Benchmarking ESG

A brief analysis of different sustainability indexes

At first glance, ESG funds can seem to be all the same product, like kitchen salt or sugar of different brands. However, ESG portfolios can differ from each other materially, with significant variations in selection criteria, tracking error and performance.

Investors have begun to focus on specific ESG criteria when making investment decisions. This has resulted in a proliferation of investment products with names including words such as Sustainable, Green or ESG. This report is part of a series looking at asset allocation and portfolio construction with ESG.

For ETFs and passive funds, the benchmark is the anchor of the portfolio. And while index funds replicate their benchmark exactly, many active funds use a benchmark index portfolio to identify the investment universe; meaning active funds are often merely subsets of the index.

In this paper we will look at the benchmark indices used by some of the largest US-listed ETFs and analyze them along a variety of dimensions. The follow-up paper will look at Europe.

The report is broken into three sections:
- An overview of ESG benchmark construction
- Tracking error comparisons and an evaluation of the different tilts
- Evaluation of different ETFs along a variety of ESG dimensions

> The main finding of the paper is that the choice of the index is crucial in determining how much tracking error (performance discrepancy between ESG and traditional index) will produce.

ESG vs. traditional benchmarks

Our previous papers on asset allocation with ESG (Asset Allocation for an ESG World and ESG: Performing Under Pressure) showed that 'conventional' ESG benchmarks, defined as those that have 'average' ESG preferences, are optimized to limit tracking error and thus have small differences in risk and return from the corresponding traditional, non-ESG benchmarks.

In contrast, indices that have strong ESG preferences tend to either exclude or substantially underweight a material number of assets against the traditional benchmark, thus achieving higher sustainability scores but also higher discrepancies in performance from the traditional index.

Helpful hint

A fund's prospectus indicates the benchmark index clearly. Since indices are produced by market data service companies such as MSCI, Bloomberg, FTSE and Dow Jones, it is easy to find information sheets about the indices with a quick online search.

1 Tracking error (TE) is defined as the standard deviation of the difference between the returns of to two indices or securities. Low tracking error means in our case that the performance of the ESG index mimics that of the traditional index closely. More information can be found here https://en.wikipedia.org/wiki/Tracking_error.

Exclusions and tilts

Sustainable equity indices review

Exclusion-based

Light
Exclude severe controversies (eg. CW, Tobacco, Thermal Oil), typical TE 0.5%
Example index
MSCI ESG Screened, FTSE Global Choice

Moderate
Exclude circa 25–50% stocks by market cap based on ESG metrics, typical TE 1%
Example index
MSCI ESG Leaders, S&P ESG, FTSE4Good

High
Exclude circa 75% stocks by market cap based on ESG metrics, typical TE 2%
Example index
MSCI SRI

Tilts/Optimisation

TE agnostic
Tilt and weight stocks by ESG metrics, typical TE 1–2%, without trying to match factor exposures such as sectors and capitalization
Example index
MSCI ESG Universal, FTSE ESG

TE constraint
Optimize for ESG factors subject to TE constraint, typical TE 0.5%
Example index
MSCI Focus, MSCI Enhanced Focus

Considerations

- Coverage: broad vs. concentrated
- Sector/country neutrality
- Tracking error[1]
- Turnover
- Heuristic vs. optimization-based
- Complexity
- Databases
- Track record: live vs. back-test
- Index cost: asset-backed fee and custom data

Source: UBS Asset Management, FTSE Russell, MSCI, S&P DJI. Data as of March 2022.
Note: TE data between sustainable index and underlying market cap index. Ex-ante tracking error (active risk) is calculated using an appropriate risk system and risk model. The ex-ante tracking error (active risk) is an indicative forecast only and may not reflect the realised (ex-post) tracking error experienced by the portfolio.

Negative screening, or exclusion, is the first consideration for understanding indices. Securities issued by coal producers, cluster ammunition and tobacco manufacturers, to use some common examples, are removed from the universe of ESG indices outright. We define light exclusion as when the resulting tracking error[1] is below 0.5% a year, medium, when tracking error below 2% a year, and high when tracking error is above 2%. Typically, simply taking out a few small companies (there are not many large listed companies producing cluster bombs, for example) causes very little tracking error.

For our purposes, anything below a 2% tracking error per year is considered a conventional ESG approach.

Negative screening causes tracking error because excluding securities from an index makes it impossible to replicate exactly. If we rule out a series of securities all having a common characteristic (beyond a low ESG score), we may cause a concentration that will be the root of the performance discrepancy. For example, if we were to remove all energy and financial stocks from a diversified equity index, it would be very difficult to replicate its performance. As a result, the portfolio will be less diversified and have higher tracking error than the traditional benchmark.

Portfolio turnover, which has tax consequences in many markets, may be an issue if ESG ratings change frequently (this is normally not the case) or if the optimization is run frequently to minimize the tracking error. Buying and selling securities adds to transaction costs. Investors need to include this in their due diligence before buying shares of a fund.

Positive screening, or tilts, are overweights of the more highly rated securities within a portfolio. This has the effect of increasing the average ESG score of the portfolio compared to the traditional benchmark.

Positive screening can be implemented in different ways:

Statistically
The portfolio manager establishes a tracking error goal to optimize weightings using an algorithm in order to reach the highest weighted-average ESG score while constraining tracking error within a certain level[2]. This can be done not only through tracking error constraints but also by constraints on how close factors such as sector exposure, country exposure and capitalization must be to those of the traditional index. For example, this is used by index providers to generate conventional ESG indices

ESG integration
For an active portfolio manager takes material ESG risks into account as part of the research process. Here, ESG is one of many inputs in the decision, which includes:

- Standard exclusions, e.g., cluster ammunition producers
- Screening and sustainability risk assessment (for example, firms that are heavy polluters may be underweighted as they are more likely to suffer large unexpected losses due to environmental catastrophes)
- Stewardship, such as consistent voting at shareholders meetings

ESG focus
Is a step further towards higher attention to sustainability in portfolio management. Active sustainability-focused strategies include:

- Extended criteria for exclusion (which go beyond the basic standard exclusions)
- Positive sustainability characteristics
- Engagement with firms on sustainability issues
- Risk-based screening to identify those higher risk assets which are to be avoided in the investable universe

Each of the approaches mentioned above may be implemented with different levels of tracking error. Statistical screening normally minimizes tracking error, while focus has more tilts and constraints and is expected to have higher tracking error; integration is generally in between.

2 Note: This is backward looking and uses historical data because we cannot know future returns.

A statistical evaluation of the largest US-listed ESG ETFs

Exhibit 1: A comparison of some of the largest US-listed ETFs to their respective traditional indexes

ESG Index Name	Traditional Benchmark	Beta to Benchmark	Correlation to Benchmark	Tracking Error
MSCI USA ESG Select	MSCI USA	1.02	100%	2.29%
MSCI USA ESG Leaders	MSCI USA	1	99%	3.10%
MSCI KLD 400 Social	MSCI USA	1.03	99%	3.15%
FTSE US All Cap ESG	FTSE US All Cap	1.05	100%	2.46%
NASDAQ Clean Edge Green Energy	NASDAQ 100 / MSCI USA	1.28 / 1.35	93% / 90%	13.39% / 16.82%

Source: MSCI, FTSE, NASDAQ; UBS Asset Management. For illustration only. It is not possible to invest in indices directly. Data as of March 2023.

To calculate the comparisons for some of the largest US-listed ETFs to their respective traditional indices, we used our proprietary UBS Global Risk System, which analyzes each holding in an ETF/index and computes its standard deviation based on the trailing 252 business days (i.e., one market year).

Exhibit 1 shows that many indexes used by popular ETFs tend to have high diversification and a close relationship with their traditional versions. For example, even in the turbulent twelve months ending March 2023, the MSCI USA ESG Select Index had a beta of 1.02 and a correlation of 100% with the traditional MSCI USA Index; its tracking error was also below 2.29%

The MSCI USA Select is what we call a conventional ESG index in that it has limited exclusion (e.g., cluster weapons manufacturers), moderate over-weighting of highly-ESG-rated stocks, but with the objective of matching performance with the traditional index. These indices are suited to investors with low or average ESG preferences.

Further analysis with our Global Risk System as well as the Barra Risk Model (GEMLTL), highlights minimal deviations in terms of exposure to risk factors such as sector weights, with only some overweight of quality and size for the sample period.

The MSCI USA Leaders Index has slightly lower beta, slightly lower correlation and a tracking error close to 3% instead of the 2% for the Select index. This confirms MSCI's index description, as the index overweights companies with high ESG rating and excludes a part of the laggards.

Looking at the risk model output, we notice material differences in sector exposure (over 5% in some cases) as well as in exposure to other risk factors such as capitalization, quality and liquidity.

More negative screening (exclusion) and more positive screening (overweight of highly-rated stocks) leads to higher tracking error and more performance discrepancy between the ESG and the traditional index. Therefore, we infer that the Leaders index is not among what we would call a conventional index, but seems more suited to investors with above-average ESG preferences.

The MSCI KLD 400 Social Responsibility Index has a lot in common, in terms of statistics, with the ESG Leaders Index. This index was among the first sustainable investing indices, and has a history going back to 1990, which may be helpful to those who like to analyze long histories. Note however that the methodology of the index may have changed during its existence.

The FTSE US All-Cap ESG Index performs more in line with conventional ESG indices, with a 2% tracking error. It has a slightly higher beta, which may be an issue specific to the chosen sample period.

Our risk models indicate little to no discrepancies in sector exposure, and similarly to the MSCI Select, some differences in exposure to factors such as quality.

Stronger ESG preferences

Many investors have strong ESG preferences. There are indices for this type of investor; in our small, unscientific tally we have found mostly indices that exclude polluters and overweight green companies. While this makes sense given the great risk driven by climate change, we were looking for indices that would highlight all dimensions of ESG, but did not find any among the benchmarks of the most widely-used ETFs.

Therefore, we decided to study an index covering green energy, the NASDAQ Clean Edge Green Energy Index. Evidently, this is not a diversified index since it only covers a segment of the energy sector. Indeed, since we did not have a clear traditional benchmark, we are reporting statistics against both the popular NASDAQ Index (which is known to be slanted towards technology and new economy names) as well as against the broadly-diversified MSCI USA Index. The last row of Exhibit 1 shows a tracking error of 13-17% and the output of our risk model shows a massive underweight position to factors such as profitability.

A large part of that tracking error is explained by sector concentration, unsurprisingly. It is interesting that the UBS AM Global Risk System highlights a 57–66% loading difference (depending on the index) to the earnings volatility factor; this could be because there are many relatively new companies among the listed names in the green energy segment.

This example highlights the need for investors to study ESG funds to prevent unexpected exposures; sector indices will always be more variable than diversified ones—this is hardly a surprise, but it is worth looking under the hood before buying the vehicle.

ESG Content:
How much sustainability?

Using the MSCI methodology, we can compare different indices based on their overall ESG score as well as along each of the ESG dimensions: Environmental, Social and Governance. A summary of the results is displayed in Exhibit 2.

For the different ESG dimensions, MSCI scores on a scale from 0 to 10, where 0 is the worst and 10 is the best possible score[3]. The first row displays the overall ESG score for the 5 analyzed ESG indices as well as for the 3 respective traditional benchmarks. The overall ESG score contains metrics across all dimensions and is computed using industry-adjusted scores. The industry-adjustment implies that achieving a high ESG score requires investments into assets which score well relative to sector peers. For example, with this methodology investments into fossil fuel companies are possible, but the investments should be focused on the best fossil fuel companies from an ESG perspective. In line with expectations, the overall ESG score is usually better for the ESG index than for the respective traditional benchmark with the NASDAQ Clean Edge Green Energy being an exception.

Exhibit 2: US ESG ETFs – Sustainability scores

	MSCI USA ESG Select	MSCI USA ESG Leaders	MSCI KLD 400 Social	FTSE US All Cap ESG
MSCI USA ESG Select	8.3	7.1	6.0	6.0
MSCI USA ESG Leaders	7.5	7.3	5.7	5.1
MSCI KLD 400 Social	7.5	7.2	5.7	5.5
FTSE US All Cap ESG	6.6	6.8	5.5	5.1
NASDAQ Clean Edge Green Energy	6.3	6.4	5.7	4.7
MSCI USA	6.6	6.7	5.5	5.1
FTSE US	6.6	6.7	5.5	5.1
NASDAQ	6.7	6.7	5.2	5.3

Source: MSCI, FTSE, NASDAQ; UBS Asset Management. For illustration only. It is not possible to invest in indices directly. Data as of March 2023.

3 The scores are based on the underlying companies' exposure to industry specific ESG risks and their ability to mitigate them relative to their peers.

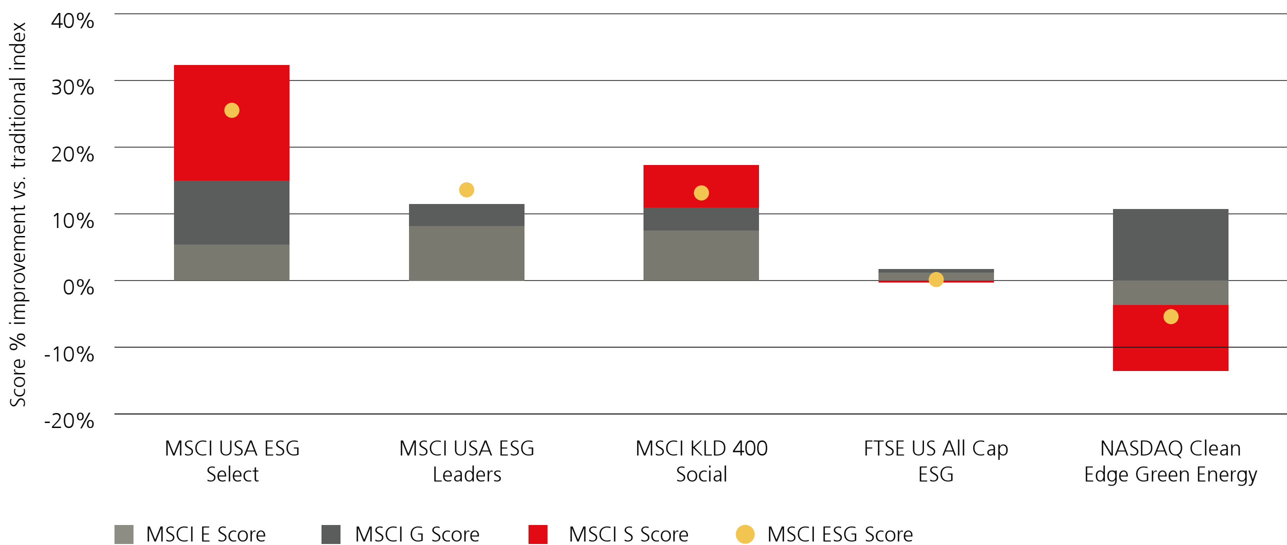
In Exhibit 3 we calculate the ESG score improvements of the different indices relative to the respective traditional benchmark and disaggregate the E, S and G dimensions.

With a 26% improvement relative to the traditional benchmark, the largest ESG exposure can be achieved with the MSCI USA ESG Select index. Interestingly, according to the MSCI methodology, moving from FTSE US to the FTSE US ESG index doesn't have a positive impact on the overall ESG score.[4]

A striking result is the ESG underperformance of the NASDAQ Clean EDGE Green Energy versus the NASDAQ Index. The NASDAQ Index Information Technology and Communication services companies are excluded from the NASDAQ Clean EDGE Green Energy Index, despite their on average very high ESG scores. Microsoft for example has an ESG score of 9.8 out of 10. Thus, along the ESG dimension the NASDAQ is a tough benchmark.

There are discrepancies among the different ESG dimensions if we look at percentage differences:

Exhibit 3: MSCI ESG Score improvements relative to traditional benchmark



Source: MSCI, FTSE, NASDAQ; UBS Asset Management. For illustration only. It is not possible to invest in indices directly. Data as of March 2023.

4 It is worth mentioning that MSCI is one of the many ESG rating methodologies available. FTSE uses a different methodology, which apparently weighs different ESG factors (that is, we expect that if we used the FTSE scores instead of the MSCI scores, this table might show FTSE ESG indices having a higher ESG score than the benchmark).

The **environmental score** is based on metrics such as carbon emissions, product carbon footprint as well as measurements of the pollution and waste a company produces. The biggest improvement in this dimension can be achieved by switching from an MSCI USA equity allocation to an MSCI USA ESG Leaders allocation.

The **governance** pillar focuses on metrics describing the corporate governance of the firm. The metrics capture whether management interests are aligned with shareholder interests and whether there is good management oversight, for example with an independent board. On the other hand, the governance pillar also includes metrics capturing the corporate behaviors such as regulatory fines. For this pillar, the MSCI USA ESG Select provides the largest improvement relative to the MSCI USA.

Finally, evaluating the social dimension requires a different set of questions and analysis. For example, do the companies in the index treat their employees well and protect their human capital? Do they care about responsible investments? For this dimension, the MSCI USA Select Index again provides the largest improvement relative to the traditional benchmark. When discussing the overall ESG score, we mentioned that the FTSE US ESG Index has the same overall ESG score as the traditional FTSE US Index. This result is partially explained by the social dimension. The FTSE index is optimized using FTS ESG ratings instead of MSCI, and it appears that while the MSCI and FTSE ratings are similar on E and G, they differ materially on S, which makes FTSE indexes appear to lag (when using the MSCI measure, but not if we used the FTSE measure). While the ESG index outperforms the traditional index on the environmental and governance dimension, it underperforms on the social dimension.

So far we have focused on ESG scores provided by MSCI, whose indices are optimized based on these scores. This might bias our view positively towards the MSCI indices. To evaluate the robustness of our conclusions, we also look at two alternative ESG scores in Exhibit 4[5].

The first score is a proprietary score from UBS Global Wealth Management (GWM) and the second score is from Sustainalytics[6]. The conclusions don't change although the scores are slightly lower on average.

All the major ESG indices provide material sustainability rating improvements to their respective traditional benchmarks on at least one of the major dimensions. Given the large correlation between the ESG indices and the traditional indices as well as the low tracking error implications of moving to one of the major ESG indices, the benefits of moving to an ESG index seem to outweigh the costs.

Exhibit 4: Comparing different ESG Scores

	MSCI USA ESG Select	MSCI USA ESG Leaders	MSCI KLD 400 Social	FTSE US All Cap ESG	NASDAQ Clean Edge Green Energy	MSCI USA	FTSE US	NASDAQ
UBS GWM Score	7.02	6.98	6.97	6.58	5.27	6.62	6.62	7.04
Sustainalytics Score	6.8	6.54	6.5	6.05	5.63	6.05	6.06	5.86

Source: MSCI, FTSE, NASDAQ, Sustainalytics, UBS GWM ; UBS Asset Management. Data as of March 2023

6 Scores range from 10 (highest/best score) to 0 (lowest/worst score).

A look at fixed income

There are not as many ESG bond indices as for stocks, and there are significantly lower assets invested in vehicles following these indices.

Secondly, there is a lack of objective methodology to rate government bonds for ESG. For example, should you look at whether there are laws in a country covering environmental, social (e.g., workforce conditions, diversity or product safety), and governance (e.g., protection of minority shareholders) issues? Or should you look at whether existing laws are appropriately enforced? How can you measure such things? And would raters be banned from countries who receive poor ratings as a reprisal? These are hard questions.

As a consequence, most ESG ratings for bonds focus on two issues:

1. Supranational bonds, often issued by inter-governmental organizations to finance projects such as clean water accessibility or education
2. Corporate bonds (green or traditional), issued by private firms

Exhibit 5 shows that the tracking error of the bond indices relative to their traditional benchmarks is significantly lower compared to the equity indices from the previous section. Given the overall lower volatility of bonds relative to stocks, this is in line with expectations. The beta and correlation of bond indices relative to their traditional counterparts are very close, confirming the low tracking error.

The key difference from equities is that tracking error in fixed income is generated through **differences in duration or in credit exposure**. Analyzing the different bond indices, we find that ESG bond indices do not systematically deviate in terms of duration or credit exposure from their traditional counterparts. The MSCI USD Green Bond index for example has a lower duration and a higher credit exposure relative to its traditional benchmark whereas the Bloomberg MSCI US High Yield Choice ESG Screened has a higher duration and a lower credit exposure on a relative basis.

Exhibit 5: Comparing fixed income ESG funds – Risk relative to traditional benchmark

ESG Index Name	Traditional Benchmark	Beta to Benchmark	Correlation to Benchmark	Tracking Error	Duration relative to benchmark	Credit exposure relative to benchmark
MSCI USD Green Bond	Bloomberg Barclays Global Aggregate USD Hedged	1.04	0.93	2.30%	Lower	Higher
Bloomberg Barclays ESG Aware US Aggregate Bond index	Bloomberg Barclays US Aggregate Bond	1.10	1.00	1.00%	Higher	Higher
Bloomberg MSCI US High Yield Choice ESG Screened	Bloomberg Barclays U.S. Corporate High Yield	1.00	0.99	0.85%	Higher	Higher
Bloomberg MSCI US Universal Choice ESG Screened Index	Bloomberg Barclays U.S. Aggregate Bond	0.97	1.00	0.56%	Higher	Higher

Source: MSCI, Bloomberg Barclays; UBS Asset Management. Data as of March 2023.

Following the analysis for equity indices, we also examine the potential ESG score improvements when moving to an ESG benchmark. Exhibit 6 contains some interesting insights . First, on a composite score level we find some significant dispersion across different scoring methodologies. Whereas the MSCI methodology suggests ESG improvements for all the indices, the UBS GWM ESG Score and the Sustainalytics ESG score don't. Specifically, for the MSCI USD Green Bond as well as the Bloomberg Barclays ESG Aware US Aggregate Bond Index, we can observe a deterioration in the ESG score relative to the traditional benchmark for the alternative ESG score providers.

Decomposing the MSCI ESG Score into the environmental, social and governance dimension provides additional color. For the MSCI USD Green Bond, the table suggests a significant improvement in the environmental score, but a significant deterioration in the social and governance dimension. Interestingly, this resembles our findings for the Nasdaq Clean Edge Green Energy index whose MSCI social score is very low.

Exhibit 6: ESG Scores relative to traditional benchmark -Fixed income ETFs

	MSCI USD Green Bond	Bloomberg Barclays ESG Aware US Aggregate Bond index	Bloomberg MSCI US High Yield Choice ESG Screened	Bloomberg MSCI US Universal Choice ESG Screened Index
MSCI ESG Score	11%	7%	13%	6%
UBS GWM ESG Score	160%	-17%	28%	27%
Sustainalytics Score	-21%	-28%	28%	-6%
MSCI E Score	23%	2%	6%	3%
MSCI S Score	-16%	2%	5%	-3%
MSCI G Score	-5%	3%	2%	4%

Source: MSCI, Bloomberg Barclays; UBS Asset Management. Data as of March 2023.

The devil is in the detail

Sustainability benchmarks may differ from their traditional counterparts materially or very little. Investors should understand the characteristics of the benchmark for any investment product they choose.

This is true particularly for passive funds, which replicate the ESG benchmark exactly, but also for actively managed funds, which still often use the benchmark as an anchor. Ultimately, higher adherence to sustainability principles is likely to bring more tracking error due to both negative screening (exclusion of low-rated assets) and positive screening (overweight of high-rated assets). The choice of the index provider is how much tracking error (performance discrepancy between ESG and traditional index) to allow when producing a benchmark.

While bond benchmarks tend to have very limited tracking error from their traditional counterparts, stock indices can have quite material differences and therefore have different risk and return when compared to traditional indices. Investors should make sure the selected benchmarks match their objectives, constraints and preferences.

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