

# Responsible Investing: What's the Difference Between Screens and Integration?

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Investors seeking to incorporate environmental, social, and governance (ESG) information into their investment decisions largely have two distinct options: *screening* or *integration*. Both are used to enhance the portfolio's overall ESG characteristics, but they're quite different in terms of implementation and outcomes. A screen clearly divides the eligible investment universe into acceptable and unacceptable securities and ensures an investor owns only those that are acceptable to them. Integration draws no such bright line. Instead, integration considers ESG information along with other financial information to determine the weight of the constituents in the portfolio. This paper explains these options and uses the case of carbon emissions to illustrate the difference.

## Key takeaways

- » ESG screens help investors focus on companies that meet specific criteria, just like any other screen, but include information beyond traditional financial metrics.
- » ESG integration includes quantitative approaches that reweight securities in a portfolio using ESG characteristics.
- » Screens ensure that investors only own companies that meet their ESG criteria, but they don't set the portfolio weight in proportion to their ESG characteristics. Integration does set portfolio weights in but is more flexible about which companies meet the ESG criteria.
- » Although either method can be used to enhance a portfolio's ESG characteristics, screens are frequently preferred because they enable both precision and customization in an acceptable tracking error budget.

## What is a screen?

Screens are arguably one of the most familiar and commonly used investment tools in the industry. They allow investors to seek investments with desirable characteristics using a simple yes-or-no decision rule to determine what could be allowed in the portfolio. Screens can be based on numerical metrics such as dividend yield or categorical ones such as country of incorporation. A screen identifies eligible investments but doesn't specify exactly which will make it into the portfolio or the weight at which they will be held.

An ESG screen uses the same concept but expands on the type of information that might be used for the rule—for example, revenue from clean energy, number of women on the board, carbon emissions, number of labor violations, or evidence of human rights abuses. Any given metric can be framed in different ways. In the example of carbon emissions, the screen could be based on absolute emissions, trend in emissions, peer-relative emissions, or emissions normalized by sales. Depending on the definition and threshold required for eligibility, the number and types of companies that pass a given screen can vary considerably. This makes screens both incredibly precise and quite flexible, and unsurprisingly they are very popular with investors.

The result of the screen is a list of securities that can be used to build the final portfolio. The securities must pass all screens to remain eligible for investment if there are multiple. The resulting list is just that: a list of companies. It doesn't assign weights to any of those that pass or indicate whether a company's characteristics are well above the threshold or just barely above it. For example, in a list of companies that pass a screen for at least two women on the board, a company with two women on the board is no different from a company with 10. Both may be included in the screened portfolio, and their weight will be decided in an entirely separate process that may not necessarily depend on the exact number of women on the board.

A major misconception about screens based on ESG information is that they come in two flavors: positive or negative. This is not a useful distinction because to define what goes into a portfolio, an investor or advisor simultaneously defines what should stay out of it. One doesn't exist without the other.

## What is integration?

The term *ESG integration* has been used in the industry to refer to very different investment processes. When the [Principles for Responsible Investing](#) first launched, integration was used to describe a process in which ESG characteristics were explicitly considered during the security valuation process. Since then, the term has broadened to include quantitative approaches that reweight securities in a portfolio using ESG characteristics. However, what both have in common is that they attempt to explicitly use the company's ESG characteristics along with its financial characteristics in the investment decision.

For the purposes of this paper, we use *integration* to refer to a quantitative process that uses company-level ESG characteristics to determine portfolio weights alongside other risk characteristics such as sector, geography, or fundamental factor. This process generally strives to overweight companies with better ESG characteristics and underweight those with worse ones in proportion to those characteristics. However, it must balance that objective against other factors. For example, in a portfolio that's trying to increase the average number of women on the board across its holdings, a company with 10 women would ideally be more overweighted than a company with two women. However, depending on the other factors driving the portfolio weights, the company with 10 women could end up being barely overweight or even underweight in the portfolio.

## How is integration different from screening?

The fundamental difference between integration and screening is that integration tries to consider how well a company scores in an ESG characteristic, as well as other factors, in the weighting decision. In contrast, a screen simply and transparently determines if a company meets the investor's criteria and doesn't have any bearing on its weighting when it remains in the investable universe. Unlike a screened portfolio, an integrated portfolio may invest in companies that have very objectionable ESG characteristics and might not necessarily overweight companies with the best ESG characteristics. This is typically not a desirable outcome. In addition, although integration does not intentionally omit any securities outright, as a screen would, it might end up choosing a weight of zero to achieve the desired ESG portfolio enhancement, which would make the end effect no different from a screen. Said another way, screening and integration are very different in application but may have similar outcomes.

The other key difference between screens and integration is how separate ESG characteristics are handled. In a screened approach, these can easily be addressed through separate screens with specific criteria for each. But it's more practical in integration to combine multiple ESG metrics of interest into a single composite variable that the investor can try to maximize while controlling for overall portfolio risk characteristics. This requires very careful consideration about how to create the composite metric and how it will interact with the other balancing risk characteristics. This multifaceted process can lead to undesirable outcomes if it isn't understood or managed well.

### Example: Carbon emissions

For the purposes of illustrating the difference between a screen and integration, we selected a metric that an investor could sensibly incorporate using either approach: carbon emissions. This issue isn't typically controversial enough that investors would balk at the inclusion of some of the poorer-performing companies, and it's possible to

**FIGURE 1:** SCREEN VERSUS INTEGRATION



#### Market-cap-weighted portfolio

Consists of a mix of companies with acceptable and unacceptable business involvement or behavior.



#### Integrated portfolio

Uses ESG characteristics to weight companies subject to constraints aiming to maintain a diversified exposure.



#### Screened portfolio

Reconfigures the eligible investment universe to remove companies with objectionable characteristics and invest only in those with acceptable ones.

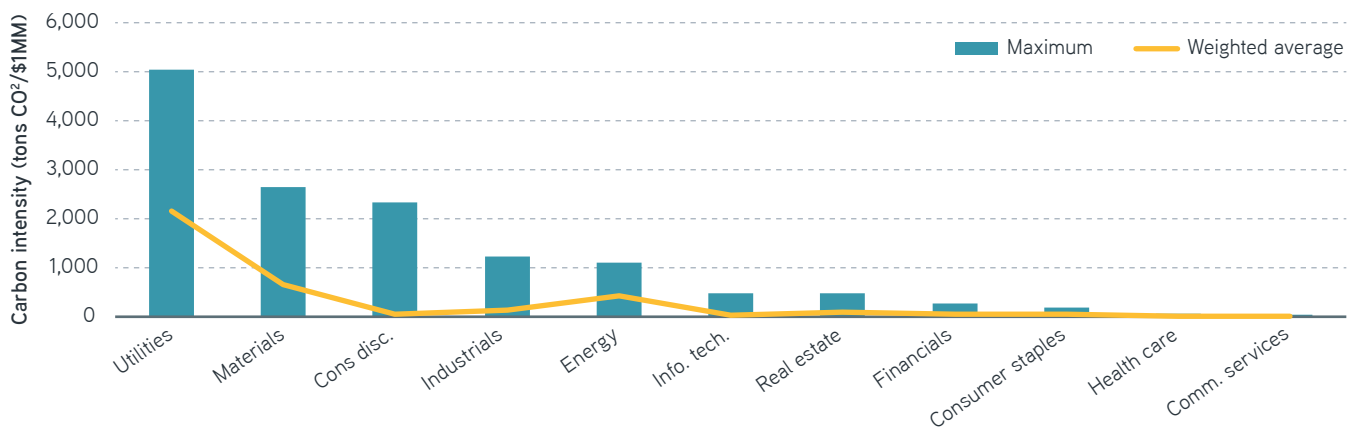
Source: Parametric. For illustrative purposes only.

determine a clear threshold of acceptability that could be used for a screen. For our analysis, we use carbon intensity, which is simply a company's carbon emissions normalized by revenues, and measure it as tons per \$1 million in revenue. This helps avoid penalizing companies simply because they're larger and have a greater economic footprint.

For our scenarios, we selected the S&P 500® and the MSCI EAFE indexes as our target exposure. The target exposure defines the initial eligible investment universe as well as desired risk characteristics. In the screened portfolios, we attempted to minimize tracking error relative to the target via an optimization process.

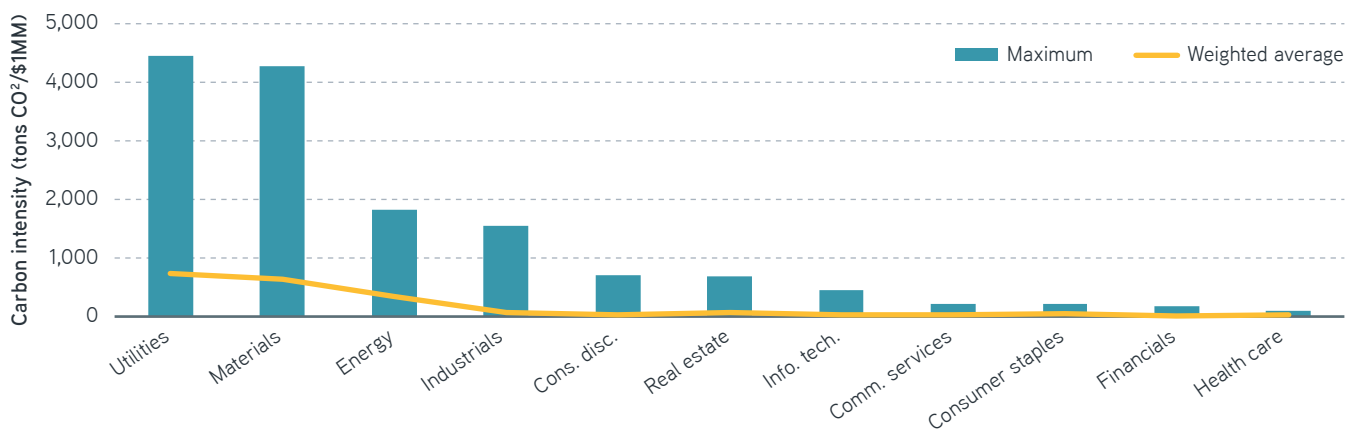
For context, the average carbon intensity is 132 for the S&P 500® and 113 for the MSCI EAFE. This varies considerably by sector. As figures 2 and 3 show, companies with higher-than-average carbon intensity tend to be found in the utilities, materials, energy, and industrials sectors. Utilities are notably worse than the other sectors, particularly in the S&P 500®. Note that carbon intensity for the energy sector is based solely on the consumption of energy to extract and transport fossil fuels to market, not on ownership of the fossil fuels themselves.

**FIGURE 2: AVERAGE AND MAXIMUM CARBON INTENSITY OF S&P 500® CONSTITUENTS BY SECTOR**



Sources: Parametric, MSCI ESG Research, S&P Dow Jones Indices, 5/8/2023. For illustrative purposes only. Not a recommendation to buy or sell any security. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

**FIGURE 3: AVERAGE AND MAXIMUM CARBON INTENSITY OF MSCI EAFE CONSTITUENTS BY SECTOR**



Sources: Parametric, MSCI ESG Research, S&P Dow Jones Indices, 5/8/2023. For illustrative purposes only. Not a recommendation to buy or sell any security. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

We first ran three scenarios with screen thresholds of 500, 1,000, and 3,000 tons/\$MM. Because higher values are worse in this case, companies with a carbon intensity higher than the threshold fail the screen and aren't eligible for inclusion. For each screen scenario, we calculated the average carbon intensity and predicted tracking error if we simply market-cap-weighted the eligible securities, as well as if we optimized them to reduce sector and factor biases relative to the unscreened benchmark. In general, predicted tracking error was moderate, less than about 50 basis points (bps) for even the most restrictive scenarios, and was reduced further via optimization. Additionally, the reduction in average carbon intensity was meaningful, about 20% to 60% for both indexes. Interestingly, the reduction in carbon intensity was better under the market-cap-weighting approach than the optimized approach in all scenarios. This arises as the optimizer overweights companies with risk characteristics that are similar to the companies that failed the screen to balance out the effect of the restriction. If these companies tend to also have higher emissions, even though they pass the screen, the overall reduction in portfolio emissions will be lessened.

We then ran three additional scenarios that attempted to match the average carbon intensity of the optimized screened portfolios under an integration approach for comparison. We used similar risk controls as the screened optimized scenarios and allowed tracking error to vary to target the desired carbon intensity level. The optimizer had full flexibility in selecting and weighting securities that best tried to minimize overall portfolio carbon intensity while providing benchmark-like risk characteristics—no individual names were explicitly restricted based on emission levels. What we found was that the predicted tracking error was scarcely better than the screened optimized approach once we reached the desired level of emission reduction. What this tells us is that integration doesn't necessarily produce better ESG characteristics for a given unit of tracking error than when we used an optimization approach after applying a screen. We present the results in figure 4, which demonstrates that there's always a trade-off between the reduction in carbon intensity and the predicted tracking error, no matter which approach the investor takes.

**FIGURE 4:** SCREENED AND INTEGRATED PORTFOLIO CHARACTERISTICS ILLUSTRATION

S&P 500®-based illustration												
Screened approach									Integrated approach			
Fail criteria (carbon intensity)	Market-cap weighted				Optimized				Avg. carbon intensity	Predicted tracking error	Number of stocks	
	Avg. carbon intensity	Reduction vs. benchmark	Predicted tracking error	Number of stocks	Avg. carbon intensity	Reduction vs. benchmark	Predicted tracking error	Number of stocks				
> 3,000	99	-25%	0.16%	492	109	-17%	0.06%	490	109	0.05%	494	
> 1,000	57	-57%	0.38%	472	65	-51%	0.16%	465	65	0.13%	462	
> 500	49	-63%	0.46%	455	55	-58%	0.18%	450	55	0.17%	453	

MSCI EAFE-based illustration												
Screened approach									Integrated approach			
Fail criteria (carbon intensity)	Market-cap weighted				Optimized				Avg. carbon intensity	Predicted tracking error	Number of stocks	
	Avg. carbon intensity	Reduction vs. benchmark	Predicted tracking error	Number of stocks	Avg. carbon intensity	Reduction vs. benchmark	Predicted tracking error	Number of stocks				
> 3,000	91	-20%	0.08%	788	92	-19%	0.08%	788	93	0.07%	785	
> 1,000	65	-42%	0.18%	770	70	-38%	0.14%	762	70	0.11%	759	
> 500	52	-54%	0.32%	738	58	-49%	0.20%	722	58	0.16%	724	

Sources: Parametric, MSCI ESG Research, S&P Dow Jones® Indices, 5/8/2023. Data is provided for illustration purposes only; it is not a recommendation to buy or sell any security or adopt any investment strategy. Tracking error risk refers to the risk that the performance of a client portfolio may not match or correlate to that of the index it attempts to track, either on a daily or aggregate basis. It is not possible to invest directly in an index. Indexes are unmanaged and do not reflect the deduction of fees or expenses.

It's important to note that the number of stocks in the market-cap-screened approach represents all the securities that were eligible for investment after the screen was applied. As the screen threshold becomes more stringent, the number becomes lower, as expected. In the case of the optimized screened approach, the portfolio holds only securities with the desired risk characteristics that pass the screen, which may be lower than the number of eligible securities.

Similarly, although the integrated portfolio can theoretically own many more securities than the screened portfolio, it doesn't always do this. This is because it rarely needs all the securities for risk purposes, and the most expedient path to improving the portfolio's carbon profile is to underweight or completely drop the highest-emitting companies. These aren't the same securities that the screen would remove. The integrated portfolios hold high-emitting companies. For instance, the integrated S&P 500® portfolio with the lowest tracking error holds five companies with carbon intensity greater than 3,000, and the comparable integrated MSCI EAFE portfolio holds two. In some cases, particularly for especially sensitive ESG issues, this result might be unacceptable to the investor.

We point this out to address the common misconception that portfolios that eliminate certain companies altogether are bound to underperform simply from restricting the opportunity set. The reality is far more nuanced than that in our experience. Performance depends on which securities are eliminated, not the act of elimination itself—not to mention that the entire premise of stock picking is that of narrowing down the opportunity set to only the most favorable securities. Hardly anyone would argue that a portfolio with more securities will necessarily outperform one with fewer on that fact alone.

## Conclusion

Screens and integration are essential yet distinct ESG incorporation techniques, and integration is especially misunderstood, since the term is used in the industry for entirely different investment processes. Although many investors are attracted to the fact that quantitative integration doesn't necessarily omit any securities from the portfolio, the reality is that it's difficult to improve any portfolio's ESG characteristics without significantly underweighting or outright removing companies with the worst characteristics. In practice, either approach can lead to similar levels of tracking error for a given set of ESG considerations.

Furthermore, many investors don't like to hold objectionable securities for the sake of reducing tracking error. In contrast, screens provide a precise and flexible way to control which companies are in the portfolio and improve its ESG characteristics, with optimization techniques that can provide equivalent risk controls to integration.

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