Decarbonisation in portfolio benchmarks

Tracking the portfolio carbon transition

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Foreword

Now in its fourth edition, LSEG's Decarbonisation in Portfolio Benchmarks report continues to provide valuable insights to asset owners and asset managers navigating the low-carbon transition.

While the report highlights that decarbonisation is not yet occurring at the necessary pace, it points to encouraging signs of progress: stronger disclosure of operational Scope 1 and 2 emissions in emerging markets, emissions-driven declines in carbon intensity in the utilities sector and improvements in Scope 3 reporting.

With new analysis on green bonds and high-yield bonds and an expanded analysis of company-level observations including climate pledges, the report provides new lenses through which to track portfolios' low-carbon transition and assess corporates' climate risk.

The UN-convened Net-Zero Asset Owner Alliance (NZAOA) appreciates the ongoing work with LSEG and the valuable insights for asset owners and asset managers presented in this report. The findings underscore the importance of breaking down drivers of portfolio emissions, enabling better tracking of climate risks and informing investment decisions that contribute to real world decarbonisation.

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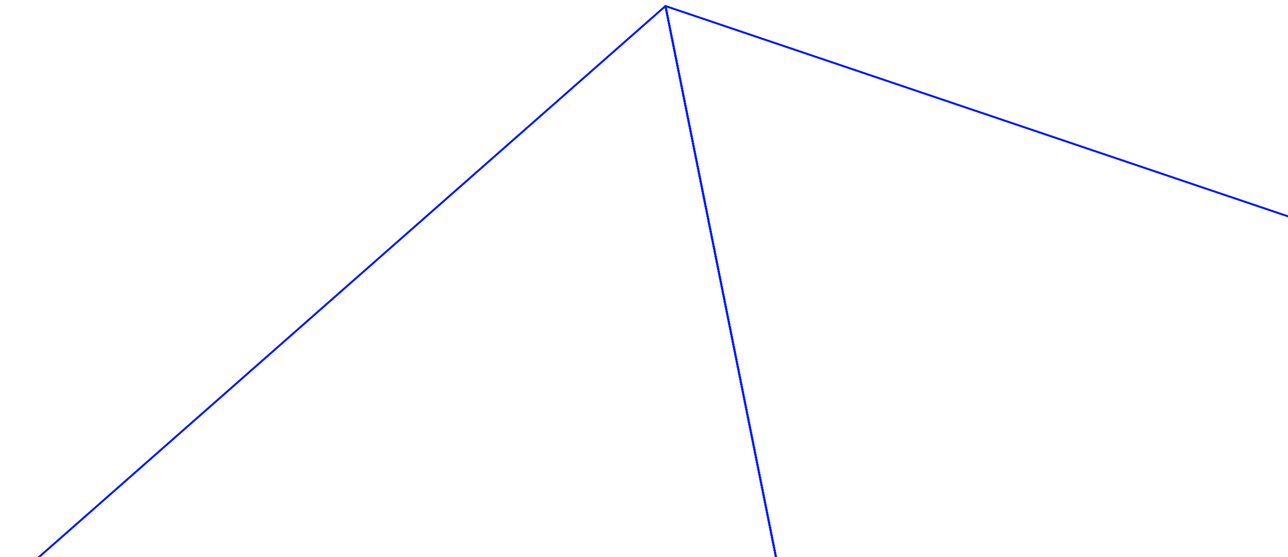

Executive summary

As investor practices on managing climate risk and opportunities continue to evolve, portfolio emissions metrics are increasingly used for regulatory compliance, climate risk assessment and investment decisions. However, these metrics require careful interpretation, as they are not only sensitive to changing emissions profiles, but also shifts in portfolio composition, disclosure practices of investees and macroeconomic volatility, such as commodity price shocks.

This can make it challenging for investors and stakeholders to draw decision-useful insights when comparing decarbonisation progress across asset classes, portfolios and time-horizons.

This report – now in its 4th annual edition and produced by LSEG working with the UN-convened Net-Zero Asset Owner Alliance (NZAOA) – tracks emissions trends of listed equities and fixed income. It uses a range of commonly used absolute emissions and emissions intensity metrics and analyses emission development for key market benchmarks, including the FTSE All-World Index and the FTSE WorldBIG Corp Index since 2016. The report also spotlights emerging priorities of institutional investors in the calculation of portfolio emission, including green bonds, Scope 3 emissions, and high yield bonds.

Our key findings across portfolio benchmarks for 2016 to 2023 include:

- **Aggregate Scope 1 and 2 emissions of global equities have yet to peak,** with FTSE All-World Index emissions expanding 4% p.a. between 2016 and 2023 to reach 13 bn tonnes CO_2e. The inclusion of fast-growing, high-emitting emerging market (EM) constituents to the equity index have been a key driver of this growth.
- **In corporate fixed income – where the benchmark has not seen a comparable shift to EM issuers – aggregate Scope 1 and 2 emissions have declined slowly** at -1% p.a. for investment-grade bond issuers in the FTSE WorldBIG Corp Index.
- **Portfolio carbon intensity has gradually declined since 2016,** with the FY2023 Weighted Average Carbon Intensity (WACI) being 26% lower in equities and 20% in fixed income despite volatile macro-economic factors and sectoral rotations.
- **Attribution analysis shows that year-on-year fluctuations in portfolio intensities are still mostly influenced by non-carbon factors** (i.e., normalisation and allocation effects), however in certain sectors such as Utilities the changes in emissions intensity does appear to be driven by real-world corporate emission reductions.
- **Emissions reporting among benchmark constituents continues to improve.** Scope 1 and 2 disclosure rates reached 79% in equities and 67% in fixed income in 2023 (up from 56% and 53%, respectively in 2016), and over half of EM firms in both benchmarks now disclose operational emissions.
- **Scope 3 disclosures of FTSE All-World constituents reached 58% in 2023.** However, volatility and quality issues in Scope 3 data persist: only one-third of firms cover the material categories in their disclosures, and about two-thirds show annual emissions changes of greater than 20%, making it challenging for investors to estimate Scope 3 portfolio emissions reliably.
- **65% of FTSE All-World constituents have set long-term climate targets, an eightfold increase since 2018,** though the pace of new commitments has slowed since 2021. Firms with climate targets typically delivered more consistent Scope 1 and 2 emissions reductions than those without targets.
- **Green bonds now represent ~5% of investment-grade bond universe – an eightfold growth since 2016 – making their treatment increasingly important in portfolio emissions calculations.** Different treatments of green bonds in portfolio emissions calculations, including discounting and use-of-proceeds modelling, can lead to materially different results that are large enough to shift portfolio intensity.
- **Broadening our coverage of the corporate bond market to include high-yield bonds for the first time, we observed that the high-yield segment has lower disclosure rates** (39% vs 67%) and is more carbon intense (28% higher WACI) but has decarbonised faster than investment-grade bonds.

1

Introduction

Against a fragmented and uncertain regulatory backdrop across many jurisdictions, emissions reporting practices of institutional investors globally are continuing to evolve. Reviewing FY2024 reporting of the ten largest pension funds and asset managers globally,[1] we find that half of pension funds and all asset managers now report on their portfolio emissions.[2]

1 See Tables 11-12 in Appendix III
2 Many separately also disclose their own operational emissions

Portfolio emissions are commonly reported across multiple asset classes[3] and are expressed using absolute emissions[4] and intensity-based metrics, typically drawing from the portfolio companies' Scope 1 and 2 absolute emissions, and increasingly value chain or Scope 3 emissions. In many cases, investors are also tracking and reporting decarbonisation progress or targets linked to these metrics.

While disclosure practices are gradually converging, substantial methodological discretion remains in portfolio emission reporting. No single metric provides a holistic view of portfolio carbon exposure, impact or alignment. Each metric offers a different dimension of portfolio decarbonisation and is often sensitive to diverse idiosyncratic parameters, such as portfolio composition, market volatility or other normalisation factors (Table 1). These sensitivities can make it challenging for investors and other stakeholders to extract clear, actionable signals for regulatory compliance, investee engagement and asset allocation.

The report includes:

- a systematic overview of available portfolio carbon emission metrics, their use cases and complexities (p.6),
- the annual evolution of carbon metrics across (1) global equities using the FTSE All-World Index as the representative benchmark and (2) global fixed income using the World Broad Investment-Grade (WorldBIG) Corporate Bond Index, as the representative benchmark (p.12),
- an overview of trends in firm-level disclosures within both benchmarks and climate management quality within the FTSE All-World Index (p.32),
- an exploration of Scope 3 exposures within the FTSE All-World Index (p.41),
- an overview of green bonds issuances and carbon footprinting within FTSE WorldBIG Corp Index (p.24); and,
- an attribution analysis to decompose intensity metrics and distinguish decarbonisation driven by investee emissions reductions, portfolio composition and financial factors (p.17).

Table 1. Portfolio carbon metrics

Metric	Description	Unit	Use case	Complexities
Aggregate emissions*	Total emissions of all investee firms, regardless of portfolio weights and turnover	tCO2e	Tracking investees' climate impact and engagement prioritisation	Volatility from index turnover; not investor-specific (i.e., does not reflect investor ownership)
Chained emissions*	Total aggregate emissions of persistent firms, controlling for portfolio turnover	tCO2e	Tracking impact consistency of emissions over time	Hard to compare across different benchmarks
Financed emissions (absolute)	Investor's pro-rata share of firm emissions, attributed by firm value (i.e., EVIC)	tCO2e	Tracking investor's attributed emissions (i.e., ownership share of investee emissions)	Unnormalised outputs makes cross-portfolio comparison difficult
Weighted average carbon intensity (WACI)*	Weighted average investee emissions per revenues using portfolio weights	tCO2e /USD revenue	Tracking carbon operational efficiency Cross portfolio comparison	Revenue volatility, particularly in high-emitting sectors; swings in currency inflation
Firm value-based carbon intensity[5]*	Weighted average investee emissions per firm value using portfolio weights	tCO2e/USD EVIC or market cap (equities only).	Cross portfolio comparison	Firm value volatility and asset inflation can distort intensity trends
Activity-based carbon intensity	Total emissions divided by total firm production volume or physical output	tCO2e/production volume or output (e.g., MWh)	Sectoral decarbonisation and comparison	Output differs by sector; limits cross-sector comparability

*Included in this report

Source: LSEG, 2025

3 PCAF (2022) | The Global GHG Accounting and Reporting Standard for the Financial Industry Part A: Financed Emissions
4 Note: that "absolute" emissions here refer to financed emissions in absolute terms, i.e., absolute emissions of investees attributable to an investor
5 When scaled by notional value gives financed emissions

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Absolute emissions of global benchmarks

Aggregate emissions – calculated by simply summing the absolute emissions of all portfolio constituents – offers a rough, ‘unfiltered’ lens through which investors can observe the impact of investees’ emissions on the real world. Aggregate emissions can be difficult to interpret, as they do not account for the relative size of constituents within a portfolio, or an investor’s ownership share.[6]

Aggregate emissions combine company-disclosed values and modelled estimates. Reported values are taken from company disclosures, while reporting gaps are filled using LSEG’s proprietary estimation model.[7]

6 Aggregate emissions highlight the total global warming potential of investees, making it a useful metric for engagement, but they don’t directly reflect portfolio exposure.
7 See LSEG’s Climate Data Package - GHG Emissions Estimation Methodology. Note: the figures in this report may differ from those in past reports due to improvements in data quality, updates of previous company disclosures and expansion of our data coverage.

Aggregate Scope 1 and 2 emissions of the FTSE All-World Index – comprising c. 4,200 large- and mid-cap companies across developed and emerging economies, and c. 90% of global market capitalisation – reached 13.1 bn tonnes of CO2 equivalent in 2023 or ~25% of global emissions.[8]

By contrast, aggregate emissions of the FTSE WorldBIG Corp Index – the closest fixed income equivalent – reached just 4.6 billion tonnes of CO2 equivalent in 2023. These emissions come from a smaller set of c. 1,500 corporate issuers of over 10,000 individual investment-grade bonds.[9]

Due to index expansion and turnover, it can be challenging to track aggregate emissions over time. For this reason, we use chained emissions (see table 1 above for definitions) to track the emissions of persistent constituents only, filtering out the distortion of index churn and growth, while chained disclosed emissions go one step further, tracking only persistent firms with disclosed emissions.[10]

Over the period of 2016 to 2023, aggregate emissions of the FTSE All-World Index increased by c. 4% p.a. This growth evolved over three distinct phases (Figure 1):

- **2016-19:** aggregate emissions expanded rapidly by 10% p.a., primarily driven by the addition of a large number of high-growth and high-emitting emerging market (EM) equities into the FTSE All-World benchmark, particularly the inclusion of China-A shares.
- **2019-20**: a contraction of 5% during the COVID pandemic, driven by lower economy activity and an associated drop in real-world emissions.
- **2020-23:** In the post-pandemic period, aggregate emissions grew at 2% p.a., owing chiefly to a 6% rebound in 2021 as economies recovered, a reduction of 1% in 2022 attributable to the sanctions-driven removal of Russian firms[11] from the index, and a growth of 3% in 2023, mostly from the addition of high-growth Asia Pacific Utilities to the index.[12]

Figure 1. Little progress in absolute emissions reductions of global equities

Absolute emissions, FTSE All-World Index (2016 =100)

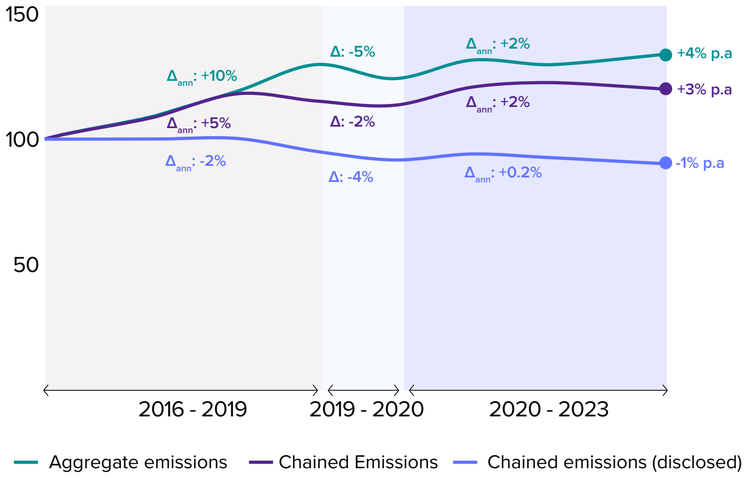
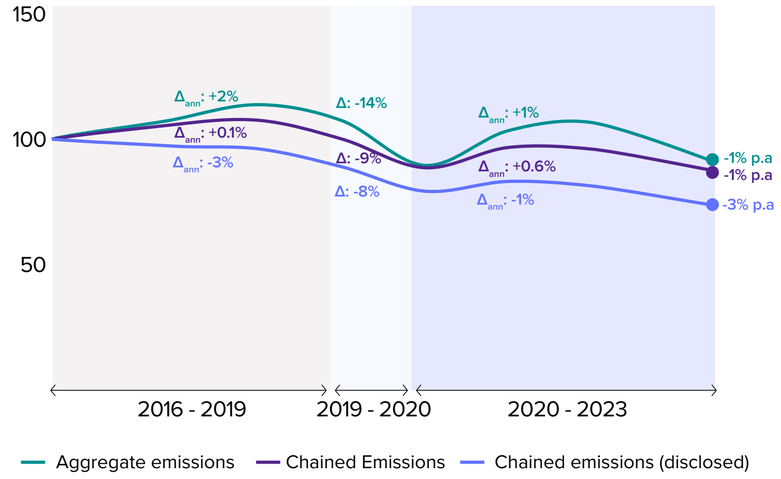


Figure 2. Modest declines in absolute emissions of corporate fixed income

Absolute emissions, FTSE WorldBIG Corp Index (2016 =100)



(Δ = Annual change in emissions, Δann = Average annual change in emissions and ● = 2016-2023 Average annual change in emissions)

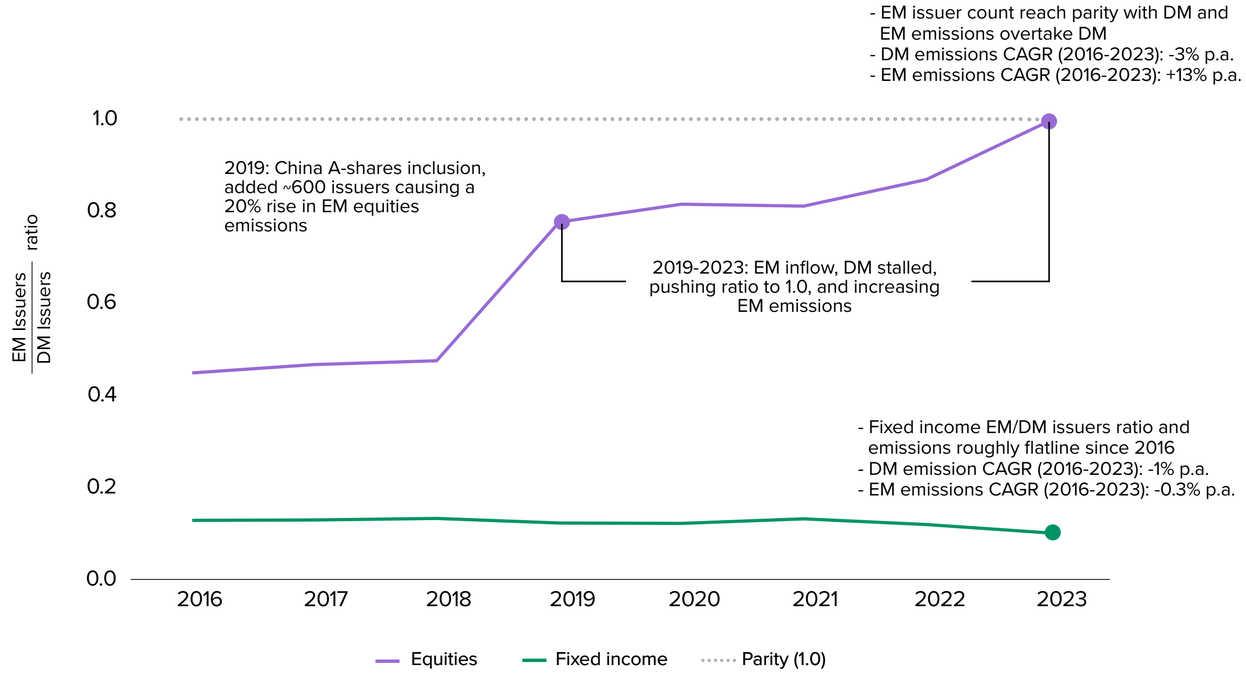
Source: LSEG, 2025

8 EDGAR (2024). - The Emissions Database for Global Atmospheric Research. | Global greenhouse gas emissions reached 53 bn tonnes of CO2 equivalent in 2023
9 In a fixed income portfolio, aggregate emissions is the sum of emissions from each unique issuer. For carbon intensity metrics, the weight of an issuer equals to the combined weights of all bonds from that issuer. See more in Appendix III.
10 We calculate chained emissions as aggregate absolute emissions each year for persistent constituents only – i.e., firms that were also in the index prior to a given year.
11 LSEG (2022) | Treatment of Russia in FTSE Russell Equity Indices.
12 See Figure 37 in Appendix III for the drivers of absolute emissions between 2022 and 2023

While similar distinct phases can be observed for fixed income (Figure 2), the overall picture is quite different for the WorldBIG Corp Index, with aggregate emissions declining at 1% p.a., mainly due to the index not experiencing an influx of high-growth and high-emitting EM constituents in a similar manner to equities. In the latter, the emerging-to-developed market (EM to DM) issuer ratio rose from 0.45 in 2016 to near parity in 2023, owing to accessibility reforms[13] for the inclusion of high-growth EM issuers into global equity markets (Figure 3).

Figure 3. In equities, the number of issuers in emerging markets reach parity with developed markets, causing surge in emissions, while fixed income show no comparable change

Emerging market-to-developed market issuer ratio, equities vs fixed income, 2016-2023



Source: LSEG, 2025

13 This is mainly due to the inclusion of China A Shares in 2019: FTSE Russell completes landmark inclusion of China A Shares | LSEG

From a sectoral perspective, aggregate emissions rose across most equity sectors[14] between 2016 and 2023, with Industrials, and Basic Materials growing most rapidly (Figure 4). Fixed income sectors show slower growth in emissions in the long-term in comparison to equities, with Utilities delivering the clearest signs of decline (Figure 5).

Figure 4. Industrials and materials drive emissions in equities, utilities led the decline in fixed income

Long-term compound annual change rate in absolute emissions per sector, 2016 - 2023

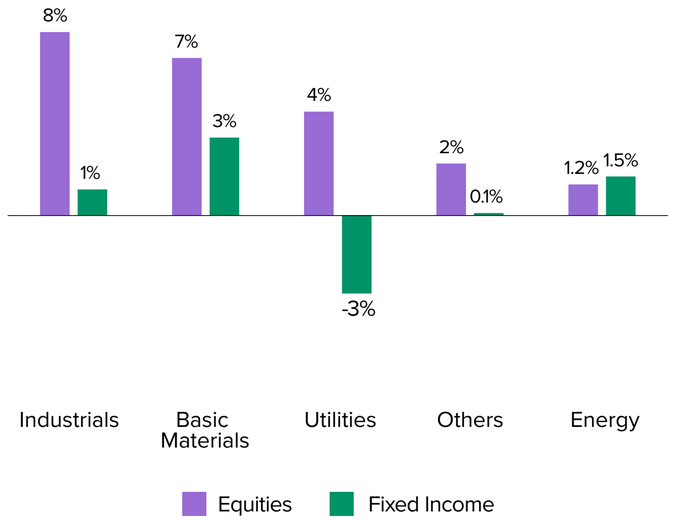
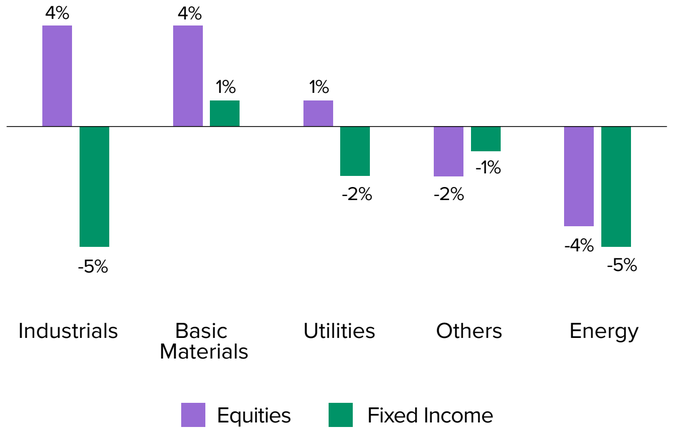


Figure 5. Energy showing strongest medium-term decline, industrials and materials lagging in equities

Medium-term compound annual change rate in absolute emissions per sector, 2019 - 2023



Source: LSEG, 2025

14 Sector classification per FTSE Industry Classification Benchmark (Level 1).

3

Tracking firm-level disclosures and transition

In this section, we investigate trends in company-level reported Scope 1 and 2 emissions to understand the levels of firm disclosures, volatility in the annual changes of reported emissions, and climate transition trends.

Scope 1 and 2 disclosure rate, by count, of listed issuers in the FTSE All-World Index reached 79% in 2023 – up from 56% in 2016. Overall, disclosure rate in the fixed income universe – 67% as of 2023 – is lower than equities (Figures 6-7). While more DM issuers disclose their emissions than EM issuers in both benchmarks, consistent improvements can be seen in the disclosure rate of EM issuers, with over half disclosing their operational emissions since 2021.

In both benchmarks, median annual reduction in reported Scope 1 and 2 emissions peaked during the pandemic in 2020 and has since returned to near zero pre-COVID levels. Since the marked deep in 2020, the top quartile firms achieved 8% or greater annual reductions and the bottom quartile companies increased emissions by 9-10%. This shows that while the typical firm continues to reduce emissions modestly, there are still significant variations in individual firm performance, although this gap appears to be narrowing (Figures 8-9).

Figure 6. Disclosure rate of equities continue to increase

Scope 1 and 2 disclosures in equities

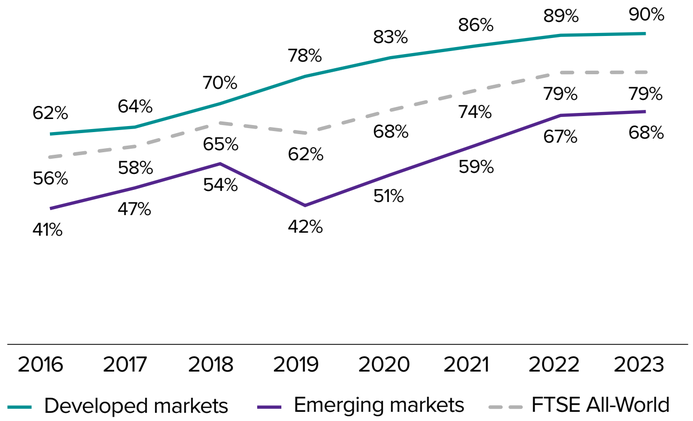


Figure 7. But are still lagging in corporate fixed income

Scope 1 and 2 disclosures in fixed income

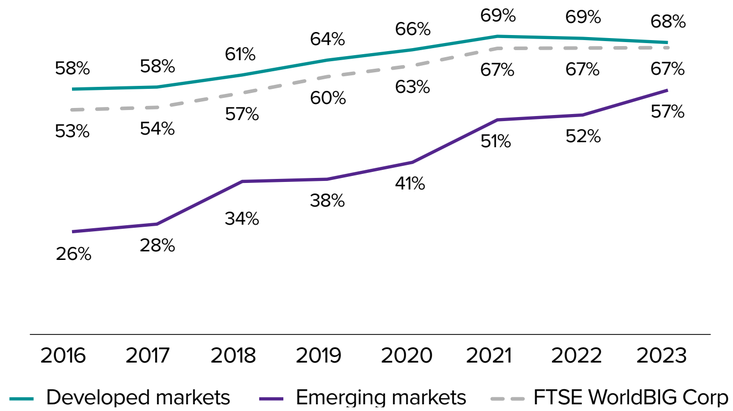


Figure 8. Emissions for a typical company decreased slightly in equities

Annual change distribution in reported emissions, equities

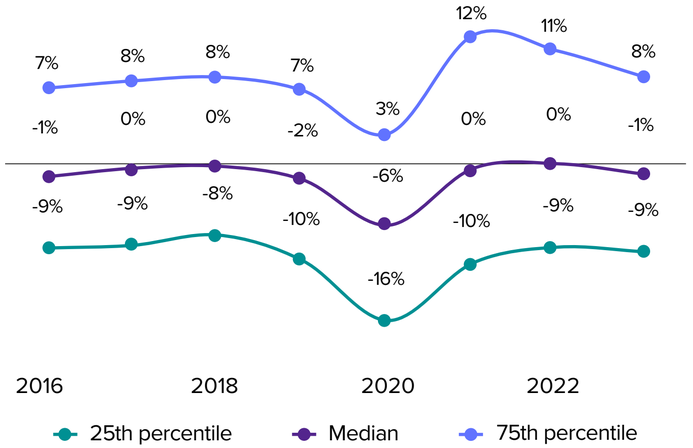
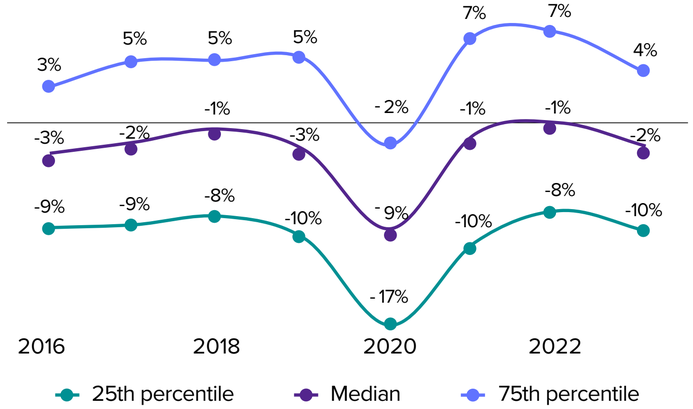


Figure 9. Median change of reported emissions in fixed income in tandem with equities

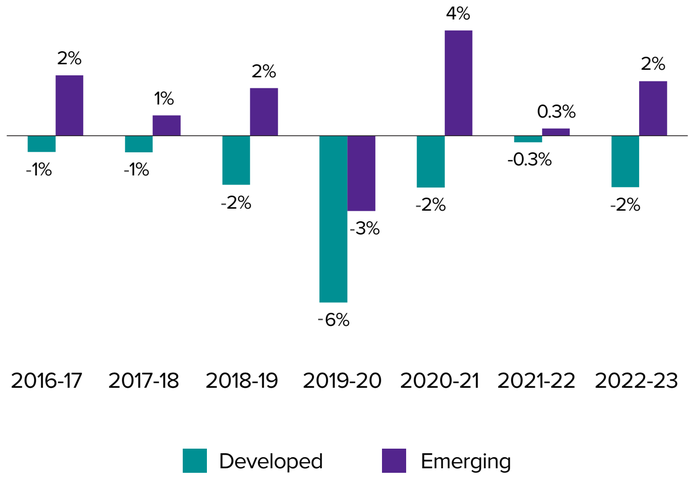
Annual change distribution in reported emissions, fixed income



Source: LSEG, 2025

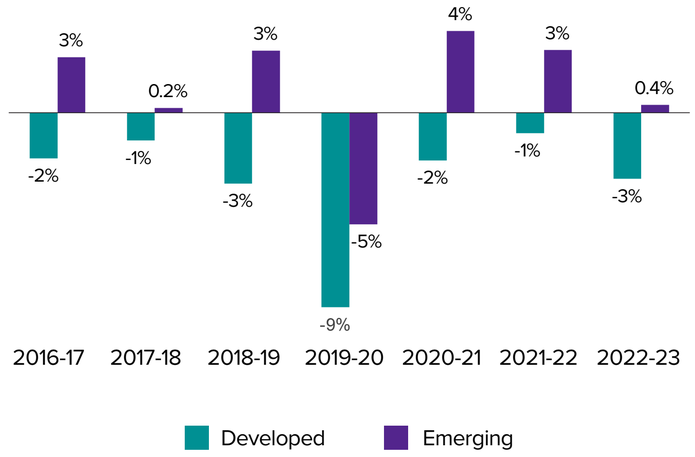
A divergence can also be seen between annual change in reported emissions of DM and EM issuers in both benchmarks. A typical DM issuer in both universes have consistently reduced emissions annually, with sharper cuts seen in fixed income in 2019-20. EM issuers, on the other hand, tend to report emissions increases year after year (Figures 10-11).

Figure 10. Developed market firms show steady emissions reduction in equities
Median change in reported emissions, equities



Source: LSEG, 2025

Figure 11. Developed market issuers cut emissions more sharply in fixed income
Median change in reported emissions, fixed income

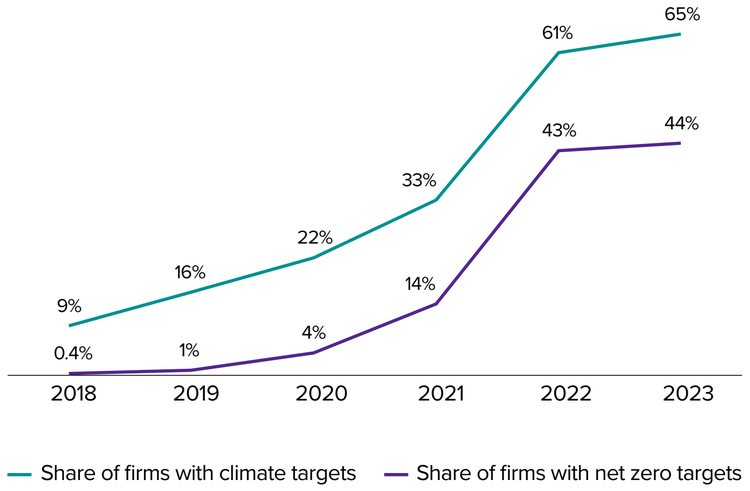


Further, firms with climate targets – 65% of listed equities as of 2023 (Figure 12) – typically deliver higher emissions reductions than those without targets. While the margin between the firms that set targets and those that do not is slim, the direction of change differs. A typical target-setting firm generally reduced emissions since 2018, while the typical non-target setting peer have increased emissions, outside the pandemic-induced contractions of 2019 and 2020 (Figure 13).

This chimes with previous research[15] where we have shown that, all else being equal, firms with better climate risk management and better transition plans – proxied by Management Quality scores from the Transition Pathway Initiative (TPI) – are more likely to reduce their emissions in the future and tend to achieve greater emissions reductions on average than those with lower scores.

Figure 12. Most firms now setting climate targets

Proportion of firms in the FSTE All-World Index with climate targets and net-zero, 2018 – 2023



Source: LSEG, 2025

Figure 13. Target-setting firms typically cut emissions, but pace remains modest

Median change in Scope 1 and 2 emissions of listed equities, by climate target, 2018 -2023

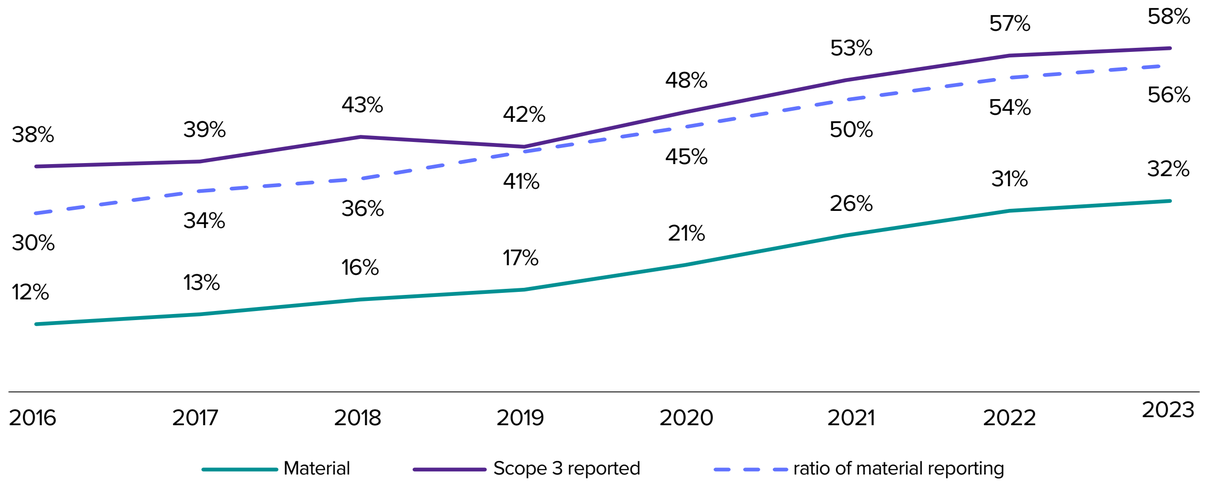
15 Still tracking analysing corporate decarbonisation intentions with TPI MQ scores | LSEG 2025

Spotlight: Scope 3 emissions

Scope 3 (value chain) emissions account for the bulk of companies' carbon footprint – roughly 80% of total emissions on average – but disclosures remain significantly less mature than Scope 1 and 2. Moreover, low disclosures and high volatility makes it difficult to accurately estimate Scope 3 emissions for non-reporting firms.[16] These issues present a significant challenge for investors in assessing Scope 3 emissions of investees, as shown in our previous research.[17]

Analysing the Scope 3 disclosures of firms in the FTSE All-World Index, we observe gradual improvements, with 58% of firms reporting their Scope 3 emissions in 2023, up from 38% in 2016 (Figure 14). These reporting rates are still lower than those of Scope 1 and 2 emissions (which stood at c. 79% as of 2023) and, crucially, companies still in many cases omit the most material Scope 3 emissions[18] from their reporting. Approximately a third of companies now report on Scope 3 emissions and include the most material categories in their reporting – up from a quarter in 2021.

Figure 14. Proportion of FTSE All-World constituents disclosing Scope 3 and material Scope 3 emissions



Source: LSEG, 2025

16 See Shemfe, M., Bourne, E., Meng, A., Fouret, F., Jain, M. (2024). Decarbonisation in portfolio benchmarks: tracking portfolio carbon transition. LSEG. Available at: https://www.lseg.com/content/dam/lseg/en_us/documents/sustainability/lseg-decarbonisation-portfolio-benchmarks-report.pdf - Accessed 4th July, 2025.
17 LSEG (2024) | Understanding Scope 3 emissions
18 See Fouret, F., Olesiewicz, M. & Haalebos, R. (2024). Scope for improvement: Solving the Scope 3 conundrum. FTSE Russell. Available at: https://www.lseg.com/en/ftse-russell/research/solving-scope-3-conundrum – Accessed 4th July, 2025.

Data volatility also sees improvements but remains high. Year-on-year reported emissions change by more than 20% for four-in-ten companies, and by more than 50% for two-in-ten companies in 2023 (Figure 15). Changes to reporting categories over time remain a key driver for this, with a third of the companies that reported their Scope 3 emissions in 2023, having changed the Scope 3 categories that they include in their reporting from the previous year (Figure 16).

Figure 15. Year-on-year change in reported scope 3 emissions (share of companies by variation thresholds)

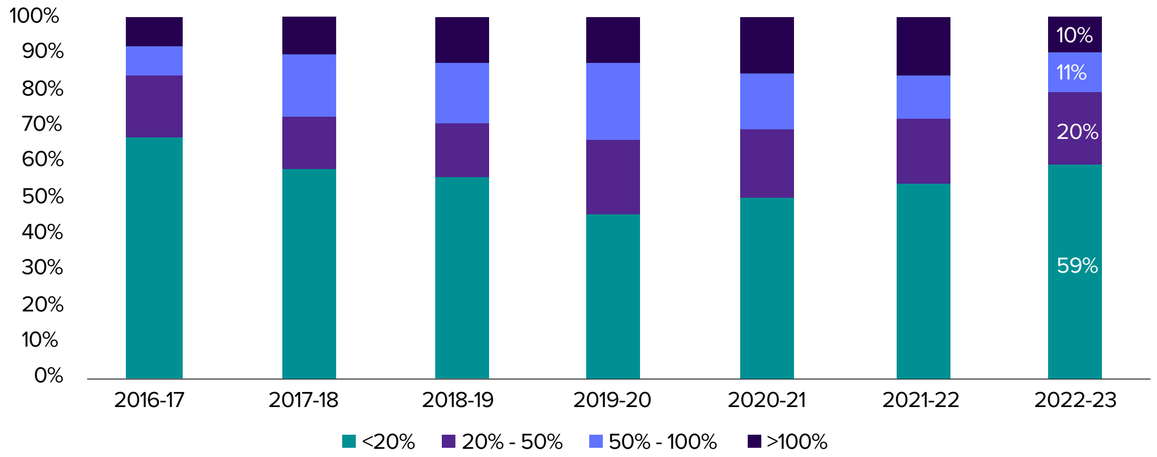
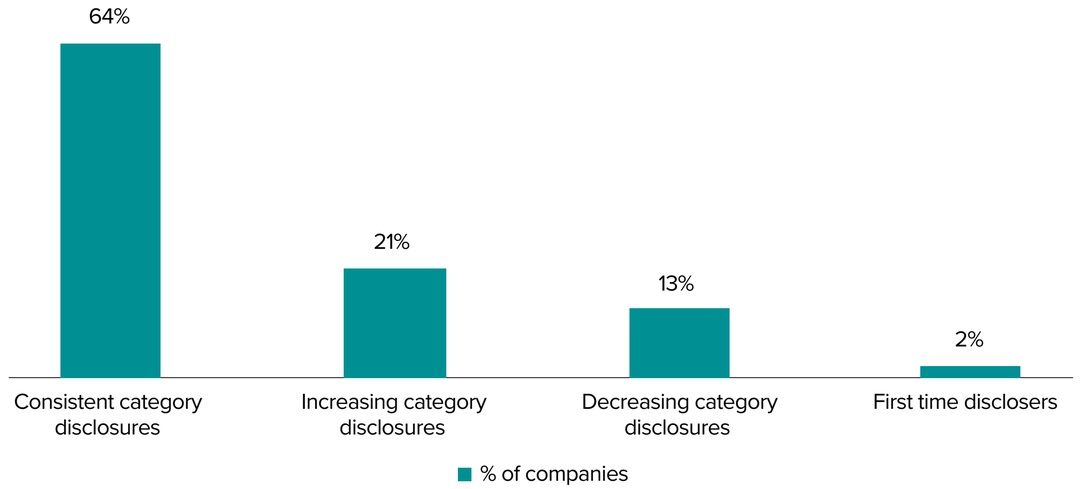


Figure 16. Variation of number of categories between 2022 and 2023



Source: LSEG, 2025

Examining disclosure rates by Scope 3 category (Figures 17-18) shows that Business Travel (Category 6) remains the most commonly reported category, but that reporting on more material categories such as Purchased Goods and Services (Category 1); Capital Goods (Category 2); Fuel- and Energy-Related Activities (Category 3); and Use of Sold Products (Category 11) is improving significantly. Overall, upstream categories are still much more likely to be included in reporting than downstream categories.

Figure 17. Upstream Scope 3 coverage among reporting FTSE All-World frims (2016 vs 2020 vs 2023)

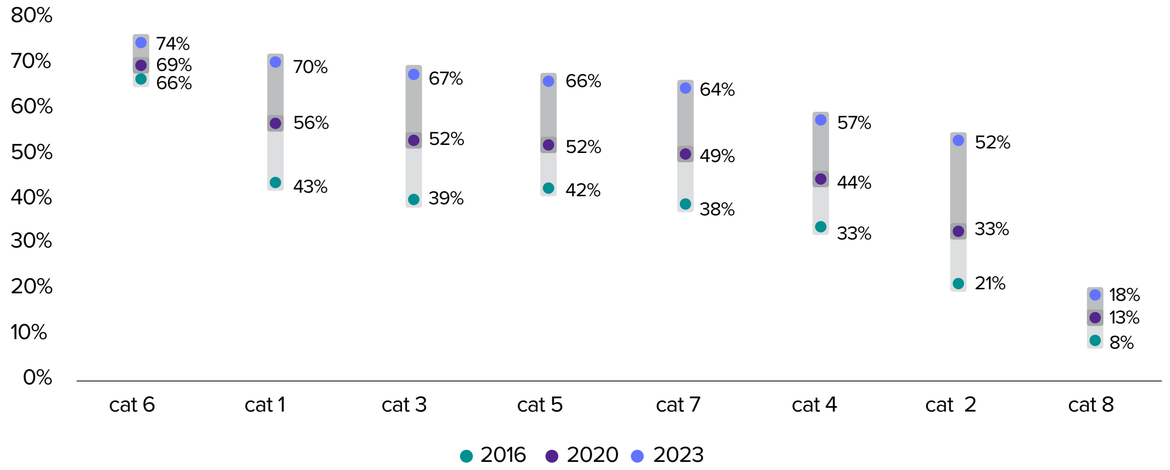
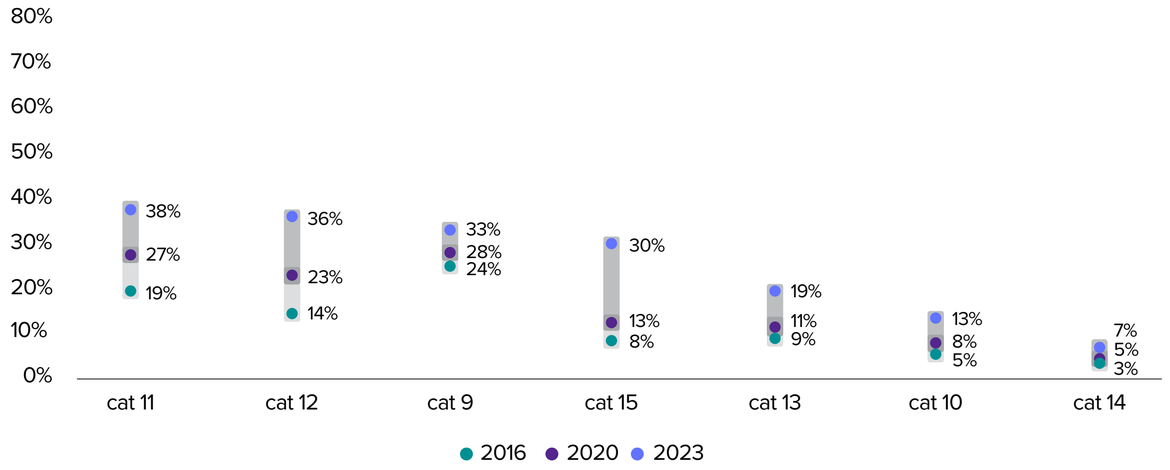


Figure 18. Downstream Scope 3 coverage among reporting FTSE All-World firms (2016 vs 2020 vs 2023)



Source: LSEG, 2025

4

Portfolio emissions intensities

Emissions intensity gives investors a performance-adjusted lens for comparing the carbon exposure of portfolios of varying composition and size. Intensity metrics are therefore often required alongside absolute portfolio emissions[19] under disclosure and regulatory frameworks, such as ISSB and EU SFDR, because they allow for more meaningful comparison.

19 i.e., Financed emissions, attributed absolute emissions of investees

These metrics are derived by normalising firm-level emissions against a measure of economic output (i.e., revenues) or firm value (i.e., EVIC or market capitalisation), before aggregating to the portfolio level while accounting for securities weights. Revenue-based intensity measures how efficiently investees are emitting carbon per unit of economic output, while value-based intensities quantify the proportion of firm emissions that an investor finances per dollar invested.

Since 2016, portfolio intensities across global benchmarks have declined consistently. In equities, the weighted average carbon intensity (WACI) by revenues fell by 26% between 2016 and 2023, roughly at 4% p.a., from 188 to 139 tonnes per million USD of revenue.[20] Fixed income showed a similar trajectory, with a 20% cumulative reduction (from 196 to 157 tonnes per million USD), or 3% p.a. A comparable pattern is evident in EVIC-normalised carbon intensity (CI-EVIC), which declined by 5% and 4% per annum, respectively, for equities and fixed income over the same period (Figures 19-20).

While the long-term intensity trends show a steady decline for both benchmarks, this often masks pronounced year-on-year volatility. Such annual fluctuations can diverge significantly across metrics and asset classes (Figures 21-22).

Figure 19. Carbon intensity, equities, three ways

Scope 1 and 2 intensity, FTSE All-World Index (2016 =100)

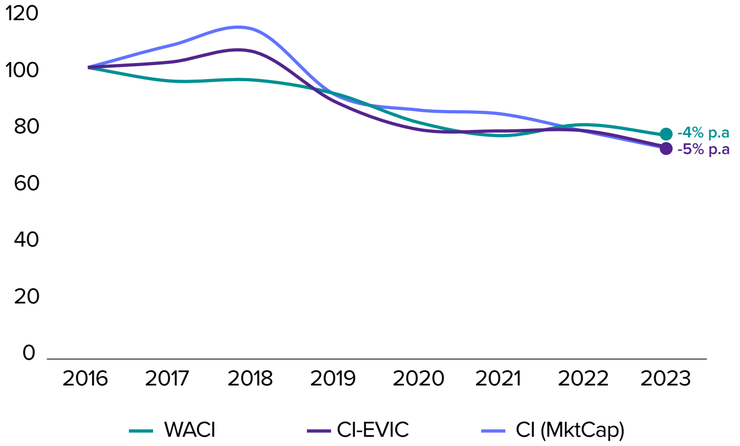
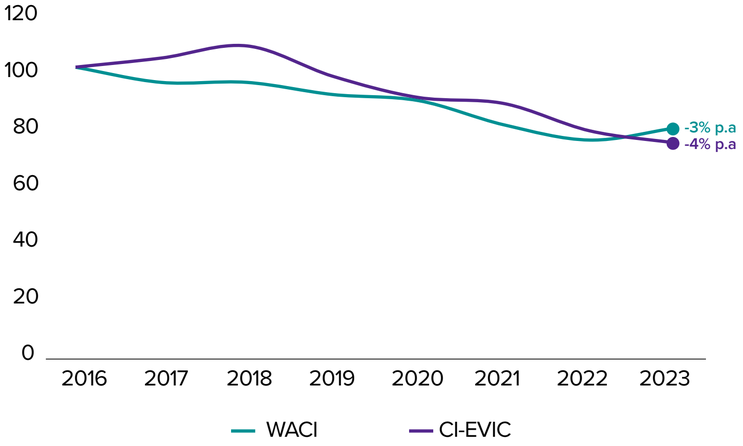


Figure 20. Carbon intensity, fixed income, two ways

Scope 1 and 2 intensity, FTSE WorldBIG Corp (2016 =100)



(● = 2016-2023 Average annual change in emissions intensity)

Figure 21. Equity intensities are volatile and uneven

Annual change in portfolio intensities, equities

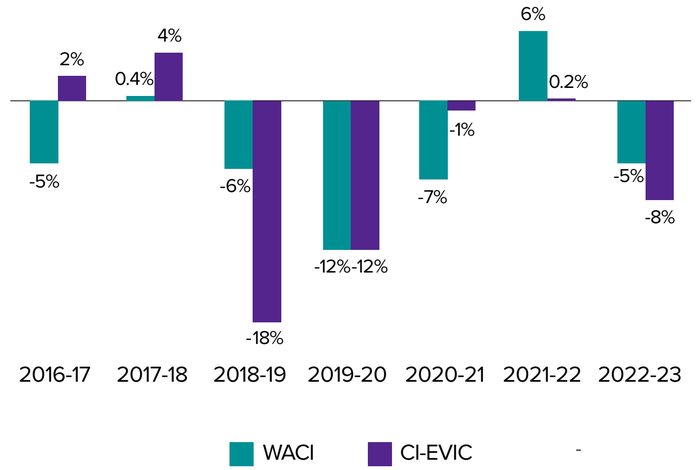
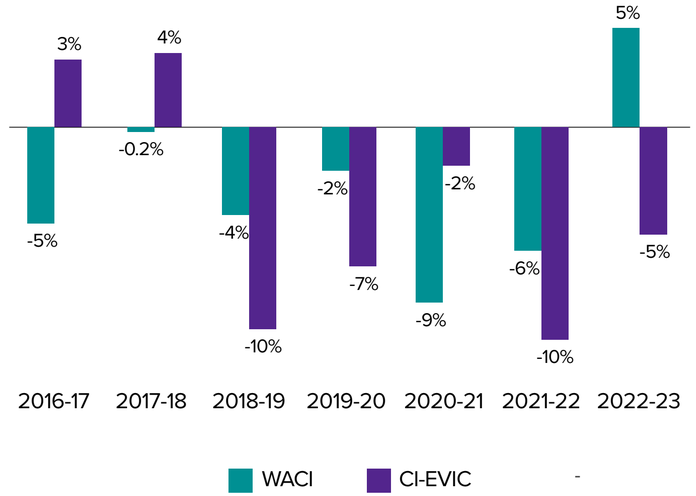


Figure 22. Less volatile but often diverging intensities

Annual change in portfolio intensities, fixed income



Source: LSEG, 2025

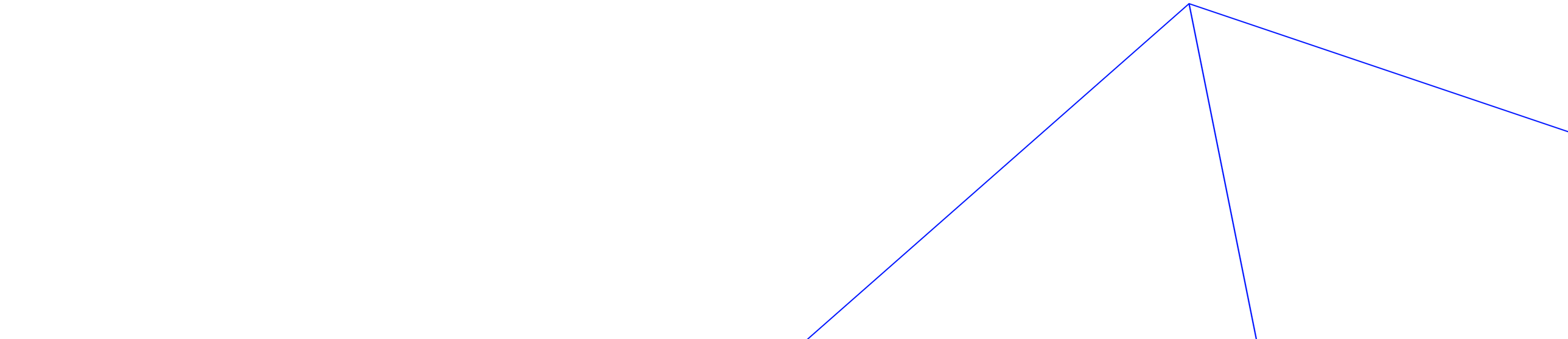
20 Revenues have been adjusted against the US GDP deflator.

This annual volatility highlights the sensitivity of top-line intensity numbers to fluctuations in denominator-side non-carbon factors, such as fluctuations in firm revenues and market valuation, or inflationary pressures (see Table 2). These factors are therefore important in shaping portfolio emissions intensities and can obscure the true pace of decarbonisation.

Table 2. Non-carbon denominator-side variables of portfolio intensity

Non-carbon factor	Mechanism of impact	Affected intensity metric
Revenues	Volatile sales, or commodity price cycles (e.g., revenue decline in the energy sector caused by plummeting crude oil prices)	WACI
EVIC	Market valuation changes (e.g., rising share prices)	CI-EVIC
Normalisation adjustment method	Inflation-linked currency adjustments or asset value adjustments of normalisation factors	Both
Index/constituent turnover	Portfolio rebalancing changes exposure to high-emitting firms	Both
Foreign exchange rate fluctuations	Small non-zero impacts from currency conversion of reported financials	Both

Source: LSEG, 2025

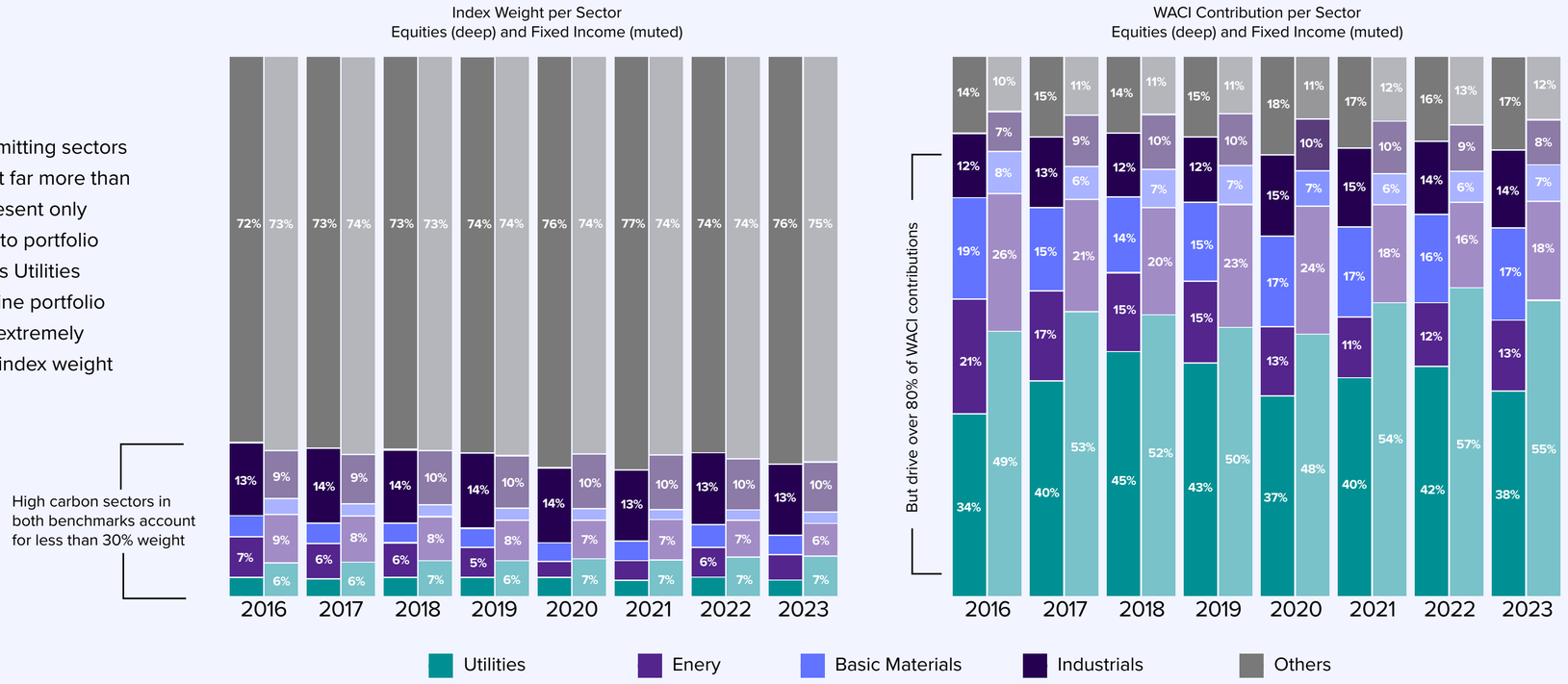


Box 1:
High carbon sectors disproportionately impact portfolio emission metrics

Intensity metrics are disproportionately influenced by high-emitting sectors (i.e., Utilities, Energy, Basic Materials and Industrials) that emit far more than their index weight would suggest. For example, Utilities represent only 3-7% of both indexes by weight but contributes over 34-57% to portfolio WACI (Figure 23). Therefore, minor portfolio rotations towards Utilities and other high-emitting sectors can significantly impact top-line portfolio carbon intensity. This makes portfolio-level intensity metrics extremely sensitive to changes in emissions, normalisation factors and index weight within these sectors.

Figure 23. What makes up portfolio intensities, equities and fixed income

Proportion of contribution to Scope 1 and 2 WACI and index weight, by Industry, 2016 -2023



Source: LSEG, 2025

Spotlight: Green bonds

As the green bond market continues to expand,[21] there has been growing discussions among investors and standard setters on how green bonds should be assessed and integrated in the measurement of portfolio emissions. From 2016 to 2023, the green bond weight in the FTSE WorldBIG Corp Index increased eight-fold from 0.6% to just under 5%, with green bond issuance particularly common among Financials, Utilities and Real Estate (Figure 24).

As green bonds typically finance renewables and the improvement of energy efficiencies,[22] it is often argued that the carbon footprint of green bonds should not necessarily be considered to be the same as the footprint of its issuers.[23] Alongside other research that suggest green bonds can help firms finance carbon reductions,[24] we also find some evidence that green bond issuers showed faster emissions reductions than their peers (Figure 25). Notably, green bond issuers in Financial and Utilities saw annualised emission reduction rate of 9% and 8% respectively, compared to 4% and 6% among their non-green bond issuer peers.[25]

Figure 24. Green bonds account for almost 5% of investment grade bonds

Green bonds share in FTSE WorldBIG Corp by weight

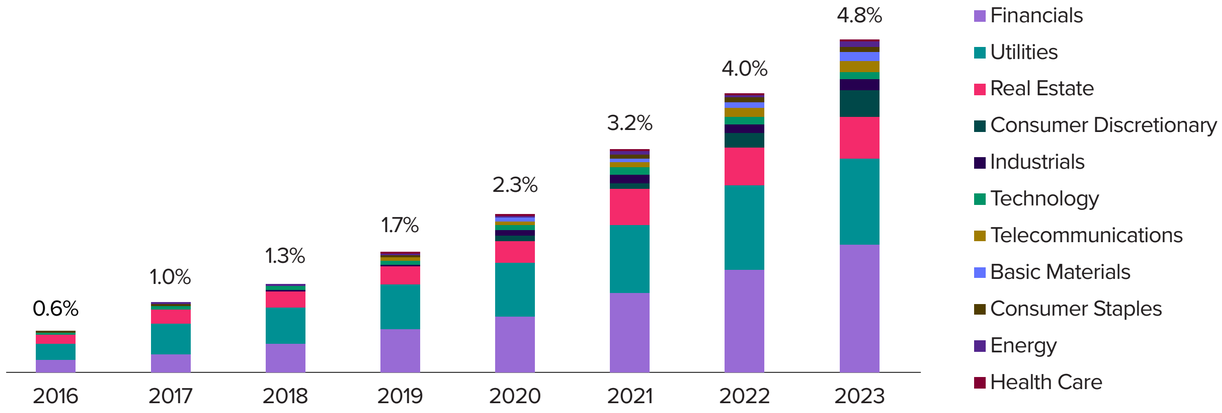
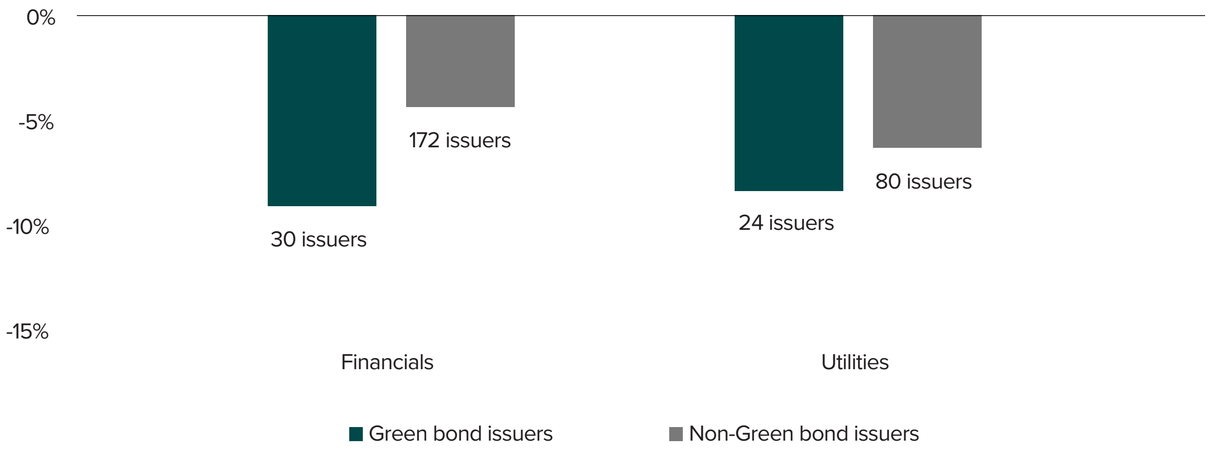


Figure 25. Green bond issuers in Financials and Utilities have decarbonised more rapidly than peers

Average annual change in emissions, 2019-2023



Source: LSEG, 2025

21 Green bonds are any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/ or existing eligible green projects.
22 LSEG Green Economy Report - Investing in the green economy 2025
23 PCAF. Three new draft methods for public consultation
24 Mona A. ElBannan, Gunter Löffler. *How effectively do green bonds help the environment?* Journal of Banking & Finance. Volume 158, January 2024
25 To enable consistent tracking and comparison, we identified green and non-green bonds that were active in 2019 FTSE WorldBIG Corp index and have maturity dates in 2023 or later. As a result, we identified 80 unique green bond issuers and 839 unique non-green bond issuers. We then focused on 30 green bond issuers in the Financial sector and 24 in the Utilities sector, representing 68% of the total 80 green bonds issuers identified, and their absolute emissions between 2019 and 2023 were used in the analysis. Other sectors are excluded from the sectoral level comparisons due to limited same sizes that may not provide statistically meaningful insights.

In practice, the most common approach in fixed income portfolio carbon footprinting is to treat green bonds like plain vanilla bonds, with issuer-level carbon emissions applied uniformly across all bonds. But given their role in supporting low carbon transition, various alternative approaches are being adopted by investors for green bond footprinting, such as applying a discount factor for green bonds to the issuer's emissions or estimating green bond footprints based on their use of proceeds. We have compared these approaches (Table 3) and their impact on the carbon intensity of the broader index.

Table 3. Green bond footprinting approaches

Approaches	Description	Formula
Conventional approach	Carbon footprint of green bond k (CF_{bk}) is not considered separately, issuing company's overall emissions (E_k) are used.	$CF_{bk} = \frac{Emission_k}{Revenue_k}$
Discounting approach	Issuer's emissions are used, but a blanket emission discount $(Discount_i)$ is applied to green bonds. Below we have tested value of $i \in [10\%,90\%]$. A 10% discount means the carbon footprint of green bonds is set at $(1\text{-}10\%) = 90\%$ of the issuer's.	$CF_{bk} = \frac{Emission_k}{Revenue_k} * (1\text{-}Discount_i)$
Estimating approach (Use-of-proceeds based)	Green bond carbon footprint is based on weighted sum of proxy carbon intensity figures associated with the bond's use-of-proceeds categories $(CF_{uop,i})$. For the proxy of carbon intensity of a certain use of proceeds in green category i , it is the median carbon footprint of all pureplay green revenue companies (grc) in green category i $(CF_{grc,i})$.	$CF_{bk} = \sum_i W_{uop,i} * CF_{uop,i}$ $CF_{uop,i} = \tilde{x}(CF_{grc,i})$

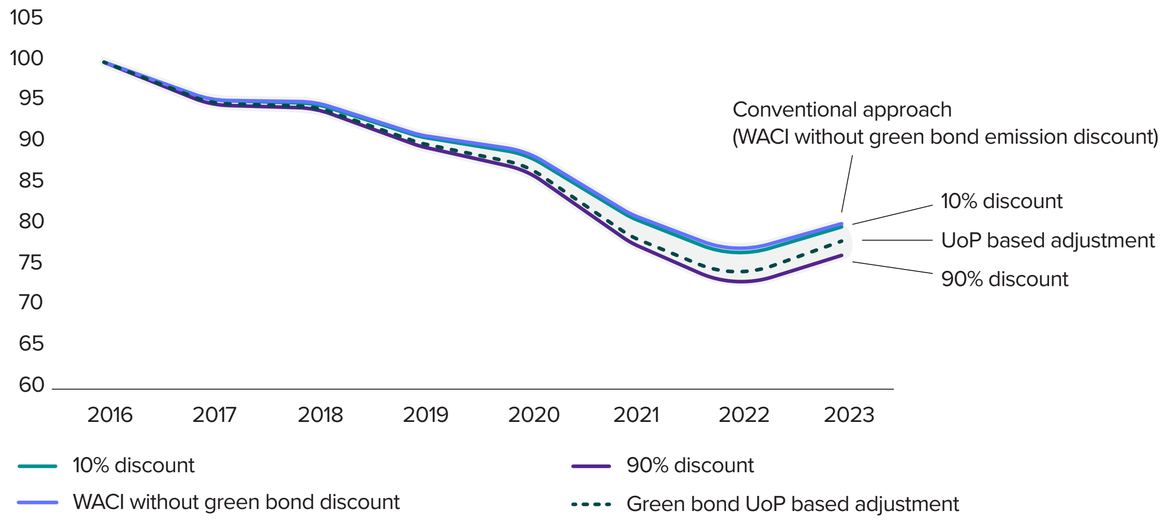
Source: LSEG, 2025

In Figure 26, we compare these approaches and their impact on the WACI intensity of the FTSE WorldBIG Corp. The impact of a 10% discount is minimal, however, if a 90% emission discount is applied to green bonds, this would decrease the 2023 WACI by 4.7% (purple line) compared to the conventional approach (blue line).

In the use-of-proceeds (UoP) modelling approach, we leveraged LSEG's Green Revenues[26] data to estimate the carbon intensity of various UoP categories, by using the median carbon intensity of companies that derive 90% of their revenues from the relevant green activity categories.[27] The resulting portfolio level WACI reduction (green dash line), aligns closely with the 50% haircut discount approach, suggesting it may offer a reasonable proxy for investors.[28]

Figure 26. Comparing impact on portfolio carbon intensity by different green bond carbon footprinting approaches

WACI of FTSE WorldBIG Corp, (2016=100)



Source: LSEG, 2025

26 LSEG (2025) | Green Revenues 2.0 Data Model | LSEG
27 For example, the carbon footprint proxy for a green bond that allocates all proceeds to waste treatment projects is defined as the median carbon footprints of all companies in our Green Revenues dataset that generate more than 90% of their revenue from Waste & Pollution and Control.
28 See Use of proceeds discounting proxies in Figure 50 in Appendix III

5

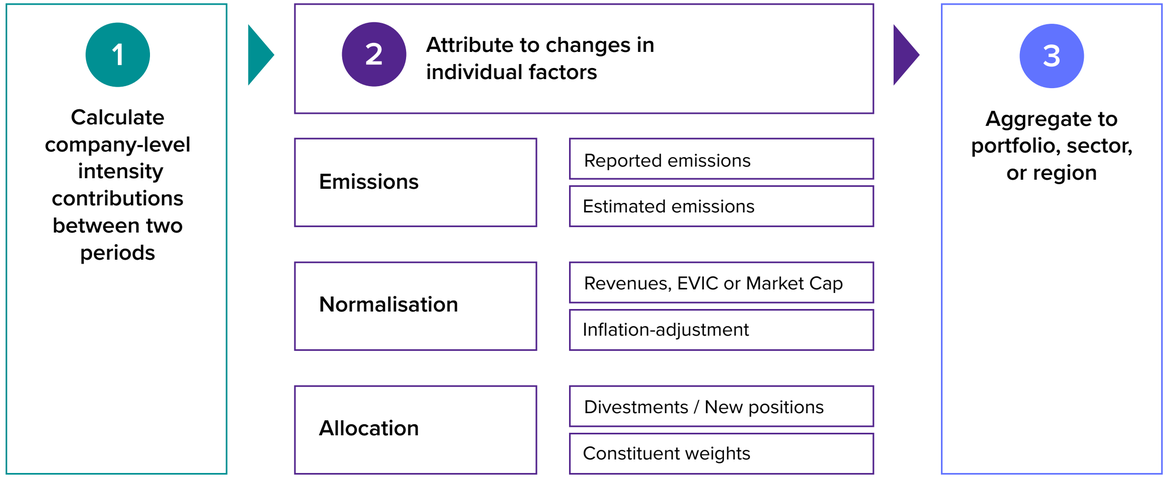
Attribution analysis

To understand the factors driving the annual changes in portfolio intensities, investors need to look beyond top-line figures.

A portfolio company’s contribution to the overall portfolio carbon intensity is proportional to its emissions and index weight, and inversely proportional to the chosen normalisation factor (e.g. inflation adjusted revenues).

Attribution analysis can disintegrate changes in intensity metrics into changes arising from constituents' emissions, normalisation factors (e.g., inflation-adjusted revenues for WACI) and allocation effects – i.e., weight reallocation and constituent churn (Figure 27). Using a logarithmic ratio approach (detailed in Appendix IV), year-on-year changes can be decomposed to show how each factor contributes to the fluctuations in intensity metrics.

Figure 27. Attribution analysis decomposes changes in intensities into underlying drivers



Source: LSEG, 2025

Portfolio attribution – Equities

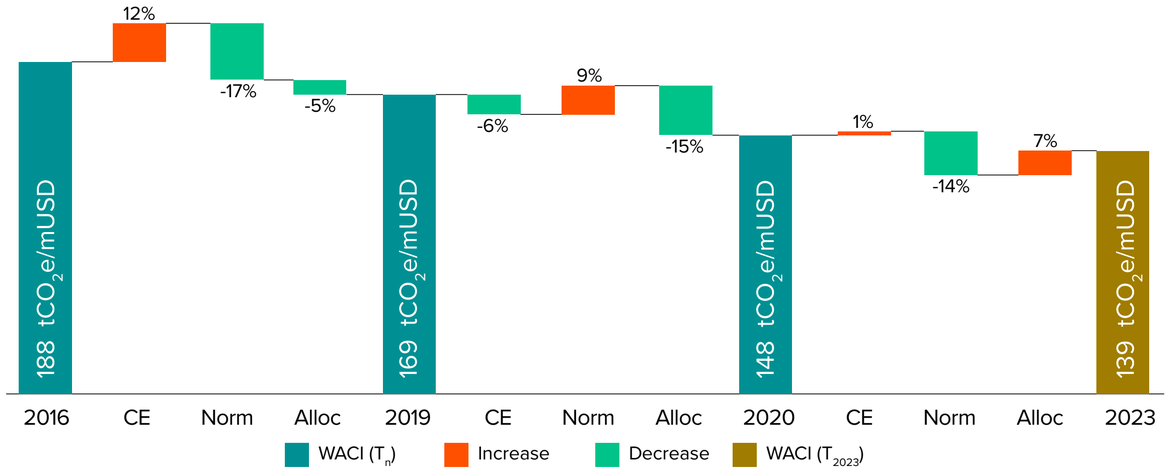
Between 2016 and 2023, annual changes in WACI of equities were mostly driven by shifts in normalisation factors (i.e., adjusted revenues) and allocation effects, not actual changes in the emissions of constituents (Figure 28):

- 2016 - 2019: WACI decline largely driven by shifts in adjusted revenues and allocation, offset by higher emissions.
- 2019 - 2020: WACI decline was driven by allocation, and emissions reductions, offset by adjusted revenues.
- 2020 - 2023: WACI decline was driven by higher adjusted revenues, offset by allocation and marginal emissions changes.

Zooming into the most recent period (i.e., 2022 - 2023), there are emerging signs of emission-led WACI reduction (Figure 29). Emissions cuts trimmed WACI by 2%, while lower real revenues – 2% in nominal terms and 3% from inflation adjustment – added 5%. Allocation had the largest impact, reducing WACI by 9%, with little offset from constituent churn (<1%).

Figure 28. Changes in WACI mostly shaped by normalisation factors and allocation effects

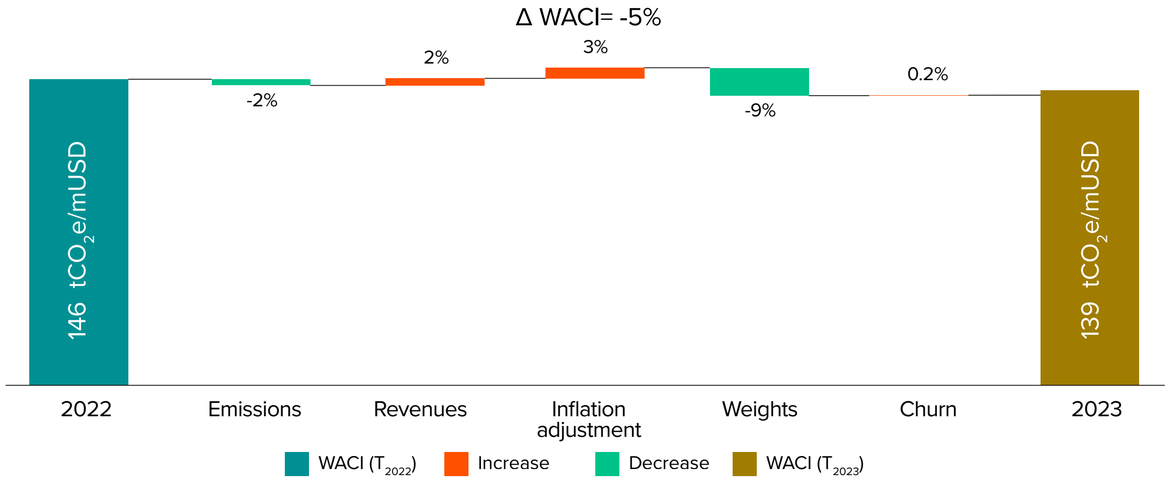
Long-term contributions of attribution factors to WACI changes in equities, 2016-2023



(CE = carbon emissions, Norm = normalisation factors i.e., adjusted revenues and Alloc = allocation effects)

Figure 29. Emission-led decarbonisation emerging recently

Contribution by category to the change of WACI (2022-2023)



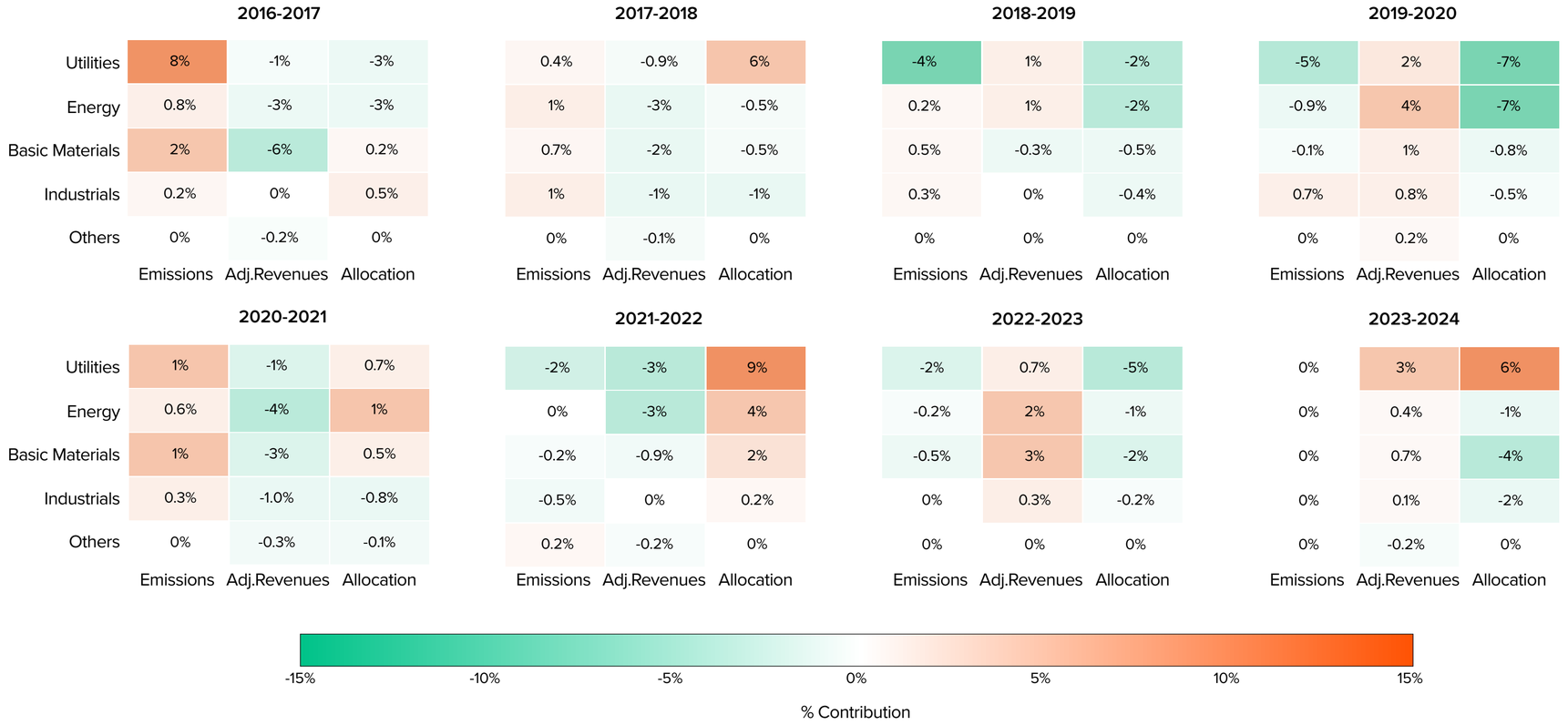
Source: LSEG, 2025

Sector-level attribution analysis highlights the dominant role of high-carbon sectors (i.e., Utilities, Energy, Basic Materials, and Industrials) in shaping changes in top-line WACI. Sectoral rotation in and out of these sectors are a major source of variability in WACI between 2016 and 2023. In 2024, changes in the weights of these sectors delivered a combined cut of 1% to top line WACI.[29] Of the four sectors, only Utilities show consistent signs of decarbonisation, with the sector alone contributing the most to emissions-led cuts between 2016 and 2023 (Figure 30).

The attribution of EVIC-based intensity changes of equities between 2016 and 2023 largely mirrors WACI, with normalisation (i.e., adjusted EVIC)[30] and allocation effects having the largest influence on intensity changes (Figure 31).

Figure 30. Disaggregating equity portfolio WACI changes for Scope 1 and 2 per sector

Contribution by category to the change of WACI (2016-2023), per sector



Source: LSEG, 2025

29 Corporate reported carbon emissions data is only available for the full universe until FY2023. We have nonetheless included the sectoral contribution analysis for FY2024 (i.e., 2023 - 2024 sectoral attribution analysis) based on revenue estimates and historical emissions data.

Portfolio attribution – Fixed Income

Similar to equities, changes in fixed income WACI between 2016 and 2023 were largely shaped by normalisation factors, particularly volatility in issuer annual revenues and currency inflation adjustment (Figure 32). However, allocation played a smaller role, reflecting lower volatility of bond value-based weighting in fixed income compared to the market cap-driven changes in equities. Emissions consistently acted as a secondary driver, exerting a higher pressure on changes in top-line WACI for fixed income than for equities, due to a higher count of DM issuers within the fixed income benchmark.

Figure 31. EVIC-based intensity changes driven by allocation and normalisation

Long-term contributions from attribution factors to CI-EVIC change in equities, 2016-2023

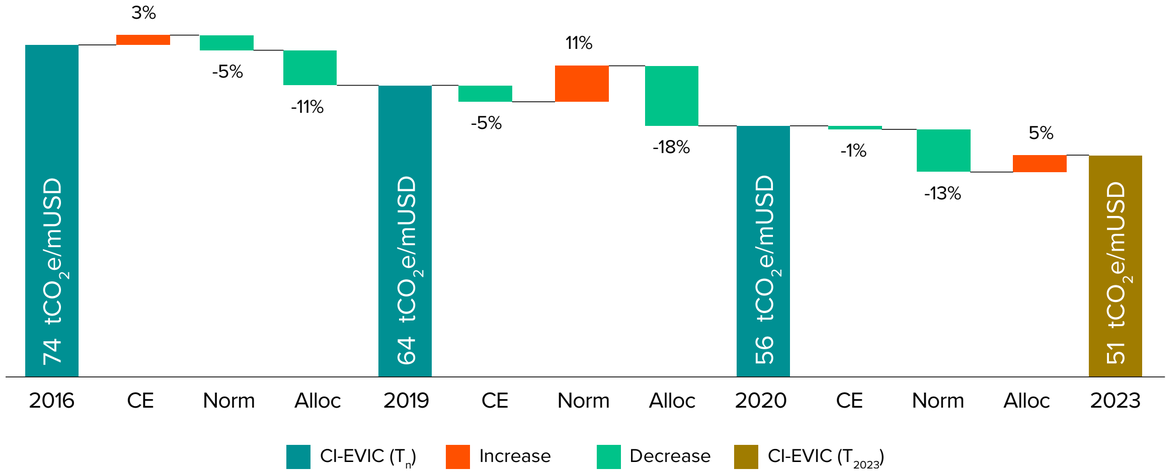
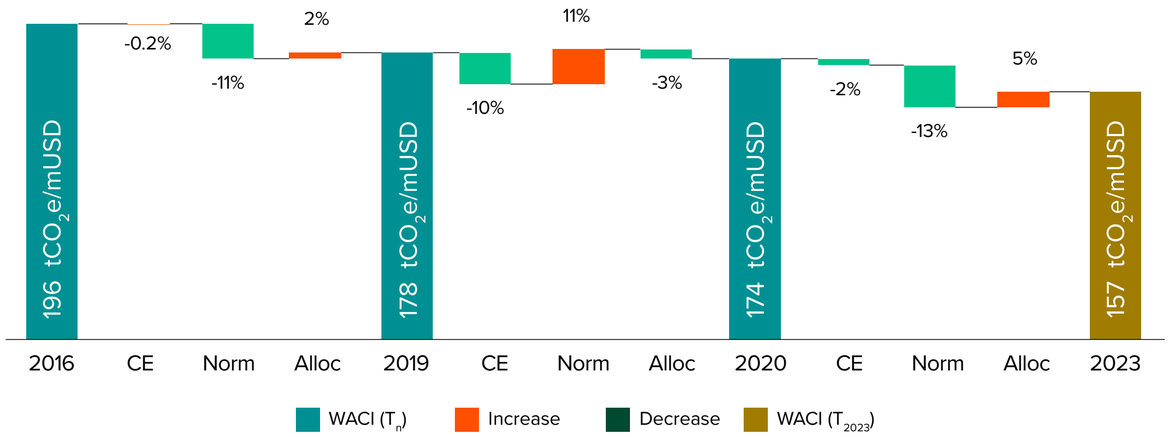


Figure 32. Change in WACI mostly shaped by normalisation factors, emissions take a more prominent role in driving fixed income compared to equities

Long-term contributions of attribution factors to WACI change in corporate fixed income, 2016-2023.



Source: LSEG, 2025

30 Unlike EVIC, revenues do not directly consider investor-assessed value, and therefore changes are less likely to align with changes in weight on a yearly basis, resulting in a more volatile attribution factor over the near term for certain sectors.

Box 2:
High-Yield bonds

Incorporating high-yield (HY) bonds (represented by the FTSE World High-Yield Corp Bond Index, or FTSE WorldHY Corp) into our analysis provides a broader perspective of the decarbonisation trends across the whole credit quality spectrum in the corporate bond market[31]. Compared to the investment grade (IG) universe, HY bonds have lower issuer emissions disclosure rates – 39% versus 67% in IG (Figure 33).

Absolute aggregate emissions of FTSE WorldHY Corp have reduced significantly in recent years. This is primarily driven by index turnover, with HY index's exposure to carbon-intensive sectors decreasing from 37% in 2016 to 32% in 2023 (Figure 34).

Similar trends can be observed for intensities, with the WACI and CI-EVIC of the FTSE WorldHY Corp Index also reduced rapidly from 2016 to 2023 (Figure 35), mainly due to non-carbon factors, such as adjusted revenues and allocation effects (Figure 36). For example, between 2020 and 2023, constituent churn accounted for 24% of the overall reduction in carbon intensity with 23% stemming from carbon-intensive sectors and just 1% from non-carbon-intensive sectors.

31 FTSE WorldHY Corp includes four eligible currencies: USD, EUR, GBP, and CHF. While they represent a liquid portion of the high yield universe, the exclusion of soft currencies limits coverage of emerging market corporate bonds.

Figure 33. Index basics IG vs HY, including emission disclosure rate

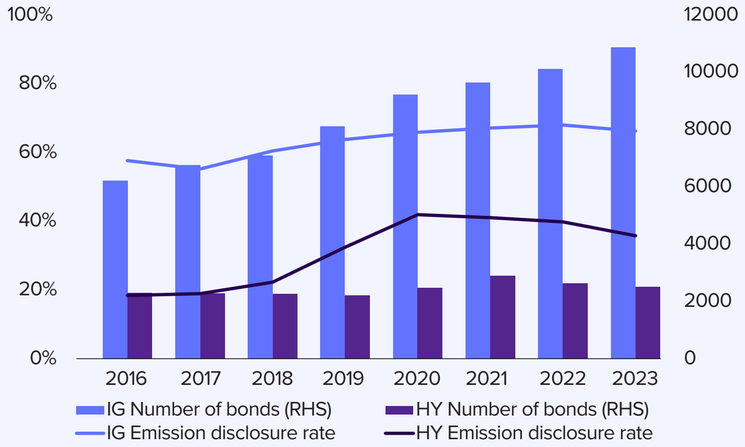


Figure 34. Aggregate emissions, IG vs HY (2016=100)

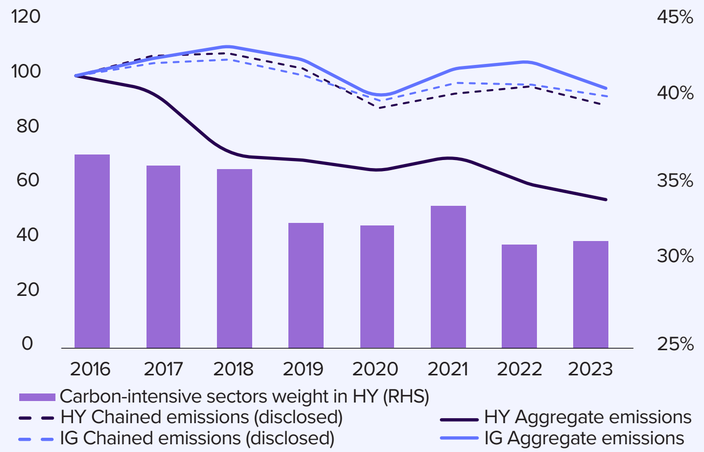
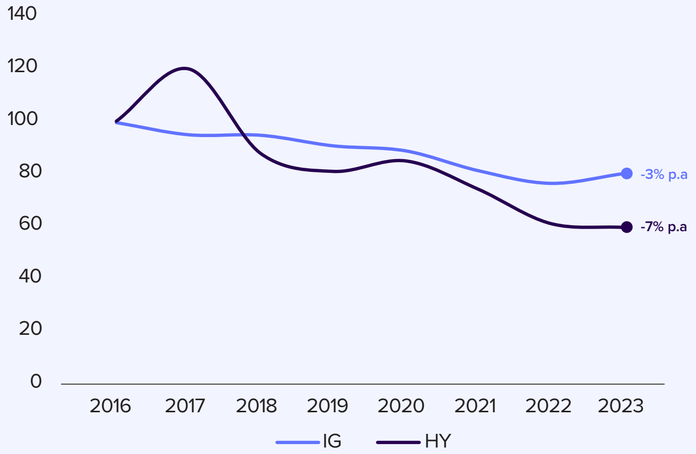
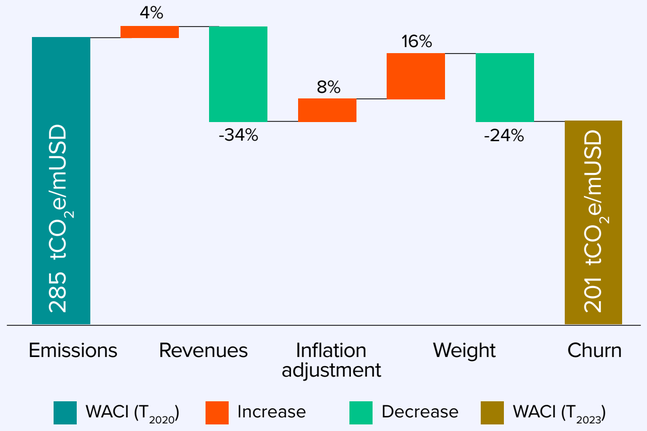


Figure 35. WACI, IG vs HY (2016 = 100)



(● = 2016-2023 Average annual change in emission intensity)

Figure 36. Attribution of WorldHY Corp WACI, 2020 - 2023



Source: LSEG, 2025

Appendix

Appendix I.

Data and aggregated metrics

Table 4. Common carbon metrics for portfolio (Scope 1 & 2) of FTSE All-World Index[32,33]

	2016	2017	2018	2019	2020	2021	2022	2023
Aggregate Emissions (million tonnes)	9,700	10,734	11,706	12,797	12,213	12,985	12,793	13,128
WACI (tonnes per million USD sales)	188	178	179	169	148	138	146	139
Carbon Intensity (EVIC) (tonnes per million USD invested)	74	75	78	64	56	56	56	51
Carbon Intensity (Market Cap) (tonnes per million USD invested)	130	141	149	116	108	107	98	90
Median Carbon Intensity (tonnes per million USD)	44	41	39	35	37	32	32	32
Median Carbon Intensity (EVIC) (tonnes per million USD invested)	22	18	18	15	13	11	13	13
Median Carbon Intensity (Market Cap) (tonnes per million USD invested)	32	25	28	22	19	17	19	19

Table 5. Regional breakdown of WACI and Median Carbon Intensity (Scope 1 & 2, in 2023) of FTSE All-World Index

	WACI	Median Carbon Intensity	Weight in Index
All Region	141	32	100%
China	244	67	3%
Developed Asia Pacific	180	35	11%
Developed Europe	93	15	16%
Emerging Asia, Middle East & Africa (ex-China)	551	63	6%
Emerging Europe	644	57	>1%
Latin America	202	43	1%
North America	100	17	63%

32 EVIC data used in Carbon intensity calculation have been adjusted for inflation using the methodology outlined in the EU Handbook for Paris Aligned Benchmarks.

33 Please note that discrepancies may exist between the carbon intensity figures cited in this report and those in FTSE Russell index reporting - where FTSE All-World Index is the benchmark. These variances are mainly attributable to several factors, including variations in the sources of emission data and financial data (refer to Appendix V for details on data sources in this research), differences in cut-off dates used for this research and index reporting, as well as the choice of base year for inflation adjustment.

Table 6. Industry breakdown of WACI and Median Carbon Intensity (Scope 1 & 2, in 2023) of FTSE All-World Index

	WACI	Median Carbon Intensity	Weight in Index
All Industry	141	32	100%
Basic Materials	649	419	4%
Consumer Discretionary	45	23	6%
Consumer Staples	52	54	6%
Energy	397	306	5%
Financials	12	5	14%
Health Care	18	32	11%
Industrials	152	41	13%
Real Estate	71	43	3%
Technology	31	16	25%
Telecommunications	45	37	3%
Utilities	1819	567	3%

Table 7. Common carbon metrics for portfolio (Scope 1 & 2) of bond issuers of FTSE WorldBIG Corp

	2016	2017	2018	2019	2020	2021	2022	2023
Aggregate Emissions (million tonnes)	4,779	5,087	5,308	5,062	4,376	4,907	5,036	4,558
WACI (tonnes per million USD sales)	196	187	186	178	174	159	150	157
Carbon Intensity (EVIC) (tonnes per million USD invested)	70	72	75	67	63	62	55	52
Median Carbon Intensity (tonnes per million USD)	31	30	28	26	24	23	23	22
Median Carbon Intensity (EVIC) (tonnes per million USD invested)	10	10	9	8	7	7	7	7

Table 8. Regional breakdown of WACI and Median Carbon Intensity (Scope 1 & 2, in 2023) of bond issuers of FTSE WorldBIG Corp

	WACI	Median Carbon Intensity	Weight in Index
All Region	157	18	100%
China	74	22	1.1%
Developed Asia Pacific	312	34	4.0%
Developed Europe	93	18	29.4%
Emerging Asia, Middle East & Africa (exChina)	421	92	0.6%
Emerging Europe	330	96	0.1%
Latin America	230	240	0.5%
North America	175	22	64.2%

Table 9. Industrial breakdown of WACI and Median Carbon Intensity (Scope 1 & 2, in 2022) of bond issuers of FTSE WorldBIG Corp

	WACI	Median Carbon Intensity	Weight in Index
All Industry	157	18	100%
Basic Materials	482	338	2.2%
Consumer Discretionary	48	19	9.8%
Consumer Staples	43	45	6.7%
Energy	469	274	6.1%
Financials	5	3	31.7%
Health Care	16	14	9.1%
Industrials	130	23	10.0%
Real Estate	90	36	3.5%
Technology	32	9	6.8%
Telecommunications	34	27	6.7%
Utilities	1,181	433	7.3%

Appendix II.
Portfolio carbon metrics

In addition to differences that can arise from different data sources (e.g., reported carbon data, estimated carbon data, revenues, enterprise value, market capitalisation), there are several methodological choices involved in the construction of carbon exposure metrics:

1. Normalisation factors are often applied to absolute emissions to obtain carbon intensity, increasing comparability between companies and over time. The most common normalisation factors are as follows:

- Revenues: Annual revenues generated during the same time period of emissions provide a universal measure of company output or activity across the investable universe. However, revenues are not a perfect proxy for output across sectors and revenue intensities are sensitive to price changes between sectors or over time (e.g., inflation).
- Market value metrics:
  - » Enterprise value including cash (EVIC): By dividing emissions by EVIC, the resulting metric links emissions directly to the value of the company an investor owns, rather than tying them to an 'output' metric such as revenues. However, this also exposes the intensity measure to volatility in market valuations, while also rewarding higher debt levels.
  - » Market capitalisation: By dividing emissions by EVIC, the resulting metric links emissions directly to the value of the company an investor owns, rather than tying them to an 'output' metric such as revenues. However, this also exposes the intensity measure to volatility in market valuations.
  - » Physical units: Carbon intensity in terms of physical production units (e.g., per car or tonne of cement) is often seen as a particularly reliable metric of a company's carbon efficiency. However, these units are sector-specific and will not cover the entirety of the investable universe, limiting the usefulness of physical intensities for inter-sector and portfolio level analysis.

2. Attribution factors dictate the share of a constituent's emissions, which are included in overall portfolio emissions figures. Where intensity metrics (e.g., WACI) often attribute emissions from each company based on their weight in the portfolio, other metrics calculate the proportion of a firm's activities owned by a portfolio, by dividing the amount invested by total market value of the firm and attributing this proportion of the firm's emissions to the portfolio. The most common attribution factors are as follows:

- Weight: A simple multiplication of portfolio or index weight to the quantity in question.
- Ownership by market capitalisation: This factor captures the current value of a constituent's equity and so is not viable as a metric for fixed income. Allows alignment of individual firms with point-in-time market estimates.
- Ownership by EVIC: EVIC is equivalent to market capitalisation plus debt (cash is kept, avoiding negative values). Point-in-time estimates can be misaligned with respect to market volatility as EVIC values are typically taken for the end of the fiscal year for individual firms.

3. Inflation adjustments can increase comparability when the meaning of financial values drifts over time. The most common inflation adjustments are as follows:

- Asset values. As asset values (e.g., market capitalisation or EVIC) are generally volatile year over year, the EU Handbook for Paris Aligned Benchmarks[34] suggests that EVIC can be adjusted by dividing the average EVIC of the current year by that of the previous year. In this year's report, we have also treated market capitalisation similarly for the carbon intensity by market cap. A more recent submission has proposed that an asset value inflation factor should be calculated for each individual constituent, based on the changes in its market value since the initial period of analysis.[35]
- Revenues. As purchasing power decreases over time, the value of a constant amount of revenues declines, thus changing the interpretation of carbon efficiency (or carbon intensity by revenues). This can be adjusted either relative to individual currencies or by converting all revenues to US dollars and applying a GDP deflator to the overall time series. Despite these adjustments, revenues – especially for commodity driven sectors like Oil and Gas – can show significant volatility as seen in the commodity volatility throughout 2022.

Table 10. Portfolio carbon metrics

Description and mathematical formula for carbon metrics

	Description	Formula
Carbon Emissions Intensity	Normalised rate of carbon emissions per unit of economic activity or asset size. Typically, economic output indicators are used to normalise emissions.	Carbon Emissions Intensity = $\frac{E_k}{S_k}$ Where E_k is the annual carbon emissions of company k and S_k is the annual output (or size proxy) of company k.
Aggregate Emissions Intensity	Total emissions divided by total revenues of all investee firms	Aggregate Emissions Intensity = $\frac{\sum_{k=1}^{n} E_k}{\sum_{k=1}^{n}}$ Where E_k is the annual carbon emissions of firm k, and S_k is the annual output of firm k.
Weighted Average Carbon Intensity (WACI)	Portfolio level average of carbon intensity (by revenues) of investee firms, weighted by portfolio exposure	$WACI_{Revenue} = \sum_{k=1}^{n} W_k \frac{E_k}{R_k}$ Where E_k is the annual carbon emissions of firm k, S_k is the annual net revenues of firm, and W_k is the weight of firm k in a portfolio such that $\sum_{k=1}^{n} W_k = 1$.[36]
Carbon Intensity by EVIC	Total emissions owned by portfolio through its investee firms, per million USD invested.	Carbon Intensity = $\frac{\sum_{k=1}^{n}(\frac{(W_k * AUM)}{EVIC_k} * E_k)}{AUM\ (\$M)}$ Where E_k are the carbon emissions of firm k and $EVIC_k$ is the enterprise value including cash of firm k.[37]
Carbon Intensity by Market Cap	Total emissions owned by portfolio through its investee firms, per million USD invested.	Carbon Intensity = $\frac{\sum_{k=1}^{n}(\frac{(W_k * AUM)}{Market\ Cap_k} * E_k)}{AUM\ (\$M)}$ Where E_k are the carbon emissions of firm k and $EVIC_k$ is the enterprise value including cash of firm k.[38]

34 EU Handbook of Paris-Aligned Benchmarks - Accessed 4th September 2025.
35 Platform on Sustainable Finance's recommendations on data and usability of the EU taxonomy (europa.eu) - Accessed 4th September 2025.
36 In fixed income, W_k represents the total weights of all bonds issued by firm k that are included in the index.
37 EVIC is adjusted for annual change in average asset prices according to the methodology outlined in Appendix V. Along with other reported financial data such as revenues, EVIC is taken as of the end of each company's fiscal year.
38 Market capitalisation is adjusted for annual change in average asset prices according to the methodology outlined in Appendix V. Market capitalisation is sampled at the end of each calendar year.

Appendix III.
Additional charts and tables

Table 11. Reported portfolio carbon metrics by global asset managers[39]

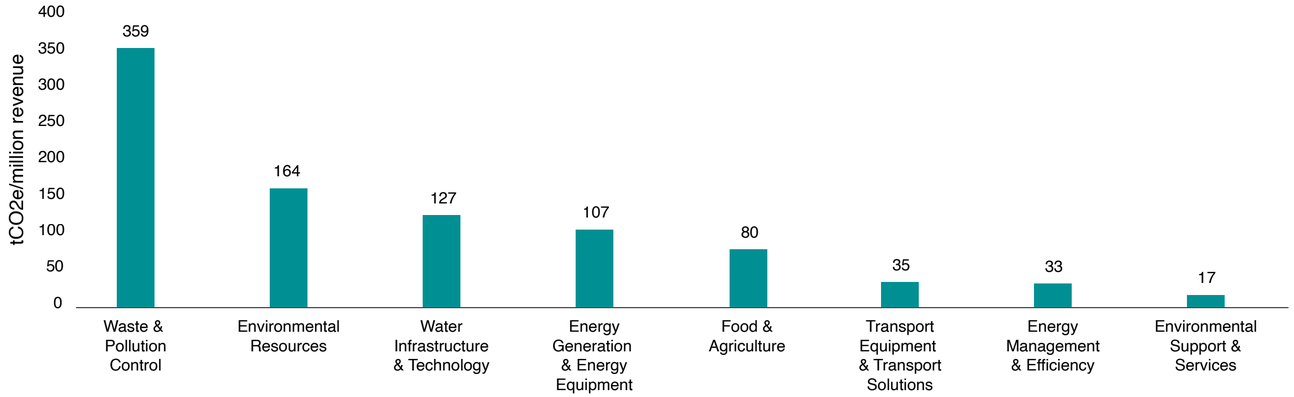
Asset Manager	AUM (USD Trillion)	Financed emissions	Financed emissions	WACI	Scope 3 included
Blackrock Inc	10.0	✓	✓	x	✓
Vanguard Group	8.6	✓	✓	✓	✓
Fidelity Investments	4.6	✓	✓	✓	✓
State Street Investment Management	4.1	✓	✓	✓	✓
J.P. Morgan Chase	3.4	✓	✓	✓	x
Goldman Sachs Asset Management	2.8	✓	✓	✓	✓
UBS	2.6	✓	✓	✓	x
Capital Group	2.5	x	x	✓	x
Allianz Group	2.5	✓	✓	✓	✓
Amundi	2.3	✓	✓	✓	✓

Table 12. Reported portfolio carbon metrics by global penision funds[40]

Asset Manager	AUM (USD Trillion)	Financed emissions	Investment intensity	WACI	Scope 3 included
Government Pension Investment	1.6	✓	x	✓	✓
National Pension	0.8	x	x	x	x
Federal Retirement Thrift	0.8	x	x	x	x
APG	0.6	✓	✓	x	✓
Canada Pension Plan	0.5	✓	✓	x	✓
California Public Employees	0.5	✓	x	x	✓
Central Provident Fund	0.4	x	x	x	x
National Social Security	0.4	x	x	x	x
CDPQ	0.3	✓	✓	x	✓

39 Total Assets and AUM obtained from Thinking Ahead Institute - Accessed 4th August 2025.
40 Total Assets and AUM obtained from Thinking Ahead Institute - Accessed 4th August 2025.

Figure 37. Green bond carbon factor proxies from use-of-proceeds based modelling approach
(Median carbon intensity of companies with more than 90% revenue derivded from corresponding categories)



Appendix IV.
Contribution analysis

Contributions to change in WACI are calculated by taking the logarithmic change of individual factors (index weight, carbon emissions, revenues). The contribution to change in WACI from emissions $(CE_{k,t})$ between time **t** and **t-1** for a constituent **k**[41] with greater than 0 index weight $(W_{j,t}, W_{j,t-1})$ is given by:

$$CE_{k,t} = \frac{ln\left(\frac{E_{k,t}}{E_{k,t-1}}\right)}{ln\left(\frac{W_{k,t}}{W_{k,t-1}}\right) + ln\left(\frac{E_{k,t}}{E_{k,t-1}}\right) - ln\left(\frac{R_{k,t}}{R_{k,t-1}}\right)} * \left(W_{k,t}\frac{E_{k,t}}{R_{k,t}} - W_{j,t-1}\frac{E_{k,t-1}}{R_{k,t-1}}\right)$$

Where:

- $CE_{k,t}$ is contribution to change in WACI from emissions from constituent k at time t,
- $E_{j,t}$ is yearly carbon emissions,
- $R_{k,t}$ is annual revenues,
- $W_{k,t}$ is index weight.[42]

Relevant inflation factors (or in the calculation of Financed Emissions, portfolio size) can be added as additional explicit factors. Individual factors can be further disaggregated once the initial contribution has been apportioned:

- Changes due to emissions can be assigned based on the source of the emission data
- Changes due to changing constituents can likewise be distinguished from general changes due to changing weights.

41 In fixed income, constituent k represents a unique bond issuer, and W_k represents the sum of weights of all bonds from issuer k in a given year.
42 In the unlikely event that changes in individual factors exactly cancel (change of contribution to WACI is 0), the relative contributions of individual factors will also be 0.

Appendix V.
Data Sources

Financial data

Company-level financial data are sourced from WorldScope as inputs into carbon intensity calculations and estimation strategies. This includes the following metrics:

- EVIC
- Revenue
- Segment revenues (see business segment taxonomy, below)

Revenue estimates for FY2024 were retrieved from I/B/E/S, while Market Capitalisation was sourced from FTSE Russell.

Emissions data

Scope 1,2, and 3 emissions data are sourced from the LSEG Data & Analytics Climate database. Full details on these, including details around estimation models can be seen here: Company Estimated Greenhouse Gases (GHG) Emissions (lseg.com)

In practice, calculations are based on both reported and estimated data sourced from the LSEG Hierarchical Multi-model framework. Due to lags in the publishing of company reported carbon numbers, we are currently utilising fiscal year 2023 as our most recent disclosed sample.

Inflation adjustments

Inflation adjustments have been made in carbon exposure metrics wherever necessary to eliminate the bias of inflation in trend analysis for carbon intensity. Currency and asset inflation adjustments have been made to revenues and EVIC, respectively.

Values for carbon intensity have been adjusted against the US GDP deflator as retrieved from the World Economic Outlook database of the International Monetary Fund.[43] Company-specific revenue data are converted to USD according to the local, point-in-time exchange rate.

The EVIC adjustment factor is calculated by dividing the average EVIC of the equity universe by that of the average EVIC of 2023, as suggested by the Climate Benchmark Handbook of the EU Commission.[44] A more recent submission has proposed that an asset value inflation factor should be calculated for each individual constituent, based on the changes in its market value since the initial period of analysis.[45]

43 World Economic Outlook. https://www.imf.org/en/Publications/WEO, IMF - Accessed 4th August, 2025
44 EU Handbook of Paris-Aligned Benchmarks - Accessed 4th August 2025
45 Please see: EU Commission (2022) EU Commission Platform Recommendations on Data and Usability

Regional classification information

We assign companies to a region to create peer groups for several estimation strategies - the Sector Median and Regression strategies. For this, we largely align our regional definitions with those used within the FTSE Global Equity Index Series.[46]

Table 13. Regional aggregation

Developed Europe	Emerging Europe	North America	Latin America	Developed Asia Pacific	Emerging Asia, Middle East & Africa (ex China)	China
Austria	Czechia	Canada	Brazil	Australia	India	China
Belgium	Greece	United States	Chile	Hong Kong	Indonesia	
Denmark	Hungary		Colombia	Japan	Malaysia	
Finland	Russia		Mexico	Korea	Pakistan	
France	Turkey		Peru	New Zealand	Philippines	
Germany				Singapore	Taiwan	
Ireland					Thailand	
Israel					Egypt	
Italy					Qatar	
Netherlands					Saudi Arabia	
Norway					South Africa	
Poland					UAE	
Portugal						
Spain						
Sweden						
Switzerland						
United Kingdom						

46 Global Equity Index Series | FTSE Russell -Accessed 26th September, 2025.

About LSEG

LSEG is one of the world's leading providers of financial markets infrastructure and delivers financial data, analytics, news and index products to more than 40,000 customers in over 170 countries. We help organisations fund innovation, manage risk and create jobs by partnering with customers at every point in the trade lifecycle: from informing their pre-trade decisions and executing trades to raising capital, clearing and optimisation. Backed by more than three centuries of experience, innovative technologies and a team of 25,000 people in over 60 countries, we are driving financial stability, empowering economies and enabling you to grow sustainably.

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