

How **data and AI** shape financial services

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Dear reader,

Welcome to the second edition of the Projective Group Institute's Journal of Financial Services.

We publish this edition at a moment when data and Artificial Intelligence are reshaping the financial services sector in ways that extend far beyond technology. They are exposing structural weaknesses, challenging long-established operating models and prompting institutions to confront questions that can no longer be deferred.

The industry's approach to data has also evolved. The first Chief Data Officer roles appeared in the early 2000s, signalling that data required dedicated senior oversight. Responsibilities then expanded from governance and compliance to broader business enablement. Today, the rise of the Chief Data & Artificial Intelligence Officer (CDAIO) reflects a clear shift. Data and AI are now recognised as one integrated area of accountability within many institutions.

Despite this progression, many organisations continue to face fundamental data challenges. Questions such as what data exists, where it is held, who uses it and whether that use is appropriate often lack clear answers. These issues were once manageable within fragmented systems or through manual controls, but the rapid emergence of AI has changed this. Modern analytical tools, able to interrogate vast datasets instantly, have revealed both the strengths and the fragilities of data foundations with unprecedented clarity.

At the same time, regulatory expectations have increased. The Digital Operational Resilience Act (DORA) strengthens requirements around operational resilience and the governance of critical systems and data, while the EU AI Act sets new standards for data quality, traceability and oversight of AI-enabled processes. Together, they underline that data governance has become a strategic imperative rather than a technical consideration.

This second edition of the journal examines what these shifts mean in practice. Our contributors, drawn from industry, academia and regulatory thought leadership, explore how data and AI are influencing decision-making, risk management and operational resilience. They highlight emerging progress, persistent challenges and the capabilities institutions will need to adopt AI safely, responsibly and at scale.

I would like to thank all contributors for their thoughtful analysis and the expertise reflected in their work. I hope this edition offers clarity at a time when the industry is actively seeking it and I welcome your reflections as we continue this discussion.

A stylized, handwritten signature in blue ink, consisting of several fluid, overlapping strokes.

Stefan Dierckx, Founder & CEO, Projective Group

How data and AI shape financial services

Is ESG reporting data fit for purpose?

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ABSTRACT

This paper highlights the inherent tension in environmental, social, and governance (ESG) reporting: ESG reporting metrics generally do not measure outcomes, they measure outputs. Outputs, such as a policy on a sustainability topic, do not necessarily drive performance, societal or financial. This article reviews the Sustainability Accounting Standards Board (SASB) and European Sustainability Reporting Standards (ESRS) standards and metrics through the lens of driving potential societal and financial performance and makes recommendations for the standards and corporate leaders.

1. Introduction

ESG data reporting is being required by regulators, investors, and other stakeholders, due to concerns that corporate performance on those topics, when material, can have a significant impact on both society and the company's "bottom-line".

However, arguments over the utility of ESG data and reporting abound, as do academic studies and consultant reports, with strong opinions on both sides of the ledger. Regulators and investors continue to ask for ESG data, though in some important cases those requests have been rolled back entirely or become more focused (e.g., the Securities and Exchange Commission (SEC) no longer requiring climate disclosure or the Corporate Sustainability Reporting Directive (CSRD) reducing its scope). Some companies continue to collect ESG data, regardless of regulatory or investor requests, because they find the data useful for their decision-making. Others no longer report on ESG performance.

Our research at NYU Stern Center for Sustainable Business using a framework we have named the Return on Sustainable Investment (ROSI)¹ has explored whether sustainability efforts linked to material ESG issues can drive better financial performance. We should note that the definition of sustainability includes impact on profit, while ESG does not, which is why we use the term sustainability when we are not specifically talking about ESG data and reporting.

As we worked with ROSI, we found many shortcomings in commonly used ESG metrics that made it difficult to assess societal or financial performance, hence we undertook a more formal analysis of the SASB and ERS standards.

The positive and negative critiques of ESG reporting by stakeholders are summarized briefly (and not exhaustively) as follows:

Why we need ESG data:

- There are ESG issues that may in the future, or already, have a material impact on a company's bottom line, such as climate change and biodiversity loss [Giglio et al. (205)]. That data, therefore, needs to be collected and disclosed as per any other material financial risk factor.
- Customers and consumers are looking for sustainable solutions and companies that

ignore that demand may put their business at risk. For example, consumer demand for healthy and sustainable consumer packaged goods (CPG) products is growing 2.3X faster in the U.S. than conventional products, and at a 27% premium (conventional is losing market share) [NYU CSB (2024)]. Robust ESG data is, therefore, needed to demonstrate to customers that claims are real.

- Data such as energy use and cost [Ibishova et al. (2024)], health and safety incidents and related comp and lost productivity costs, waste disposal costs, and so on are necessary to optimize performance, especially as costs related to energy, natural resources, waste disposal, and employees increase.
- We need a common standard for ESG data [Rouen et al. (2022)], otherwise data quality can be compromised and regulators and investors cannot make grounded assessments or comparisons related to performance.

Why ESG data is a scam/unnecessary:

- ESG data is not material to financial performance and its collection is forcing companies to make decisions based on non-financial metrics that will drive negative impacts to their bottom line, e.g. Florida anti-ESG investing law [Malone (2023)].
- ESG data reporting requirements themselves are onerous and, therefore, cost too much to implement, e.g. first version of CSR-D requiring more than 1100 data points.
- ESG data provider rankings differ widely in their assessments of corporate ESG performance, creating confusion and questions about the validity of the data [Billio et al. 2021]].
- A lot of ESG data is not audited and may be based on problematic processes or assumptions, e.g., greenhouse gas (GhG) accounting for scope 3 emissions may have different approaches and overlapping accounting.

Our own research finds an interesting contradiction, which partially explains the differing opinions described above:

1. Most ESG reporting data is output, not outcome, based and, therefore, not likely to drive better financial or societal performance. For example, the reporting metric asks if the

1. <https://tinyurl.com/4nwr34sy>

company has a policy on waste management, ignoring the outcome of that policy [Whelan (2025)].

2. ESG reporting data, even when outcome-oriented, do not link to financial returns. For example, reducing GhG can lead to lower energy use, which can lead to lower cost and energy pricing volatility, lower maintenance cost, lower regulatory fees, etc., but that is not tracked or reported on.
3. Despite these challenges, our research does find that well-designed and executive sustainability strategies and practices focused on material ESG issues for a given industry/company are likely to drive better financial performance [Whelan and Douglas (2021)].

In other words, sustainability can drive better financial and societal performance, but we postulate that ESG reporting metrics are not generally the right tool.

We have researched the financial value drivers associated with sustainability strategies and practices in different industries (automotive, apparel, food and beverage, health care, real estate, and energy) and reviewed those drivers across strategies (i.e., decarbonization, circularity, sustainable

sourcing, health & safety, and water stewardship). We have found that business drivers such as operational efficiency, risk mitigation, increased sales, innovation, employee productivity, and retention are often associated with effective sustainability practices.

For example, a company may determine that its operations materially impact the environment through GhG emissions. By integrating energy management into its decarbonization strategy, the company can save on energy costs, reduce exposure to energy price volatility, and potentially command market premiums. The company can use a Return on Sustainability Investment (ROSI™) [NYU CSB (2024)] process to define and monetize the financial benefits for each identified opportunity (Table 1).

Circularity provides another good example: it can drive lower virgin input costs, lower waste disposal costs, reduced dependency on geopolitically risky supply chains, less exposure to tariffs or extended producer responsibility taxes, increased sales, benefits and so on (Table 2). Notably, the ESG reporting standards do not highlight those opportunities.

Table 1: Potential financial benefits of improved energy management

Decarbonization strategy	Practices	Value drivers	Financial benefits
Energy management	Implement on-site renewable energy	Sales and marketing	Additional revenue due to green premiums
		Operational efficiency	Tax incentives and rebates
		Risk management	Reduced dependence on grid and protection against rising energy prices
		Operational efficiency	Reduces utility costs
	Use power purchase agreements	Operational efficiency	Tax incentives and rebates
		Operational efficiency	Lower costs of energy procurement through negotiated contract rates.
		Sales and Marketing	Green premiums
	Improve energy efficiency	Operational efficiency	Lower operational costs (energy, maintenance, increased employee productivity)

Table 2: Potential benefits of circularity

Circularity Strategy	Practices	Value drivers	Financial benefits
Circularity	Implement consumer circular take-back program	Customer loyalty	Reduced new customer acquisition costs
		Media coverage	Earned media generated from increased visibility associated w/the program
		Sales and marketing	New revenue stream and incremental profit generated for parent company from customers
	Use reprocessed component parts and/or equipment	Operational efficiency	Reduced procurement costs due to reduced need to purchase new equipment/parts
		Operational efficiency	Reduced waste management costs associated with disposal
		Risk management	Reduced GHG emissions
		Risk management	Reduced risk of supply chain disruption
	Increase percentage of recycled materials in product	Operational efficiency	Lower operational costs (energy, maintenance, increased employee productivity)
		Sales and marketing	Avoided sales loss/sustained sales from more sustainability-minded consumers

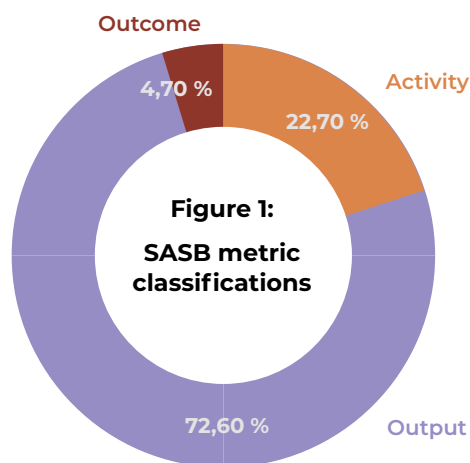
2. An Assessment of SASB and CSR-D with regards to sustainability performance

We researched both SASB (now part of International Sustainability Standards Board (ISSB)) and the original ESRS under CSR-D to assess the strengths and weakness of both standards with a view toward understanding how likely they would be to drive financially and societally material benefits. We find that both exhibit weaknesses that may partially justify some of the criticisms.

2.1 SASB/ISSB

There are four challenges associated with SASB/ISSB as currently constructed:

1. Most reporting metrics are activities/outputs rather than outcomes.
2. Most metrics are neutral or risk-focused rather than opportunity-focused.
3. ESG reporting metrics neither integrate financial performance nor provide guidance on how to understand and drive better financial performance.
4. Our own engagements with companies and investors find that some focus on these reporting metrics at the beginning and end of their sustainability initiatives, which given the above weaknesses, are unlikely to drive sustainability benefits or financial improvement.



Our assessment of SASB metrics finds that 95% of SASB metrics are primarily process/output-based (including activity classification) versus performance/outcome-based (Figure 1) [Whelan and Marx (2025)]. Certain verticals are also missing material metrics on topics such as living wage and circularity. Social metrics seem to be lacking the most.

In addition, the majority of SASB's existing metrics are neutral or risk metrics. The "neutral" metrics provide a snapshot of performance but do not help us understand what the positive or negative financial impact might be. For example, tracking GhG emissions, even reducing them, does not tell us if we have reduced a given financial risk or created revenue growth. The "risk" metrics focus on mitigating environmental and social risks that could threaten the bottom line, but the standards overall do not adequately explore the upside, such as operational efficiency and innovation and growth.

- **Activity metrics:** these metrics encourage organizations to describe the environment of a given issue and what needs to be done, without actually implementing said activities. Often, they describe strategies or risks and opportunities. Activity metrics do not require organizations to monitor these strategies' results or develop recommendations.
- **Output metrics:** we classified output metrics as those that document an output such as a policy or training or a chemical/GhG metric, but do not drive or document specific improvements/changes. They generally have no benchmark, target, or context.
- **Outcome metrics:** such metrics require a methodology to assess whether progress has been made and whether they have been

meaningful. Knowing that current water use is x, does not tell us if that is positive or negative because we have no context. Knowing that water use has been reduced by 10%, say, is still incomplete information because we do not know if that is meaningful or not. Setting context, targets and tracking progress over time, thus, becomes an important element to ensure outcomes.

Output metrics can be converted to outcome metrics by requirements for short and long-term targets, disclosure of the base year, and performance to those targets. Furthermore, disclosures should include a description of the target-setting process and the suitability of those targets to reach company goals and commitments. These metrics allow organizations to set targets to improve their efforts and document performance.

For example, the number of recalls is a material issue for the automotive sector. But the SASB metrics just ask for the total number of recalls, which gives us no sense of performance. We can adjust the metric as follows: (1) number of vehicles recalled in current year: (a) short and long-term targets with a defined period, (b) base year, and (c) performance to time-based targets.

In another example from the agricultural products sector, SASB asks for: "the percentage of agricultural products sourced that are certified to a third-party environmental and/or social standard, and percentages by standard." We can add the following: (1) percentage of agricultural products sourced by all suppliers that are certified to a third-party environmental and/or social standard, and (2) percentages by standard: (a) short- and long-term target with a defined period, (b) base year, and (c) performance to time-based targets.

In a final example from the insurance sector, SASB asks for: "a description of approach to incorporation of environmental, social, and governance (ESG) factors in investment management processes and strategies." We turned this activity into an outcome-oriented metric as follows: number and total value of investments incorporating the integration of (1) ESG factors: (a) short and long-term targets with a defined period, (b) base year, and (c) performance to time-based targets.

2.1.1 Lack of alignment with financial impacts

These revisions from outputs to outcomes still do not align the ESG reporting with financial returns.

The revised recall metric does not address the cost of these recalls, for example. In separate research, we have found that companies only track the direct costs of fixing the faulty component, but in fact, there are many other costs ranging from litigation, media outreach, crisis management time and effort, employee training, and new systems to avoid recurrence of the problem, etc., which could be tracked.

To follow-up with our agricultural certification example, the outcome-based metric does not by itself determine whether financial value will be created, but our research has found that sustainable sourcing with certification programs does lead to improved sales and marketing benefits, as well as reduced supply chain risk. We, therefore, would want to include metrics related to increased sales, premiums, or market share improvement.

With regards to the insurance company's integration of ESG into its investment portfolio - to understand if this shift had financially material results - we would need to add another metric asking for performance of the investment portfolio versus a conventional benchmark.

These examples underscore our concern that identifying something as financially material does not actually drive better tracking or assessment of the financial impacts.

There are two paths to potentially follow:

1. Change the metrics to integrate financial metrics with the ESG metrics (e.g., energy savings associated with energy management).
2. Provide guidance on which metrics can drive value (e.g., note that improved energy management can reduce energy pricing volatility, increase operational efficiency, and reduce potential or existing carbon fees).

2.2 CSR-D/ESRS

The ESRS/CSR-D provides more strategic insight and outcome-oriented guidance than SASB. For example, CSR-D requires companies to identify and disclose all material impacts within their value chain as per the following (impacts can be actual or potential, negative or positive over the short-, medium-, or long-term):

- Their governance processes, controls, and

procedures used to monitor, manage, and oversee material impacts.

- How their strategy and business model interact with its material impacts.
- The processes by which they identify, assess, and manage material impacts.
- Their performance, including targets it has set and progress towards meeting them.

However, despite the guidance outlined in the Materiality Assessment Implementation Guidance (EFRAG IG 1), a standardized methodology for conducting a materiality assessment is not provided, nor does ESRS offer detailed advice on what constitutes material impacts, risks and opportunities (IROs). The absence of a clear, standardized methodology or list of IROs can create inconsistency in how companies approach these assessments. This can lead to companies identifying different or incomplete lists of material matters, making it difficult for stakeholders to compare data points against companies in the same sector.

While the regulation aims to enhance transparency and accountability for a company's material impacts and to encourage positive outcomes, it does not mandate that companies set outcome-oriented targets. Instead, it requires disclosure only for targets that companies have already established. For any targets set, the regulation imposes a set of minimum disclosure requirements, including the nature and scope of the target, baseline value, baseline year, milestones, interim targets, and more (ESRS 2). Consequently, despite robust disclosures for set targets, the standard may actually disincentivize the setting of targets as companies aim to avoid additional disclosure that could expose them to risks if there is not a requirement to do so.

The ESRS does require companies to report the anticipated financial effects of material sustainability risks and opportunities. However, the standards primarily focus on identifying and managing negative financial risks rather than highlighting potential financial upside opportunities and the metrics are few. The ESRS includes around 100² (out of ~1,000) data points related to financial disclosures (Table 3), with most found in EI. (The original version of the CSR-D required 1200 plus data disclosures; the newest version has reduced that by more than 60%.) However, less than five of these data points explicitly address the financial upside

2. In order to identify financial disclosures leveraged EFRAG IG 3 List of ESRS Data Points and filtered for "Monetary" data types, disclosures in the "Anticipated Financial Effects" sub reporting area, and disclosures related to monetary fines and penalties.

Table 3: ESRS/CSR-D number of financial metrics

ESRS Standard	Number of financial disclosures by standard
ESRS 2	17
E1	56
E2	11
E3	1
E4	7
E5	6
G1	5
S1	2
	105

(i.e., cost savings from climate mitigation and adaptation plans and revenues from low-carbon products). Otherwise, the disclosure requirements are risk focused (e.g., operating costs, capital expenses, or monetary losses) or remain vague, asking companies to disclose anticipated financial effects from material risks or opportunities but not explicitly indicating which financial measures to disclose. In the newest version of the standard, some financial metrics have been eliminated; E1 now has 5 financial metrics, for example.

For example, “Assets at material physical risk before considering climate change adaptation actions” (E1-9a, 66a) highlights exposure to climate-related vulnerabilities. Some disclosures are neutral or depend on interpretation, such as “Disclosure of quantitative information about anticipated financial effects of material risks and opportunities arising from pollution-related impacts” (E2-6, 39a). Few disclosures explicitly emphasize opportunities, such as “Expected cost savings from climate change adaptation actions” (E1-9, 69a), which recognizes the financial benefits of proactive sustainability measures.

2.2.1 Recommendations

For standard setters, specifically IISB and EFRS, we have published two reports that provide specific recommendations for improving the standards and metrics: how to improve IISB/SASB reporting

to drive better societal and financial performance [Whelan and Marx (2025) and evaluating the effectiveness of E.U. CSRD in driving sustainability outcomes and improved financial performance [Cannon and Whelan (2025)]. However, we appreciate the variability in topics and approaches across industries and value chain players makes it difficult to provide the type of granularity and specificity that is required to drive real impact and financial benefit. Consequently, we turn our attention to how corporate leaders can best manage material ESG issues to improve performance.

3. Setting smart sustainability and ROSI KPIs and mapping to ESG reporting metrics

Most importantly, implementation of sustainability strategies and target setting should be strategic and embedded in business strategy, as is in every other area of business endeavor, rather than approached as a reporting and compliance exercise.

Myriad management studies and guidance point to mapping the strengths, weaknesses, opportunities, and threats (SWOT) to an organization and its ecosystem (e.g., customers, suppliers, and investors) and building that assessment into business strategies with innovative products and or services [Helms and Nixon (2010)]. SMART (specific, measurable, achievable, relevant, and time-bound) KPIs are required to drive progress and effect mid-course corrections [and can be enhanced by AI; Schrage et al. (2024)]. Sustainability should be no different.

In other words, companies can themselves set outcome-oriented KPIs that they can map to ESG reporting metrics. Hence, the reporting starts first with business strategy and ends with compliance, rather than the other way around.

Common practice today has companies undertaking an ESG materiality analysis with internal and external stakeholders. SASB provides a list of material topics by industry sector (though missing some topics) and CSR-D outlines a double-materiality assessment process. With a materiality matrix in hand, companies can use that analysis to undertake a SWOT and determine prioritiza-

tion and appropriate sustainability strategies and practices – and the right ESG metrics to track. For example, if a manufacturing company uses a lot of water and is located in an area under water stress, it could be exposed to cost increases, regulatory risk, and license to operate challenges. It needs to then identify potential solutions, assess the cost/benefits of different scenarios, and set up KPIs tracking water use per unit, costs per unit (including cost of water, cost of wastewater disposal, cost of energy needed to move, heat and cool the water). This sound obvious, but current ESG reporting metrics do not drive this kind of approach.

The logic flows as follows:

1. **Identify the sustainability KPI for the material ESG issue:** for example, reduce water use at all mills by 30 percent from 2023 baseline by 2026 (note this is an outcome metric, but it does not have a financial metric).
2. **Identify the potential financial benefits of that action and determine which benefits are likeliest to drive financial value** (a comprehensive analysis will look at the full range of benefits, ranging from productivity, to risk, to sales, to efficiency): for example, operational efficiency (reduced water and energy costs as well as reduced wastewater disposal costs), risk mitigation (continued access to water - no stranded asset), and

stakeholder relations (improved relationships with NGOs, local community, and regulators).

3. **Develop financial KPI(s) and monetization methods to track those benefits:** for example, operational efficiency: energy, water, and wastewater disposal costs reduced by x% at each mill, totaling \$x by 2026.

4. Conclusion

Critics and supporters of ESG reporting are both justified in their assessment of ESG reporting. While research demonstrates that sustainability is indeed financially material (based on topic and industry) and can create financial risks and opportunities, ESG reporting generally may not include metrics that would actually improve management, impact, and financial performance. Sustainability should be managed as would any other material topic for a company or an investor, with appropriate KPIs and monitoring that assess outcome-oriented societal and financial performance. ESG reporting metrics can be improved to focus more directly on outcomes and to incorporate more direct financial impacts, however, companies should define their own sustainability and ROSI KPIs as a first order of business.



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