impact cubed

Introducing SmartESG:

A Revolutionary Approach to Sustainable Investing

June 2023

About us

Impact Cubed is a London-based provider of ESG impact data and analytics solutions. Our data is factorised and quantitative, offering a comprehensive and objective solution to the challenges posed by opaque and subjective ESG scores or ratings.

Focusing on outcome-oriented data enables institutional investors and asset owners to make well-informed, evidence-based investment decisions. Our advanced online analytics platform allows for comprehensive exploration, examination and understanding of our data, providing the necessary level of detail required for increasing regulatory scrutiny.

Introduced in this white paper, our flagship offering, SmartESG, is a portfolio engine that generates bespoke model portfolios precisely aligned with your goals. These portfolios consistently outperform existing benchmarks and indices, in terms of both ESG impact and tracking error, reflecting our commitment to hasten the capital shift towards a more sustainable future.

If you would like to get in touch, we would be happy to hear from you at info@impactcubed.com.

You can find out more about our data and portfolio models at www.impactcubed.com.

Executive summary

The ascendancy of sustainable investing has been marred by expensive ESG-labelled funds often offering little tangible sustainability impact:

- Our research reveals diverse alignment with the UN's Sustainable Development Goals (SDGs) among Sustainable Finance Disclosure Regulation (SFDR) fund classifications, casting doubt on their true sustainability impacts.
- We also highlight the lack of ESG within both passive and active funds.

We believe that factorised data is the key to unlocking greater impact potential; while maintaining the same level of risk, we:

- Backtest factorised impact data that shows that certain ESG factors yield 'ESG alpha', with positive returns for environmentally beneficial products, low carbon emissions and low water use.
- Introduce SmartESG, a portfolio optimisation engine that exploits factorised data to maximise ESG impact and minimise tracking error. We reveal real-world applications of this engine, demonstrating substantial portfolio water use reduction by 90%, bolstering alignment with all 17 SDGs, and marking progress across 15 ESG factors - all achieved without an increase in tracking error.

SmartESG responds effectively to the complexities of sustainable investing in today's fast-paced and ever-evolving landscape.

Contents

High demand, premium prices and the quest for authenticity

In the face of sustained global economic turbulence, the investment landscape continues to be transformed by an unwavering surge in sustainable investing. Despite the impressive inflow into sustainable funds, discrepancies emerge when evaluating ESG labels, confronting regulatory challenges and addressing substantial tracking errors.

As this section delves deeper into the complexities of ESG, an important question emerges: are we truly discerning the shades of green in our portfolios, or are we settling for a facade?

Demand for ESG remains high

The rapidly evolving landscape of environmental, social and governance (ESG) investing continues to see substantial growth despite the turbulence of the global economic environment. Investor demand for ESG funds is fuelled by the desire for sustainable investment options and a growing understanding of the long-term financial benefits associated with ESG factors.

A recent analysis by Morningstar estimates that sustainable funds attracted $29 billion of net new money globally in the first quarter of 2023 (Kenway). Although this was less than the prior quarter's inflows, the resilience of ESG funds is noteworthy, especially against a backdrop of significant market challenges. Conventional funds, by comparison, experienced net outflows of $42bn in the fourth quarter of 2022 compared with $40bn for sustainable funds. This signals a clear trend: investors remain more inclined to place their money into funds that consider ESG factors than into traditional, non-ESG funds.

Investors pay more for an ESG label

According to studies by the National Bureau of Economic Research (Baker, Egan, & Sarkar), investors are also willing to pay a premium for ESG-oriented funds. On average, investors are prepared to pay an extra 20 basis points per annum for a fund with an ESG mandate compared with an otherwise identical fund without such a mandate. This premium has increased over time, rising from 9 basis points in 2019 to as much as 28 basis points in 2022. This suggests that investors expect higher pre-fee, gross returns from an ESG mandate, either financial or non-financial. Even when considering the possibility that investors are willing to accept lower financial returns in exchange for the psychic and societal benefits of ESG, the value placed on ESG stocks is found to be even higher.

Shades of green, or none at all?

Regulatory challenges and accusations of greenwashing are exerting pressure on asset managers managing ESG funds. In the UK and US, regulators are scrutinising whether funds labelled as green or sustainable live up to their name. The pressure is especially intense for funds falling under Article 9 of the EU's SFDR. The EU sets a high bar for Article 9 funds, expecting portfolios to be 100% sustainable, yet has not provided clear guidelines defining a 'sustainable investment', which creates an environment of regulatory uncertainty. Asset managers, wary of potential greenwashing allegations, are often opting for the less stringent Article 8 funds.

Our analysis reveals interesting insights: Article 9 funds (AUM (assets under management) weighted) had about 56% revenue alignment with the UN's SDGs, while Article 8 and 6 funds had 40% and 30% respectively. However, both Article 8 and 6 funds had 10% negative alignment. This begs the question: how distinct are Article 8 and 6 funds from one another in terms of their sustainability impacts?

In the midst of these regulatory challenges, an influx of capital is observed into light-green Article 8 funds, which often levy significantly higher fees than traditional funds. This situation is further complicated by the fact that many funds are benefiting from the surging interest in sustainable investing, while the actual sustainability impact of these investments remains questionable without robust empirical data.

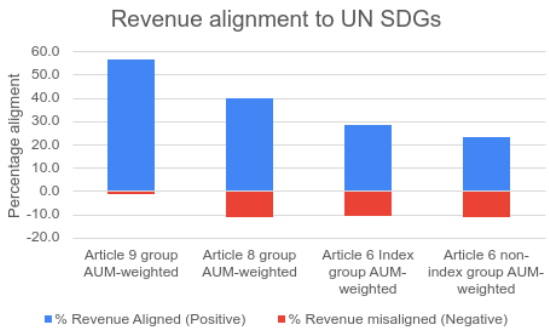


Figure 1: An Impact Cubed analysis of the top five equity-only funds by AUM and their products and services revenue alignment to SDGs.

ESG at the expense of tracking error?

In an additional study, we examined the ten largest low carbon-labelled equity funds by AUM and seven low-carbon variants of widely recognised equity indices (Figure 2). Our aim was to understand the balance between ESG impact, specifically carbon reduction, and tracking error.

We plotted carbon reduction (y-axis) against tracking error (x-axis) and found a classically shaped efficient frontier. However, compared with our internal portfolio construction studies, this frontier is anything but efficient. We observed substantial tracking errors above 50% carbon reduction thresholds.

This means that while these funds may be achieving substantial carbon reduction, they are also deviating significantly from the benchmark index. The implication for investors is that while their ESG objectives may be met, the potential risk associated with these investments is higher due to the large tracking error.

These results emphasise the complex interplay between ESG objectives and investment risk, and the potential challenges for managers seeking to maximise their ESG impact without incurring significant tracking errors.

A brief overview of active and passive funds

Utilising comprehensive, fact-based ESG data, we conducted an extensive analysis on both active (Impact Cubed, 2018) and passive funds (Impact Cubed, 2022), offering a sobering insight into sustainable investing.

For passive funds, some marketed as ESG demonstrated an overall negative impact. ESG performance varied considerably, with a four-fold difference between the 'best' and 'worst' funds. Our empirical data also uncovered that some ESG funds have higher carbon intensity than the market benchmark. A significant takeaway is that the lack of attention to the underlying securities' products and services is a substantial source of investor confusion about ESG funds.

Our in-depth analysis of active funds yielded similar surprising results. Despite being marketed as sustainable, there is a wide dispersion of sustainability performance among these funds. Some, in fact, were found to be less sustainable

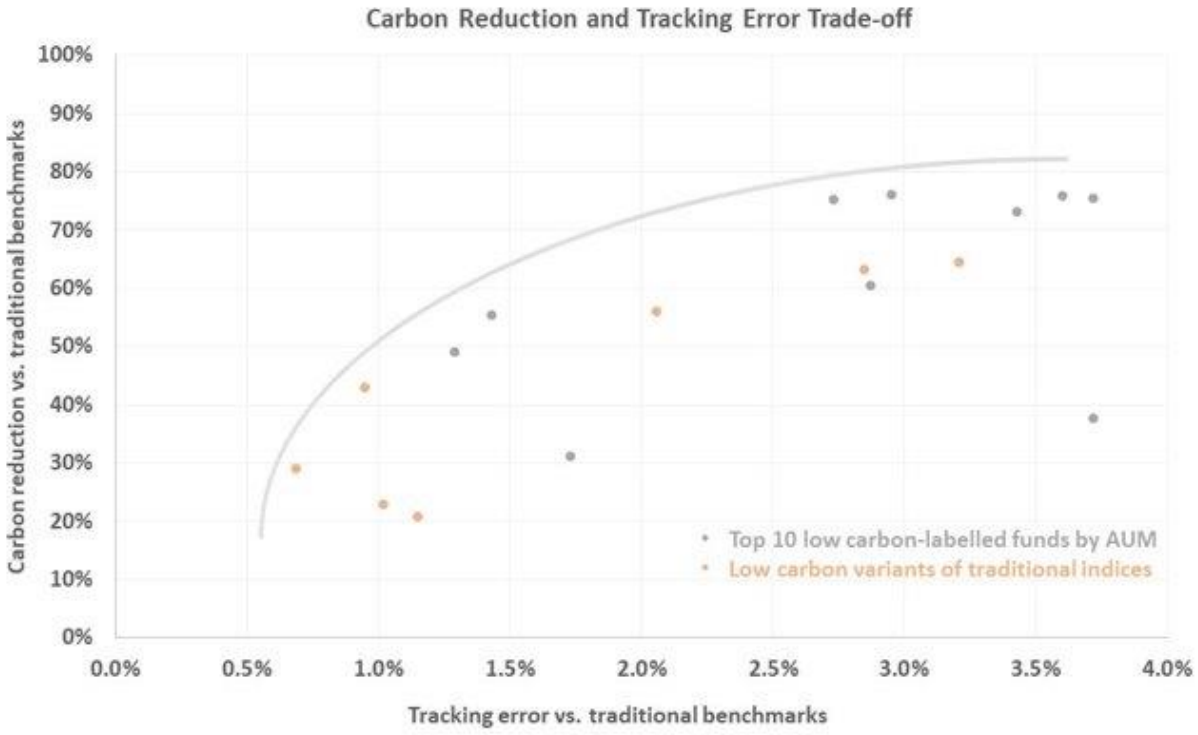


Figure 2 Sample: Top ten 'low carbon' labelled funds on Impact Cubed Analytics platform by AUM (from $1.7bn to $7.3bn). ESG metrics are calculated as per USD revenue. Data as of December 2022.

than their mainstream benchmark, or not substantially better. Our data indicates that these funds, on average, used only around 4–5% of their risk budget on sustainability, with the highest performer in the sample using only about 11%.

So how can investors use ESG properly against the backdrop of regulation and poor performance?

Given the landscape of evolving regulations and underwhelming performance in the ESG space, how can investors leverage ESG effectively? The crux is having the right ESG data and knowing how to use it. At Impact Cubed, with over 15 years of experience with ESG data and sustainable investing, we firmly believe that the key to gaining substantive insights is to use factorised, quantitative data.

The pitfalls of ESG ratings and scores

ESG ratings and scores are a simple starting point when evaluating the ESG profile of a particular fund or security. However, these metrics are often marred by subjectivity and can easily obscure the nuances of the data. Essentially, they are aggregations that condense precise data into a few broad categories, usually represented by letters or colours.

Endless studies have revealed the shortcomings of relying heavily on ESG ratings for asset allocation. A study (Chatterji) found that the correlation between six major ESG ratings agencies was only 0.61, indicating significant variation in how different agencies assess a company's ESG performance. The OECD (Dinc) found that there is a 'quantity bias effect' in ESG data, where companies that disclose more ESG data tend to receive higher ESG ratings. Most recently, MSCI removed an adjustment factor that boosted scores for companies simply because they are improving, resulting in downgrading the ESG ratings of over 30,000 funds, and we think the downgrades didn't go far enough (Impact Cubed, 2023).

Why factor data is so important

Factorised data is a powerful tool in the world of investing, and its importance cannot be overstated. The reason behind this is quite straightforward: factor data allows us to break down the performance of an investment and identify the specific elements or 'factors' that are driving returns. By understanding the 'why' and 'how' of an investment's performance, we can refine our strategy and focus on the elements that truly matter. This sharpened focus can significantly enhance our ability to make informed investment decisions.

To demonstrate the utility of factorised ESG data, we've conducted an in-depth analysis of the past 78 months' returns (from October 2016 up to March 2023) for 15 ESG impact factors in our flagship corporate factor model.

Figure 3 displays the simulated returns from holding a long/short net-zero portfolio with

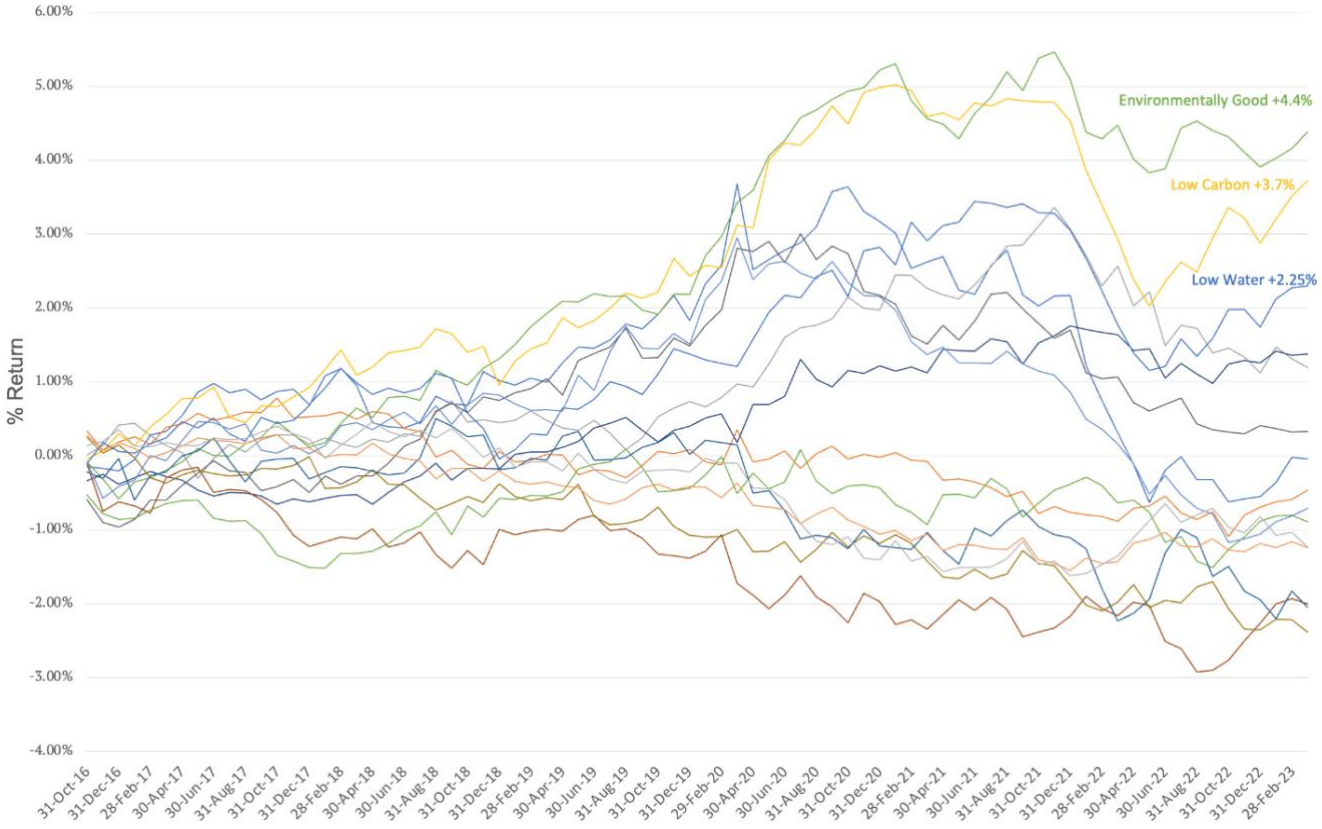


Figure 3: Backtested monthly returns from portfolios with maximum exposure to different ESG factors.

maximum exposure to each factor, aiming for a 1% expected volatility.

We can see the usual fluctuations in return estimations over time, but there are some notable trends. Securities with environmentally good products and services came out on top, with a +4.4% return over the period, while securities with low carbon emissions and low water use came closer behind with +3.7% and +2.25% returns respectively.

Such results underscore the value of quantitative factor data. Without these precise measures linked to each factor, optimising a portfolio to maximise its exposure to these factors would essentially be impossible.

From this preliminary analysis, we can see there is indeed 'alpha' in ESG; however, it's important to note that this potential doesn't appear to be uniformly distributed across all factors, nor does it manifest simultaneously. The pursuit of alpha in ESG investing, therefore, necessitates a nuanced and dynamic approach.

A 3D approach using factor data

The traditional efficient frontier model has long been an invaluable tool for investors. It enables them to plot the optimal returns for a given level of risk, or conversely, the minimum risk for a desired level of return – a concept we've already seen in action with the low carbon funds in Figure 2.

However, factor data allows us to push the boundaries of this model further. By taking away the positive and negative impacts for each factor, we can calculate the net ESG impact of a portfolio. To simplify this concept, we represent the net impact as tracking error, an indicator of the deviation from a benchmark index. In this context, the tracking error essentially quantifies how much of your portfolio's variance from the benchmark is attributable to ESG factors, and whether this deviation has a positive or negative impact.

With the addition of this ESG impact dimension, we create a 3D efficient frontier. This innovative model plots the optimal returns for a given level of risk and ESG impact. At the apex of the curve are portfolios that offer the highest return, carry the least risk and generate the most positive impact. Conversely, at the base of the curve are portfolios with the lowest return, highest risk and most significant negative impact.

This 3D frontier model (figure 4) is not just a theoretical construct; it's a practical tool for investors. By integrating it into their strategy, they can make more well-rounded decisions that align with both their financial and sustainability goals.

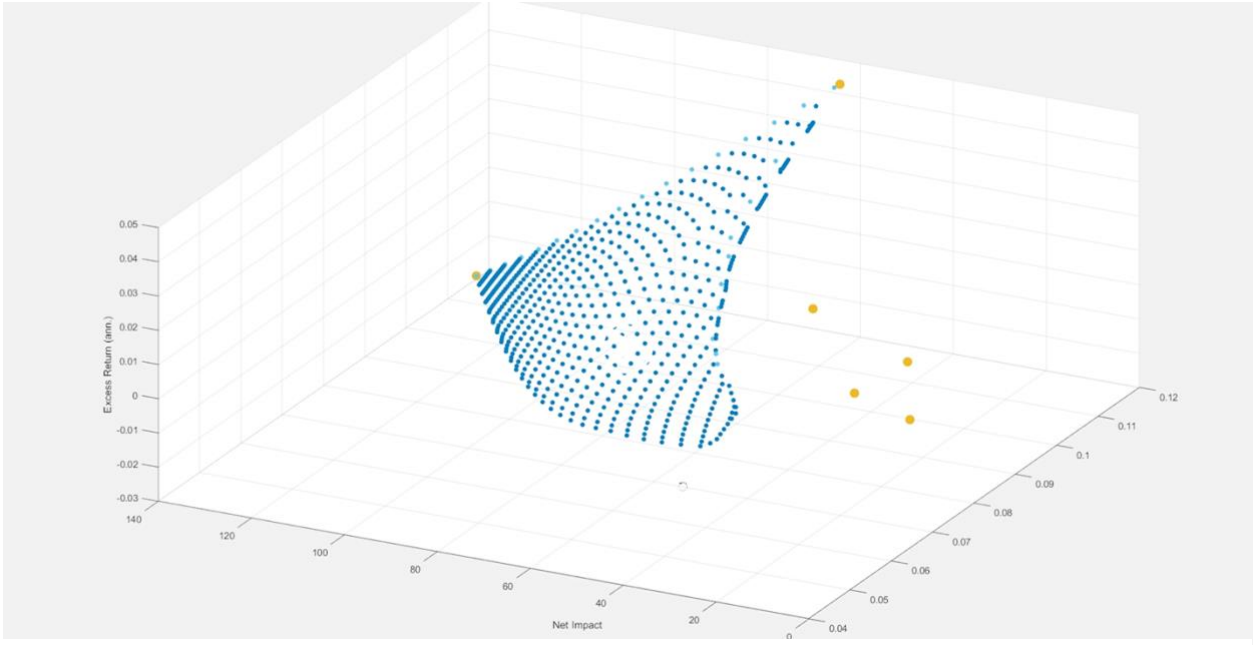


Figure 4: A 3D efficient frontier constructed using data from six global equity funds and benchmarked against global equity indices. The return data is based on two-year historical returns.

A note on net impact

At Impact Cubed, we utilise a unique measure called 'net impact' to empirically gauge the performance of a portfolio in relation to its benchmark. The net impact is essentially a quantification of the portfolio's deviation from the benchmark in terms of its ESG and impact exposures. This deviation is expressed in basis points (bps) of tracking error – a standard unit in asset management to measure a portfolio's divergence from a benchmark. In this context, net impact is as a robust indicator of how effectively a portfolio uses its active positions – be they overweights, underweights or benchmark holdings not held in the portfolio at all – to create meaningful, positive impact.

A higher positive net impact number is desirable as it signals that the fund's active positions are strategically aligned with companies that deliver superior impact. It's essential to understand that the net impact is the cumulative sum of all positive and negative fund ESG factor exposures relative to the benchmark. Thus, a portfolio could potentially have a negative net impact if it harbours more negative ESG and impact attributes than positive ones. In such cases, the net impact score provides a critical indication for potential areas of improvement in the portfolio's ESG positioning.

Going beyond the frontier

In the past 15 years, one crucial learning has emerged for us: the commonly employed industry methods for integrating ESG into investment strategies, such as step-wise screening and; 'best-in-class' rebalancing, tend to generate substantial tracking error. Figure 1 showcases this issue with our low carbon-labelled funds, which exhibit significant amounts of tracking error.

These funds, constituting the top ten low carbon-labelled funds by AUM, primarily rely on strategies of exclusion and 'best-in-class' reweighting. However, these processes often fall short of optimal for several reasons:

1. They operate in discrete, sequential steps, which may not account for the interdependencies among various ESG factors and their impact on the portfolio's performance.
2. They are specific in exclusion but unspecific in replacing the excluded weights. This often leads to arbitrary portfolio adjustments that may not necessarily align with the portfolio's ESG goals or its risk-return profile.
3. They make portfolio decisions without being informed by a risk model. This can result in significant deviations from the benchmark and unanticipated risk exposure.

A more intentional and targeted approach, informed by an appropriate risk model, would substantially outperform these existing market practices.

Introducing SmartESG: the next-generation portfolio engine

In sharp contrast, SmartESG offers a more holistic, integrated solution. It leverages our unique factorised ESG data, combined with our in-house portfolio construction expertise, accumulated through decades of investment management experience.

SmartESG simultaneously selects and rebalances portfolio holdings, by utilising ESG factors and characteristics of choice to optimise the selection process while balancing screening and tracking error, creating a portfolio that maximises ESG impact and minimises tracking error.

Upon applying SmartESG to the previously shown traditional equity benchmarks, we observe a remarkable enhancement in portfolio impact efficiency (Figure 5).

SmartESG can achieve a carbon reduction of up to 90% – a significant step beyond the reduction of around 75% seen in the lowest carbon fund. What's more, this substantial impact is achieved with less than one-third of the tracking error.

Application to asset owners, managers and portfolio managers

As with all our products, we conducted a comprehensive consultation process. This process involved engaging in insightful dialogues with asset owners, asset managers and wealth managers across North America and Europe.

Our conversations yielded invaluable insights, as well as highlighting shared concerns and common goals among participants, informing our understanding of the current state of ESG integration in investment practices.

The demand for differentiation and customisation

In our conversations with market participants, one theme emerged with striking clarity: the growing demand for differentiated sustainable investment products. In a crowded investment landscape, fund managers are increasingly recognising the value of unique offerings that can stand out from the competition and deliver better ESG outcomes than existing ESG indices.

Moreover, there is a particular interest in customisable solutions tailored to the specific needs and objectives of investors, especially among sophisticated asset owners. The one-size-fits-all approach favoured by established index providers is giving way to more customised strategies, reflecting the unique ESG priorities, risk tolerances and return expectations of each investor.

With SmartESG:

Our SmartESG solution is designed to address this need for differentiation and customisation. Let's consider the case of the pension plan of a leading European financial institution that was contemplating adopting a Paris-aligned climate

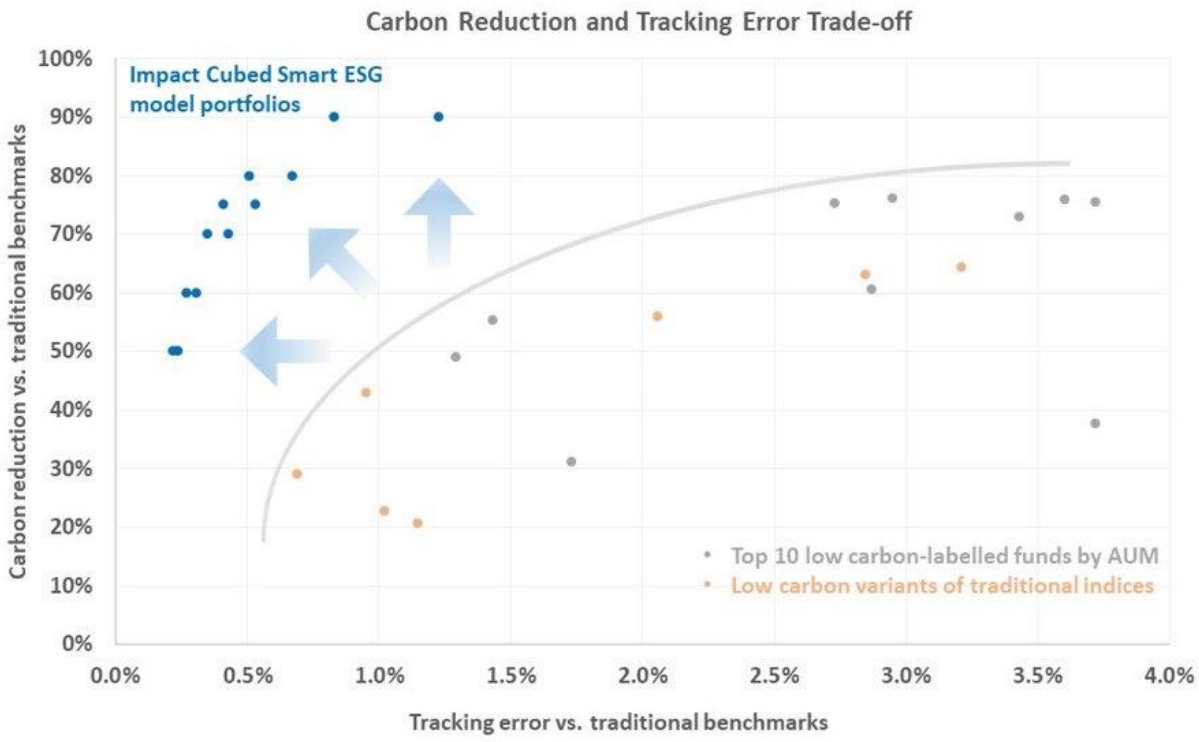


Figure 5: SmartESG low-carbon portfolios shown in blue, going beyond the previous efficient frontier.

global equity benchmark from a major index provider.

After an in-depth analysis, this pension plan realised the existing index was not delivering sufficient climate impact outside carbon considerations and was falling short in many non-climate improvements valued by the pension fund members. As a result, this pension plan engaged Impact Cubed to construct a new global equity custom benchmark with three key objectives:

- A more ambitious climate target, encompassing carbon, water and waste.
- The inclusion of a broader and higher set of SDG alignment outside climate considerations.
- A tracking error that did not exceed that of the current offering from the major index provider.

Through the application of SmartESG, we were able to deliver:

- An additional 30% reduction in portfolio carbon intensity (scope 1–3, per $m revenue), versus the reduction offered by the major index provider's Paris-aligned index.
- An additional 30% reduction in water usage intensity and 75% reduction in waste generation, versus the Paris-aligned counterpart.
- Significant advancements in 15 Impact Cubed ESG factors, including gender equality and board independence, as well as outperformance in alignments with all 17 UN SDGs (figure 6).
- All the above improvements delivered with a tracking error of 1.2% versus the 1.3% associated with the major index provider's existing Paris-aligned offering.

This case study clearly demonstrates the potential of SmartESG in optimising environmental impact, ESG factors and risk considerations to create a more efficient, sustainable portfolio tailored to asset owners' individual values.

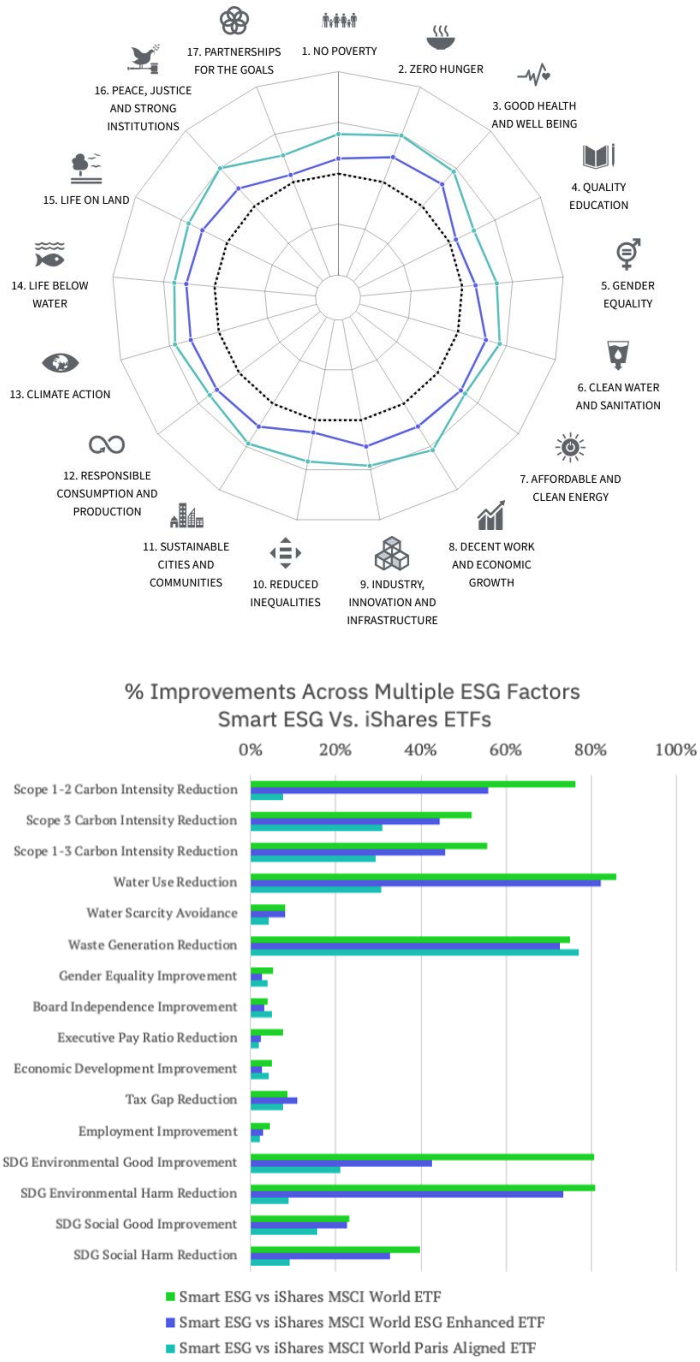


Figure 6 Top: Showing SDG revenue and operational alignment for SmartESG custom model portfolio developed for a European corporate pension plan (green line), iShares IV MSCI World Paris Aligned ETF (blue line), developed markets global equity benchmark (black dotted line). Bottom: Graph showing % improvements from SmartESG portfolios vs other benchmarks

The variable importance of tracking error

We discovered that the significance assigned to tracking error reduction varies widely across the industry. For some market participants, particularly among passive fund managers and institutional investors, tracking error efficiency is

of paramount importance. These parties often operate within a tight risk management framework, which necessitates a keen focus on minimising deviations from their benchmark.

However, not all investors share this perspective. Some clients, particularly in the wealth and active management space, are more benchmark-agnostic. For these investors with more concentrated portfolios, achieving specific investment objectives or aligning with particular ESG goals might take precedence over closely tracking a benchmark index.

With SmartESG can adjust to the varying requirements and preferences of different investors. Investors can control the tracking error as a lever to balance between achieving ESG impact and adhering to their risk parameters.

For instance, Figure 7 illustrates the trade-off between tracking error and scope 1 and 2 carbon intensity reduction for a broad global equity mandate. As depicted, an investor might accept a minimal tracking error of 0.01% for a modest 5% carbon reduction. However, for those willing to tolerate a higher tracking error, say 0.8%, a substantial carbon reduction of over 90% can be achieved. This flexibility allows investors to make conscious decisions based on their unique risk tolerance and ESG priorities.

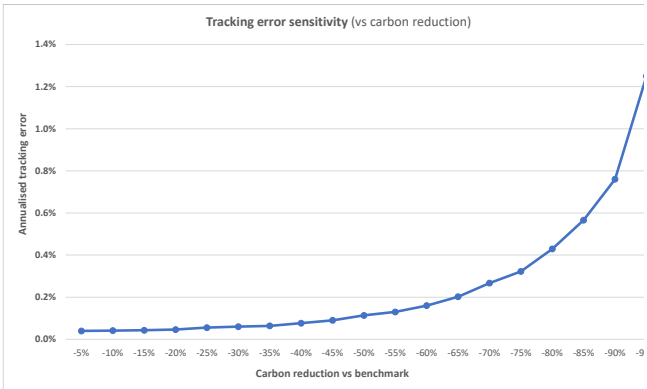


Figure 7: How SmartESG can optimise differently depending on the Tracking Error desired.

Addressing critical environmental themes through overlays: carbon, water and waste

During our consultations, three environmental themes repeatedly emerged as focal points for investors: carbon emissions, water usage and waste generation. Many are prioritising these areas in their quest for ESG impact, underlining the need for flexible solutions capable of addressing specific environmental concerns.

Consider the case of a US asset manager with an active global equity mandate, looking to integrate environmental impact through a market-neutral equity overlay, while preserving long-standing active alpha generation processes.

With SmartESG:

Our response was to leverage the capabilities of the SmartESG portfolio engine, creating a market-neutral overlay portfolio capable of reducing the underlying portfolio's carbon emissions (scope 1–3), water usage and waste generation intensity by 50% each (figure 8). Crucially, this was achieved while maintaining sector, region, and country constraints of +/−1% and complying with total portfolio zero net short position constraint, ensuring minimal disruption to the overall portfolio characteristics.

The resulting portfolio, following a recent quarterly rebalancing, successfully halved the environmental impact on all three factors with an ex-ante tracking error of a mere 0.30% and an active share of 15%. This outcome was facilitated by minimising over- and underweightings in the overlay, with individual sectoral deviations kept below 0.60%.

Such results exemplify the value of our multifactor optimisation approach. Compared with the conventional exclusion or 'best-in-class' methodologies, our portfolio engine, in tandem with our risk model, provides marked environmental improvements with minimal tracking error and active share dedicated to ESG impact.

Figure 8: Example outcomes from SmartESG overlays

Bridging the SDG alignment gap: A growing demand among European investors

We recognised the rising importance of the United Nations SDGs among European investors. Aligning with these 17 goals is increasingly viewed not just to promote sustainable practices, but also as a valuable engagement tool with clients who may not be fully versed in operational ESG factors.

With SmartESG:

Our capability to enhance SDG alignment is a direct response to this emerging trend. The SmartESG system can be tailored to target alignment with all 17 SDGs or focus on specific goals as per the investor's preference. The benefit of this bespoke approach is demonstrable in comparison with existing index products offering the same level of tracking error.

Take the example of a custom European equity model portfolio developed for a European institution using SmartESG. When we plot these SDG alignments on a spider diagram (figure 9) against the iShares MSCI World ESG Screen ETF and a developed Europe equity benchmark, our portfolio distinctly shows superior alignment across all 17 SDGs with an annualised tracking error of only 1.1%.

Figure 9: Showing SDG revenue and operational alignment for SmartESG custom model portfolio developed for a European corporate pension plan (green line), iShares IV MSCI World ESG Screen ETF (blue line), developed markets global equity benchmark (black dotted line).

Reimagining thematic funds: The need for a comprehensive overhaul

Several consultation participants mentioned they have been disappointed with impact thematic products in general. In their opinion, many thematic products are too subjective and risky.

The source of excess risk can be attributed to concentrated portfolio holdings and the focus on companies with transformative technologies but also early-stage business models.

Furthermore, thematic products can often produce unintended poor objective impact metrics due to idiosyncratic factors. For example, a consultation participant pointed out that a large $9bn water thematic fund has water usage five times worse than a broad global equity benchmark.

With SmartESG

The SmartESG portfolio engine can be configured to construct thematic portfolios by systematically identifying the top-performing companies in selected impact factors. As an example, we created a European water thematic portfolio by systematically selecting the best water-performing companies from a common developed Europe equity universe using the following criteria:

- Top 3 percentile SDG6 (clean water and sanitation) operational alignment
- Top 3 percentile SDG14 (life under water) operational alignment
- Top 3 percentile SDG6 (clean water and sanitation) revenue alignment
- For each level-3 sector: lowest water usage intensity companies
- For each level-3 sector: best water scarcity avoidance companies
- Final screen: companies selected from the above five factors must have a water usage intensity better than the universe median.

The resulting portfolio contains 60 companies drawn from a liquid and mature universe that excels in the two water-related SDG alignments (see Figure 10) as well as reducing portfolio water usage intensity by over 90%, with an annualised tracking error at 5%.

This water thematic portfolio enables institutional investors to allocate capital towards companies with best water performance without the pitfalls of being exposed to excessively risky early-stage companies.

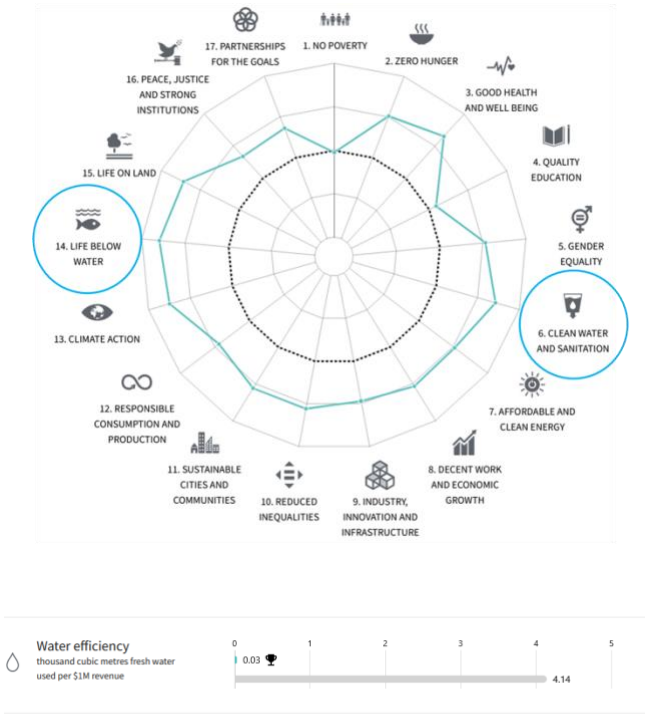


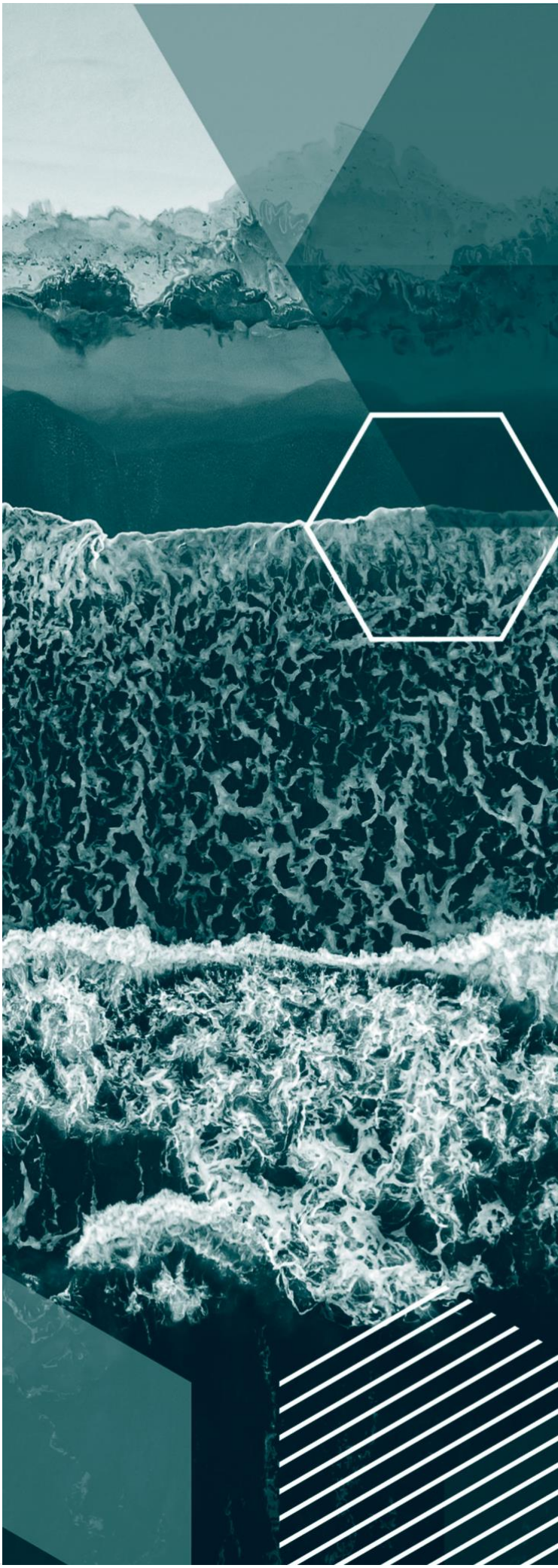
Figure 10: SDG revenue and operational alignment and water efficiency measure from Impact Cubed online analytics platform.

In conclusion

In the rapidly evolving ESG landscape, the ability to accurately assess, optimise and communicate the impact of investment decisions has become paramount. Our in-depth analysis in this paper has demonstrated that the adoption of sustainable investing strategies is not without its challenges, be they regulatory hurdles, greenwashing concerns, or the disparity between ESG-labelled funds and their actual sustainability impact.

We've highlighted the pivotal role of factor data in delivering nuanced insights and enabling genuine alignment with ESG goals. Moreover, we have presented SmartESG, our next-generation portfolio optimisation tool, as an effective solution to these challenges. Through a series of case studies and consultation findings, we have demonstrated how SmartESG allows investors to strike a balance between maximising ESG impact and minimising tracking error, providing a truly bespoke investment solution.

As we continue to innovate in the ESG space, we remain committed to empowering investors with the tools they need to navigate this complex landscape effectively, striving for both financial returns and sustainable impact. As we move forward, we encourage all market participants to join us in this journey towards a more sustainable future for our planet and its inhabitants.



Works cited

Baker, M., Egan, M. L., & Sarkar, S. K. (n.d.). *How do investors value ESG?* NBER.

Chatterji, A. a. (n.d.). Do Ratings of Firms Converge? Implications for Managers, Investors and Strategy Researchers. *Strategic Management Journal*.

Dinc, A. M. (n.d.). The quantity bias effect in ESG data. *Sustainability Accounting, Management and Policy Journal*.

Impact Cubed. (2018). *The impact of 25 European ESG funds*. Retrieved from https://www.impactcubed.com/research/the-impact-of-25-european-esg-funds/

Impact Cubed. (2022). *The impact of passive ESG funds*. Retrieved from https://www.impactcubed.com/research/the-impact-of-passive-esg-funds/

Impact Cubed. (2023). *The ESG rating shakedown is here*. Retrieved from https://www.impactcubed.com/the-esg-rating-shakedown-is-here

Kenway, N. (n.d.). *Sustainable funds see further outflows in Q1.* Retrieved from ESG Clarity: https://esgclarity.com/sustainable-funds-see-further-outflows-in-q1/