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ASSET MANAGEMENT

SUSTAINABLE INSIGHTS

MAKING SCOPE 3 WORK

HOW INVESTORS CAN NAVIGATE COMPLEXITY AND MANAGE CLIMATE RISK

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Here are four key takeaways that we explore further:

1. Understanding Scope 3 emissions is essential to calculating risk exposures because they often represent the majority of a company's or portfolio's emissions.
2. Bespoke data provider methodologies can affect portfolio characteristics such as style exposures and emissions intensity.
3. Despite data limitations, Scope 3 reductions are increasingly required under regulatory and benchmark standards can be integrated thoughtfully. Using estimated data, setting separate portfolio constraints from Scope 1 and 2, and applying sectoral focus can help investors manage complexity and improve impact.
4. Significant decarbonization is achievable with limited active risk — across various data provider estimates, portfolios can substantially reduce Scope 3 emissions with limited tracking error.

INTRODUCTION

Greenhouse gas (GHG) emissions are a critical signal for climate risk assessment, especially as investors face mounting pressure to align portfolios with net-zero pathways. While Scope 1 and 2 emissions are typically the focus of decarbonization efforts within portfolio construction currently, Scope 3 emissions often account for the largest share of a company's carbon footprint and pose the most significant portfolio integration challenges.

This paper provides a structured framework for integrating Scope 3 emissions into equity portfolios. We begin by defining the Scopes and outlining the underlying categories. We then explore why Scope 3 is financially and strategically relevant, review the current limitations of Scope 3 data, and offer solutions for addressing those limitations in portfolio construction. Finally, we show that decarbonizing Scope 3 emissions can be done with minimal active risk — enabling alignment with sustainability goals without compromising investment discipline.

Define scopes and categories

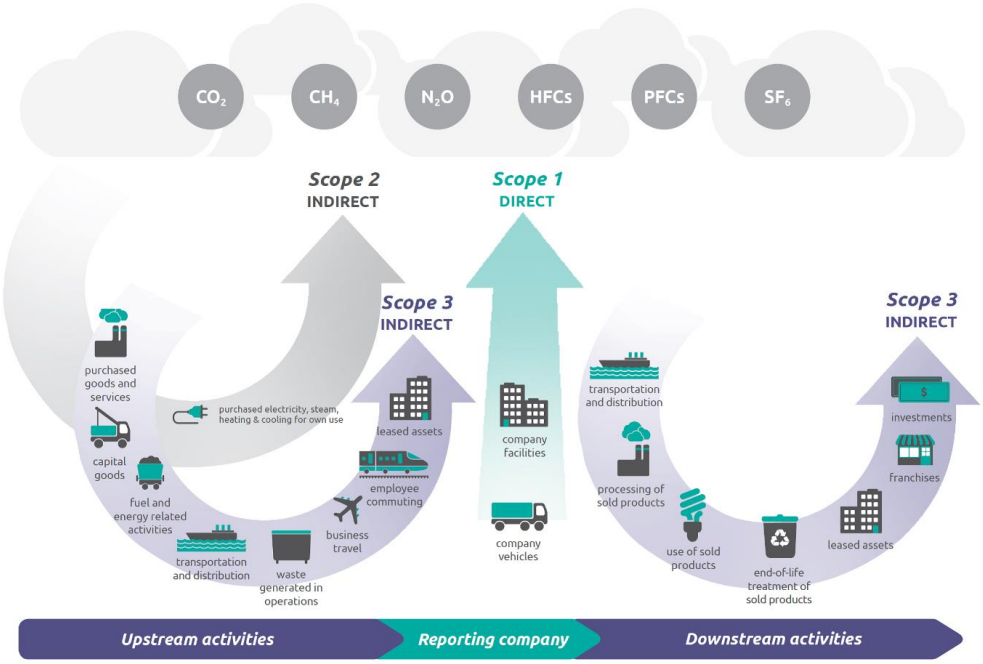
The GHG Protocol classifies emissions into three distinct categories or scopes. Scope 1 emissions are those emitted directly by company operations, facilities and vehicles, while Scope 2 emissions are those created through the purchase of electricity and heating for the aforementioned operations. In general, Scope 1 and 2 emissions are relatively easy to measure and thus simple to aggregate across a portfolio based on company reported data.

Scope 3 includes all other indirect emissions that occur in a company's upstream and downstream value chain. This includes 15 distinct categories such as purchased goods and services, capital goods, business travel, use of sold products, end-of-life treatment, and investments. **Exhibit 1A** below shows the full breakdown, and **Exhibit 1B** shows the numerical categories. These emissions are often outside the company's control, hard to estimate, and inconsistently reported — yet they are often the largest part of a company's footprint.

Understanding the differences between scopes is more than a technicality — it's essential for effective decarbonization. Portfolios focused solely on Scope 1 and 2 emissions may significantly underestimate exposure to climate risks. This can lead to blind spots in oversight of risks in the value chain, regulatory misalignment, and incomplete progress on sustainability goals.

EXHIBIT 1A: CATEGORIZING EMISSIONS

GHG Protocol emissions categories, with Scope 3 split by upstream and downstream activities



Source: World Resources Institute and World Business Council for Sustainable Development. (2011) Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Global Greenhouse Protocol.

EXHIBIT 1B: SCOPE 3 CATEGORIES

Upstream and downstream Scope 3 emissions categories

Upstream Categories	Downstream Categories
1 – Purchased goods and services	**9** – Downstream transportation and distribution
2 – Capital goods	**10** – Processing of sold products
3 – Fuel and energy related activities (not included in Scopes 1 and 2	**11** – Use of sold products
4 – Upstream transportation and distribution	**12** – End-of-life treatment of sold products
5 – Waste generated in operations	**13** – Downstream leased assets
6 – Business travel	**14** – Franchises
7 – Employee commuting	**15** – Investments
8 – Upstream leased assets	

Source: GHG Protocol, https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf

WHY SCOPE 3 IS IMPORTANT

In most sectors, with the exception of Utilities, Scope 3 accounts for the largest share of a company's total carbon emissions (as shown in **Exhibit 2**). This is especially true in the Financials sector, where Category 15 (investments) often vastly outweighs any direct or energy-related emissions. For many other sectors, Categories 1 and 2 (purchased goods and capital goods) and Category 11 (use of sold products) are the most material. **Exhibit 3** shows the share of Scope 3 categories per Global Industry Classification Standards (GICS) sector.

EXHIBIT 2: WHERE ARE THE EMISSIONS?

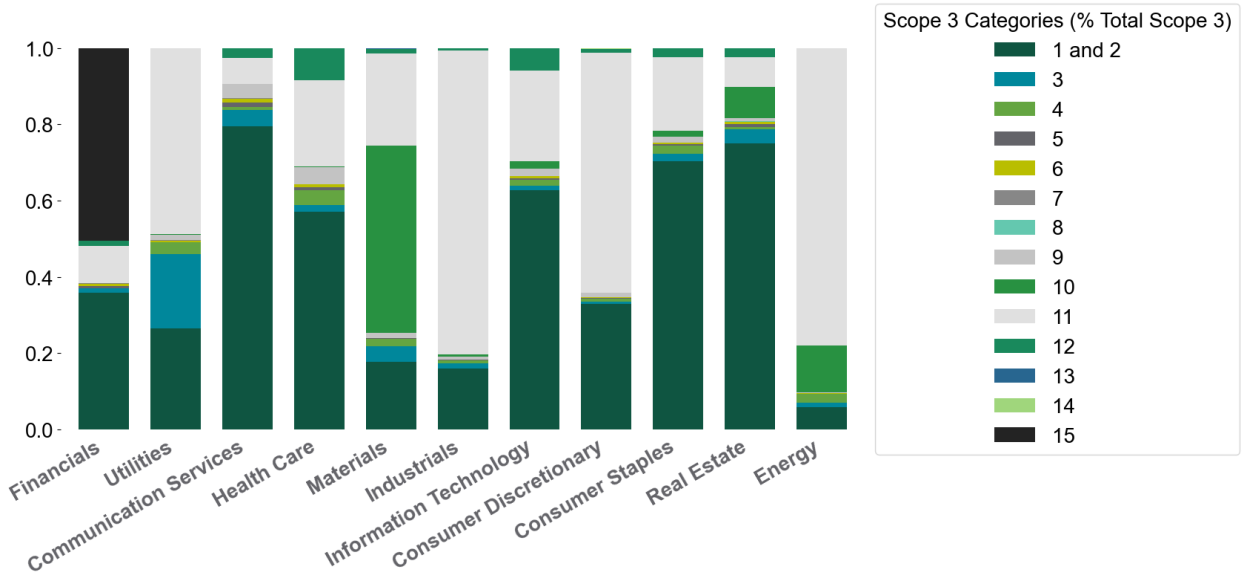
Weighted average emissions intensity (metric tons CO_2/US$1m EVIC) by scope and GICS sector, MSCI World Index vs. MSCI EM Index

	MSCI World Index			MSCI EM Index		
	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3
Communication Services	0.8	4.6	60.7	3.7	31.9	56.8
Consumer Discretionary	8.6	12.9	696.5	12.7	23.1	941.4
Consumer Staples	21.5	17	437.6	35	27.1	359.3
Energy	221	24	2661.3	496.5	70	6179.8
Financials	0.8	0.6	63	2.3	3	88
Health Care	2.3	3.1	111.7	8.7	12.3	73.2
Industrials	52	8.2	623.9	110.6	22.5	975.6
Information Technology	1.6	5.5	119.1	12.9	47.5	266.8
Materials	239.7	70.1	884.4	617.5	137	959.5
Real Estate	1.7	5.3	47.3	0.5	6.2	63.7
Utilities	327.6	14	302.5	1270	29.9	781.1

Source: MSCI. Data as of February 28, 2025.

EXHIBIT 3: MATERIALITY FACTORS

MSCI Scope 3 estimated emissions (%) distribution across categories, per GICS sector



Source: MSCI. Data as of February 28, 2025.

Access to Scope 3 accounting and reporting facilitates a clearer view on a company's holistic emissions exposure and risks. If an issuer omits emissions from their Scope 2 accounting (such as for joint ventures or assets classified as held for sale), it may result in a blind spot and ultimately an underestimation of transition risk. Investors who fully account for Scope 3 are better positioned to identify risks — and capture opportunities — as the climate transition unfolds.

Scope 3 reporting is growing in prominence due to a number of regulatory drivers. For Financial Markets Participants (FMPs) in the European Union (EU), the minimum standards for the EU Climate Transition and Paris-Aligned Benchmarks (PAB) required the phase-in of Scope 3 on a sectoral basis from 2020, with full Scope 3 integration required across all sectors from the end of 2024. FMPs are also required to disclose Scope 3 emissions as part of their Principal Adverse Impacts disclosures.

Meanwhile, in-scope companies are obligated (or will be obligated in the future) to calculate and disclose Scope 3 emissions under the Corporate Sustainability Reporting Directive (CSRD) as well as to disclose relevant information under the Corporate Sustainability Due Diligence Directive (as part of the Climate Transition Plan requirement). Scope 3 is also captured more broadly in best practice sustainability frameworks such as the Taskforce for Climate-Related Financial Disclosures (TCFD) and the International Sustainability Standards Board (ISSB) S2 requirements. While the extent of these disclosure requirements is growing, the focus is still on larger issuers and specific markets. For now, voluntary disclosures of this kind are still limited and requirements rarely extend to small and medium-sized enterprises (SMEs).

KEY CHALLENGES

Despite their growing importance, Scope 3 emissions remain the most challenging to assess. The primary issue is data availability — most emissions lie outside a company's direct control and often require supplier or product-level estimates. Supply chain emissions (upstream) are difficult to capture as they are commonly made up of SMEs not calculating their Scope 1 and 2 emissions per the previous section, or are often exempt from mandatory disclosure requirements. Downstream emissions require modeling of consumer

usage patterns over a product's lifecycle, introducing layers of uncertainty. In our view, these assessments overall can be highly inaccurate over longer time horizons where trends and habits are subject to change.

For example, a Consumer Goods company making electronic goods must estimate energy efficiency and user habits over the lifetime of the product. Longer lifespan products typically have higher emissions, thus incentivizing producers to either purposely underestimate lifespan or build products with shorter lifetimes.

This gets more complex when we look at Category 15 (investments) for companies in the Financials sector. While there are well developed methodologies to calculate financed emissions for (listed) corporate equity and debt, such as calculating ownership share using enterprise value including cash (EVIC), investments generally span a much larger range of assets, including sovereign debt, sub-sovereign debt, loans and securitized and structured products. The Partnership for Carbon Accounting Financials (PCAF) released new guidance on several of these 'more complicated' asset classes towards the end of 2024[1], but guidance does not ultimately cover all asset classes. Therefore, Category 15 remains a complex and underreported emissions area, leading to inaccurate estimations of overall carbon footprint for Financials sector companies within a portfolio.

Double counting is another challenge, and can occur when the Scope 1 or Scope 2 emissions of one company are the Scope 3 emissions of another company within the same portfolio. This also happens across and within Scope 3 categories themselves. Using the previous example of Category 15 for Financials: a financial institution investing in sovereign debt issued by a country; debt issued by a state or province within the same country; and a company located within that state or province could end up counting the same emissions three times. Attempts to correct for double counting could also lead to underestimations of emissions at the issuer level. These issues exacerbate at the level of a investable universe or across an entire investment allocation. However, on an individual portfolio level, double counting is less of an issue and can be controlled for by separating Scope 3 reductions from those of Scope 1 and Scope 2 (as discussed later).

Finally, due to these complexities, companies often report Scope 3 categories that are easier to calculate — rather than those that are most material. Categories like business travel (6) and employee commuting (7) are frequently disclosed, while more material categories like purchased goods and services (1) or use of sold products (11) are often omitted. In such cases, data providers step in with modeled estimates; but, the quality and methodology of these estimates can vary significantly, introducing additional uncertainty into portfolio-level analyses.

Understanding data provider differences

To navigate the complexity of Scope 3 emissions, investors are often reliant on third-party data providers. However, the methodologies used to estimate Scope 3 emissions differ significantly across providers, affecting the consistency and comparability of portfolio-level results.

In this paper, we focus on three widely used providers — S&P Global Trucost ('Trucost'), Institutional Shareholder Services ('ISS'), and MSCI ESG Research ('MSCI'). Each provider uses distinct frameworks to determine when company-reported emissions are considered reliable enough to include, and when modeled data should be substituted instead. Critically, if a company does not report Scope 3 data, all three providers will generate estimates using their respective methodologies. These methodological choices vary in terms of model type (e.g., top-down vs. bottom-up), emissions factor sources, and treatment of missing

[1] Partnership for Carbon Accounting Financials (PCAF). (2024) The Global GHG Accounting & Reporting Standard. November 2024. PCAF: Amsterdam.

data. Furthermore, different update cycles can result in a lack of comparability when using most recently available emissions estimates.

To illustrate how these choices affect coverage, consider ISS's proprietary 'Trust Metric', which scores the reliability of company-reported emissions. As shown in **Exhibit 4**, a notable share of companies in Developed Markets (DMs) have their reported data replaced with estimates due to low trust scores. The replacement rates are particularly high in sectors such as Financials, due in part to the aforementioned calculation issues. In Emerging Markets (EMs), the situation is pronounced by a larger share of companies not reporting Scope 3 data, resulting in heavier reliance on estimations.

EXHIBIT 4: ESTIMATING COMPANY DATA

ISS Scope 3 emissions reporting (% companies by GICS sector) by data source, MSCI World Index (left) vs. MSCI EM Index (right)

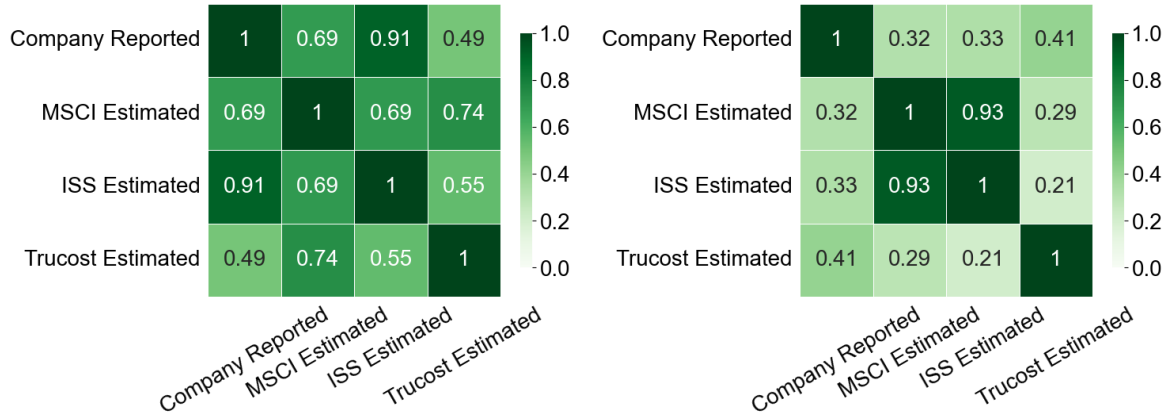
Source: ISS. Data as of February 28, 2025. Dark gray bars indicate not available (N/A) values.

As discussed in the *Key Challenges* section, this variability in reporting — and the provider-specific modelling approach for estimation — introduces additional uncertainty and inconsistency into Scope 3 integration. For investors, understanding how these datasets are constructed is essential for making informed portfolio decisions and ensuring methodological alignment with broader sustainability goals.

How do the Scope 3 estimates from major data providers actually compare in practice? As shown in **Exhibit 5**, correlations between provider estimates and company-reported data — as well as correlations between providers themselves — are far from perfect. Correlations are generally higher in DMs. For example, ISS's estimations exhibit a 91% correlation with reported data for MSCI World Index, reflecting relatively strong alignment. In contrast, Trucost shows much lower correlation levels, both with company disclosures and with other providers. In EMs, the divergence is more pronounced. All three providers exhibit correlations below 50% when compared to company-reported data. It should be noted that divergence can be caused by company underreporting, which will likely improve going forward. Among the providers, ISS and MSCI are more closely aligned with each other, while Trucost remains an outlier. **Exhibit 5** highlights just how much these discrepancies matter when selecting a data vendor.

EXHIBIT 5: DATA PROVIDER DISCREPANCY

Comparing MSCI, ISS and Trucost Scope 3 emissions estimates, MSCI World Index (left) and MSCI EM Index (right)



Source: MSCI, ISS, S&P Global. Data as of February 28, 2025. Number of companies in MSCI World and MSCI EM Indices with full coverage is 1182 and 542 respectively.

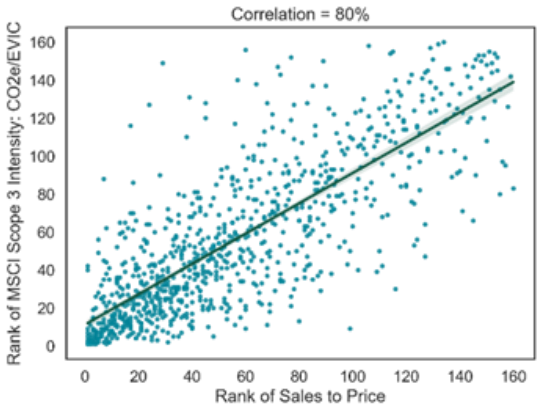
PORTFOLIO CONSTRUCTION IMPLICATIONS

Using MSCI as an example, their Scope 3 methodology relies heavily on top-down estimates for the majority of categories (including 1, 2, 4–6, and 8–13). These models typically use revenue as a scaling factor, meaning that companies with higher revenue are assigned a larger share of sector emissions. When emissions are scaled by EVIC to calculate intensity, this approach leads to a strong correlation between emissions intensity and a company's Sales-to-Price ratio, as shown in **Exhibit 6**. This results in optimized portfolios naturally tilting away from high-revenue firms and toward lower-revenue or growth-oriented companies, introducing a systematic anti-value bias. While this may be an intuitive consequence of the estimation process — and not necessarily undesirable — it is something investors should be aware of. The same dynamic applies, to varying degrees, when using data from Trucost or ISS.

For portfolio managers, this underscores the importance of aligning decarbonization strategies with existing factor exposures. Integrating emissions constraints without accounting for these biases could inadvertently introduce unwanted style tilts, unless explicitly controlled through factor-based portfolio construction techniques.

EXHIBIT 6: TILTING TOWARDS GROWTH

Correlation between MSCI Scope 3 intensity (CO_2e/EVIC) and sales-to-price ratio



Source: MSCI. Data as of February 28, 2025.

Potential solutions for integrating Scope 3

For investors seeking to integrate Scope 3 emissions into their portfolios, several practical considerations can help balance climate ambition with implementation constraints. If the strategy is aligned with a PAB, Scope 3 reductions are not optional — they must be embedded within both the initial 50% carbon intensity reduction target and the 7% annual decarbonization trajectory. However, even for non-PAB-aligned portfolios, a thoughtful Scope 3 integration strategy can enhance climate resilience and regulatory alignment.

Below, we outline a set of design principles applicable across both PAB and non-PAB contexts:

- Set Scope 3 constraints separately from Scope 1 and 2. Combining all emissions into a single aggregate target can result in disproportionate reductions in easier-to-measure categories. Separate constraints ensure a more balanced and transparent decarbonization approach. This also helps to mitigate some of the double counting across scopes.
- Use fully estimated Scope 3 data. Especially in EMs, where company-reported emissions are sparse and inconsistent, relying on blended or partially reported datasets may compromise integrity and comparability. While fully estimated datasets can present challenges, they can help maintain methodological consistency across regions and sectors.
- Select a single data provider. While no dataset is perfect, using one provider ensures internal consistency, avoids duplication of model-based assumptions, and reduces unintended noise when monitoring portfolio-level progress.

For investors not formally following PAB criteria, there is greater flexibility in how and when to incorporate Scope 3 emissions. A sectoral integration approach — where Scope 3 targets are applied only in sectors with the most material emissions — can be both pragmatic and impactful.

This approach is supported by guidance from the Institutional Investors Group on Climate Change (IIGCC), which encourages investors to focus on sectors and Scope 3 categories where emissions are most material and where data quality is improving. According to IIGCC, industries where Scope 3 is particularly high and material include oil & gas, coal, food producers, diversified mining, electric utilities and automobiles[2]. Across

[2] **Source**: IIGCC. (2024) IIGCC Supplementary Guidance: Scope 3 emissions of investments. IIGCC: London. July 18, 2024.

these industries — with the exception of food producers — downstream emissions (such as the use of sold products or end-of-life treatment) represent the most significant component of Scope 3.

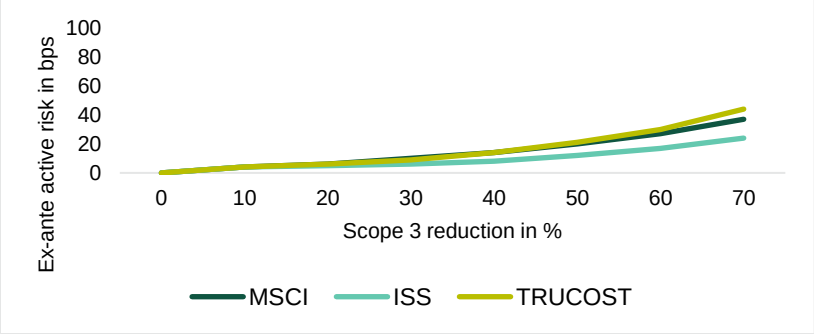
Impact testing: Efficient decarbonization with limited active risk

As demonstrated in our earlier white paper, *Carbon Misconceptions*[3], substantial reductions in emissions — particularly Scope 3 — can be achieved with minimal active risk. Using the same methodology outlined in that study, we constructed efficient frontiers for each data provider, plotting reductions in Scope 3 carbon intensity against portfolio tracking error.

As shown in **Exhibit 7**, the results are compelling: A 70% reduction in Scope 3 intensity can typically be achieved with less than 50 basis points (bps) of active risk. These results are consistent across data providers, despite differences in estimation methodology and scope coverage.

EXHIBIT 7: EMISSIONS REDUCTIONS REQUIRE MINIMAL RISK

Comparing MSCI, ISS, and Trucost Scope 3 intensity reduction (%) vs. additional ex-ante tracking error (bps)



Source: MSCI, ISS, S&P Global. Data as of February 28, 2025.

Importantly, because Scope 3 emissions often account for the majority of a portfolio's total carbon footprint, optimizing for all scopes simultaneously — Scope 1, 2, and 3 — yields similar results to optimizing for Scope 3 alone. This finding reinforces the idea that comprehensive decarbonization can be pursued without sacrificing core investment objectives.

In other words, integrating Scope 3 does not need to come at the expense of portfolio efficiency. With thoughtful design, investors can significantly reduce their emissions exposure while staying within acceptable risk thresholds.

CONCLUSION

Scope 3 emissions represent a complex but increasingly relevant dimension of climate-aware investing. While data inconsistencies, estimation challenges, and methodological differences remain, they do not diminish the strategic importance of understanding the full emissions profile of portfolio companies.

As regulatory requirements evolve and data quality improves, Scope 3 integration is likely to become more standardized and reported. Until then, investors have a range of tools and approaches — such as constraint separation, consistent data sourcing, and sectoral targeting — that can help navigate the current landscape.

[3] See Zymail, P. et. al. (2024). Carbon Misconceptions: Clarifying the Impact of a Net-Zero Commitment on Equity Portfolios. Northern Trust Asset Management.

Ultimately, deeper analysis of Scope 3 emissions offers the potential to improve risk management, anticipate regulatory shifts, and align more effectively with long-term climate objectives. For many investors, this represents not just a reporting obligation, but an emerging investment lens through which both portfolio risks and opportunities can be more clearly understood.

While Scope 3 emissions are a critical component of understanding a company's climate impact, they are not the only factor that matters. In a complex, multi-dimensional climate context, it's essential to also consider other metrics — such as forward-looking indicators, climate targets, and the alignment of company revenues with a low-carbon future. Scope 3 data and methodologies are still evolving, with expectations of improved quality and consistency over time, which means that frameworks and best practices will also continue to develop. A key part of the puzzle is better estimation methodologies and disclosure around these from the data providers. For the companies themselves, stewardship plays a vital role — through active engagement, investors can both encourage more robust Scope 3 disclosure and support tangible efforts to reduce these emissions.

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