Index Insights | Sustainable Investment – Factor

Sustainability in the UK: A Year on

March 2023

AUTHOR

Sergiy Lesyk
Director, Research and Analytics
+44 207 866 8082
sergiy.lesyk@lseg.com

FTSE RUSSELL
An LSEG Business

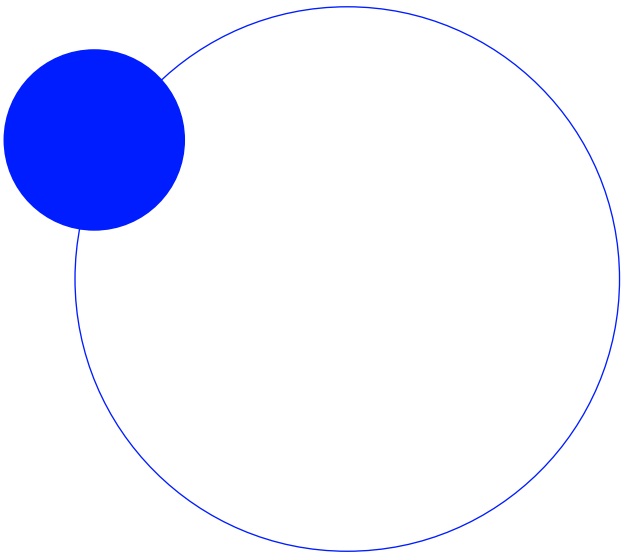
Overview

Last year, we investigated the sustainability profile of the FTSE UK Index [6] and its peculiarities in the context of challenges in creating a sustainability index in the UK. In this paper, we review and update the changes over the last 12 months.

Although there were changes in the structure of the index, the broader picture remained the same. Natural resources companies continue to dominate the FTSE UK Index, which resulted in a relatively high carbon emissions and carbon reserves intensity score.

At the same time, the UK index still has a fairly high ESG score overall, with very few stocks averaging a higher ESG score and low carbon emissions intensity at the same time, and they are limited to very few specific industries.

This feature of the UK market remains a challenge for investors looking to construct benchmarks that have a high ESG score, and a low carbon reserves and carbon emissions intensity. The FTSE Russell multiple tilt approach, however, provides a solution to this conundrum.



Contents

Section 1: Introduction

The UK market presents an interesting challenge for the construction of sustainable investment indices. It is a market in which many of the most carbon intensive stocks are concentrated in just a few industrial groups. As a result, this concentration makes it difficult to balance the dual goals of significantly reducing index level carbon intensity and controlling the deviation of the industrial make-up from the underlying benchmark index. Additionally, analysis shows that the aggregate ESG score of the underlying benchmark is already high (at 3.95 out of 5 for the FTSE UK), making it difficult to obtain further significant gains without increasing the concentration in high-scoring stocks.

Furthermore, when both carbon intensity reduction and an aggregate ESG uplift are targeted at the same time, we find that there are very few stocks that have both high ESG scores and a low carbon emission intensity, and moreover, they are concentrated in a handful of sectors. Therefore, the construction of an index which provides both carbon intensity reduction and significant ESG uplifts, while controlling for industrial weights and individual stock concentration risk, is not straightforward. In this paper, we confirm that this conundrum for the FTSE UK Index universe of stocks can be resolved by using FTSE Russell's multiple tilt methodology.

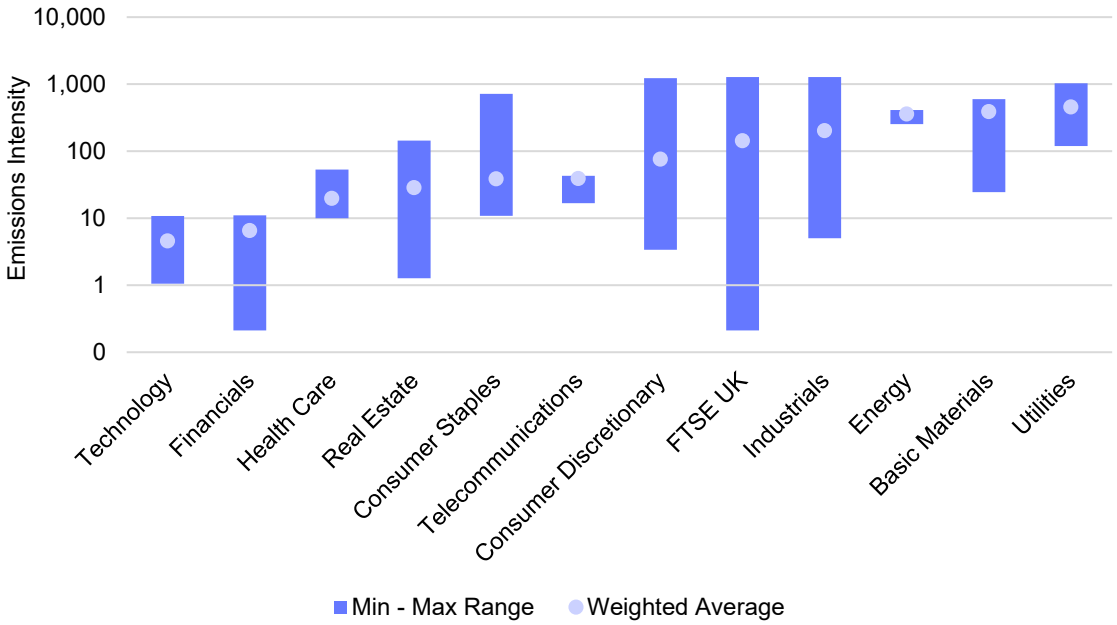
In Section 2, we review the industrial distribution of carbon emissions and carbon reserves in the benchmark FTSE UK Index. In Section 3, we examine the industrial breakdown of ESG scores and calculate the aggregate level for the benchmark. We then go on to demonstrate how carbon emission intensity correlates with ESG scores at the stock and industrial levels in Section 4. In Section 5, we confirm that the FTSE UK Low Carbon Select Index solves the problem of the ESG and carbon emissions and reserve intensity entanglement that is present in the UK market. In Section 6, we draw our conclusions.

Section 2: Carbon emission and reserve intensity

We begin by first identifying which industry produces the highest levels of carbon emission intensity (for now, we have considered scope 1 and 2 emissions only[1]). In Figure 1, we show the weighted-average carbon emission intensity (WACI), and the range over which it varies, for each industrial group in the FTSE UK Index in September 2022 (see the Appendix for the definition of carbon emission intensity). Note the log scale of the vertical axis, so that the apparent gentle increase in emission intensity for the industries moving left to right is actually exponentially steep. On a weighted-average basis, and Scope 1 and 2 basis, Energy is not the most carbon emission intensive sector in the UK. Basic Materials and Utilities have higher weighted-average emission intensities, and some stocks in Consumer Discretionary, Consumer Staples and Industrials have a higher carbon emission intensity than the weighted average for the Energy industry.

[1] More details on Scope 1, 2 and 3 emissions can be found in FTSE_EU_Climate_Benchmarks_Index_Series_Ground_Rules.pdf (ftserussell.com).

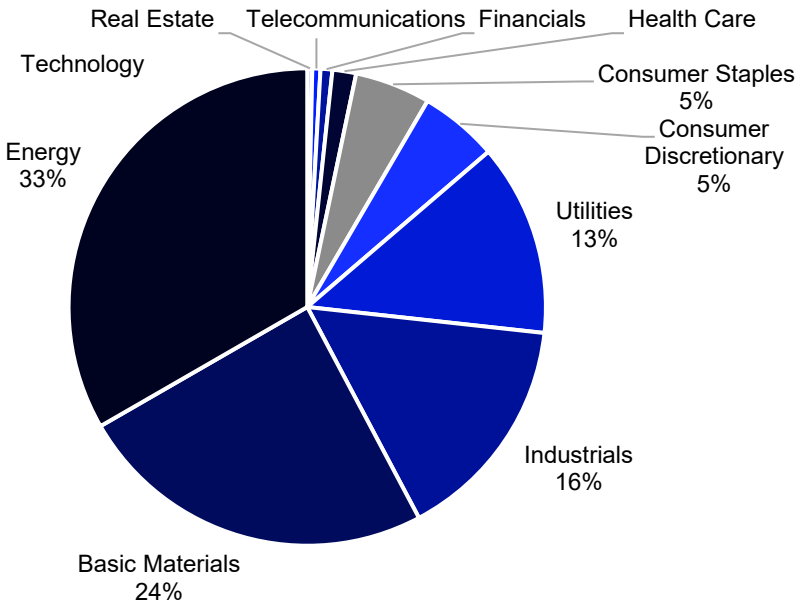
Figure 1: Scope 1 and 2 Carbon Emissions Intensity of FTSE UK and Industry components – minimum, maximum and weighted average



Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe for September 2022. Please see the end for important legal disclosures.

However, Energy is the largest contributing Industry to carbon emission intensity in the FTSE UK Index on an absolute basis, as per Figure 2. This is different from the previous year, when Basic Materials was the largest contributor. Changes in index constituents (which saw higher carbon intensity Basic Materials stocks Evraz, Kaz Minerals, Polymental and Mondi dropping out of the index) yielded the difference in industry carbon contributions rankings between the research carried out in 2021 and in this latest study.

Figure 2: Industrial breakdown of Carbon Emission Intensity contributions to FTSE UK Index



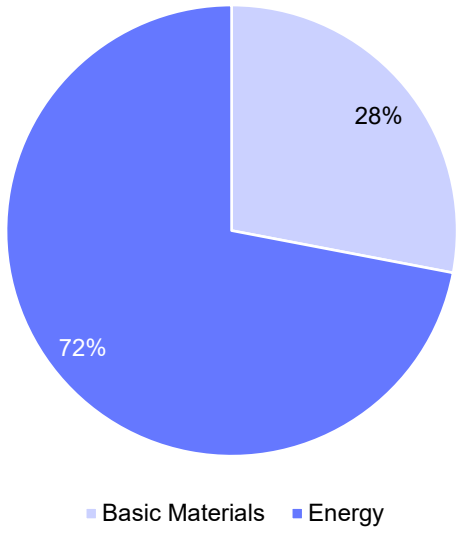
Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe for September 2022. Please see the end for important legal disclosures.

To create an index with a lower carbon emission intensity than the FTSE UK Index benchmark, we would expect it to be underweight Utilities, Basic Materials, Energy and Industrials, and overweight Financials, Technology, Real Estate, Consumer Staples, Consumer Discretionary, Health Care and Telecommunications.

Reserve intensity

There was also a change in the structure of the carbon reserve intensity of the index over the last year. There are only two sectors which include companies with carbon reserves. Figure 3 shows that carbon reserve intensity is concentrated in Basic Materials and Energy (see Appendix for the definition of reserve intensity). Again, the change in constituents since our last study has resulted in Energy being the largest contributor to the carbon reserve intensity of the FTSE UK Index, as Kaz Minerals, Polymental International and Evraz have dropped out of the UK index, and the remaining mining stocks are reducing their carbon reserve assets.

Figure 3: Industry breakdown of Carbon Reserve Intensity contributions to FTSE UK Index



Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe for September 2022. Please see the end for important legal disclosures.

To decrease the carbon reserve intensity, we would therefore expect to reduce the weights of stocks in Basic Materials and Energy.

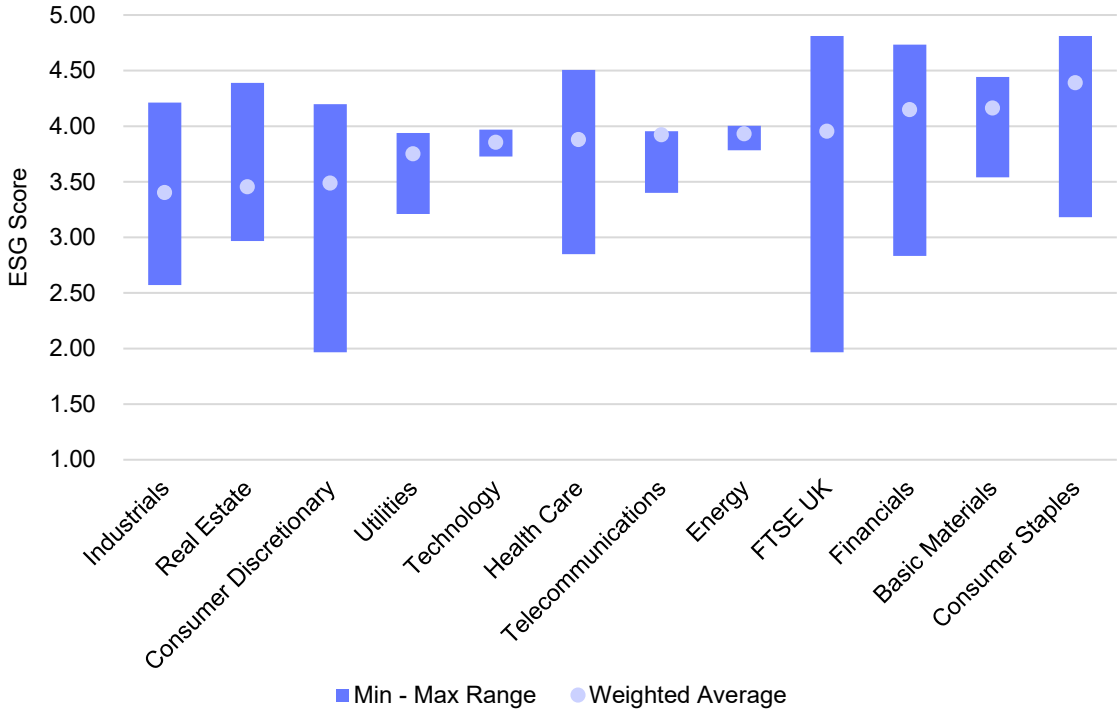
Finally, when both carbon emission and reserves intensity reductions are required simultaneously, it would seem that both Basic Materials and Energy would be most at risk of severe underweighting since they score poorly on both of these measures. However, it is worth cautioning that a simple over and underweighting of industrial groups would need to be limited, if tracking error and other risk exposures are a concern.

Section 3: ESG scores

Similarly, we reviewed the FTSE UK index constituents' ESG scores from an industry perspective. In Figure 4, we display the weighted-average ESG scores, and the range over which they vary, for each industrial group in the FTSE UK Index in September 2022 (see [2] for ESG score definitions). We would like to highlight some interesting changes compared to the previous year.

The Technology weighted-average ESG score has increased (but it had a small impact on the index overall because of the small Technology industry weight in the index), while Industrials has remained the lowest-rated group. On the other side of the scale, Consumer Staples, Financials and Basic Materials remained the highest weighted-average ESG scoring industries. Telecommunications' weighted-average ESG score is now just below that of the FTSE UK.

Figure 4: ESG scores of FTSE UK and Industry components – minimum, maximum and weighted average



Source: FTSE Russell. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Please see the end for important legal disclosures.

Therefore, to create an index that achieves an uplift in its weighted-average ESG score, compared to the FTSE UK Index benchmark, Consumer Staples, Financials and Basic Materials industries would need to be overweighted. Note that, since the weighted average for the FTSE UK Index benchmark is already about four (out of a maximum of five), even modest ESG uplifts will be difficult to obtain without taking reasonably large overweight positions in these industries.

It is clear that a potential problem arises to construct an index that provides both an aggregate ESG uplift and reduces the carbon intensity relative to the UK benchmark. While the Basic Materials industrial group has a high ESG score, we have seen in the previous section that the industry is also highly carbon intensive. We will examine this apparent contradiction in the next section.

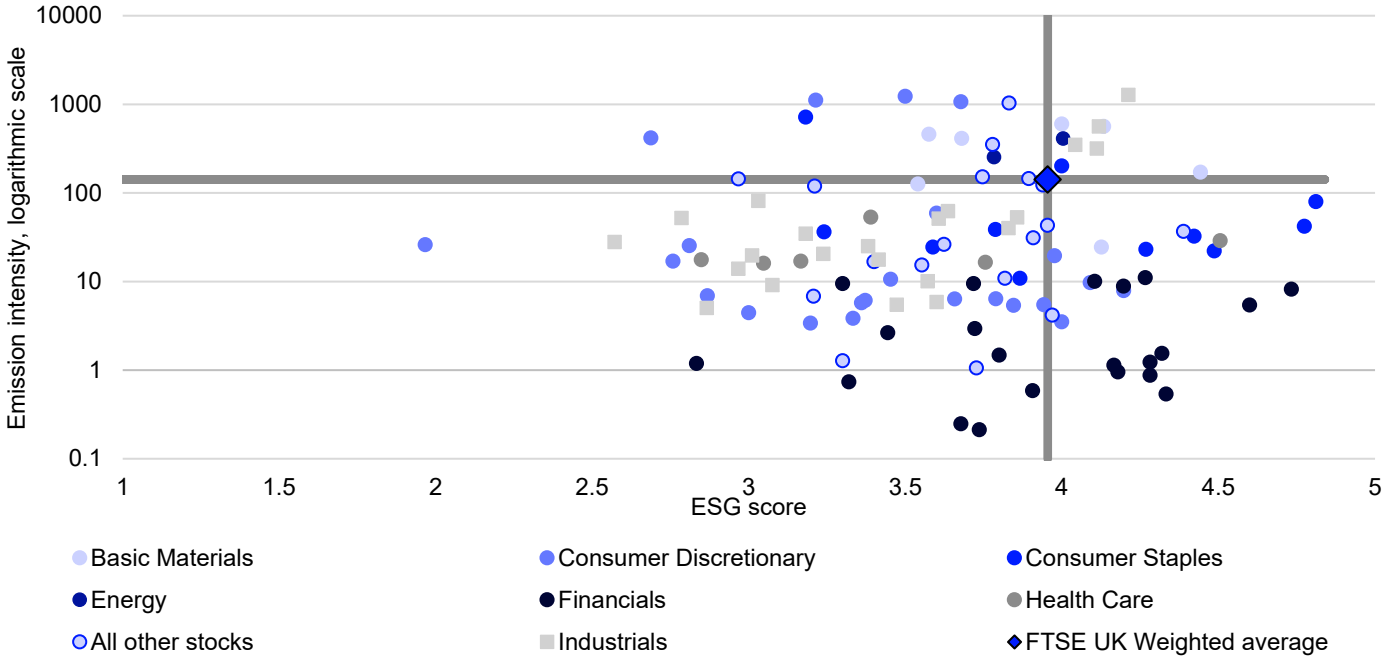
Section 4: ESG scores and emissions intensity

It is apparent that to achieve a simultaneous increase in ESG score and carbon emission reduction is even more challenging than achieving each target on its own. Furthermore, from Section 2 and 3, it follows that it would not be possible to achieve this goal without allowing for a deviation in industrial weights. Figure 5 highlights this situation via a scatterplot of ESG versus Emission Intensity for all the stocks in the FTSE UK Index universe. We have also plotted a point representing the aggregate weighted-average ESG and Emission Intensity for the FTSE UK Index universe as a whole and used it to divide the plot into quadrants.

In September 2022, only 33 out of a total of 115 stocks have ESG scores above the FTSE UK Index weighted average of 3.95. On the other hand, 90 out of 115 have Emission Intensities less than the FTSE UK Index weighted average carbon intensity (WACI) of 141.69. It is therefore clear that the opportunity set for targeting increased aggregate ESG scores is much smaller than that for decreasing the Emission Intensity.

To create an index that increases the aggregate ESG scores and decreases the WACI relative to the benchmark, we would expect to increase the aggregate weighting of the 25 stocks in the bottom right quadrant, and reduce the aggregate weight of the 13 stocks in the top left. As for the other two quadrants, where scores are a mixture of good and bad, we expect, since higher-than-average ESG scores are relatively rare, the aggregate weight of the top right quadrant's nine stocks to be increased, while the aggregate weight of the 64 stocks in the bottom left quadrant should be either near neutral or slightly underweighted.

Figure 5: Emission Intensity versus ESG scores for the FTSE UK Index constituents



Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe for September 2022. Please see the end for important legal disclosures.

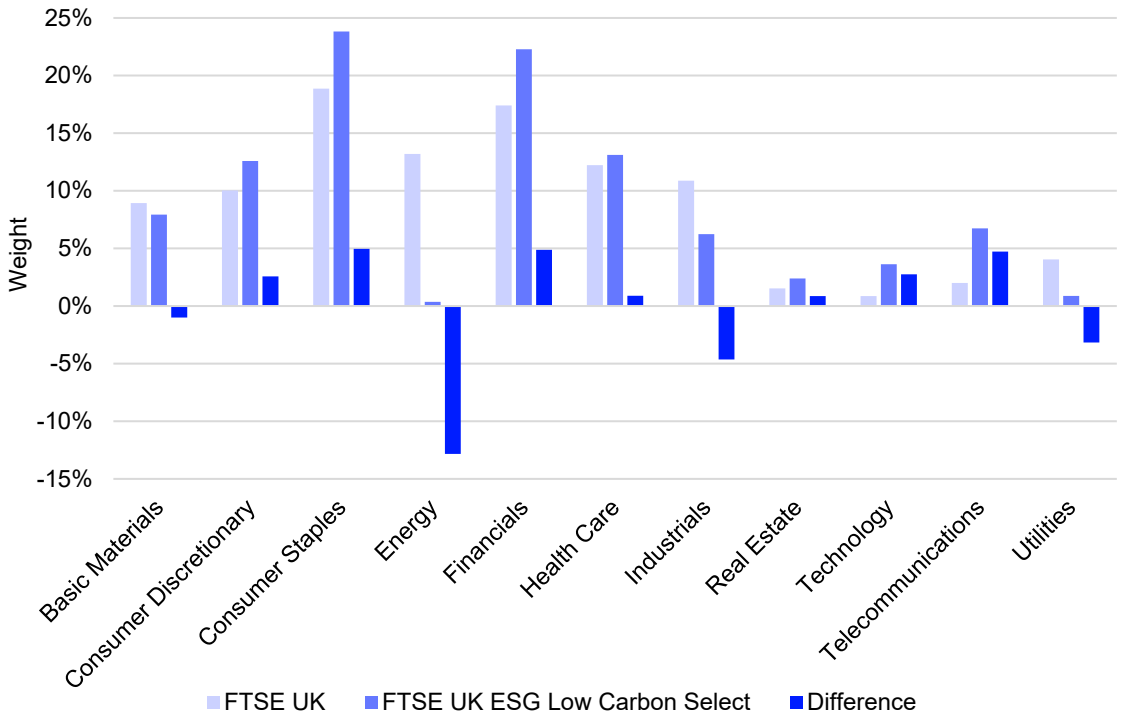
Section 5: UK ESG and low carbon index

In this section, we review the FTSE UK ESG Low Carbon Select Index, which sets out to provide significant reductions in carbon emission and reserve intensities, along with improvement in the aggregate ESG score relative to the FTSE UK Index benchmark. As pointed out in the previous sections, this is potentially challenging for portfolio construction because of the way that carbon intensive and high ESG-rated stocks interact with each other and the industrial groupings in the UK universe.

The target exposure approach is a transparent methodology devised by FTSE Russell which weights each stock by tilting away from high carbon stocks and towards higher ESG rated stocks, while controlling for industrial weightings. It is also possible to control the weight concentration in individual stocks by applying a maximum stock weight of 10%, and maximum capacity ratio of 10 (see [1, 4, 5] for more details).

Figure 6 shows the quarterly time averaged industry weightings for the FTSE UK Index and the FTSE UK ESG Low Carbon Select Index between September 2014 and September 2022. Note that all Industrial groups have similar weightings to the benchmark, with the exception of Energy. Despite relatively strong ESG scores, we allow significant underweighting of Energy to aid in our ability to work towards the low carbon targets. As we have seen earlier, this is because Energy uniquely includes stocks that exhibit high carbon emission *and* reserves intensity.

Figure 6: Average sector weights of FTSE UK ESG Low Carbon Select Index versus FTSE UK Index

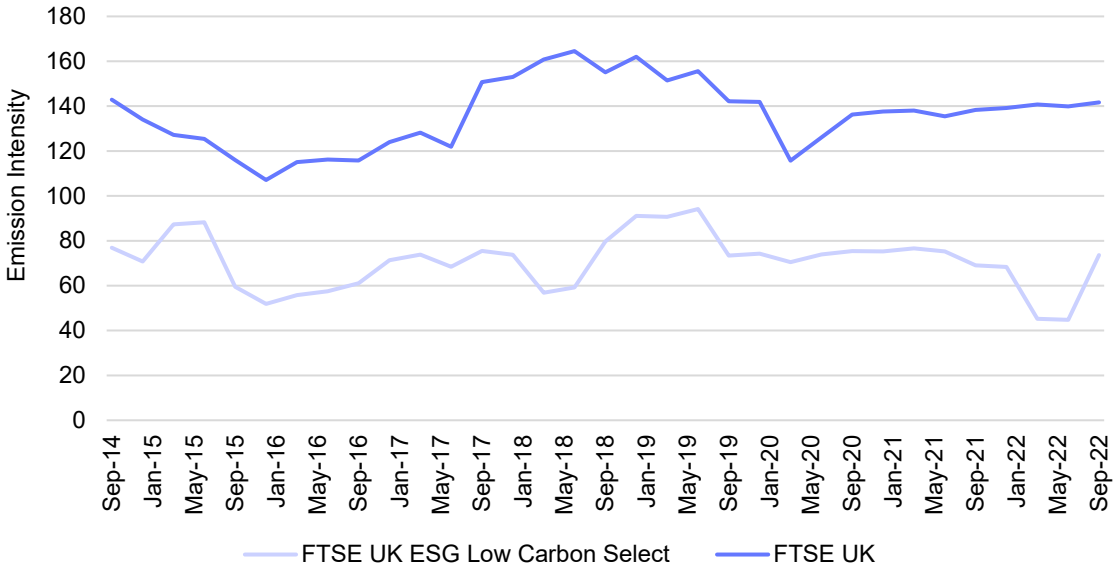


Source: FTSE Russell. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Please see the end for important legal disclosures.

Utilities and Industrials are also underweighted to pursue the carbon reduction targets. To support the ESG uplift, Telecommunications, Financials and Consumer Staples sectors are overweighted. Basic Materials has a slight underweight exposure since its strong ESG scores are tempered by its high carbon reserves and emissions intensity profile.

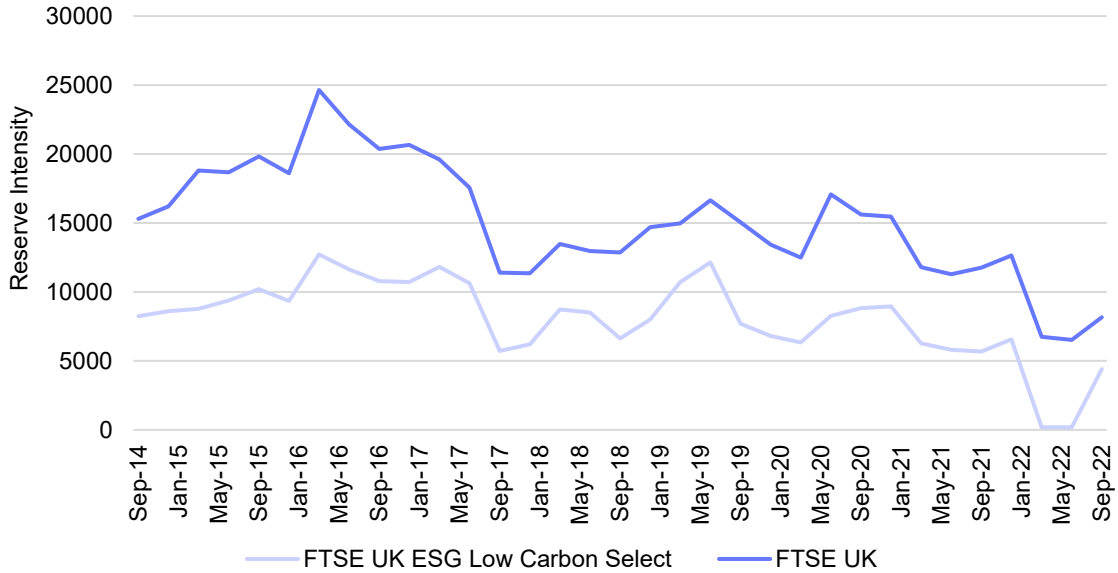
Figure 7 shows the improvement in the Weighted Average Carbon Emission Intensity through time for the FTSE UK ESG Low Carbon Select Index compared to the FTSE UK Index benchmark. Figure 8 shows the corresponding improvement in Carbon Reserve intensity. See the Appendix for definitions of carbon emission and reserve intensities.

Figure 7: Weighted Average Carbon Emissions Intensity – FTSE UK and FTSE UK ESG Low Carbon Select indices



Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Please see the end for important legal disclosures.

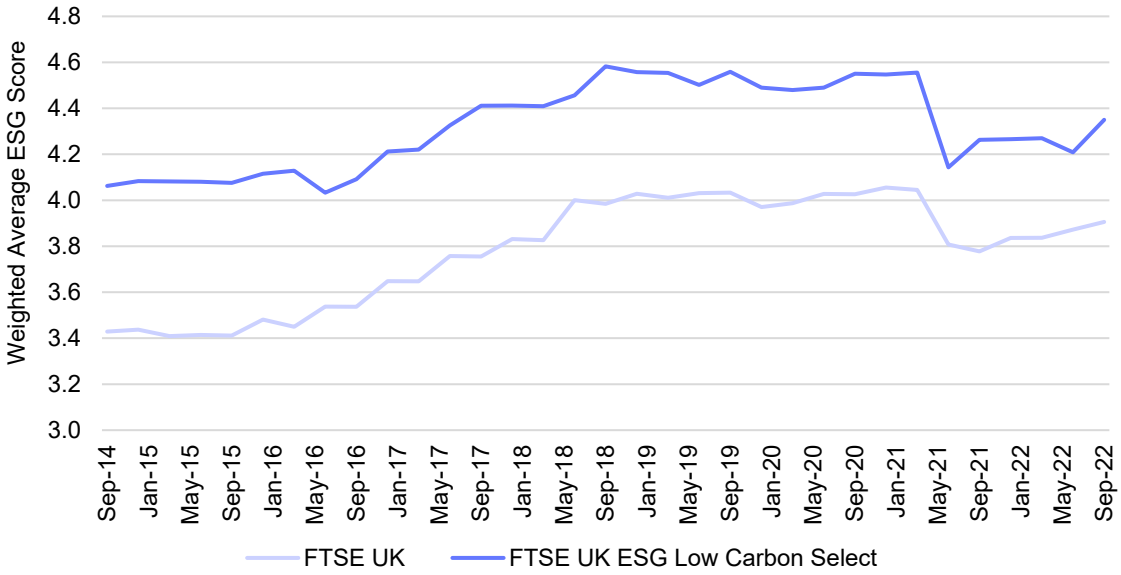
Figure 8: Weighted Average Carbon Reserves Intensity: FTSE UK and FTSE UK ESG Low Carbon Select indices



Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Please see the end for important legal disclosures.

Figure 9 shows the improvement in the aggregate ESG scores. Of note is the general trend of increase in the underlying aggregate ESG score through time. This means that in the past, an uplift of roughly 20% was possible, but recently an uplift of only about 10% is more achievable.

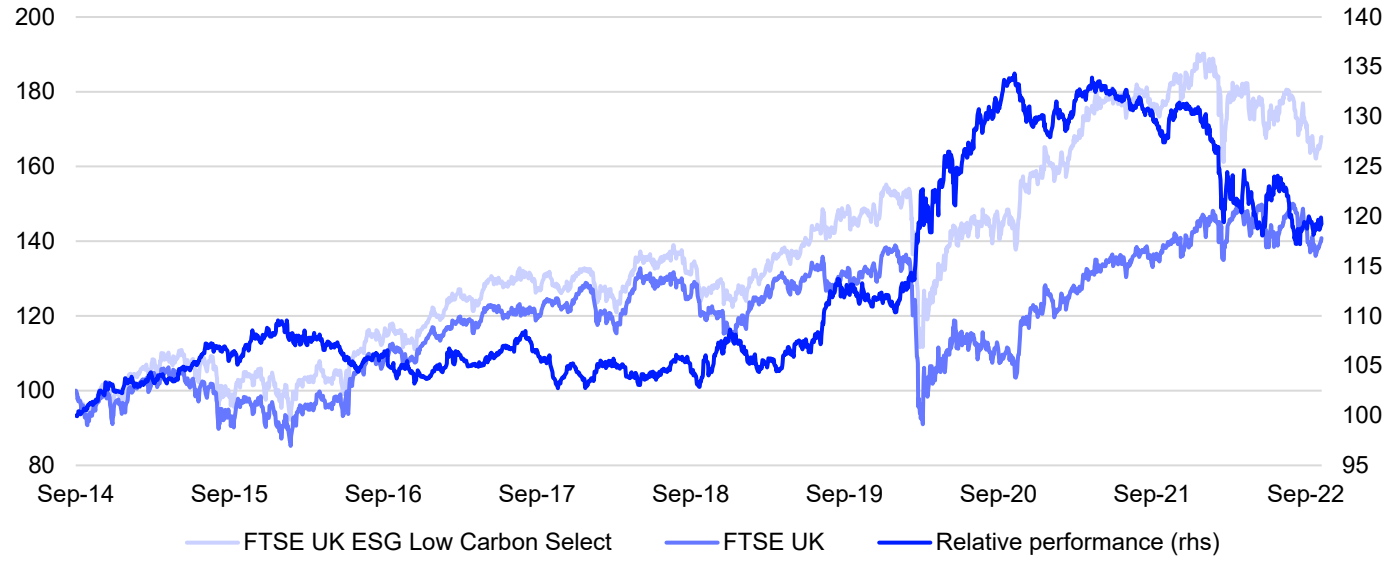
Figure 9: Weighted Average ESG Scores: FTSE UK and FTSE UK ESG Low Carbon Select indices



Source: FTSE Russell. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Please see the end for important legal disclosures.

Although the index was not designed to target improved performance relative to the underlying benchmark, figure 10 shows it has outperformed in excess of 20% in the last three years. The most recent rally in the energy stocks decreased earlier outperformance.

Figure 10: Performance of the FTSE UK and FTSE UK ESG Low Carbon Select indices



Source: FTSE Russell. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Performance shown for the SI Index is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

Finally, Table 1 details the index characteristics of the simulated FTSE UK ESG Low Carbon Select index from September 2014 to September 2022. All performance figures are annualized, total return and measured in GBP. The implementation and diversification measures and SI characteristics are averaged on a monthly basis. For detailed definitions of these quantities, see the Appendix and references [2] and [3].

Table 1: Summary statistics: FTSE UK and FTSE UK ESG Low Carbon Select indices

	FTSE UK Index	FTSE ESG Low Carbon Select Index
Performance		
Geometric Mean (%)	4.61	7.81
Volatility (%)	16.61	14.63
Sharpe Ratio		
DD (%)	-31.87	-24.63
Excess (%)		2.18
Tracking Error (%)		5.11
Information Ratio		0.43
Beta		0.84
Implementation		
Two Way Turnover (%)	12.70	70.7
Capacity (%)	100	25.0
Active Share (%)	0.0	59.5
Diversification		
Number of Stocks	130	62
Effective N	41.3	16.3
Top Ten Weight (%)	40.9	70.5
SI Characteristics		
Reserves Reduction (%)		46.9
Emissions Reduction (%)		48.3
ESG Scores Uplift (%)		14.0

Source: FTSE Russell & Trucost. Data based on the FTSE UK Index Universe from September 2014 to September 2022. Performance shown for the SI Index is hypothetical and for illustrative purposes only. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

We would like to comment on the relatively high tracking error of about 5% per annum. This is due in part to the deliberate choice of allowing a large underweight in the Energy industry. A lower tracking error solution could be obtained by imposing tighter constraints on Energy active weights. This would, however, result in lower reductions in carbon emissions and reserves intensities, and a smaller improvement in aggregate ESG score.

Section 6: Conclusion

We have reviewed the challenge of constructing a UK index with a higher aggregate ESG score and reduced carbon intensity relative to the FTSE UK Index benchmark. Our findings are not different from what we saw in our research last year [6].

It appears that in the UK, stocks with higher ESG scores *and* lower carbon emission intensities are limited and concentrated in relatively few industries. This means that to achieve carbon emission and reserve intensity reduction and improvement in ESG score, an SI index would need its industrial weights to deviate from those of the underlying market-capitalization benchmark.

To produce such an SI index, we applied a target exposure construction methodology that simultaneously tilts away from carbon intensive stocks and towards stocks with higher ESG scores. Although this does result in significant active industry weights, particularly in the Energy industry, the maximum deviations are constrained to limit the tracking error with the FTSE UK Index benchmark. Tighter constraints could be applied to further limit the tracking error, but only at the expense of SI improvements.

Appendix

This Appendix contains the definitions for the implementation, diversification and carbon metrics used in this document.

Diversification

To assess the degree of diversification in portfolio, we define Effective N of a portfolio as the inverse of the Herfindahl measure of concentration:

$$\text{Effective N} = 1/(W.W) = 1/\sum_{i=1}^{N} W_i^2 \quad (1)$$

Effective N attains its maximum under an equal weighting scheme when it is equal to the actual number of stocks. Hence, Effective N can be seen as a measure of "how far" a given portfolio is from this maximally diversified portfolio.

Active share

The active share is defined as half the sum of the absolute weight differences of two portfolios:

$$\text{Active Share} = \frac{1}{2}\sum_{i=1}^{N} |W_i - \widehat{W}_i| \quad (2)$$

where W and $\widehat{W}$ are two sets of portfolio weights.

Capacity

Portfolio capacity is defined as the reciprocal of the weighted sum of stock capacity ratios:

$$\text{Capacity} = 1/\left[\sum_{i=1}^{N} W_i * \frac{W_i}{W_{M,i}}\right] \quad (3)$$

where $W_{M,i}$ are the market capitalization weights. This yields a number between 0% and 100% and reflects the ease of investment relative to a market capitalization weighting (100%) scheme.

Weighted Average Carbon Intensity (WACI)

The Weighted Average Carbon Intensity is defined by:

$$\text{WACI} = \sum_{i=1}^{N} W_i * \frac{\text{Emissions}_i}{\text{Revenue}_i} \quad (4)$$

where, for the i^{th} stock, W_i is the portfolio weight, Emissions_i is the annual value of operational carbon emissions in metric tons of CO2 and Revenue_i is the annual sales in millions of USD.

Reserve Intensity

The Reserve Intensity is defined by:

$$\text{Reserve Intensity} = \sum_{i=1}^{N} W_i * \frac{\text{Reserves}_i}{\text{MCAP}_i} \quad (5)$$

where, for the i^{th} stock, W_i is the portfolio weight, Reserves_i is the estimated value of carbon reserves measured in equivalent metric tons of CO2 and MCAP_i is the full market capitalization of the company.

References

[1] FTSE Global Factor Index Series Ground Rules, FTSE Russell, April 2020.

[2] FTSE ESG Index Series Ground Rules, FTSE Russell, April 2020.

[3] FTSE Global Climate Index Series Ground Rules, FTSE Russell, April 2020.

[4] “Target Exposure: Investment applications and solutions,” FTSE Russell, February 2020.

[5] Targeted Sustainability, FTSE Russell Research, 2020.

[6] Sustainability in the UK, FTSE Russell Research, July 2021.

ABOUT FTSE RUSSELL

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

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

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

CONTACT US

To learn more, visit lseg.com/ftse-russell; email info@ftserussell.com; or call your regional Client Service team office:

EMEA +44 (0) 20 7866 1810

North America +1 877 503 6437

Asia-Pacific

Hong Kong +852 2164 3333

Tokyo +81 3 6441 1430

Sydney +61 (0) 2 7228 5659

Disclaimer

FTSE RUSSELL

An LSEG Business