



Scientific Portfolio Market Review

January 2025



SciX
An EDHEC Venture

Reading the ESG Label Before Use is Not Enough

Special update on Equity Indices

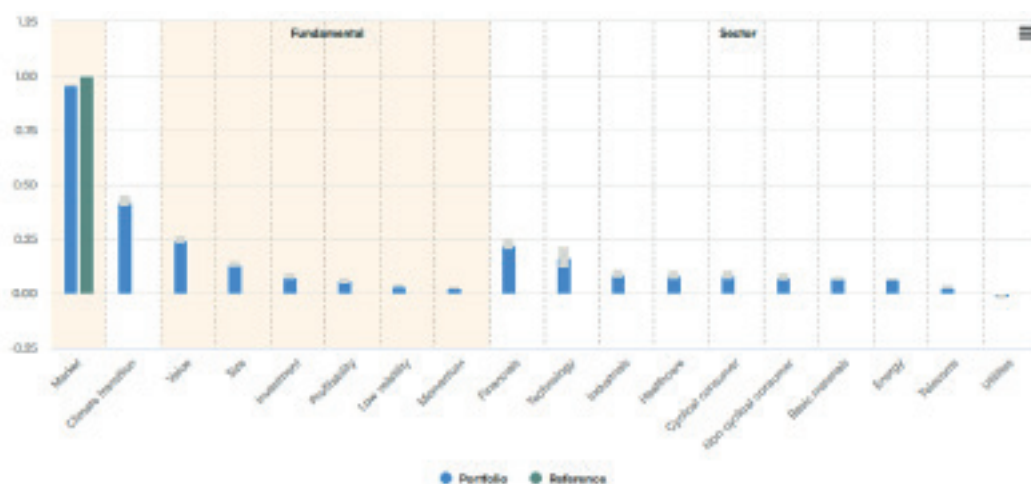
The Importance of Looking at Holdings

In the previous edition of our Market Reviews we highlighted the importance of examining the holdings of a portfolio rather than relying on ESG labels to make a precise sustainability assessment. We observed a significant dispersion of “do no harm” (DNH) sustainability levels across our pool of collective investment schemes, with some ESG funds/ETFs showing no improvement (and sometimes a worsening) compared to their corresponding market cap-weighted benchmark. We also insisted on the potential financial consequences of pursuing a sustainable strategy. This led us to report that some funds seemed to be more efficient than others when managing the tradeoff between sustainability and financial risk and return.

We now turn to ESG-focused financial benchmarks (which we expect to be of interest to institutional asset owners) and conduct the same analysis on this new data set. More specifically, we perform an [independent sustainability review of ESG-labelled broad-based large cap equity indices](#) primarily invested in US, European or global developed markets and present results produced by the Scientific Portfolio platform.

Defining a Universe of ESG-Labelled Indices Suited for Apples-to-Apples Comparisons

As we plan to engage in index-level comparisons based on [sustainability](#), it is important we select groups of investment benchmarks in our database (which includes over a thousand indices) that remain overall consistent and homogeneous from a financial standpoint. To first identify broad-based large cap indices, we use each index’s set of systematic risk exposures, also known as its [Factor Profile](#). This is a powerful feature of the platform for it works as a portfolio's unique systematic risk identification card and provides a holistic view of a portfolio's risks and performance potential, like in the illustration below.



Note: Portfolio represents a US multifactor equity index. Reference represents a market capitalization-weighted benchmark containing the 500 largest US stocks.

Source: Scientific Portfolio platform

As shown in the illustration above, a strategy with significant active risks such as an equity multifactor index has a rich Factor Profile with multiple exposures to fundamental and sector-based risk factors. Meanwhile, by design, the market-cap weighted (CW) benchmark has a market beta of 1 and no other exposures.

To systematically capture broad-based large cap indices, we look for Factor Profiles that do not deviate too much from that of the CW benchmark. We introduce two simple selection criteria to that purpose: i) Market exposure (i.e., beta) must be greater than +0.6 and ii) the sum of absolute non-Market exposures must be less than the Market exposure. As a safety measure, we also exclude indices whose risk (volatility) is not sufficiently well explained by our proprietary factor-based risk model¹, setting the minimum threshold to an R-squared of 80%. This is also an indirect way of avoiding benchmarks that might be somewhat concentrated and driven by specific risks.

Finally, to identify the **subset of ESG-labelled indices within the broad-based large cap universe**, we adopt a qualitative approach and consider all funds that include at least one of the following keywords in their names: ESG, climate, carbon, renewable, sustainable, sustainability, PAB, SRI, ISR, socially responsible, choice, and ethical. The table below summarizes the fund universes obtained for three investment regions: United States, Developed Europe, Developed (World).

Region	# Indices	# ESG-labelled indices
United States	91	35
Developed Europe	43	24
Developed (World)	38	26

Sustainable Investing Starts with Doing no Harm (DNH)²

Reviewing the ESG-labelled indices above requires us to first **define sustainable investing**. Dating back to the 18th century, the notion of sustainability is historically and fundamentally a “Do No Harm” (DNH) injunction. Our first and primary definition of sustainable equity investing is derived from this concept: investing in companies whose business is conducted in a sustainable way, i.e., whose activities and behaviour do no significant harm.³ With this specific objective in mind, sustainable equity investors can consider two natural levers : either excluding (or divesting from) companies deemed “unsustainable”, or engaging with such companies to influence and improve their business conduct. The real impact of exclusion or engagement on the activities and behaviour of corporations, and ultimately on the planet or society, remains hard to measure though because broad outcomes such as a company’s greenhouse gas emissions depend on many outside factors. We therefore recommend investors focus on the **outputs** they can control, e.g., the proportion of stocks excluded or the number of companies engaged.

Is **engagement** more effective than **exclusion** when it comes to influencing corporations? The academic literature is still investigating this question⁴, but as reported in our June 2024 Market Insights some Oil & Gas CEOs seem to take (climate-related) exclusions seriously. We argue the two levers can be **complementary**: for instance, exclusion can be envisaged as the consequence of a failed engagement strategy, or as a credible deterrent if publicly announced ex-ante to the engaged companies and other

1 - See Scientific Portfolio's Investment Philosophy for more detail.

2 - See also Scientific Portfolio's Investment Philosophy.

3 - For other types of sustainable investing strategies that go beyond simply doing no harm, search for “Sustainable Investing” in Scientific Portfolio's Knowledge Center.

4 - Either side of the argument may be found in Berk and van Binsbergen (2021) and in Cheng et al. (2024).

relevant stakeholders. Also, genuine engagement efforts go beyond simple shareholder voting and therefore require to commit engagement (human) resources: exclusion can then become a cost-effective alternative⁵ when scarce engagement resources need to be carefully allocated and prioritised. There remains a case where exclusion has been historically considered the more effective if not the only approach: when it is a moral imperative for an investor not to be associated with a company, that is when the aim is not to have an impact on the company but rather to align the portfolio with the values of the investor.

ESG Screens are Naturally Suited to Assess DNH-Sustainability

Regardless of the approach taken, sustainable investing starts with knowing exactly what portion (if any) of a portfolio is currently unsustainable in order to determine the best course of action, rather than relying on names and labels. In practice, we identify unsustainable (harmful) securities using an ESG screen based on objective exclusion criteria. We recognise the criteria may vary among investors and therefore offer several standardised screens on our platform⁶, as well as the ability to design a customised screen by selecting one or several sustainability issues or Sustainable Development Goals (SDGs). We will further cover other ESG screens in future publications pertaining to sustainable investing but for the purpose of this analysis we rely on a “Consensus” screen derived from the review of the exclusion policies of the world’s 100 largest institutional asset owners. The four criteria most frequently used by asset owners when assessing a given company are the exposure to the controversial weapons industry, to the tobacco industry, or to the coal industry, and the presence of controversies related to the ten principles of the United Nations Global Compact (UNGC).

For each index in our list, Scientific Portfolio’s ESG Screening functionality identifies its unsustainable securities (if any) in accordance with the Consensus screen and thus provides a simple holdings-based assessment of its sustainability from a DNH standpoint. This assessment could be viewed as conservative because it assumes no engagement effort by the investor holding the index portfolio. Indeed, each index investor may wish to personalize and refine the assessment by accounting for her engagement objectives, resources and strategies towards the unsustainable stocks present in the portfolio. Such a customized assessment is naturally outside the scope of our study, and we aim to remain agnostic to the specifics of the index investor.

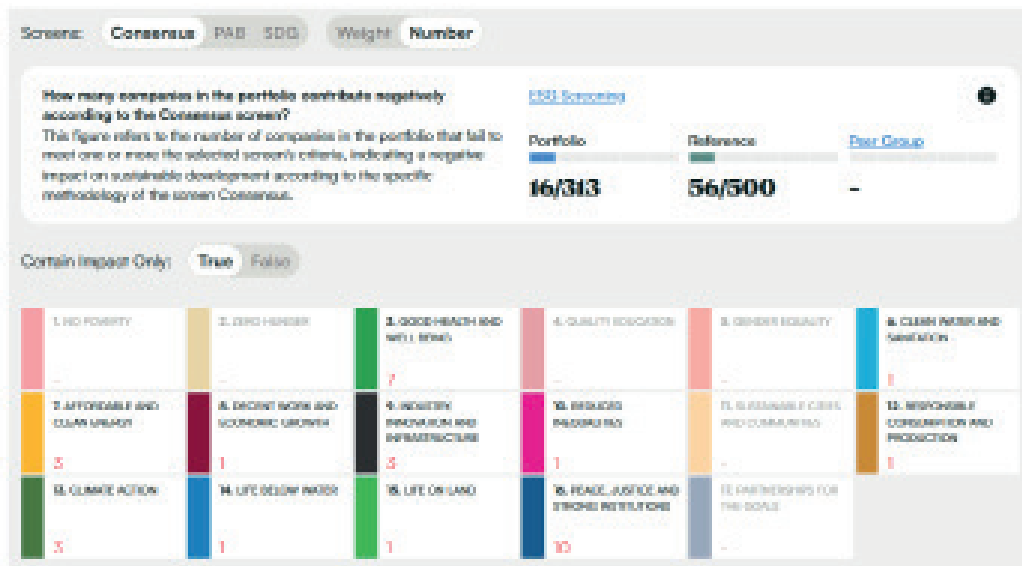
Therefore, we do not include engagement considerations in our review and use a simple metric for DNH-sustainability equal to the number of screened stocks divided by the total number of stocks in the portfolio. The interpretation is that the lower the proportion of screened (detected) stocks in the portfolio, the more sustainable the index’s strategy. Like most investment metrics, this ratio is arguably influenced by the investment universe in which the sustainable strategy is implemented and can only be used to differentiate between somewhat comparable strategies. We assume our universe of ESG indices meets this condition to the extent it only includes broad-based large cap strategies in developed markets, but we will later introduce a regional distinction to ensure results are homogeneous.

As a concrete example, in the exhibit below, “Portfolio” is deemed more sustainable than “Reference” because it contains only 16 unsustainable stocks out of a total of 313 (a proportion of ~5%), compared to Reference’s 56 unsustainable stocks out of a total of 500 (a proportion of ~11%). Our proprietary

5 - Exclusion may however affect the portfolio’s financial risk and performance, as we explain further in this note.

6 - For example, a screen consistent with the climate-related Paris-Aligned Benchmark (PAB) regulation, or a more ambitious screen meant to detect any negative contribution to any Sustainable Development Goal (SDG).

mapping methodology also makes it possible to identify which **SDGs** are being harmed by the 16 unsustainable stocks detected by the screen.



Note: Portfolio is the S&P 500 ESG Index. Reference is a market cap-weighted benchmark containing the 500 largest US stocks.

Source: Scientific Portfolio platform

For investors considering an engagement strategy and therefore wanting to understand the exact reason why an SDG is deemed to be harmed and why a company is deemed unsustainable, the Scientific Portfolio platform offers a clear and intuitive view of the links between SDGs and the underlying sustainability issues. More specifically, one can drill down into the ESG Screening analysis and visualise the underlying issues as well as the type of ESG data that caused one or several stocks to be flagged. For example, in the [exhibit below](#), we see that SDG 14 (Life Below Water) is affected through the issue of Biodiversity Footprint which is in turn detected through a variable measuring the extent to which the company is subject a Biodiversity Controversy.



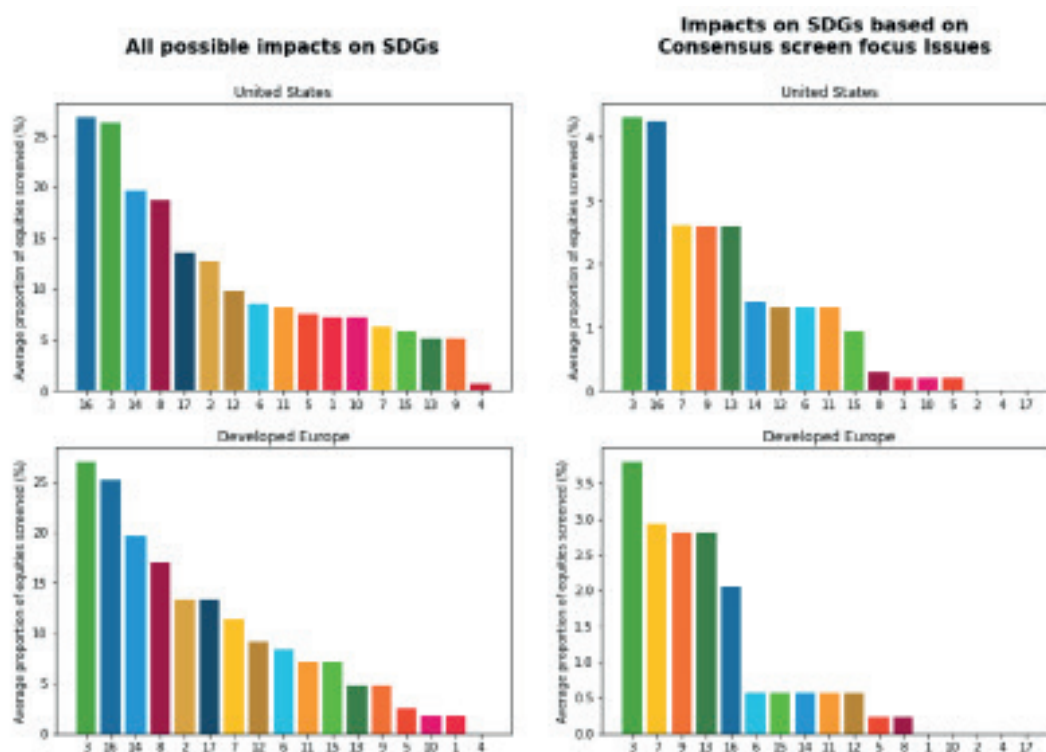
Source: Scientific Portfolio platform

Which SDGs are the Most Violated by our Universe of Broad-Based Large Cap Funds ?

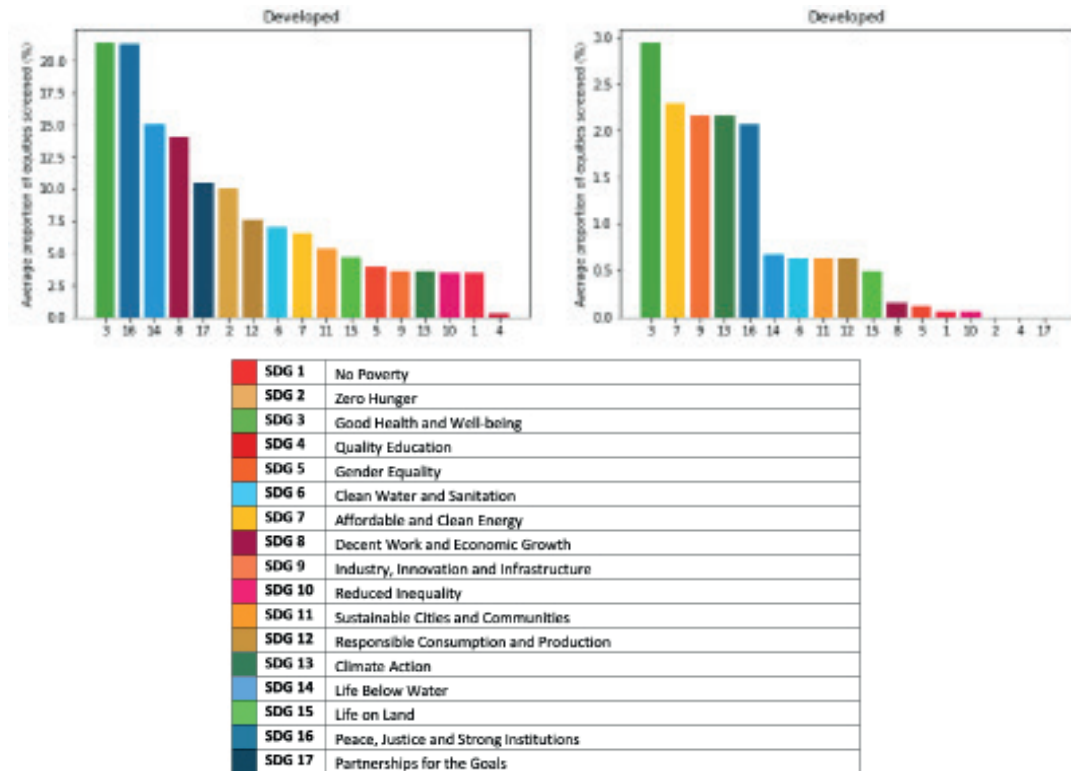
We now carry out our DNH screening analysis for all the ESG-labelled indices (in each region). First, we aim to obtain a broad picture of the sustainability issues (if any) that are being harmed by the activities or behaviours of companies held by the broad-based large cap indices: Exhibit 1 below reports the average (across all the funds) proportion of unsustainable equities, broken down by (negatively) impacted SDG. In the bar charts on the right-hand side, unsustainable equities are detected and accounted for using the Consensus screen described earlier, while the bar charts on the left-hand side adopt a more ambitious approach and consider a stock to be unsustainable as soon as it harms at least one of the 17 SDGs.⁷

Based on Exhibit 1, we note that the proportions of unsustainable stocks detected by the Consensus screen are overall (as expected) lower than for the more stringent approach, but also that some SDGs (e.g., SDG 14 Life Below Water, or SDG 8 Decent Work & Economic Growth) are largely underrepresented on a relative basis on the right-hand side, indicating that the corresponding sustainability themes could be overlooked if only relying on the Consensus screen. This is because the Consensus screen focuses on a limited set of sustainability issues with effects on only specific SDGs: for instance, tobacco-related issues which directly impact SDG 3 (Good Health and Well-Being), coal-related issues which directly affect SDGs 7 (Affordable and Clean Energy) and 13 (Climate Action), and controversial weapons as well as most issues tied to the UNGC principles which are closely associated with SDG 16 (Peace, Justice, and Strong Institutions).

Exhibit 1: Average proportion of equities (in the indices) that negatively impact each SDG



7 - See our publication Porteu de la Morandière et al. (2024) for more details on our SDG-related methodology.

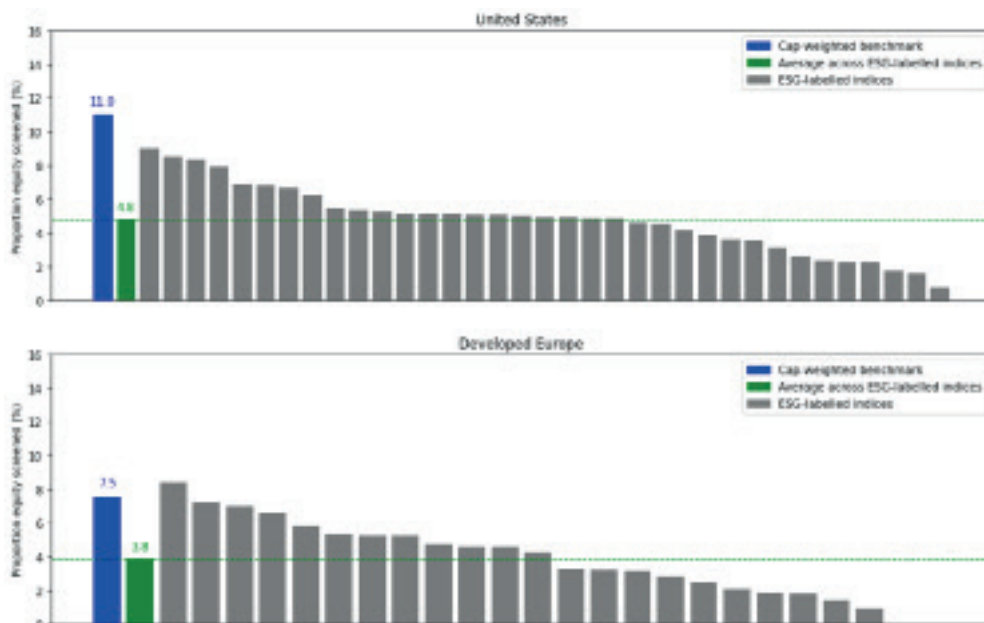


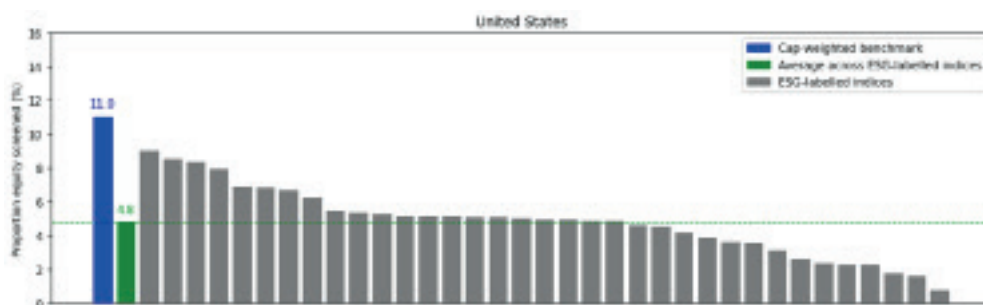
Results of the Review: Who are the Most Sustainable ESG-Labelled Indices?

We continue to use the Consensus screen and report index-level results for each of the three regional sub-groups to ensure results are homogeneous and can be compared to that of the regional market cap-weighted (CW) benchmarks.

The three charts in Exhibit 2 below rank ESG-labelled indices (grey bars) from the least DNH-sustainable (on the left) to the most DNH-sustainable (on the right). The average sustainability level across the entire sub-group (respectively the sustainability level of the relevant CW benchmark) is represented by a green (respectively blue) bar.

Exhibit 2: Comparison of the ESG-labelled indices sustainability level with the regional CW benchmark





On the one hand, the results show that on average, as expected, the ESG-labelled funds include significantly **fewer unsustainable names** than their relevant CW benchmark (4.8% vs 11.0% for the US region, 3.8% vs 7.5% for the Developed Europe region, and 3.6% vs 8.9% for the Developed region). This implies that a number of DNH exclusions were carefully applied by some index providers. On the other hand, the results also show that the presence of an ESG-related label in the name of an benchmark has to be interpreted with caution because it may translate into **a very wide range of sustainability levels**, as measured with our DNH approach. In fact, we see some ESG indices being even less DNH-sustainable than their corresponding CW benchmark, confirming that **investors should refrain from relying exclusively on labels** when selecting an ESG strategy.

Based on our analysis, the **five most sustainable** indices in each regional sub-group are:

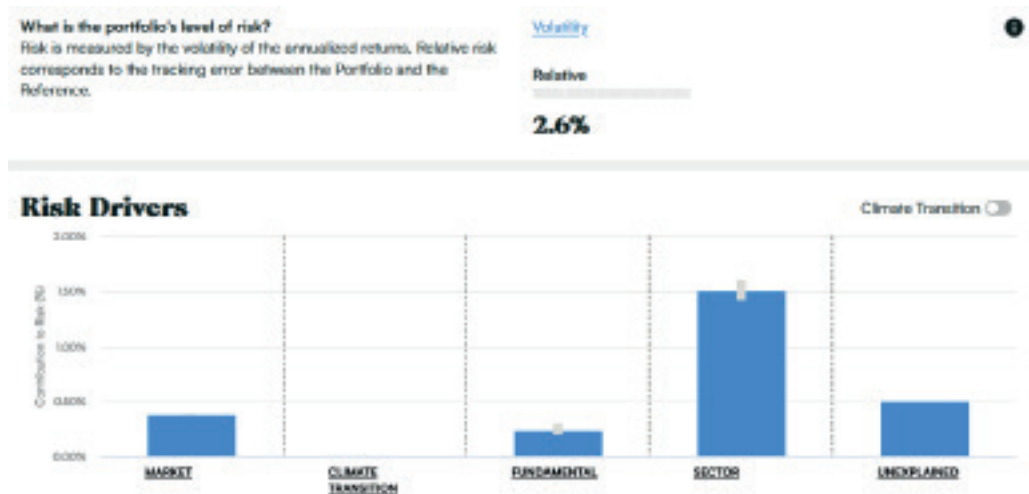
United States	
Index Name	Proportion of unsustainable equities
FTSE US All Cap Choice Index	0.7%
Beyond Investing US Vegan Climate Index	1.6%
MSCI USA Choice ESG Screened Index	1.8%
FTSE US Choice Index	2.1%
MSCI USA Low Carbon SRI Selection Index	2.3%
Developed Europe	
Index Name	Proportion of unsustainable equities
MSCI Europe SRI Low Carbon Select 5% Issuer Capped Index	0%
Euronext Low Carbon 100 Europe PAB Index	0%
MSCI Europe ex EMU ESG Leaders Select 5% Issuer Capped Index	0.9%
MSCI Europe Low Carbon SRI Selection Index	1.4%
MSCI Europe SRI Select Reduced Fossil Fuel Index	1.8%
Developed	
Index Name	Proportion of unsustainable equities
MSCI World SRI Low Carbon Select 5% Issuer Capped Select Index	1.3%
MSCI World Low Carbon SRI Selection Index	1.4%
MSCI World Select ESG Rating and Trend Leaders Index	1.5%
Nasdaq Future Global Sustainability Leaders Index	1.5%
MSCI World SRI Select Reduced Fossil Fuel Index	1.5%

Sustainable Investing is Also About Risk and Return

In our July 2024 Market Insights we mentioned the importance of considering the **financial consequences** of pursuing a sustainable strategy. Indeed, an ESG tilt in a portfolio may lead to material risk and return deviations compared to the CW benchmark, something fiduciary investors (or more generally investors subject to strict risk budgets) should carefully quantify. Scientific Portfolio's **Risk & Reward functionalities** facilitate this financial analysis by computing and decomposing an ESG index's risk relative to the CW benchmark (also known as its active risk or tracking error), using a **factor-based risk model**⁸.

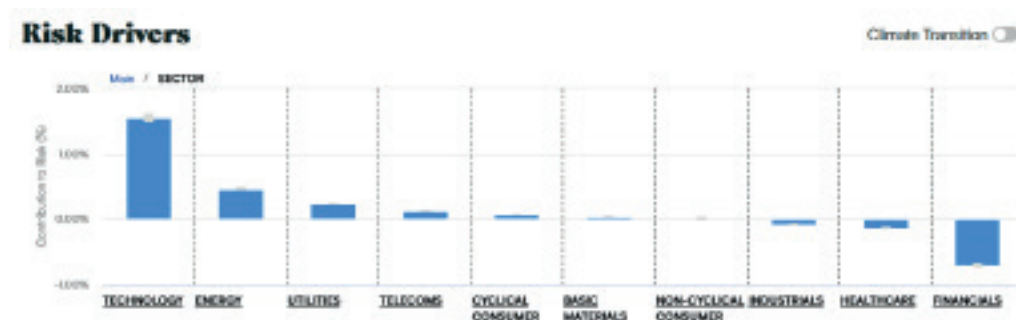
For example, the **illustration below** shows the active risk of the FTSE US All Cap Choice Index (listed above among the most sustainable US indices) decomposed into **four main components** that add up to 2.6% per annum:

- 'Market', representing deviations from a market beta of 1.0,
- Fundamental', representing fundamental equity factor risk deviations,
- 'Sector', representing sector-based risk deviations,
- 'Unexplained', representing non-systematic or idiosyncratic risk deviations.



Source: Scientific Portfolio platform

The decomposition above indicates that the strong level of sustainability achieved by this index **resulted** in a material **sector-based** risk deviation (responsible for ~1.5% of active risk out of 2.6% in total) when compared to the CW. Drilling down a bit further (see **illustration below**), we see that this active risk is primarily driven by a deviation in the Technology sector, which could in turn lead to a **performance** deviation in the future.



Source: Scientific Portfolio platform

8 - See Scientific Portfolio's Investment Philosophy for more detail

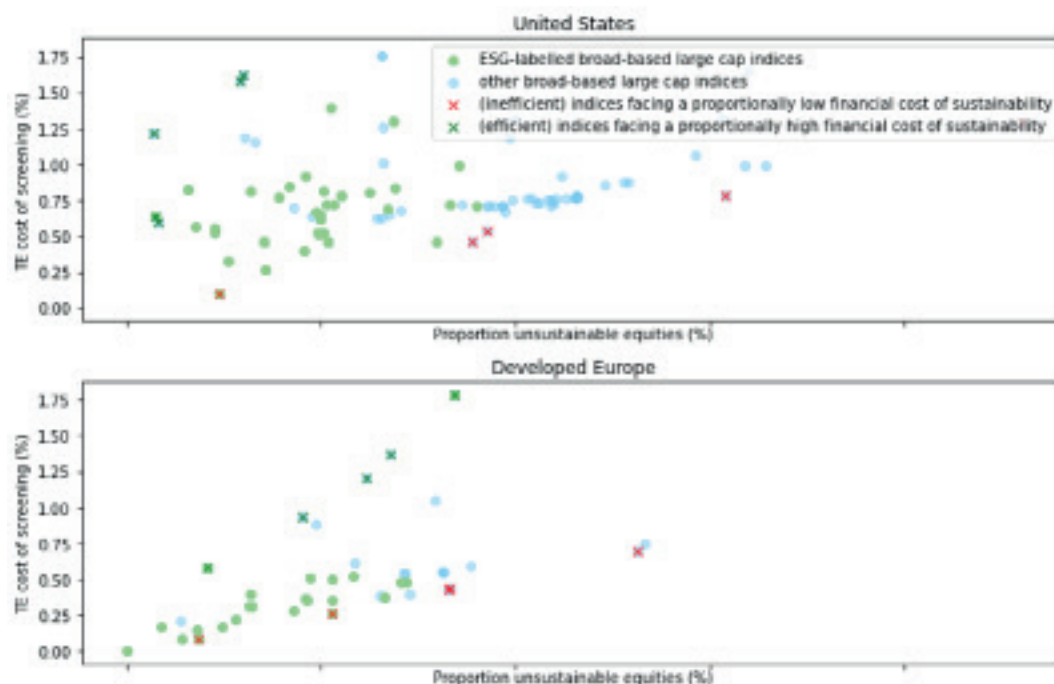
Results of the Risk-Aware Sustainability Review

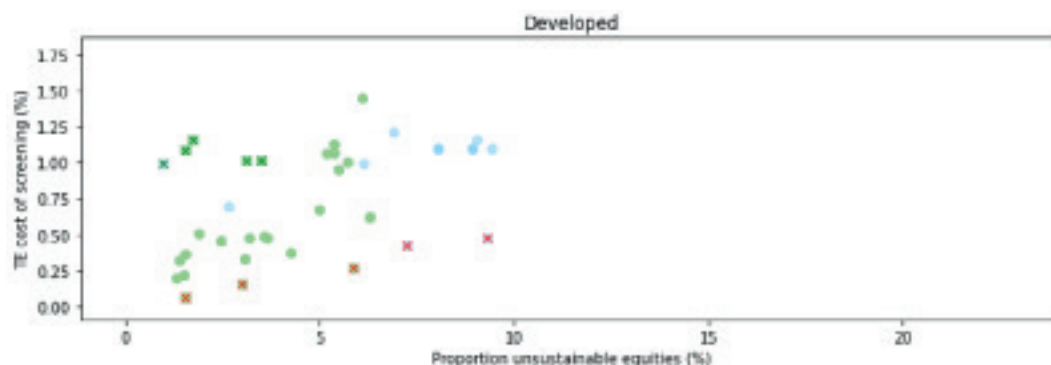
The previous example could indicate a possible **tradeoff** between sustainability on the one hand, and financial risk and return on the other hand. For example, an ESG tilt applied to an existing portfolio with the objective of negatively screening and excluding as many unsustainable stocks as possible could at some point create a significant deviation in the risk and return profile of the portfolio. Note that some stock exclusions would naturally have a greater financial impact than others: this could be because the stock has a large weight in the portfolio, or because its risk profile cannot be easily replicated by/substituted with a combination of other stocks (i.e., because the stock carries a large amount of specific risk), or a combination of both. It is reasonable to expect that index providers who implement ESG strategies often face this sort of challenge and try to enhance the sustainability of their portfolio, provided the extra sustainability (i.e., the exclusion of remaining harmful stocks) does not excessively affect the strategy's financial risk and return profile.

In **Exhibit 3** we therefore analyze the ex-ante tracking error (TE) cost of screening, as a function of the proportion of screened unsustainable companies within our previously selected set of ESG-labelled indices. We calculate the TE cost of screening by measuring the ex-ante tracking error between the index's portfolio composition after removal of the screened stocks and its initial composition, after having reallocated the divested capital to the remaining stocks only, and having optimized the new allocation weights so to minimize the ex-ante tracking error.

Thus, the indices with the highest ratio of TE cost of screening to the proportion of unsustainable companies are those for which the marginal financial costs (quantified by the TE cost of screening) to further enhance sustainability are the most significant. These ESG-labelled indices appear to have efficiently managed the tradeoff between sustainability and financial risk and return, thereby providing a stronger justification for holding unsustainable stocks. Conversely, indices with a low ratio could become more DNH-sustainable with minimal costs in terms of financial risk and have therefore likely managed the tradeoff inefficiently.

Exhibit 3: TE cost of screening as a function of the proportion of unsustainable companies





Based on the analysis described above, the five ESG-labelled indices that appear to have implemented DNH-sustainability the most efficiently (i.e., facing the proportionally highest financial cost of sustainability) in each sub-group are:

United States	
Index Name	Ratio TE / proportion screened equities
FTSE US All Cap Choice Index	0.6% / 0.7%
Beyond Investing US Vegan Climate Index	0.8% / 1.6%
MSCI USA Choice ESG Screened Index	0.6% / 1.8%
S&P 500 ESG Elite USD	1.4% / 5.3%
Solactive ISS ESG United States Net Zero Pathway Index	0.8% / 3.2%
Developed Europe	
Index Name	Ratio TE / proportion screened equities
STOXX Europe 600 SRI Index	0.6% / 2.1%
FTSE Developed Europe ESG Low Carbon Select Index	1.8% / 8.4%
MSCI Europe ex EMU ESG Leaders Select 5% Issuer Capped Index	0.2% / 0.9%
MSCI Europe Climate Paris Aligned Index	0.4% / 3.2%
MSCI Europe ESG Universal Low Carbon Select 5% Issuer Capped Index	0.5% / 4.7%
Developed	
Index Name	Ratio TE / proportion screened equities
Nasdaq Future Global Sustainability Leaders Index	1.1% / 1.5%
FTSE Developed ex Australia Choice Index	1.2% / 1.7%
MSCI World Climate Change Paris-Aligned Select Index	1.0% / 3.1%
MSCI World Climate Change CTB Select Index	1.0% / 3.5%
MSCI World Select Catholic Principles ESG Universal and Environment Index	0.5% / 1.9%

Conclusion

By using the concept of “**Do No Harm**” (DNH) we conducted a holdings-based sustainability review of a large universe of approximately **170 broad-based large cap indices ETFs** invested in developed markets. First, we identified the Sustainable Development Goals (SDGs) most frequently “harmed” by the holdings of the indices, namely SDG 3 (Good Health and Well Being), SDG 16 (Peace, Justice and Strong Institutions), SDG 14 (Life Below Water), and SDG 8 (Decent Work and Economic Growth), but noted that the latter two appear to be overlooked by the negative screens commonly implemented in the institutional equity investment space. Next, we focused on and ranked a **subset of 85 “ESG-labelled”**

indices using the same DNH approach, observing that they were on average more sustainable than their corresponding market cap-weighted (CW) benchmarks. However, our analysis also uncovered a very large dispersion across the pool of benchmarks, with some ESG indices showing no significant improvement in terms of DNH-sustainability compared to the CW benchmark, prompting us to recommend sustainable investors examine the holdings of a portfolio and go beyond simple ESG labels. Finally, we examined the extent to which ESG-labelled indices had efficiently managed the financial risk and return consequences of pursuing a sustainable strategy. We identified, using a simple portfolio optimisation technique, potentially significant efficiency gains that can be interpreted as “sustainability-low-hanging-fruits” that some ESG indices have not picked.

Users of the Scientific Portfolio platform may access our analytics to conduct their own review of indices available in our database but may also upload their own customised equity portfolio for a more personalised analysis.

Access the Scientific Portfolio Platform

About Scientific Portfolio

Scientific Portfolio is the latest commercial venture incubated within the research ecosystem of EDHEC Business School (EDHEC), one of the world's leading business schools.

Scientific Portfolio has assembled a team with a broad range of expertise and backgrounds, including financial engineering, computer science, sustainable and climate finance, and institutional portfolio and risk management. It proudly carries EDHEC's impactful academic heritage and aspires to provide investors with the technology they need to independently analyse and construct equity portfolios from both a financial and extra-financial perspective.

To achieve this, it offers investors three sources of value through its portfolio analysis & construction platform:

- Helping investors to analyse their equity portfolios, identify actionable insights and enhance portfolios with allocation functionalities. Indeed, Scientific Portfolio likes to promote portfolio analysis as a means to the concrete goal of building portfolios that are both more efficient and better aligned with their investment objectives.
- Providing investors with an integrated framework where financial and extra-financial (ESG) considerations are jointly captured in analysis and portfolio construction. The ability to incorporate ESG-related insights in the portfolio allocation process is now a common requirement among many investors.
- Giving investors access to a Knowledge Centre catering to all types of learners and providing guidance through the portfolio analysis and construction process. This aligns with Scientific Portfolio's commitment to remaining connected with its academic roots and bridging the gap between investors and academia.

<https://scientificportfolio.com/>

