in Q3. UK, Europe, APAC and Emerging outperformed, while Japan underperformed, and the US performance was in line with the market. Underperformance was driven by negative selection in Industrials, Tech and Consumer Discretionary, which was offset by positive performance from an overweight in Financials and underweight in Energy. Emerging outperformance was driven by positive selection in Tech and Financials. Japanese underperformance was driven by negative selection in Consumer Discretionary and Healthcare. ESG Low Carbon generates both lower carbon intensities and higher ESG scores from multiple industries, particularly Financials, Tech and Telecoms.

Chart 1: Active Performance (TR, USD %)

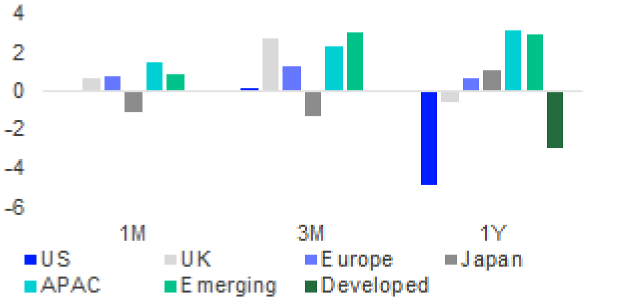


Chart 2: ESG Low Carbon ESG scores

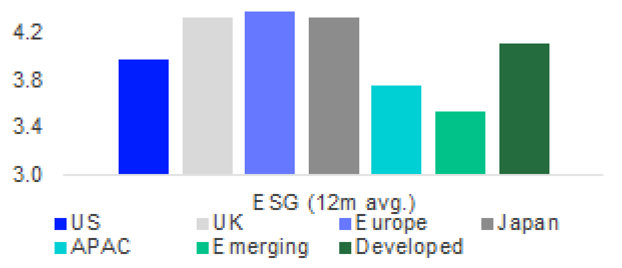


Chart 3: 3M Attribution of developed index (TR, USD %)

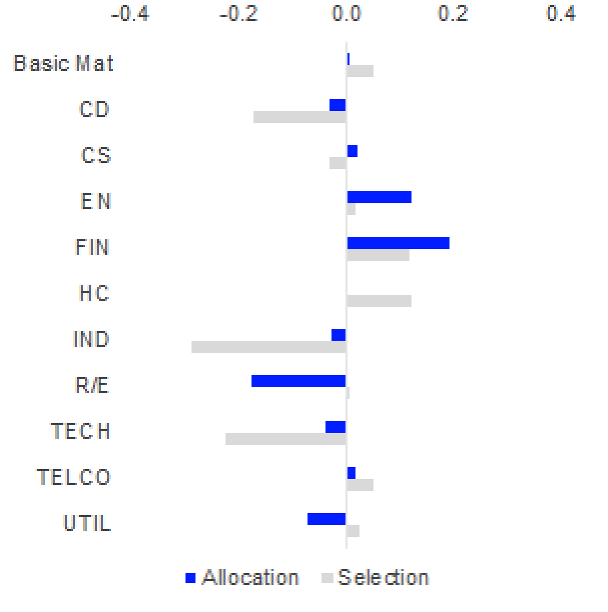


Chart 4: Contribution to ESG uplift (%)

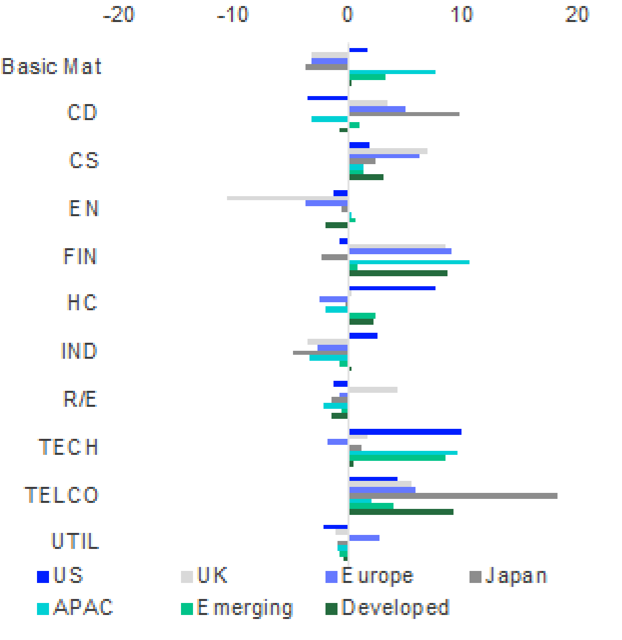
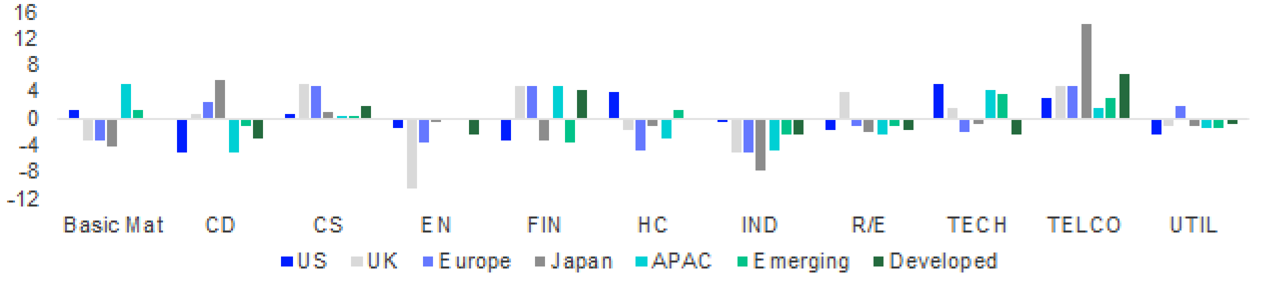


Chart 5: Active industry weights (%)



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FTSE EU Paris-Aligned Benchmark (PAB) indices – Q3 2024

Paris-Aligned Benchmark slightly underperformed at the global level in Q3. Developed markets slightly outperformed (there are no US or European standalone indices), while the UK and Emerging outperformed. The majority of underperformance came from an overweight allocation in Tech and underweight allocation in Financials. Outperformance came from an underweight allocation in Energy and negative selection in Consumer Discretionary. Emerging outperformance came from positive selection in Consumer Discretionary and Tech. 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 %)

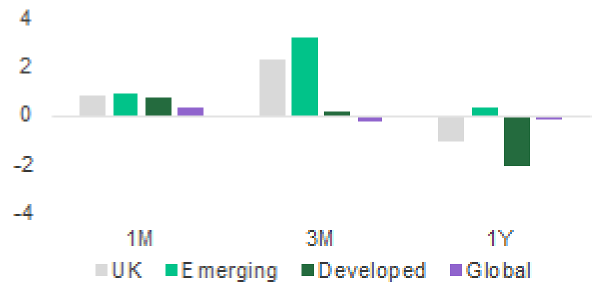


Chart 2: PAB Carbon Emissions / EVIC

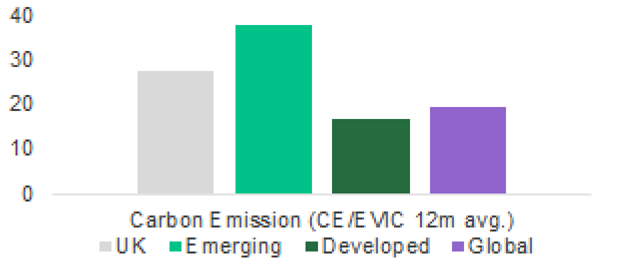


Chart 3: 3M Attribution of global index (TR, USD %)

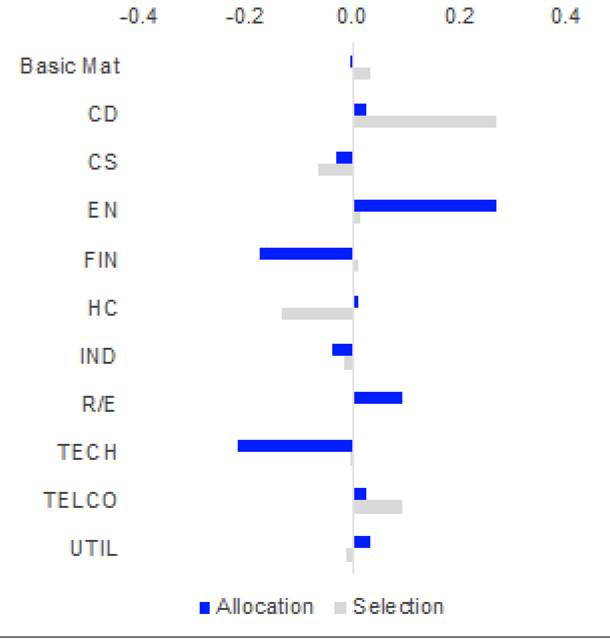


Chart 4: Contribution to Carbon Reduction (%)

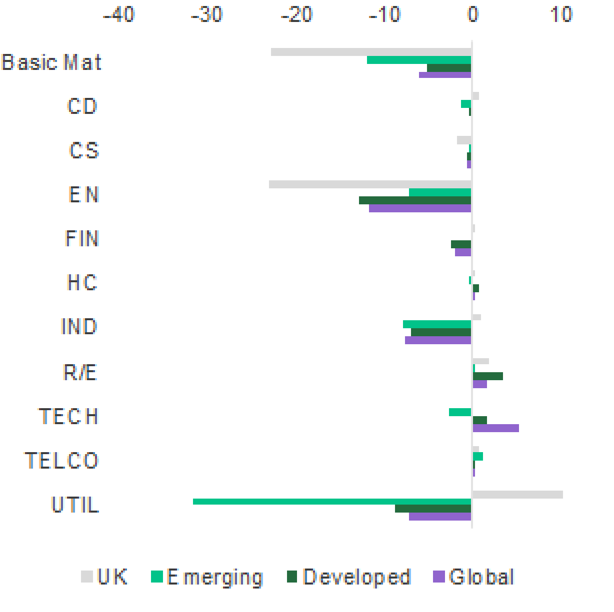
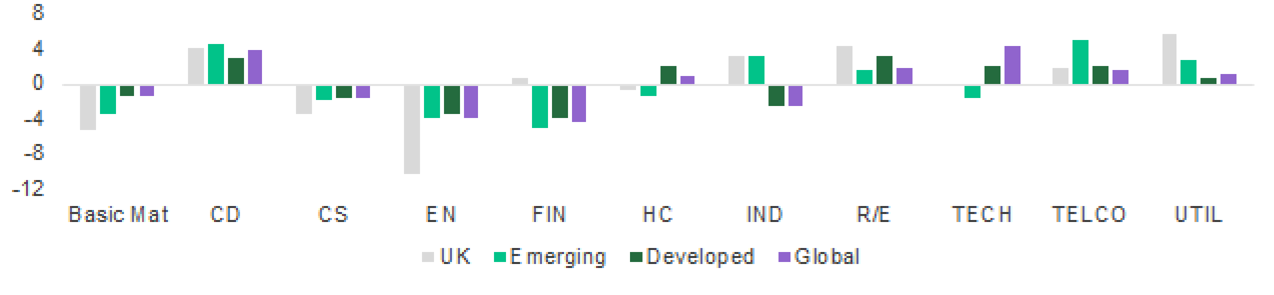


Chart 5: Active industry weights (%)



Source: FTSE Russell/LSEG. All data as of September 30, 2024. 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 TPI Climate Transition indices – Q3 2024

TPI slightly underperformed the market at the global level in Q3. Geographical performance was mixed with Japan underperforming, Emerging outperforming and the US performance in line with the market. The majority of underperformance came from the overweight allocation in Tech and negative selection in Tech and Consumer Discretionary. Outperformance came from an underweight allocation in Energy and a positive selection in Financials. Outperformance in Emerging came from positive selection in Consumer Discretionary. 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 %)

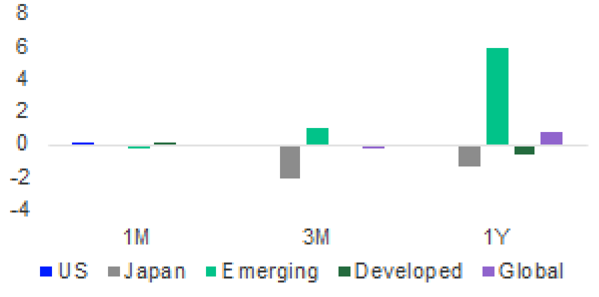


Chart 2: TPI Index TPI Management Quality scores

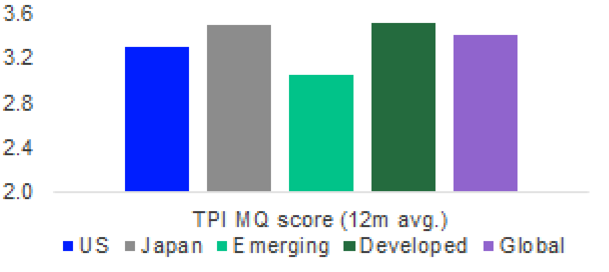


Chart 3: 3M Attribution of global index (TR, USD %)

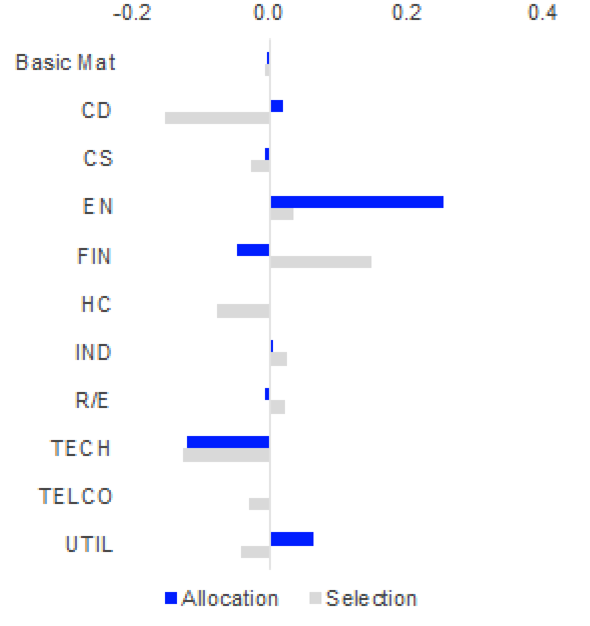


Chart 4: Contribution to TPI Management Quality uplift (%)

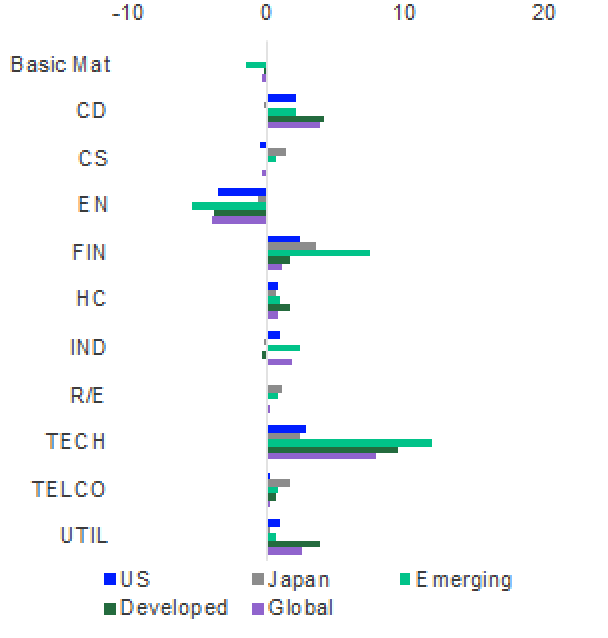
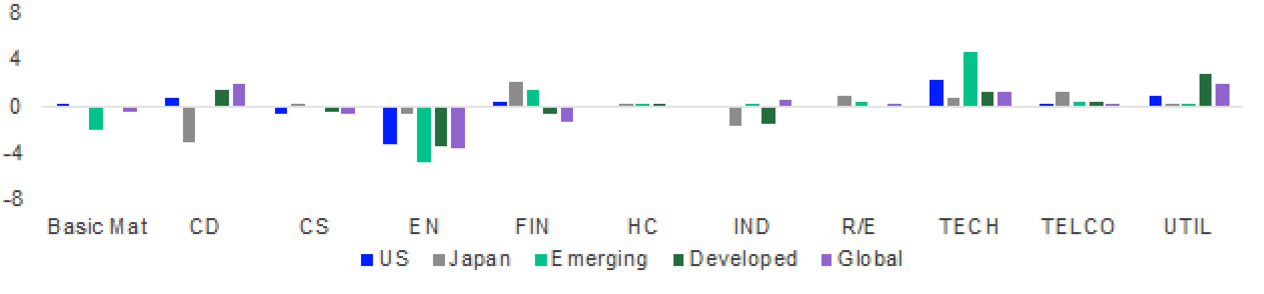


Chart 5: Active industry weights (%)



Source: FTSE Russell/LSEG. All data as of September 30, 2024. 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 specific sectors. These indices share rules-based selection methodologies and are market-cap weighted.

The FTSE Russell tilting and target exposure methodologies 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

Select rules followed by market-cap weighting | Tilting away from market-cap weighting

Exclusion Rules	Inclusion Thresholds	Thematic	Targeted /Tilted	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,

Market-Cap Weighted indices*

Equity

FTSE Global Choice Index Series | LSEG exclude companies based on the impact of their products and conduct on society and the environment.
FTSE4Good Index Series | LSEG include companies with an ESG and climate-change scores above a minimum threshold, with exclusions.
Environmental Markets Index Series | LSEG include companies that derive at least 20% of their revenue from green.

Fixed Income

FTSE Fixed Income Global Choice Index | LSEG designed to represent the performance of securities in FTSE Fixed Income indexes that exclude issuers based on their conduct or product involvement in specific sectors.
FI Ex Fossil Fuels Enhanced Index | LSEG designed to represent the performance of securities in FTSE Fixed Income indexes after the exclusion of issuers that have certain exposure to fossil fuels.
FTSE Green Impact Bond Index Series | LSEG comprehensive measure of the global green bond market across various asset classes and credit sectors.

Tilted / Target Exposure indices*

Equity

FTSE ESG Low Carbon Target Exposure targets a 20% uplift in the ESG score ** and a 50% reduction in carbon emissions, controlling for country and ICB industry exposures.
EU Climate Benchmarks Index Series | LSEG Paris Aligned Benchmark (PAB) targets a 50% reduction in carbon emissions, 100% uplift in Green Revenues and high climate governance.
FTSE TPI Climate Transition Index Series | LSEG over/underweights companies based on fossil fuel reserves, carbon emissions, green revenues, TPI management quality and TPI carbon performance.

Alternative

FTSE EPRA Nareit Green index of eligible real estate equities worldwide, with an improved climate and sustainability performance based on two sustainable investment measures; green building certification and energy usage.
FTSE Green Infrastructure index of companies from three core infrastructure sectors (transportation, energy and telecommunications) and adjusts stock weights to account for the risks and opportunities associated with the transition to a low-carbon economy

Fixed Income

Climate Risk Adjusted Gov Bond Index | LSEG quantitatively incorporates climate transition, physical and resilience risk into government bond index.
FTSE ESG Government Bond Index Series | LSEG adjusts index weights according to each country's relative Environmental, Social and Governance (ESG) performance.
FTSE Fixed Income EU Climate Benchmarks Index Series | LSEG achieving the required minimum targets as stipulated by the EU 2019 Regulation on EU Climate Transition Benchmarks.

* Please refer to FTSE | The Right Index for Your Sustainable Investment Objectives (lseg.com) l 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.

Source: FTSE Russell/LSEG. All data as of June 30, 2024. 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

Region	SI FAMILY	FTSE Russell Index	FTSE Russell Benchmark	Regional Coverage		Market Cap Coverage	
				DM	EM	Large + Mid Cap	Large + Mid + Small Cap
Equities							
Global	Global Choice	FTSE Global All Cap Choice	FTSE Global All Cap	✓	✓		✓
	FTSE4Good	FTSE4Good All World	**FTSE All World**	✓	✓	✓	
	Environmental Ops	FTSE Environmental Opportunities All Share	FTSE Global All Cap	✓	✓		✓
	Paris Aligned	FTSE All-World Paris-Aligned (PAB)	**FTSE All World**	✓	✓	✓	
	TPI Climate Transition	FTSE All-World TPI Climate Transition ex FF	**FTSE All World**	✓	✓	✓	
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	FTSE 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	**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	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**		✓	✓	
Dev.	Global Choice	FTSE Developed All Cap Choice	FTSE Developed All-Cap	✓			✓
	FTSE4Good	FTSE4Good Developed	**FTSE Developed**	✓		✓	
	ESG Low Carbon Target	FTSE Developed ESG Low Carbon Target Exposure	**FTSE Developed**	✓		✓	
	Paris Aligned	FTSE Developed Paris-Aligned (PAB)	**FTSE Developed**	✓		✓	
	TPI Climate Transition	FTSE Developed TPI Climate Transition ex Coal ex FF ex Tobacco	**FTSE Developed**	✓		✓	
Alternative							
Global	EPRA Nareit Green	FTSE EPRA Nareit Developed Green Low Carbon Target	**FTSE EPRA Nareit Developed**	✓			✓
	Green Infrastructure	FTSE Global Core Infrastructure TPI Climate Transition	**FTSE Global Core Infrastructure Index**	✓	✓		✓
Fixed Income							
Global	SI Sovereign	FTSE Climate Risk Adjusted WGBI	**FTSE WGBI**	✓	✓		
		FTSE ESG WGBI	**FTSE WGBI**	✓	✓		
Global	SI Corporate Bond	FTSE WorldBIG Choice Corporate Bond Index	**FTSE WorldBIG Corporate**	✓	✓		
		FTSE WorldBIG ex Fossil Fuel Enhanced Corporate Bond Index	**FTSE WorldBIG Corporate**	✓	✓		
		FTSE WorldBIG PAB Corporate Bond Index	**FTSE WorldBIG Corporate**	✓	✓		
Global	Green Bond	FTSE WorldBIG Green Impact Corporate Bond Index	**FTSE WorldBIG Corporate**	✓	✓		
		FTSE WorldBIG Green Impact Domestic Sovereing Index	FTSE WorldBIG Domestic Sovereign				

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

Source: FTSE Russell/LSEG. This report should not be considered "research" for the purposes of MIFID II. Please see the end for important legal disclosures.

Appendix 2: Reference Guide

Report calculations

- Unless noted otherwise, all performance calculations are total return in US dollar currency terms (fixed income indices are USD hedged).
- 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

- 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: [ESG Metrics Methodology and Calculation (lseg.com)].

Naming convention

FTSE Russell Sustainable indices are abbreviated in the report as follows:

Official Name	Report Abbreviation	Official Name	Report Abbreviation
FTSE Global Choice	Choice	FTSE Climate WGBI	Climate WGBI
FTSE4Good	4Good	FTSE Advanced Climate WGBI	Adv Climate WGBI
FTSE Environmental Opportunities	Env Ops or EO	FTSE ESG WGBI	ESG WGBI
FTSE ESG Low Carbon Target Exposure	Low Carb	FTSE Choice Corporate Bond	Choice Corp
FTSE Paris-Aligned Benchmark	PAB	FTSE Ex Fossil Fuel Enhanced Corporate Bond	FFE Corp
FTSE TPI Climate Transition	TPI	FTSE PAB Corporate Bond	PAB Corp
FTSE EPRA Nareit Developed Green Low Carbon Target	EPRA Nareit Green	FTSE Green Impact Corporate Bond	Green Corp
FTSE Global Core Infrastructure TPI Climate Transition	Green Infra	FTSE Green Impact Domestic Sovereign	Green Sov

Source: FTSE Russell/LSEG. Please see the end for important legal disclosures.

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ABOUT FTSE RUSSELL

FTSE Russell is a leading global provider of index and benchmark solutions, spanning diverse asset classes and investment objectives. As a trusted investment partner we help investors make better-informed investment decisions, manage risk, and seize opportunities.

Market participants look to us for our expertise in developing and managing global index solutions across asset classes. Asset owners, asset managers, ETF providers and investment banks choose FTSE Russell solutions to benchmark their investment performance and create investment funds, ETFs, structured products, and index-based derivatives. Our clients use our solutions for asset allocation, investment strategy analysis and risk management, and value us for our robust governance process and operational integrity.

For over 35 years we have been at the forefront of driving change for the investor, always innovating to shape the next generation of benchmarks and investment solutions that open up new opportunities for the global investment community.

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