

Sustainable Investment Insights

QUARTERLY REPORT | JANUARY 2025

Mixed Q4 ends a challenging year for SI

Q4 saw a broad variation in the relative performance of SI indices. Climate-focused equity indices outperformed, while ESG-focused indices underperformed. SI Alternatives and SI Sovereigns were weak, and SI Corporates performance was in line with the market, though both sovereign and corporate green bonds outperformed. 2024 was also challenging for SI overall, with mixed performances. Fund flows into the sector weakened vs the broader market, and there were geopolitically-driven concerns around the direction of regulations, despite a strong rise in global temperatures.

Highlights

Climate vs ESG SI Equities

The performance of SI equity indices was mixed in Q4, with climate-focused indices, such as PAB and EnvOps outperforming the market, and ESG-focused indices, such as FTSE4Good underperforming. The main reason for this disparity is their specific over or underweight position in Tesla, which has a large weight in parent indices and rose 54% in Q4. Tesla has a high percentage of green revenues, but a weak ESG score.

Alternatives weaken on rising yields

SI real estate and infrastructure indices underperformed in Q4 as yields rose. This reversed much of the strong performance in alternatives in Q3, when yields fell.

Green bonds strong; corporates in line with market; and sovereigns weak

SI fixed income performance was impacted by rising yields in Q4, especially in the US. SI sovereigns underperformed, mainly due to longer durations, while SI corporate returns were in line with the market. Green bonds outperformed the market in Q4 due to shorter active duration and an overweight in banks and utilities in Green corporates, and a US underweight in Green sovereigns.

Rising temperatures, rising challenges, new opportunities

Global temperatures have continued to rise in 2024, with an average of 1.6°C above pre-industrial period (1850-1900). While installations in solar PV and unit sales of electric vehicle have continued to grow, they have both come under pressure from tariffs, and global GHG emissions rose in 2024. However, as the industry continues to evolve, new areas are developing, including the impact of artificial intelligence, a potential renaissance in nuclear power and developments in SI regulation.

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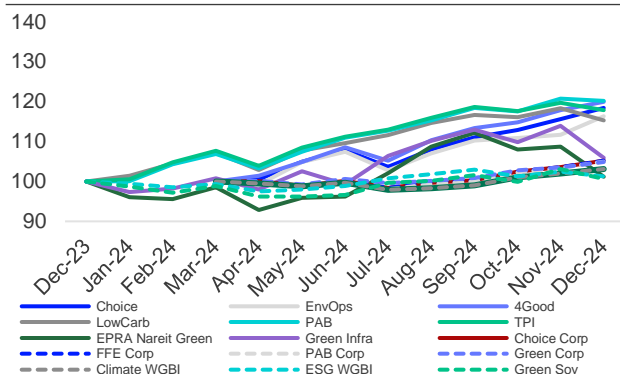
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Chart 1. 12-month absolute performance of global SI equity, fixed income and alternatives indices, (TR, USD,%).



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

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

FTSE Russell | Sustainable Investment Insights Report January 2025

Source: FTSE Russell / LSEG. Data as of December 31, 2024.

SI Equity Risk and Climate Characteristics – Q4 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 (-45% to -54%) and underweights to Energy (-4.9% 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 96% 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 (18% to 3%). The global tracking error is low (1.9%). Europe has the lowest ESG uplift (3%), but the highest absolute ESG score. By contrast, EM has the highest ESG uplift (18%), 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 33%). However, the focus on Industrials, Utilities & Technology leads to higher carbon intensity in most regions (53% to 5%). The indices are highly concentrated (7% to 15% 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 3.0%) 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 (-68% to -48%), increases TPI MQ score (10% to 4%), increases green revenues (absolute increase of 8% to 6%) and reduces Energy industry weighting (absolute reduction of -10% to -3%). Tracking error is slightly higher than some other SI indices (2.5% to 5.8%) and the indices are more concentrated (70% to 30% of benchmark).

TPI Climate Transition (TPI) targets multiple climate related uplifts. It achieves strong reduction in carbon intensity (-53% to -30%), significant increase in TPI MQ score (25% to 8%), while the global tracking error is relatively modest at 1.6%. EM has the highest tracking error at 4.2% but also 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%		1.2%	1.7%	1.9%	1.8%
	FTSE4Good	2.6%	1.9%	2.2%	10.3%	2.5%	6.6%	1.9%	1.9%
	Environmental Ops	9.0%	9.5%	7.0%	7.0%	11.4%			6.3%
	ESG Low Carbon Target	3.0%	6.3%	2.9%	2.8%	2.8%	2.6%	2.3%	
	Paris Aligned		5.8%				3.4%	2.5%	2.7%
	Transition Pathway	2.0%			2.7%		4.2%	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	0.3	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	82.3%	96.1%	82.2%		87.3%	84.3%	84.2%	84.3%
	FTSE4Good	47.4%	39.1%	72.6%	50.9%	49.8%	30.4%	54.6%	42.1%
	Environmental Ops	9.3%	7.0%	14.7%	11.9%	7.0%			9.3%
	ESG Low Carbon Target	73.5%	64.7%	46.5%	49.7%	25.9%	34.5%	39.2%	
	Paris Aligned		70.4%				45.2%	48.0%	30.4%
	Transition Pathway	59.9%			80.8%		40.9%	52.3%	34.9%
Weight in Top 10 relative to benchmark	Global Choice	119.4%	102.9%	131.0%		114.9%	104.3%	123.8%	124.1%
	FTSE4Good	144.8%	126.2%	119.1%	132.2%	124.7%	124.3%	131.6%	135.2%
	Environmental Ops	237.0%	151.8%	270.6%	295.0%	300.0%			277.5%
	ESG Low Carbon Target	154.3%	148.2%	165.6%	200.9%	173.1%	128.0%	162.1%	
	Paris Aligned		85.0%				113.0%	139.2%	150.1%
	Transition Pathway	122.0%			147.1%		143.8%	131.4%	126.5%

Source: FTSE Russell/LSEG. All data as of December 31, 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 – Q4 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	2.2%	0.0%	-3.2%		-1.5%	-2.4%	0.7%	0.5%
	FTSE4Good	13.5%	10.0%	3.7%	9.9%	9.8%	21.7%	11.9%	12.8%
	Environmental Ops	-2.2%	-5.8%	0.9%	10.9%	20.0%			3.3%
	ESG Low Carbon Target	26.4%	20.5%	23.6%	21.6%	25.8%	22.6%	27.0%	
	Paris Aligned		1.4%				9.3%	4.9%	6.0%
	Transition Pathway	8.9%			10.4%		21.2%	12.5%	10.3%
Active S score	Global Choice	3.0%	-1.6%	-1.1%		-0.4%	0.7%	1.8%	1.7%
	FTSE4Good	12.5%	9.1%	2.8%	10.9%	9.4%	21.7%	10.9%	11.9%
	Environmental Ops	16.2%	-2.9%	-1.8%	-0.7%	29.9%			13.4%
	ESG Low Carbon Target	18.7%	12.7%	13.5%	19.2%	20.5%	22.2%	18.5%	
	Paris Aligned		1.3%				10.2%	3.1%	5.0%
	Transition Pathway	6.0%			5.8%		17.7%	5.9%	6.0%
Active G score	Global Choice	0.6%	-0.8%	-1.2%		-1.3%	-0.1%	-0.1%	-0.1%
	FTSE4Good	4.9%	7.2%	1.5%	8.3%	8.3%	13.0%	5.4%	6.1%
	Environmental Ops	13.3%	0.7%	-1.6%	-2.0%	16.5%			9.8%
	ESG Low Carbon Target	10.0%	4.0%	5.6%	14.6%	11.9%	13.0%	10.1%	
	Paris Aligned		-0.7%				7.7%	0.1%	1.5%
	Transition Pathway	0.7%			4.2%		11.5%	1.0%	1.8%
Active ESG score	Global Choice	1.9%	-0.9%	-1.7%		-1.0%	-0.3%	0.8%	0.7%
	FTSE4Good	10.2%	8.8%	2.7%	9.6%	9.1%	18.4%	9.3%	10.1%
	Environmental Ops	9.3%	-3.2%	-1.3%	3.1%	24.0%			8.8%
	ESG Low Carbon Target	18.1%	12.0%	14.0%	18.5%	18.8%	18.7%	18.3%	
	Paris Aligned		0.6%				8.7%	2.7%	4.1%
	Transition Pathway	5.1%			6.8%		16.0%	6.4%	5.8%
Carbon Reduction	Global Choice	-53.7%	8.6%	-49.3%		-44.8%	-47.9%	-52.5%	-51.7%
	FTSE4Good	-40.8%	7.7%	2.3%	-1.7%	-11.0%	14.5%	-26.4%	-18.9%
	Environmental Ops	24.7%	11.4%	32.1%	5.3%	52.8%			33.1%
	ESG Low Carbon Target	-50.5%	-40.0%	-49.9%	-49.6%	-39.9%	-37.8%	-50.4%	
	Paris Aligned		-48.3%				-68.1%	-58.5%	-58.6%
	Transition Pathway	-46.6%			-29.7%		-44.9%	-53.4%	-42.9%
Active Green Revenues	Global Choice	0.15	0.42	-1.55		-0.15	0.98	-0.04	0.05
	FTSE4Good	-0.02	-0.18	0.16	-1.18	-0.66	4.18	-0.12	0.23
	Environmental Ops	34.31	44.26	33.32	35.76	47.55			36.78
	ESG Low Carbon Target	-0.74	0.26	2.74	-1.97	3.04	2.46	-0.46	
	Paris Aligned		5.86				8.30	6.96	7.55
	Transition Pathway	1.02			3.58		9.27	1.71	2.82
Active TPI Management Quality Score	Global Choice	0.1%	1.3%	-2.9%		-1.4%	-3.5%	-0.8%	-0.9%
	FTSE4Good	8.4%	6.9%	2.2%	6.1%	5.8%	19.3%	7.6%	8.6%
	Environmental Ops	4.1%	-2.8%	0.7%	7.4%	28.0%			6.7%
	ESG Low Carbon Target	15.6%	3.9%	8.9%	14.3%	20.8%	17.9%	15.8%	
	Paris Aligned		4.4%				9.5%	6.4%	6.9%
	Transition Pathway	8.2%			11.1%		24.7%	12.2%	10.6%

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 – Q4 2024

Markets were mixed in Q4 2024, with most bond markets selling off on the back of higher interest rate expectations, while equity markets saw a mixed performance. The US led global equity returns, helped by a stronger US dollar and market optimism for pro-growth policy, following President-elect Trump's election victory. At the industry level, cyclicals outperformed, with Consumer Discretionary and Financials the top performers. Market participants and central banks, including the Fed, revised their policy rate expectations in 2025. The Fed dot plots now show only a further 50bp of rate cuts in 2025, with growth and inflation projected to be higher.

Higher inflation in the US, UK and Europe in Q4 resulted in G7 central banks either slowing the pace or pausing policy. The outlook for growth continues to remain resilient, with the US expected to lead the major developed market economies in 2025 and 2026

Global fund flows continued their positive trend in Q4. However, volatility in interest rates led to a slower pace of flows for bond funds.

For further in-depth analysis of asset classes see [Asset Allocation Insights - December 2024 | LSEG](#)

Chart 1: Select FTSE Equity Indices (TR %, USD) – US equities led in Q4, helped by a stronger US dollar and a favourable growth outlook following the US election.

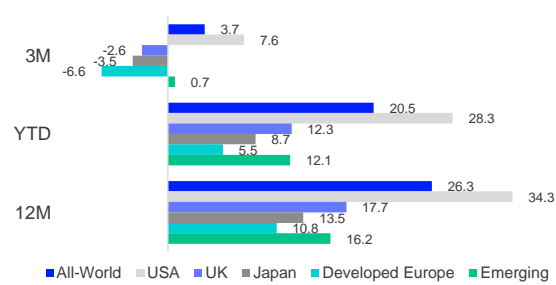


Chart 2: FTSE All World 3M Industry Returns (TR %, USD) – cyclicals led industry performance in Q4, with Consumer Discretionary and Financials the top performers.

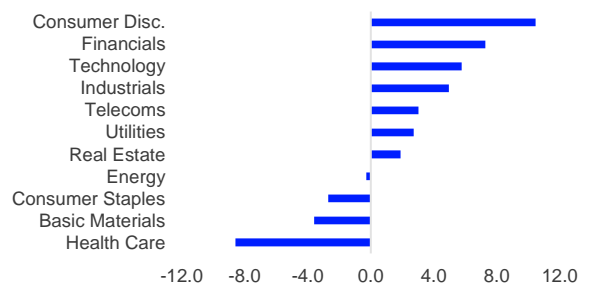


Chart 3: Historical GDP and forecasts across regions (%) – global growth to be stable in 2024 and 2025, with the US still expected to lead the main developed market economies.

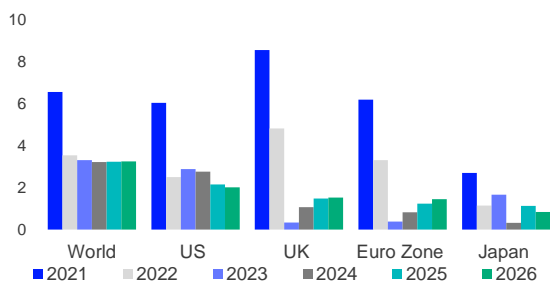


Chart 4: Regional Inflation (%) – inflation remained sticky in most major economies in Q4, with the US, EU and UK all seeing higher CPI readings.

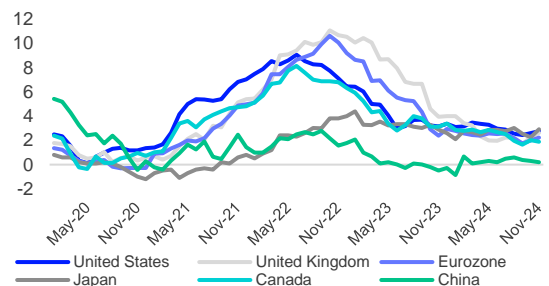


Chart 5: Central Bank Policy Rates – rates remained on hold for Japan in Q4, but all other G7 economies saw cuts to their respective policy rates.

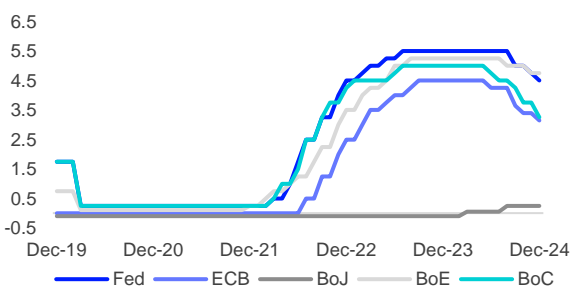
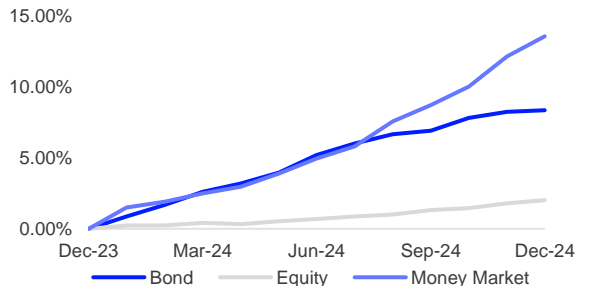


Chart 6: Global Bond, Equity & Money Market Cumulative Fund Flows (% of total net assets) – the pace of bond flows eased in Q4. Money market & equity flows remained steady.



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SI Backdrop – Q4 2024

In Q4, renewable energy stocks suffered in anticipation of weakness in the US market. Global renewable installations remained strong in 2024, driven by strength in solar and in China, while wind was weaker. The EV market also continued to grow in 2024, driven by a strong, but a competitive market in China. Slower than expected demand and the pressure from Chinese EV imports led to tariffs and pressure on European EV targets. The EU also announced an omnibus review of three key SI regulations to potentially combine and simplify the rules on Green Taxonomy, Corporate Sustainability Reporting Directive and Corporate Sustainability Due Diligence Directive.

Performance of SI equity funds in Q4 was driven by Tesla, given its size and 54% rise in the quarter. Climate-focused indices like EnvOps and PAB are significantly overweight Tesla, which was a key driver of outperformance, while ESG-focused funds, like 4Good, are underweight Tesla, and therefore lost performance as a result.

Physical risk has been a key feature of 2024, with hurricanes, droughts and floods. The annual average temperature anomaly with pre-industrial periods rose to 1.6 degrees in 2024. Estimated global GHG emissions also rose by ~2%, however land use change was a bigger driver than an increase in the use of fossil fuel.

Nuclear power is seeing renewed focus, driven by support from large tech companies, and the development of the Small Modular Reactor industry, which has numerous projects under development, especially in the US.

Chart 1: Env Ops Green Sectors Performance – in Q4, Renewable Energy and Water lost most of the performance it had recovered in Q3.

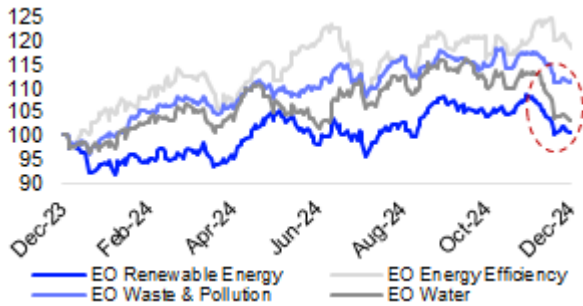


Chart 2: Tesla stock price (USD) – as a significant overweight in most climate indices, Tesla boosted performance in November and December.

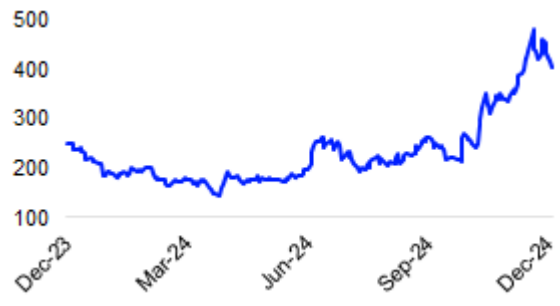


Chart 3: Global temperature anomaly vs 1850-1900 average (°C)¹ – 2024 saw a record anomaly of 1.6 degrees (boosted by El Niño).

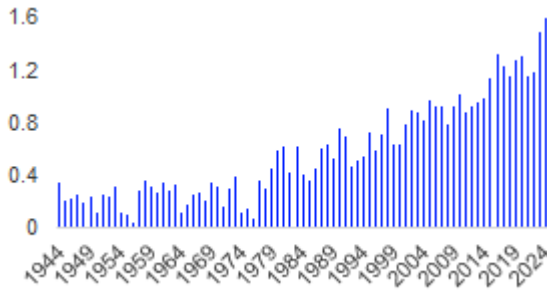


Chart 4: Global carbon emissions (bn tons CO₂ equivalent)² – carbon emissions continued to rise in 2024.

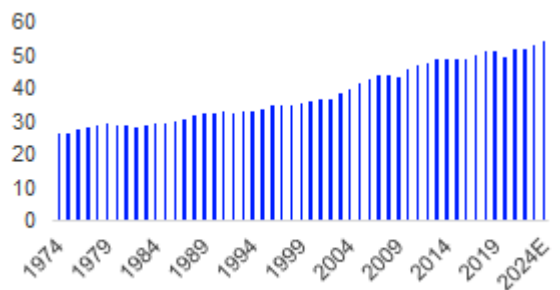


Chart 5: Clean Energy technology capacity/sales growth H1 24 vs H1 24³ – SI flows slowly recovering in Q3.

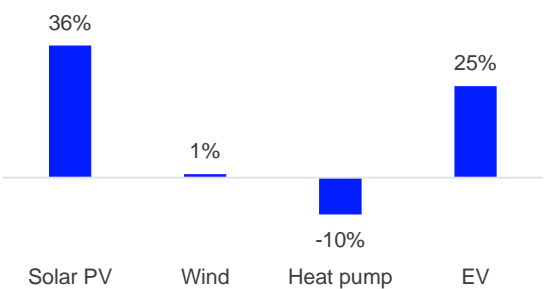
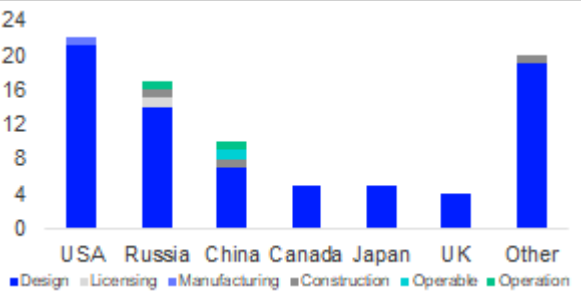


Chart 6: Nuclear Small Modular Reactor (SMR) development by country (# of reactors)⁴ – multiple projects in designs, boosted by big tech demand.



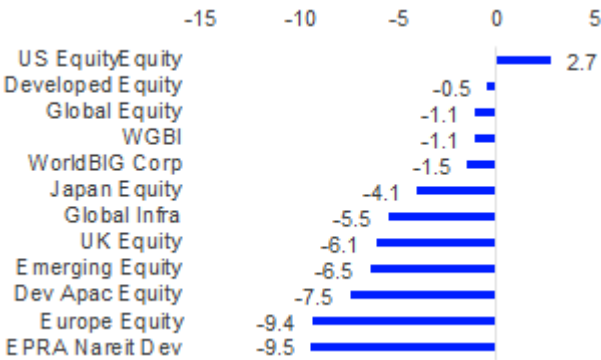
1. Copernicus Era5 [Climate Pulse](#) 2. [EDGAR - The Emissions Database for Global Atmospheric Research](#) & Global Carbon Budget 2024 estimate 3 [Clean Energy Market Monitor – November 2024 – Analysis – IEA](#) 4 Enerdata [Small Modular Reactors: Advancing Nuclear Power Generation for a Sustainable Future](#)

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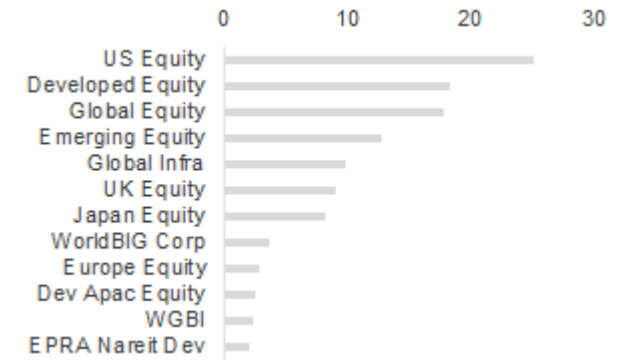
Absolute Returns – 3M & 12M (TR, USD %) Q4 2024

Q4 saw weaker performance across most asset classes, with real estate finishing as the worst performing asset class. Stubborn inflation and concerns over the impact pro-growth policies from the incoming US administration caused interest rate expectations to rise, affecting some interest rate sensitive sectors, and driving the US dollar higher vs most other currencies. Regionally, the US remains the best performer over 12 months, following a strong performance in Q4. Quarterly SI performance was mostly negative, except in the US and some Global and Developed indices, all of which benefitted from a strong US market performance.

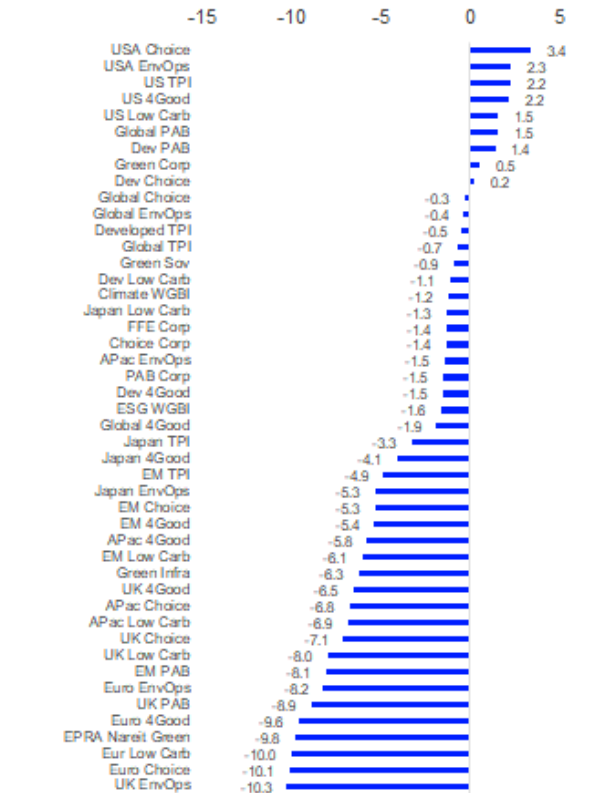
Regional 3M Absolute Returns* (TR, USD %): USD strength and optimism for US growth meant that US equities and US-dominated indices were the top performers in Q4.



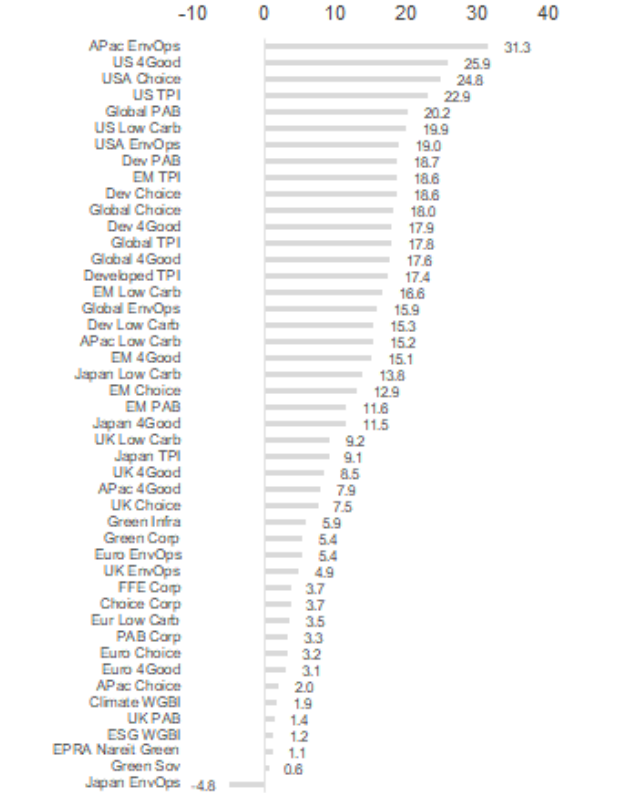
Regional 12M Absolute Returns* (TR, USD %): US equities remain the top performer over 12M, aided by a strong Q4. Sovereigns and real estate were the worst performers.



SI Index 3M Absolute Returns (TR, USD %): USA Choice led SI performance during the quarter, while UK EnvOps and UK/EU indices lagged.



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



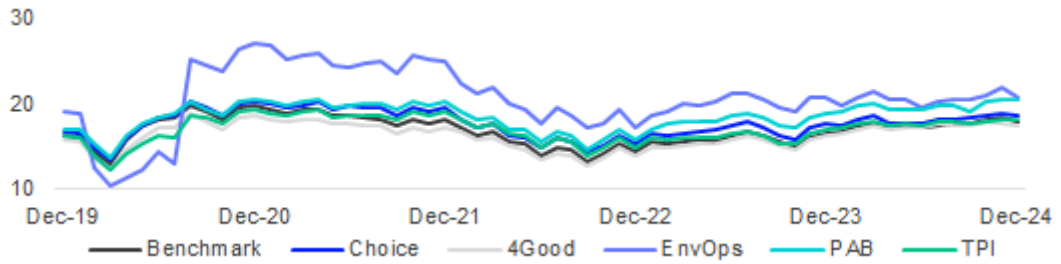
*The Broad regional indices above are: The FTSE USA, FTSE UK, FTSE Developed Europe, FTSE Japan, FTSE Developed Asia-Pacific and FTSE Emerging Markets. Benchmarks for the listed SI indices may vary. Appendix 1 shows the appropriate benchmark and market-cap coverage for the SI indices covered in this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

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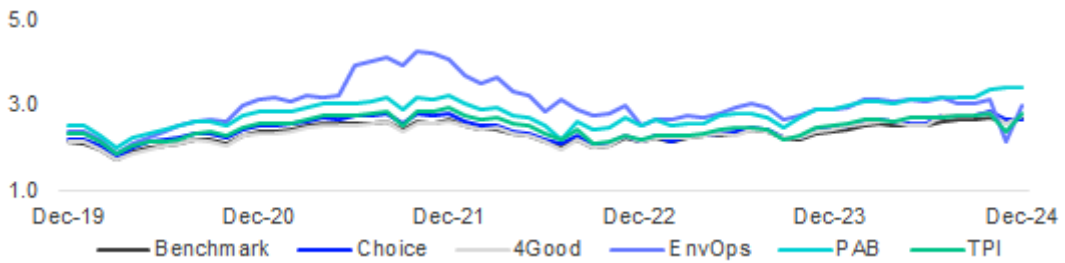
SI Equity Index Valuation – Q4 2024

Regionally, the US was the only developed market region to see higher broad market index valuations in Q4, thanks to its outperformance on the back of improved growth optimism. For SI indices, the effect of the US outperformance resulted in most indices seeing higher valuations in Q4, given their substantial weightings in US equities. The exception to this was FTSE4Good, which remains underweight the US versus the FTSE All World (60% vs 65%), and which saw its valuation decline over 3M. SI indices retained their higher valuation versus the broader equity market on a P/E basis, with the exception of FTSE4Good, which remains cheap versus the FTSE All World. EnvOps was again the SI index with the highest valuation premium at the end of the quarter, with PAB close behind, after it saw the largest increase in valuation across all SI indices in Q4. Besides FTSE4Good, all SI indices retained their lower dividend yields versus the market.

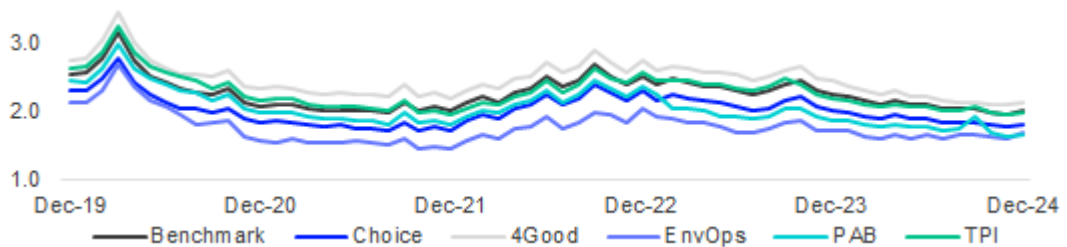
Global Markets – 12-month forward factor P/E ratios



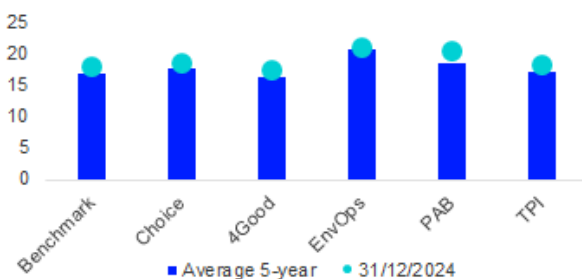
Global Markets – 12-month forward factor Price to Book ratios



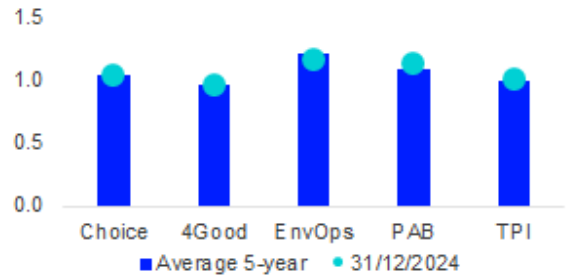
Global Markets – Dividend Yield



12-month forward P/E vs history



12-month forward P/E premium vs history



Source: FTSE Russell/LSEG. All data as of December 31, 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.

SI Sovereigns – Q4 2024

SI sovereign performance was negative across the board in Q4, fuelled by a move higher in global yields as stronger-than-expected global economic data and the result of the US presidential election caused market participants to price less monetary easing than previously expected. On a relative basis, performance was mixed. Advanced Climate WGBI was the only index to outperform in Q4, largely due to its large underweight in the US, but positive active duration detracted from relative performance in all three SI sovereign indices in December as yields rose further. As long as markets expect central bank rate paths to remain volatile, active duration should continue to dictate relative performance leadership moving forward. While the ESG WGBI has a slight overweight to US government bonds, the climate indices are both heavily underweight the US in favour of some European sovereigns. All three indices remain underweight China, which was a headwind to relative performance in 2024, given the region's outperformance throughout the year. Given these active weights, China's policy response to continued deflationary risks could be a key determinant of relative performance in 2025, as will any divergence in central bank policy between the US and the rest of the world.

Despite a history of lower relative yields vs WGBI, SI yields have seen a relative improvement over the last two years. Country allocation effects were largely responsible for changes in relative yield in Q4, which saw relative yields rise for Climate WGBI and ESG WGBI but decline for Advanced Climate WGBI. Active duration remains positive for all three SI Sovereign indices, but declined in Q4, especially for Climate WGBI, following the index rebalancing.

Chart 1: Selected SI Sovereign Returns (TR, USD Hedged) – returns were negative in Q4, as yields rose, following the US election and continued resilience in global economic data.

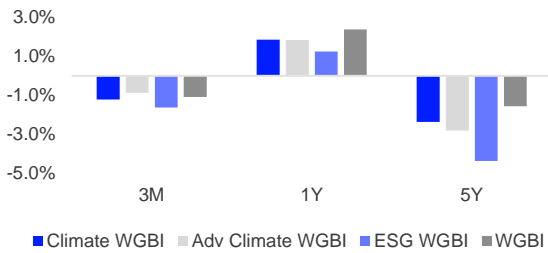


Chart 2: Selected SI Sovereign Relative Performance vs. WGBI (TR, USD Hedged) – Adv Climate outperformed in Q4 due to its underweight in the US.

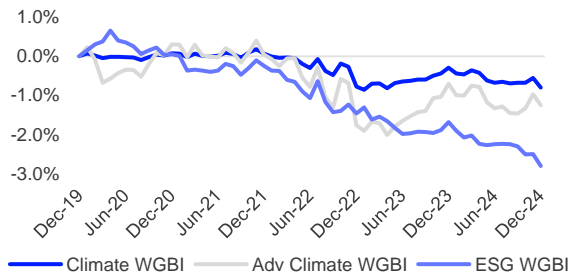


Chart 3: Selected SI Sovereign Active Weights vs WGBI – while ESG WGBI is overweight the US, climate indices remain heavily underweight in favour of select European sovereigns.

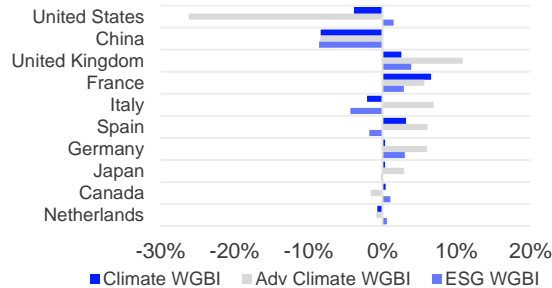


Chart 4: Selected SI Sovereign Relative Credit Weighting vs WGBI – ESG WGBI and Adv Climate WGBI both exhibit a clear quality bias.

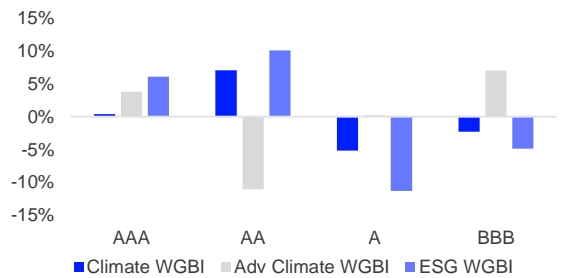


Chart 5: Selected SI Sovereign Relative Yield vs WGBI – yields for Climate WGBI and ESG WGBI rose by more than WGBI in Q4, leading to a higher relative yields for both indices.

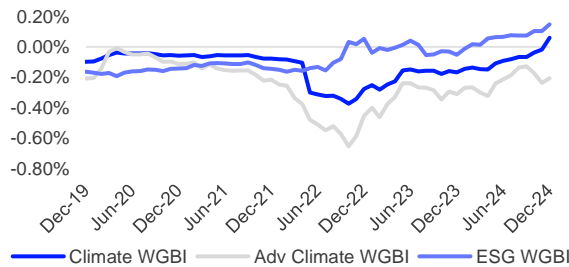
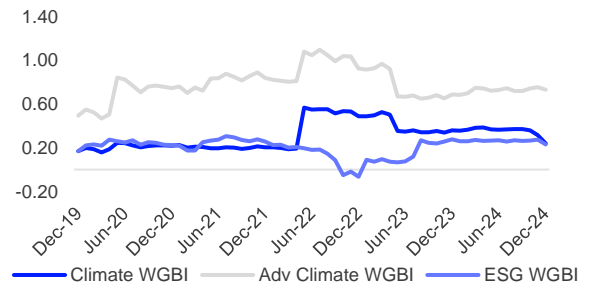


Chart 6: Selected SI Sovereign Active Duration vs WGBI – Climate WGBI saw a relative decline in active duration in Q4, but all three indices continue to exhibit positive active duration.



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SI Corporate Bonds – Q4 2024

SI corporate returns were negative in Q4, as tighter credit spreads were offset by higher global interest rates. PAB Corp was the worst performer over 3M, returning ~-1.5%. On a relative basis, Choice Corp and FFE Corp outperformed in Q4, while PAB Corp underperformed WorldBIG Corp. With yields rising in unison during the quarter and no major changes to relative option adjusted spreads, relative performance was largely a function of active duration in Q4.

Although the SI corporate indices take a varied approach to active weights in the Financials, Electric and Manufacturing sectors, all three indices continue to have an overweight in Services, and an underweight in Energy versus WBIG Corp. Relative to WBIG Corp, the SI Indices also have a lower BBB exposure in favour of AAA and AA, indicating a quality bias. PAB Corp incurred the biggest in quality upgrade vs WBIG Corp, and we note that there were no major changes in credit exposure.

During the quarter, market participants began to price in less monetary easing than previously expected for 2025, especially in the US, which saw yields rise in the lead up to, and following the US presidential election. As a result, SI corporate yields rose during the quarter, despite tighter option adjusted spreads on continued expectations for resilient growth. There were no major changes to active duration in Q4, with PAB Corp remaining the only index with a positive active duration.

Chart 1: Selected SI Corporate Returns (TR, USD Hedged) – absolute performance was negative in Q4, as tighter credit spreads were offset by a move higher in global interest rates.

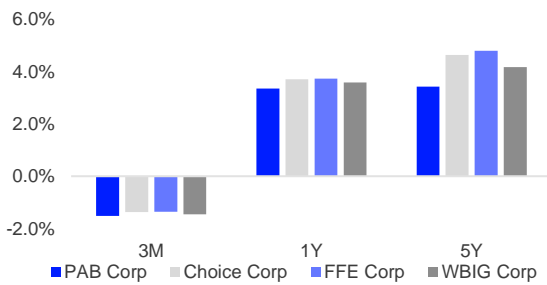


Chart 2: Selected SI Corporate Relative Performance vs. WBIG Corp (TR, USD Hedged) – with yields rising, relative performance was mainly a function of active duration in Q4.

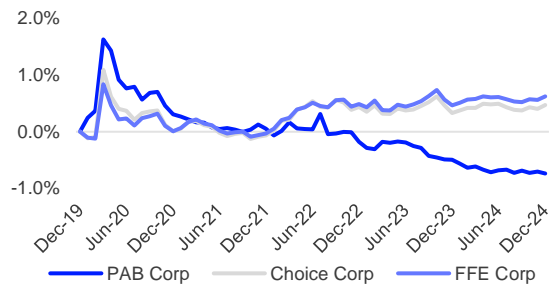


Chart 3: Selected SI Corporate Active Weights vs WBIG Corp – SI corporate indices take a varied approach to active weights in the Financials, Electric and Manufacturing sectors.

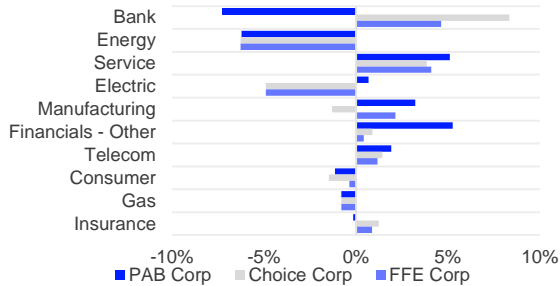


Chart 4: Selected SI Corporate Relative Credit Weighting vs WBIG Corp – all three SI Corporate indices continue to show a bias towards higher quality credit.

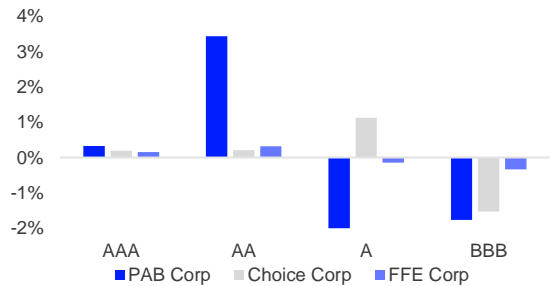


Chart 5: Selected SI Corporate OAS (bps) vs YTM (%) – while yields rose across all three indices in Q4, credit spreads continued their tightening trend to near 5-year lows.

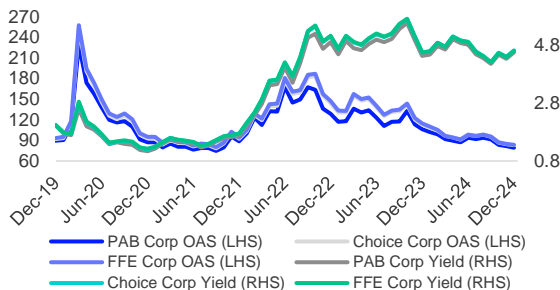
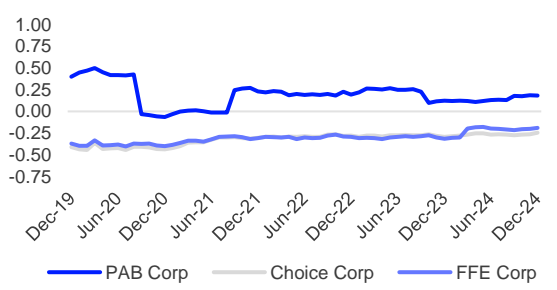


Chart 6: Selected SI Corporate Active Duration vs WBIG Corp – there were no major changes to active duration in Q4. PAB Corp remains the only index with positive active duration.



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Green Bonds – Q4 2024

Green bond performance was mixed over 3M, with Green Corp seeing a slightly positive return and Green Sov, a negative return. On a relative basis, Green Corp outperformed in Q4 as it benefitted from industry-allocation effects, with select active weights helping with additional tightening in option adjusted spreads vs WorldBIG Corp. Green Corp's negative active duration also helped minimize the effect of higher interest rates on performance. For Green Sov, headwinds to performance from positive active duration offset the benefit of being underweight the US in Q4, resulting in an underperformance for the index.

Within Green Sov, currency exposure remains 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 Q4, Green Corp's slight overweight in Transport Industrials switched to a slight underweight.

While active duration for Green Sov has been trending lower over the last five years, the index saw an uptick in Q4. 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 trended lower in Q4, particularly in December, where green bond issuance declined markedly, both in absolute terms, and as a share of total bond issuance.

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

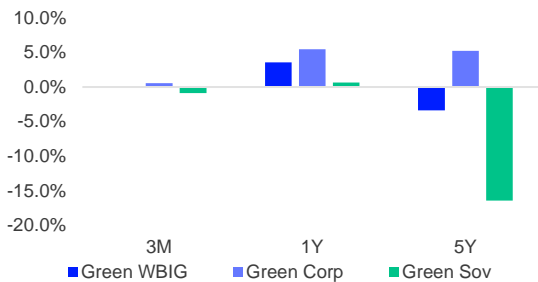


Chart 2: Selected SI Green Bond Index Relative Performance vs. WBIG, WBIG Corp, WBIG Sov (TR, USD Hedged) – Green Corp outperformed in Q4.

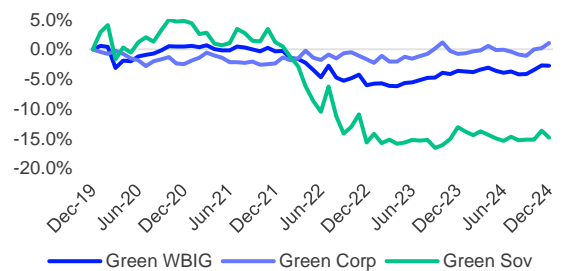


Chart 3: WBIG Sov and Green Sov Absolute Weight by Currency – currency exposure remains heavily weighted towards EUR due to high green bond issuance in the region.

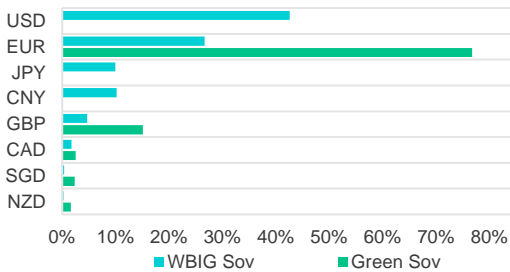


Chart 4: WBIG Corp and Green Corp Absolute Weight by industry – Green Corp's weights were largely unchanged, except for transport industrials which moved to underweight.

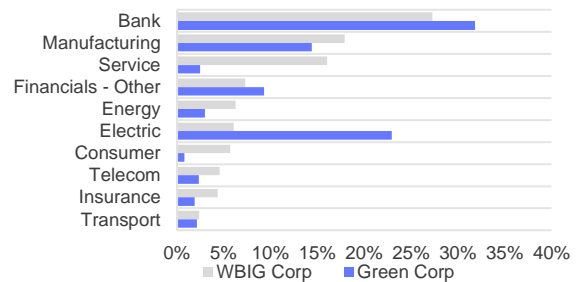


Chart 5: Selected SI Green Bond Active Duration vs WBIG, WBIG Corp, WBIG Sov – active duration increased slightly for Green Sov in Q4, but decreased for Green Corp.

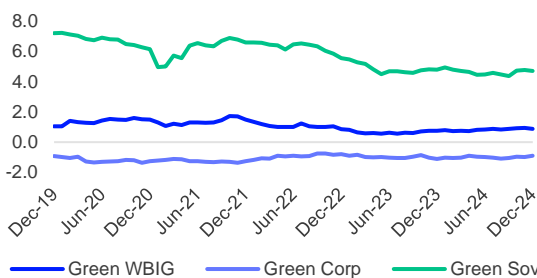
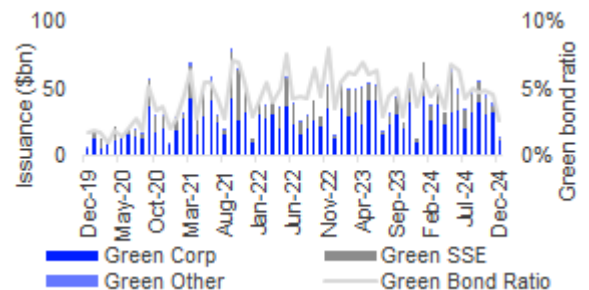


Chart 6: Green Bond Issuance – green bond issuance declined markedly in December, both in absolute terms and as a share of total bond issuance.



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SI Alternatives (Real Estate & Infrastructure) – Q4 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 and 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 weak in Q4, after it gave up much of the strong performance from Q3, as bond yields rose on concern over government debt levels and the pace of interest rate cuts. EPRA Nareit Green underperformed the broader market in Q4 and over 2024, although the performance has been more in line with the market, and tracking error returned to ~1%, compared to a weaker historic performance, particularly in the 2021 post covid period. Selection effect in Real Estate Holdings & Development companies was the main reason for the underperformance in 2024, though this was offset by the positive performance in Office and Residential REITs.

The listed infrastructure market also underperformed in Q4 due to higher bond yields. Green Infra underperformed the market in Q4, and over 2024. Underperformance in 2024 was driven by an overweight in Railroads and negative selection effect in Conventional Electricity, as well as a previous overweight in Alternative Electricity and underweight in Pipelines (before the change in methodology in Q3).

Chart 1: FTSE Global Core Infrastructure TPI Climate Transition Active Performance – underperformance narrowed in Q4.

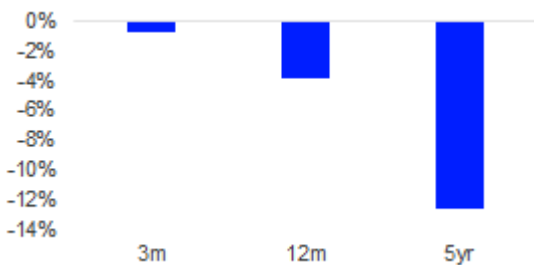


Chart 2: FTSE EPRA Nareit Developed Green Low Carbon Target Active Performance – small underperformance in Q4.

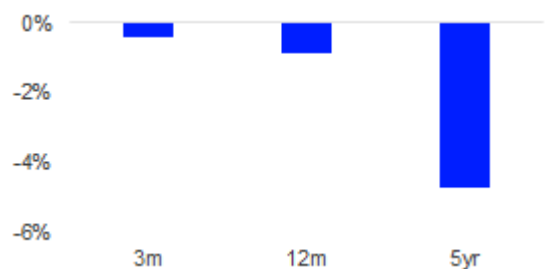


Chart 3: 12M Attribution vs FTSE Global Infrastructure – underperformance came from an overweight in Railroads and a previous underweight in Alternative Electricity.

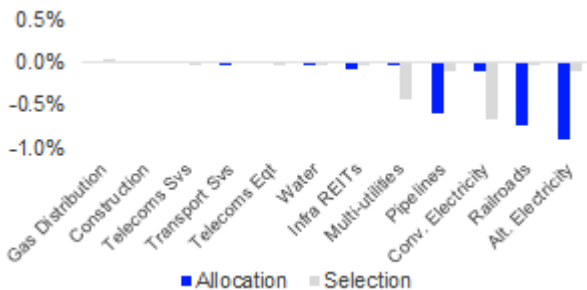


Chart 4: 12M Attribution vs FTSE EPRA Nareit Developed – performance primarily from selection, positive in Office and Residential, negative in Specialty and Holdings & Dev.

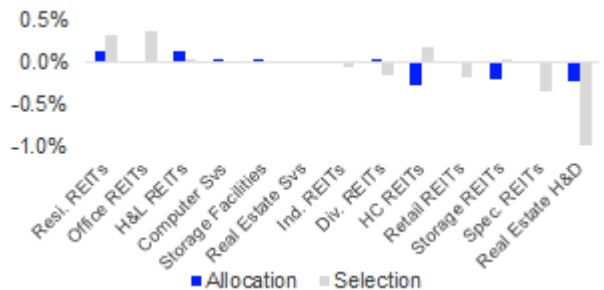


Chart 5: Active weights vs FTSE Global Infrastructure – overweight Railroads and underweight in conventional Electricity Utilities.

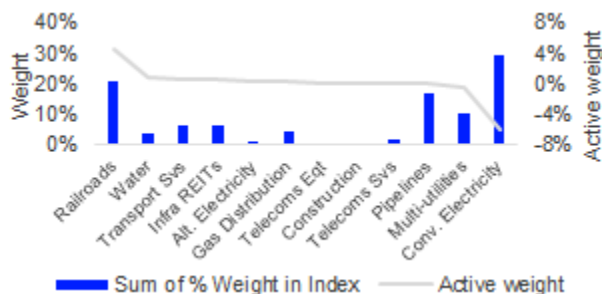
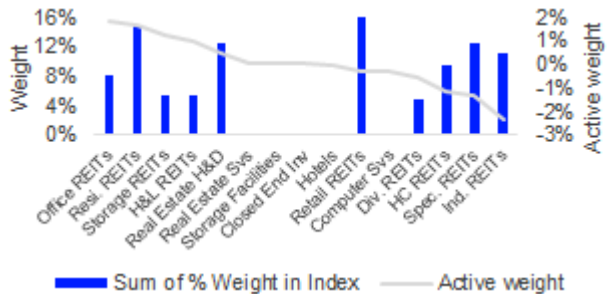


Chart 6: Active weights vs FTSE EPRA Nareit Developed – overweight Residential & Office, underweight Healthcare, Specialty and Industrial.



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SI Risk / Return – Q4 2024

SI equity risk/returns were relatively clustered together, both over one and five years, and similar to gold over five years (but significantly behind over one year). EnvOps has the highest return over five years, but in both one and five years has a higher risk. PAB has the highest SI equity return over one year (and second highest over five years) and the lowest SI equity 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 a slightly lower risk than the market (WorldBIG Corp) in both periods, and PAB Corp's ratio was in line. Green corporate bonds had similar returns over 5 years, is ahead over one and has a lower risk in both periods. SI Sovereigns saw lower returns and risk than SI Corporates over both periods, Climate and ESG WGBI had slightly lower returns and a slightly higher volatility than the market (WGBI) in both periods. Green Sovereigns saw lower returns and higher risk than the market in both periods.

EPRA Nareit Green and Green Infra returns over one year weakened in Q4, 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 – PAB had the highest return, after gold, with a lower volatility than other equity strategies; Green Corp saw lower volatility than other credit strategies, while Green Sov had a higher volatility than other sovereign strategies.

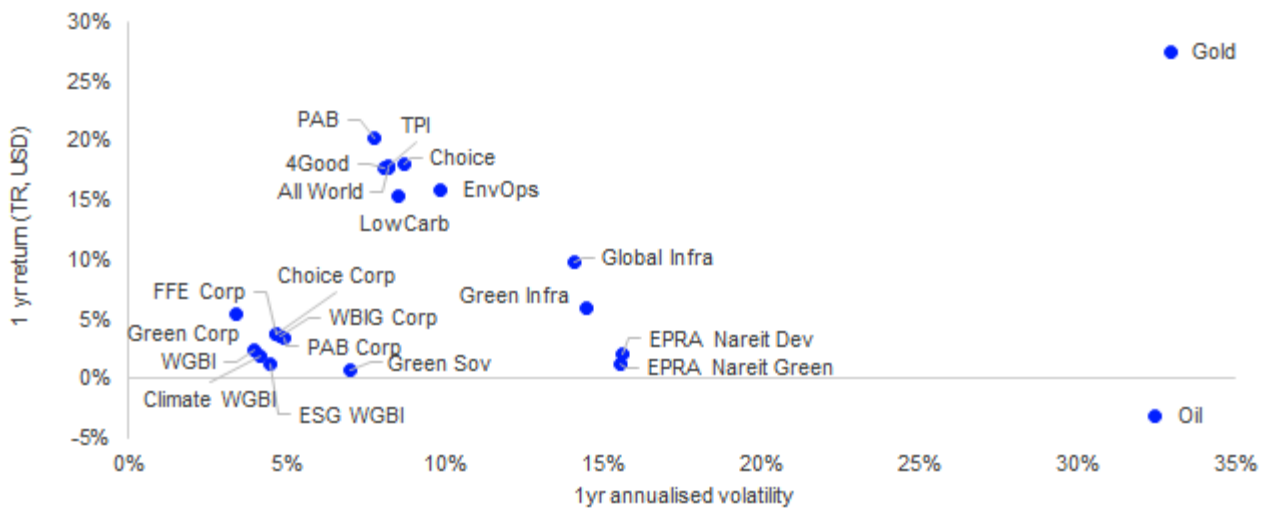
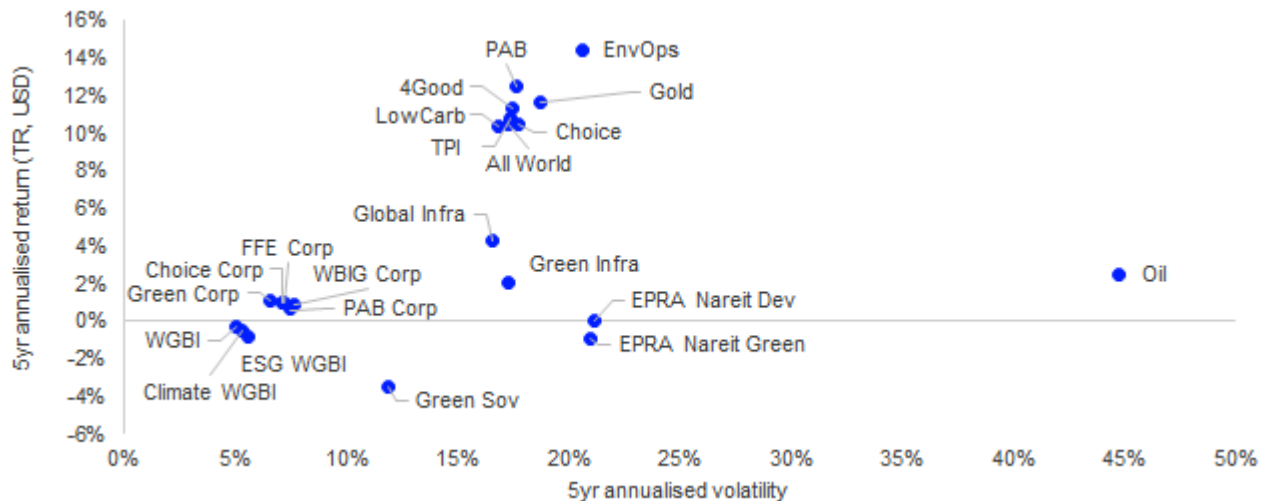


Chart 2: 5-year risk vs return – EnvOps had the strongest return, but with a higher risk than other equity strategies. SI bond strategies have a similar risk/return profile, except Green Sov, while Green Infra and EPRA Nareit Green are behind parents. Oil has a weak return and considerably greater risk,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



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Risk calculated as the annualized monthly volatility

SI Correlation – Q4 2024

SI/broad market correlations are high over both periods, with EnvOps, Green Infrastructure and EPRA Nareit Green seeing the lowest correlations with the FTSE 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 corporate bonds saw slightly lower correlations to bond markets over five years, but correlation has 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.

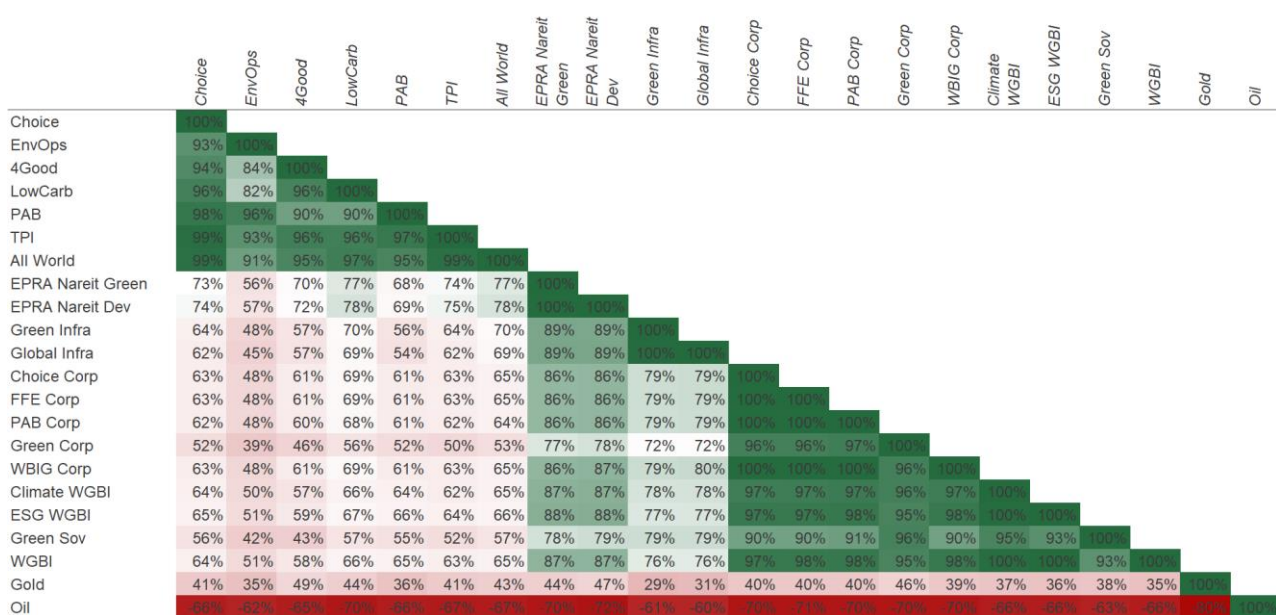
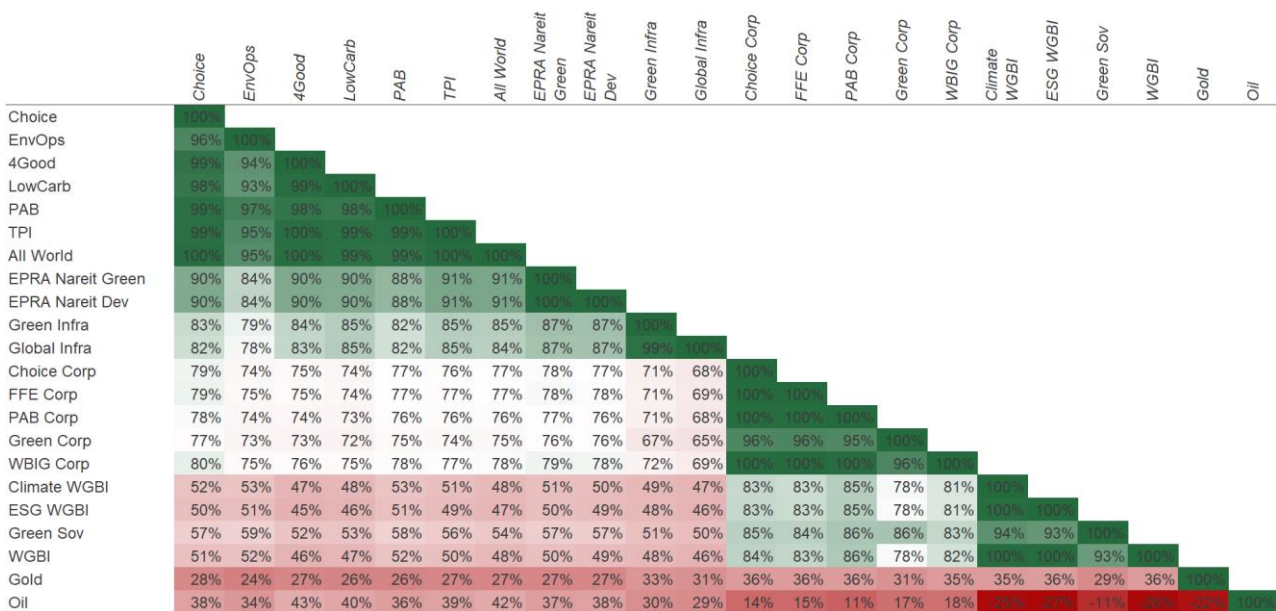


Chart 2: 5-year cross correlation – high correlations between SI strategies and broader market within similar asset classes.



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Correlation calculated based on monthly performance

3M & 12M rolling relative performance (equities & alternatives) – Q4 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.

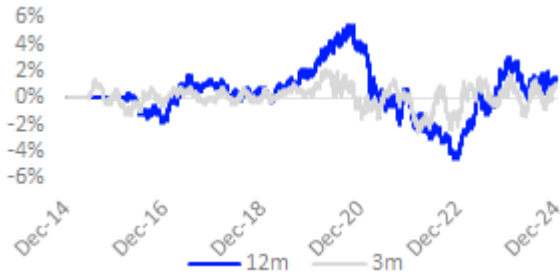


Chart 2: EnvOps – after seeing significant outperformance in 2020, EnvOps underperformed through 2021/22, strongly recovered in 2023 and was again weak in 2024 to date.

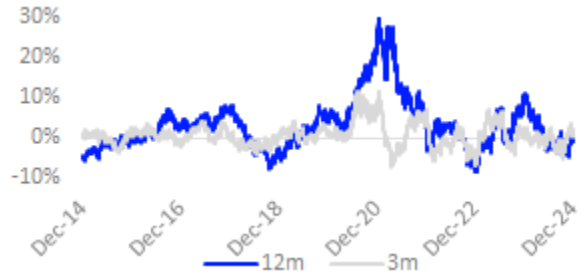


Chart 3: 4Good – underperformed in early covid period, recovering strongly in 2021, and continuing to outperform in 2022 to Q3 2024, before underperforming in Q4.

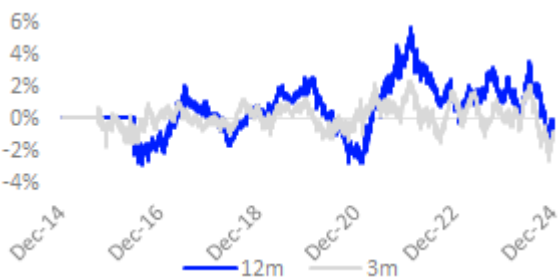


Chart 4: LowCarb – after a consistent pre-covid performance, LowCarb fell in 2020, before recovering in 2021 and then underperforming from 2022 to date.

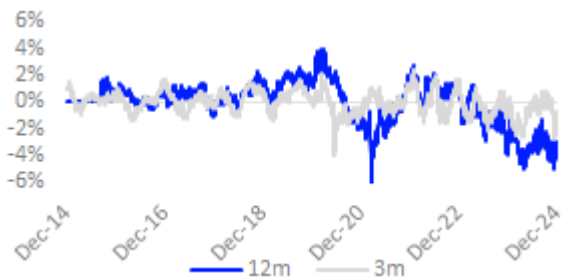


Chart 5: PAB – strong performance from 2017 to late 2020, fell and underperformed in 2021/22. The strategy recovered in 2023 but was weak in early 2024 and strong in Q4.

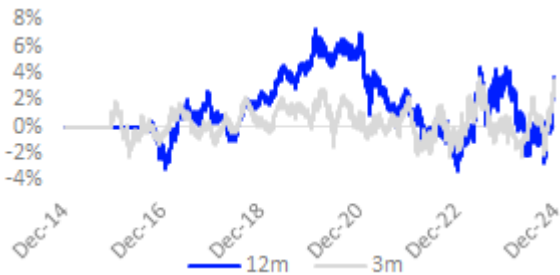


Chart 6: TPI – relative performance difference is typically lower than other SI equity strategies, with underperformance in 2018 and 2021, recovering in 2002 and in line since.

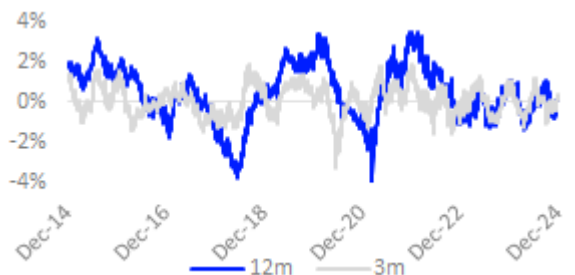


Chart 7: EPRA Nareit Green – lower tracking error, except during sharp underperformance in mid 2021, which persisted through 2022. Recent performance closer to the market.

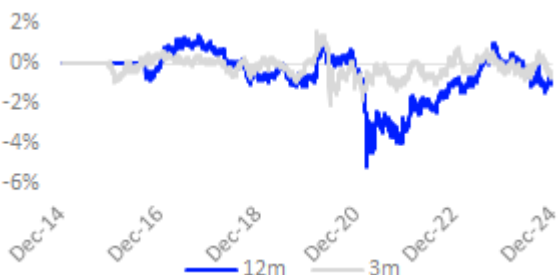
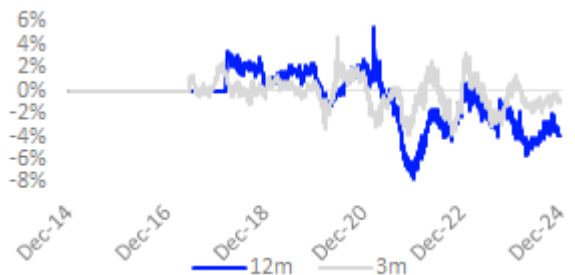


Chart 8: Green Infra – weak relative performance in 2021, recovered in 2022, but continued to underperform since early 2023.



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1. Vs FTSE Global Core Infrastructure + ICB Alternative Electricity

Relative performance over time (fixed income) – Q4 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.

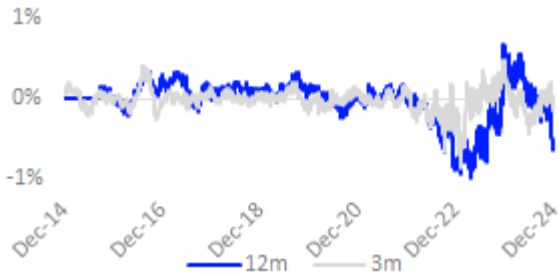


Chart 2: ESG WGBI – gradual underperformance from mid 2019, particularly from early 2022, before recovering from mid 2023 and weakness in Q4.

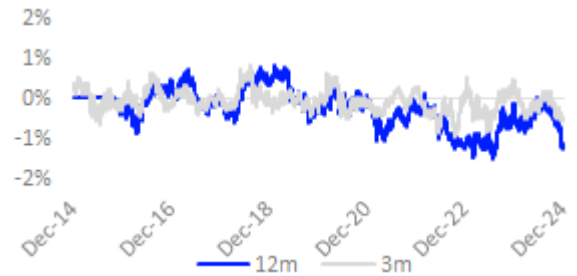


Chart 3: Choice Corp – tracking closely with market, out/underperformance typically <1%, except for in 2016/17.

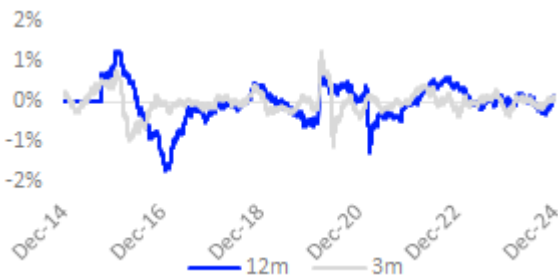


Chart 4: FFE Corp – tracking closely with market, out/underperformance typically <1%, except for in 2016/17.

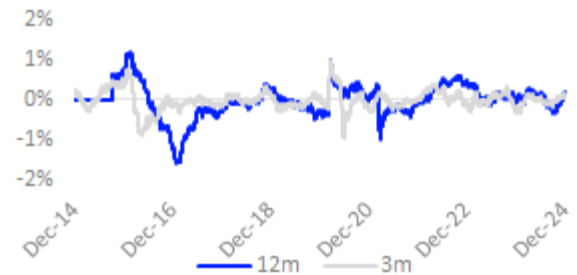


Chart 5: PAB Corp – larger underperformance spikes in 2017 and 2021, and outperformance in 2020, with performance close to market in other periods & slightly below market recently.

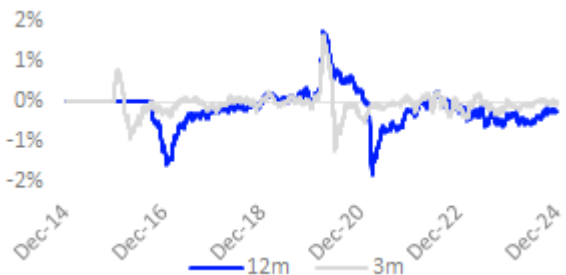


Chart 6: Green Sov – outperforming pre-covid, before underperforming from 2020 to 2022, due to longer duration. Strategy recovered in 2023 and 2024

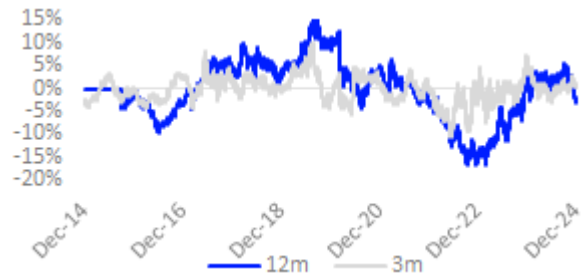


Chart 7: Green Corp – performed closer to the market than green sovereigns. Predominantly outperforming since 2021 underperforming in Q3 and outperforming in Q4.

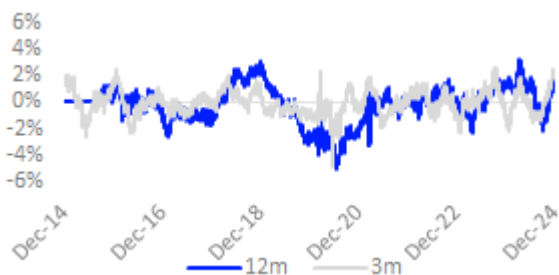
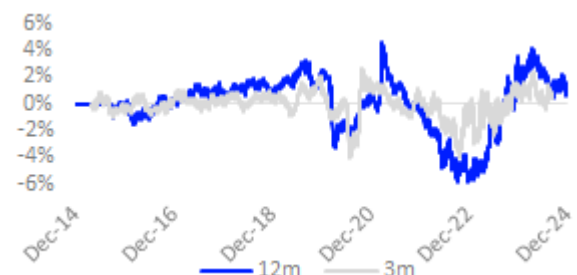


Chart 8: Green WBIG – overall green bonds outperformed up to 2019, before going through a series of cycles, notably an underperformance in 2021/22 and outperformance in 2023/4.



Source: FTSE Russell/LSEG. All data as of December 31, 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.

1. Vs FTSE Global Core Infrastructure + ICB Alternative Electricity

Global Index Comparisons – Q4 2024

Global SI indices saw mixed performance in Q4. PAB had the largest outperformance of the market, driven by positive selection in Consumer Discretionary (overweight in Tesla). EnvOps and Choice also performed strongly, the former driven by positive selection in Consumer Discretionary (Tesla) offset by negative selection in Tech, and the latter, by overweight allocation in Tech and underweight in Utilities, offset by overweight in Healthcare. 4Good was the only driven which underperformed by negative selection in Consumer Discretionary (underweight Tesla) and Finance, offset by an overweight allocation in Tech. TPI, Choice and 4Good are trading at close to their 5-year relative P/E premium, while PAB is slightly higher, and Env Ops, lower. During Q4, premia remained largely unchanged, except PAB, which has risen.

Chart 1: Active Performance (TR, USD %)



Chart 2: Index tracking error (%)

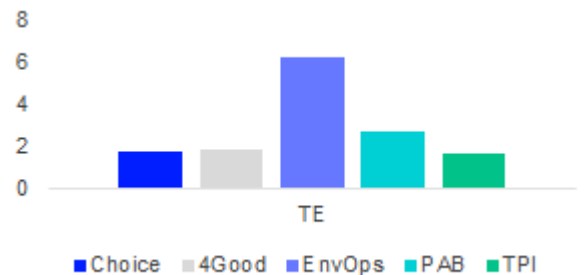


Chart 3: Industry active weight (3M average %)

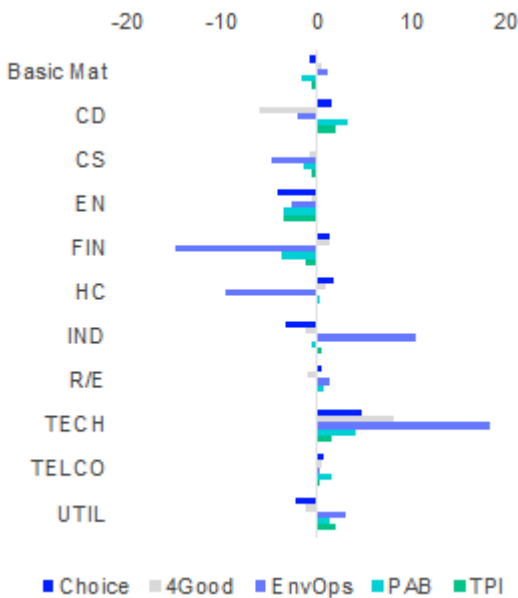


Chart 4: 3M industry allocation effect (%)

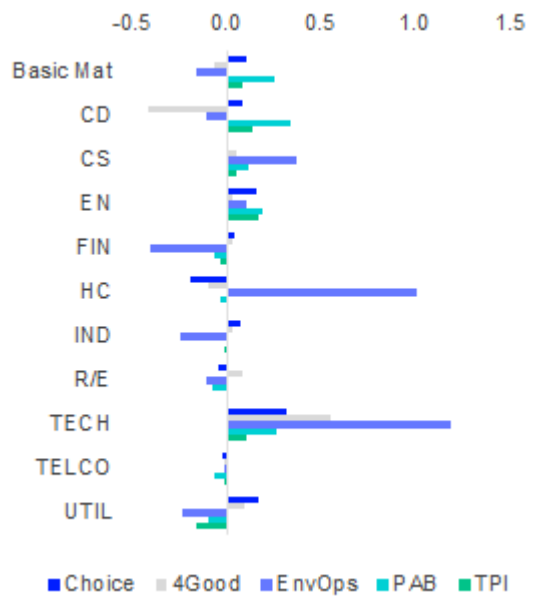
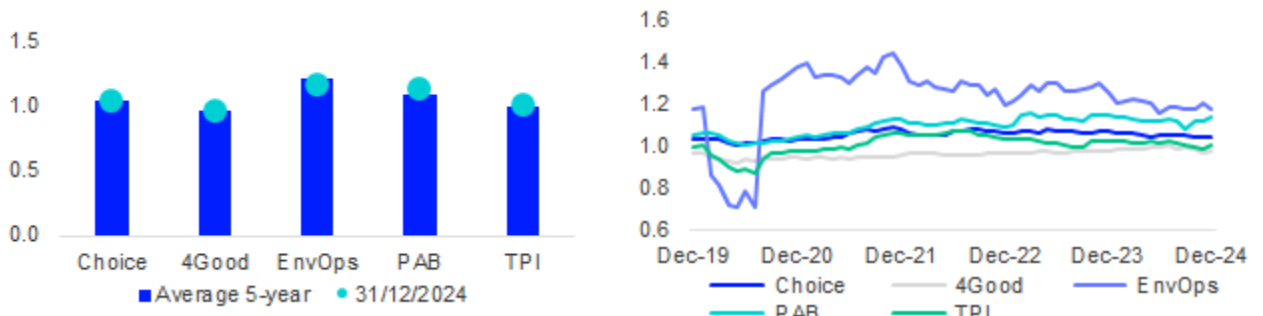


Chart 5: Global indices Relative Valuation: Latest 12-month Forward P/E relative to 5-year average



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FTSE Global Choice indices – Q4 2024

Global Choice outperformed the global market in Q4. Geographical performance was mixed, with US, APAC and Emerging outperforming, and UK and Europe underperforming. The majority of outperformance came from an overweight allocation in Tech and underweight allocation in Utilities Energy, partially compensated by an overweight allocation in Healthcare. Emerging outperformance was driven by the positive selection in Tech, and an 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 %)

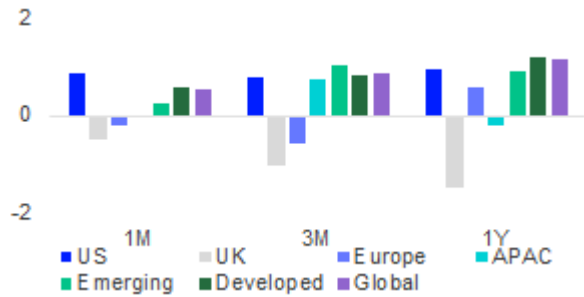


Chart 2: Global Choice carbon emissions / revenues

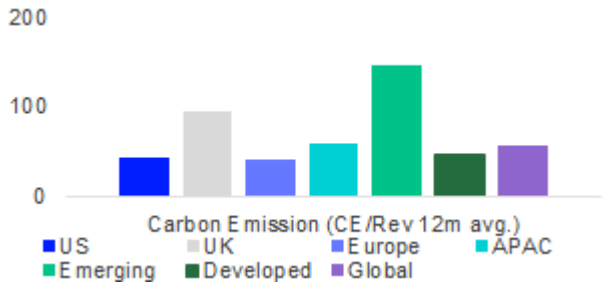


Chart 3: 3M Attribution of global index (TR, USD %)

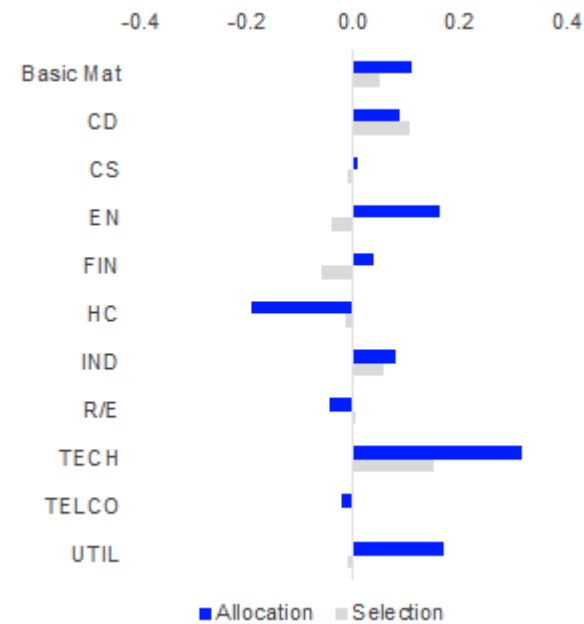


Chart 4: Contribution to carbon reduction (%)

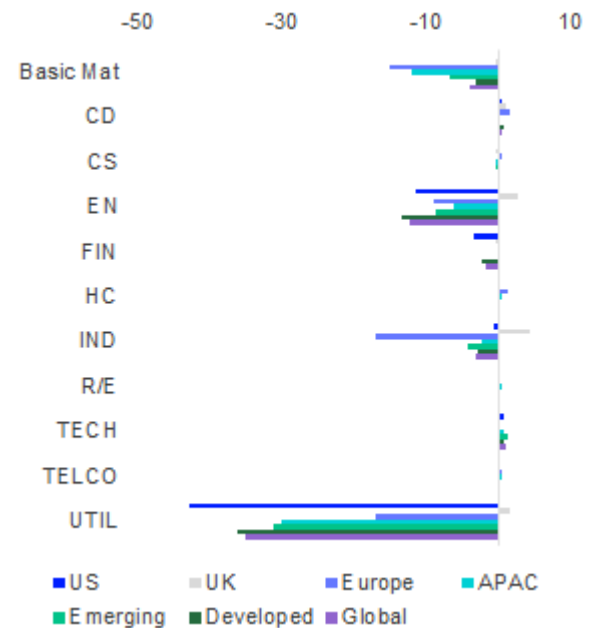
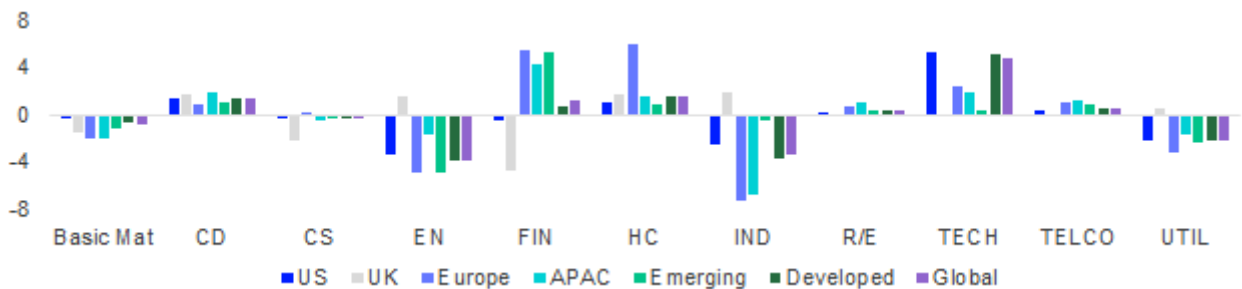


Chart 5: Active industry weights (%)



Source: FTSE Russell/LSEG. All data as of December 31, 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.

FTSE4Good indices – Q4 2024

FTSE4Good underperformed at the global level in Q4. Geographical performance was mixed, with the US and Europe seeing the largest underperformance, while Emerging and APAC outperformed. The majority of underperformance came from an underweight allocation and negative selection in Consumer Discretionary, which was partially compensated by positive selection, and an overweight allocation in Tech. US underperformance was similar to Global, driven by both allocation and selection in Consumer Discretionary. 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 %)

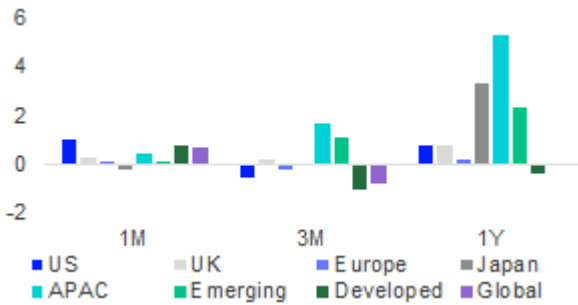


Chart 2: FTSE4Good ESG scores

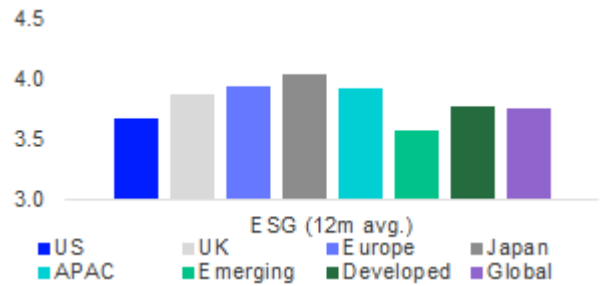


Chart 3: 3M Attribution of global index (TR, USD %)

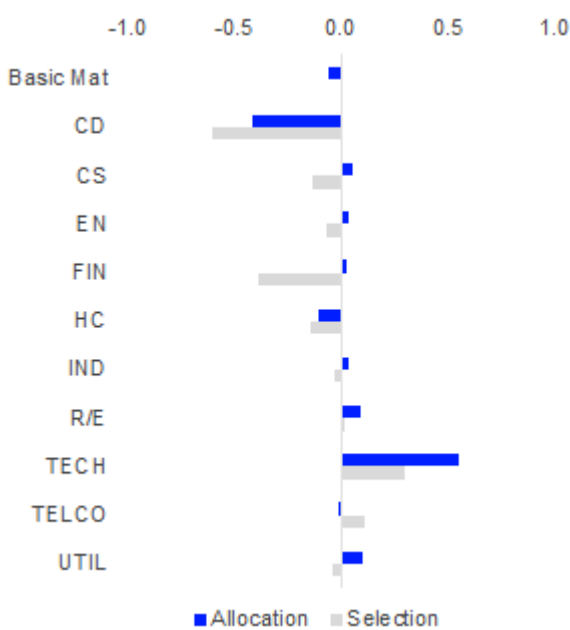


Chart 4: Contribution to ESG uplift (%)

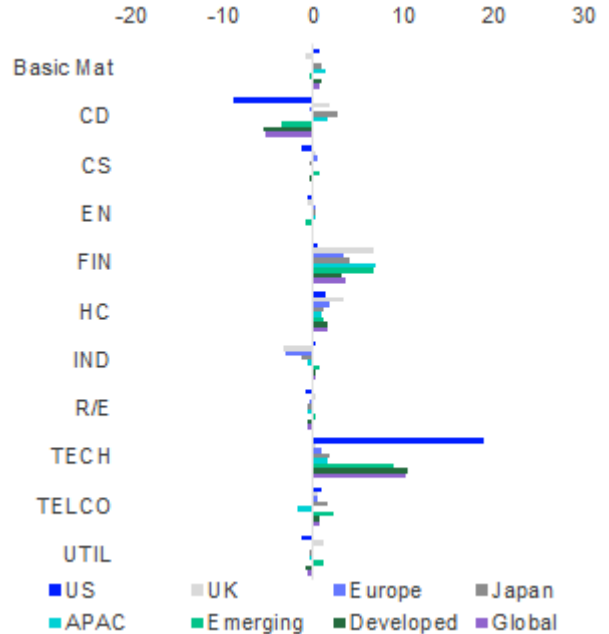
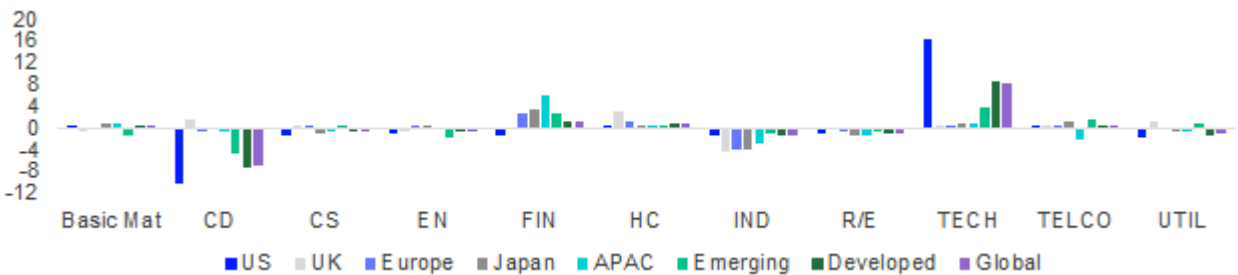


Chart 5: Active industry weights (%)



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FTSE Environmental Opportunities (EO) indices – Q4 2024

EnvOps outperformed the market at the global level in Q4. Geographical performance was mixed, with APAC and Europe outperforming, while the US, UK and Japan underperformed. The majority of outperformance came from positive selection in Consumer Discretionary (overweight Tesla), partially compensated by negative selection in Tech. APAC outperformance came from positive selection in Tech; Japanese underperformance came from underweight allocation in Financials and negative selection in Tech and Industrials. EO indices are heavily overweight Industrials, Technology and Utilities (& Consumer Discretionary in Japan).

Chart 1: Active Performance (TR, USD %)

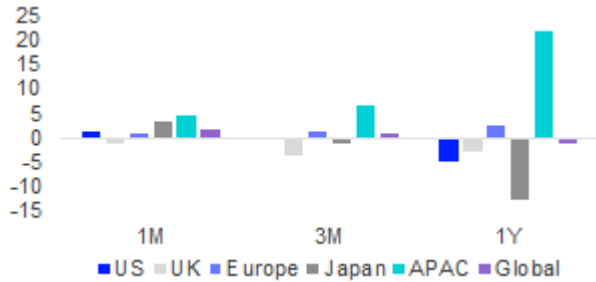


Chart 2: Environmental Ops Green Revenues scores

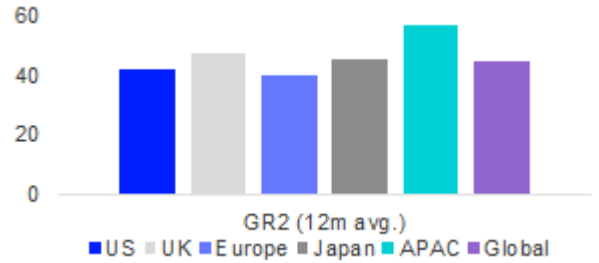


Chart 3: 3M Attribution of global index (TR, USD %)

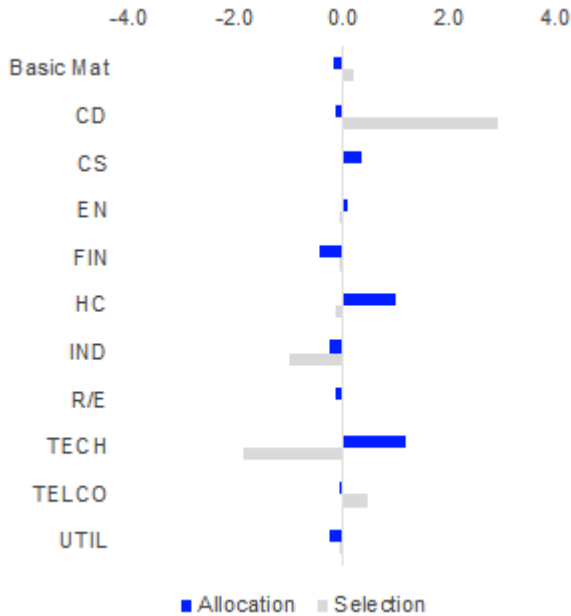


Chart 4: Contribution to Green Revenues uplift (%)

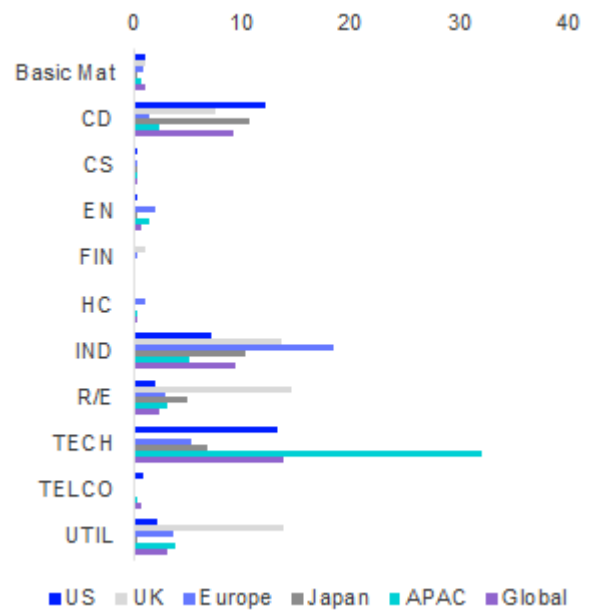
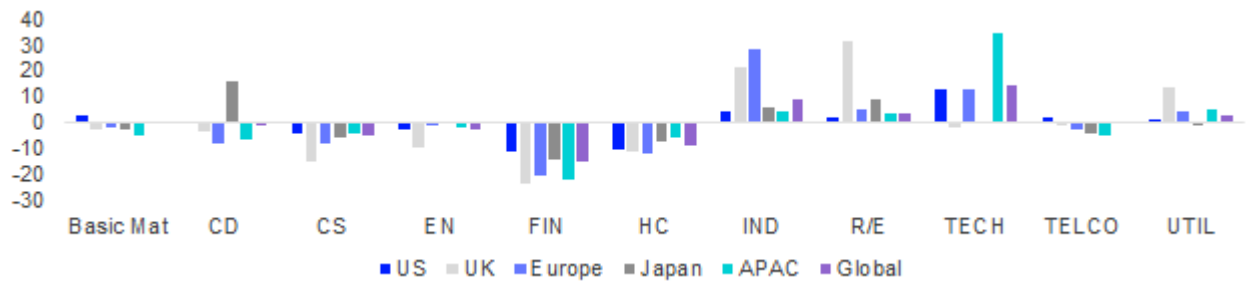


Chart 5: Active industry weights (%)



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FTSE ESG Low Carbon Target Exposure indices – Q4 2024

FTSE ESG Low Carbon underperformed in the Developed market in Q4. Japan, APAC and Emerging outperformed, while US, Europe and UK underperformed. Underperformance was driven by negative selection in Tech and Financials, underweight allocation in Consumer Discretionary, and overweight allocation in Telcos, offset by positive selection in Industrials. US underperformance was driven by negative selection in Tech, underweight allocation in Consumer Discretionary and overweight allocation in Healthcare. Japanese outperformance was driven by positive selection in Industrials and Consumer Discretionary. 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 %)

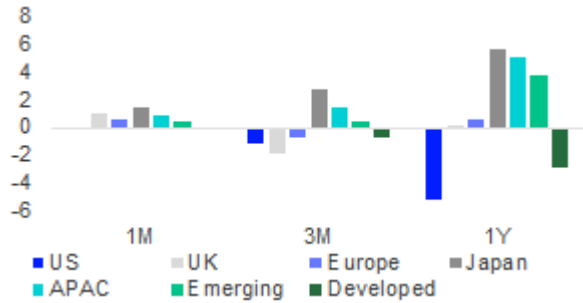


Chart 2: ESG Low Carbon ESG scores

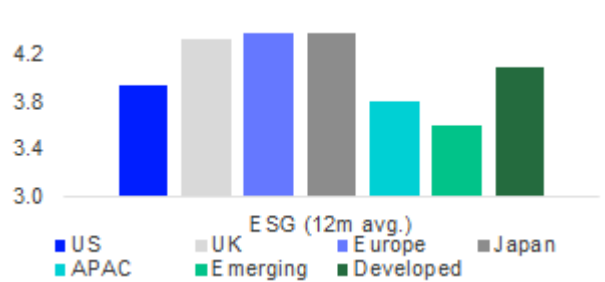


Chart 3: 3M Attribution of developed index (TR, USD %)

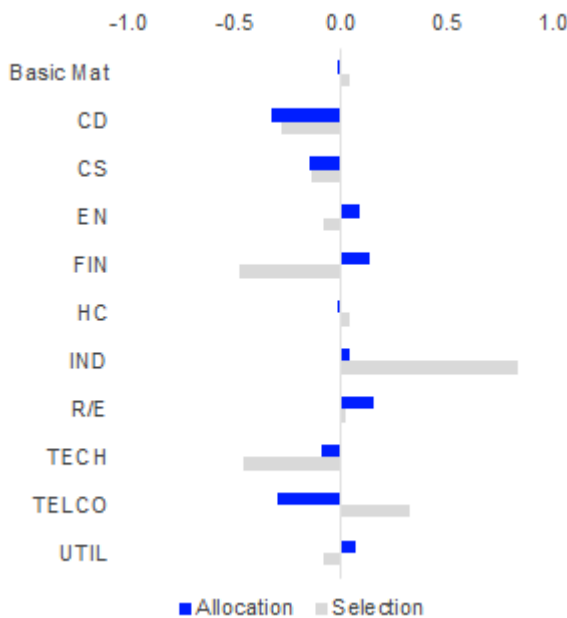


Chart 4: Contribution to ESG uplift (%)

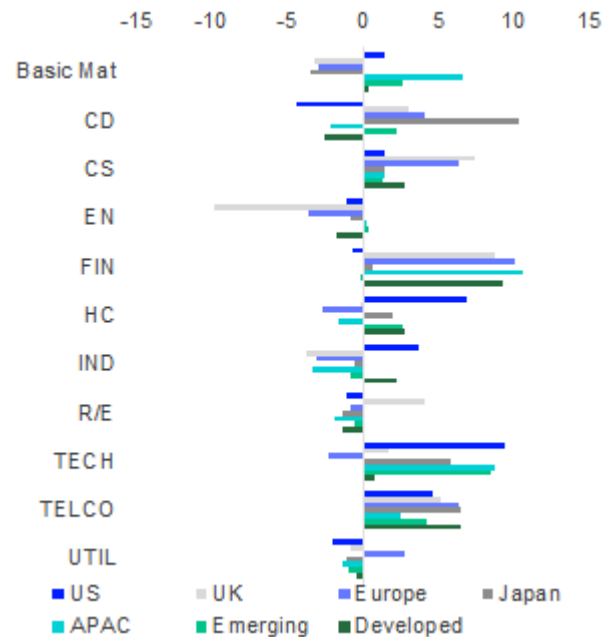
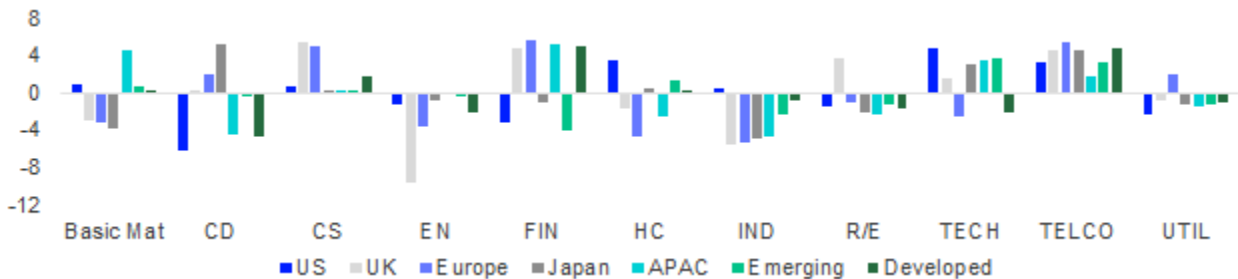


Chart 5: Active industry weights (%)



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FTSE EU Paris-Aligned Benchmark (PAB) indices – Q4 2024

Paris-Aligned Benchmark significantly outperformed at the global level in Q4. Developed markets outperformed (there are no US or European standalone indices), while the UK and Emerging underperformed. The majority of outperformance came from a positive selection in Consumer Discretionary (overweight Tesla). Developed outperformance came from the same source as global. Emerging underperformance came from negative selection in Consumer Discretionary, partially offset by positive selection in 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 %)

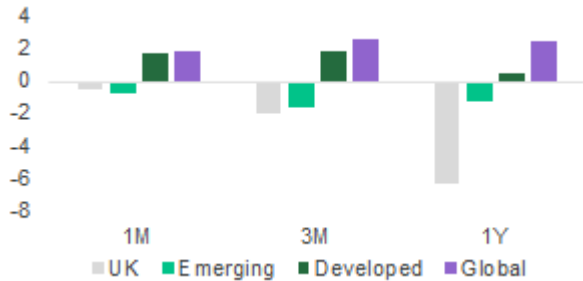


Chart 2: PAB Carbon Emissions / EVIC

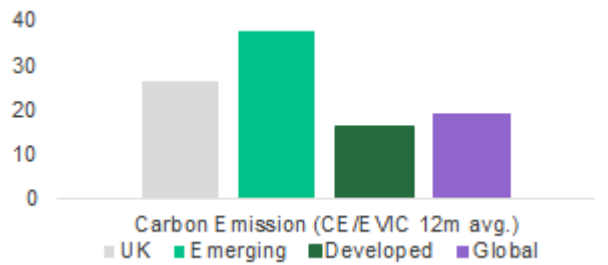


Chart 3: 3M Attribution of global index (TR, USD %)

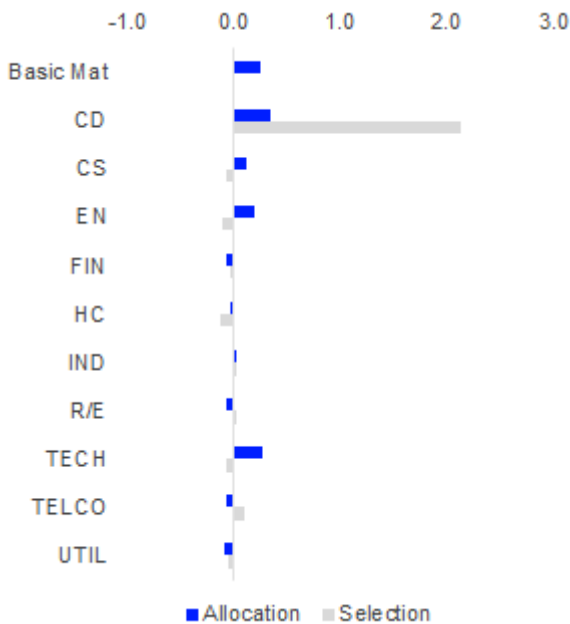


Chart 4: Contribution to Carbon Reduction (%)

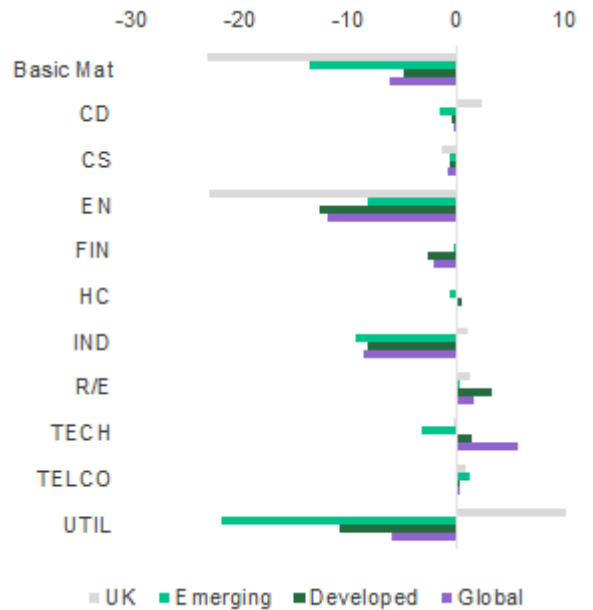
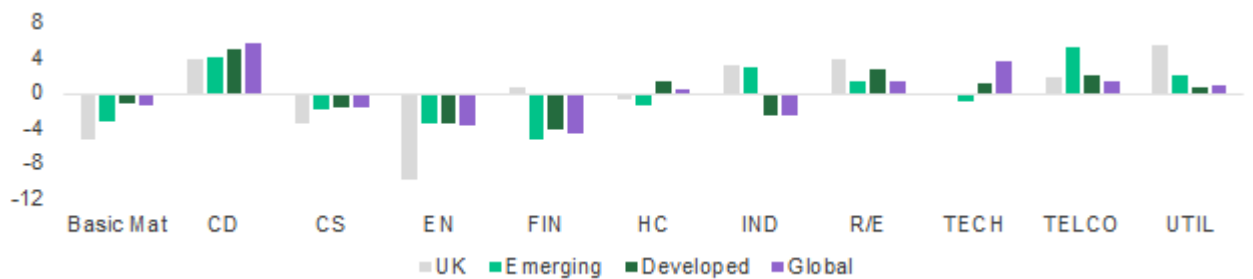


Chart 5: Active industry weights (%)



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FTSE TPI Climate Transition indices – Q4 2024

TPI slightly outperformed the market at the global level in Q4. Geographical performance was mixed with Emerging and Japan outperforming, while the US underperformed. The majority of outperformance came from positive selection and overweight allocation in Consumer Discretionary and Tech and an underweight allocation in Energy, partially offset by negative selection and overweight allocation in Utilities. Outperformance in Emerging came from positive selection in Tech, overweight allocation in Tech, and underweight allocation in Energy. 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 %)

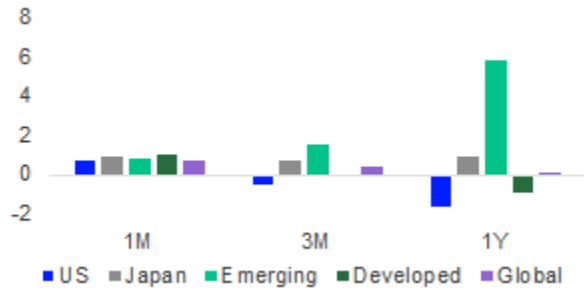


Chart 2: TPI Index TPI Management Quality scores

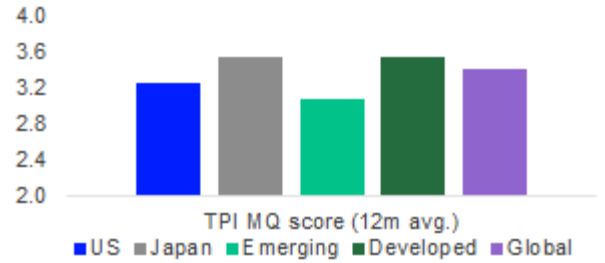


Chart 3: 3M Attribution of global index (TR, USD %)

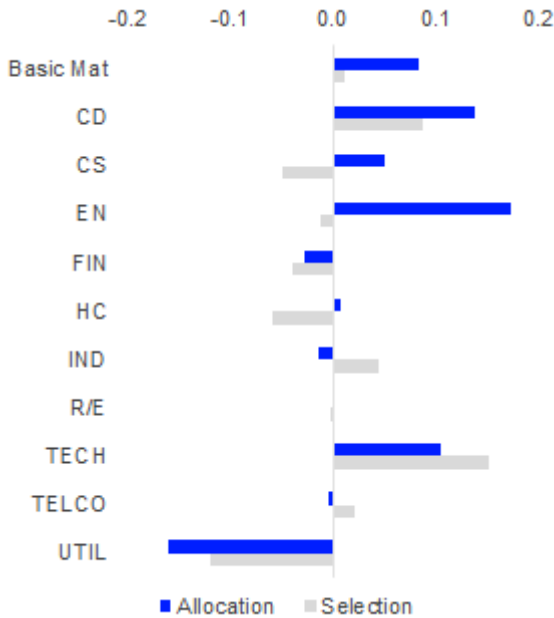


Chart 4: Contribution to TPI Management Quality uplift (%)

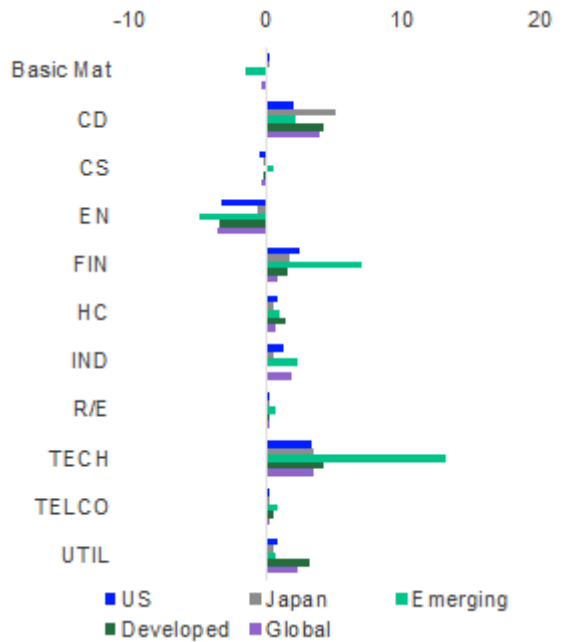
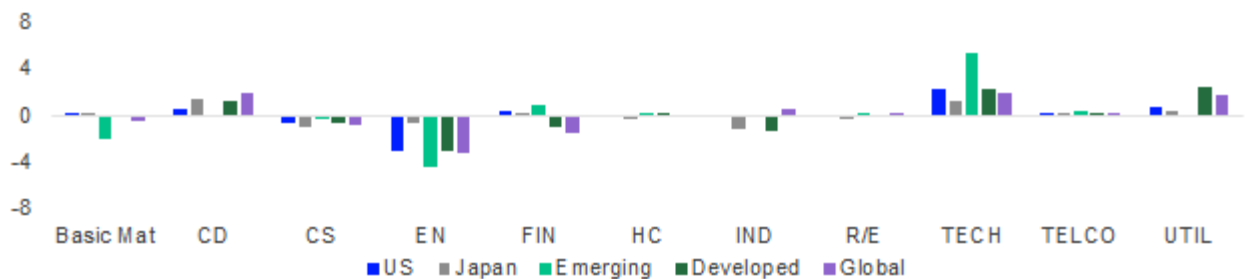


Chart 5: Active industry weights (%)



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Appendix 1: SI Index Coverage and Benchmarks

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



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 \(lseg.com\)](#) 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.

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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 JPY 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 Sovereign 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 \(lseg.com\)](https://www.lseg.com/en/insights/esg-metrics-methodology-and-calculation).

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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