Abstract

Calls for standardization of corporate sustainability data continue to mount as a growing segment of the mainstream investor community seeks greater clarity and comparability regarding relative company performance on environmental, social, and governance (ESG) issues. While ESG reporting standards have driven greater transparency over the years, we focus in this article on the standards for ESG data that will underlie decision-useful information in future disclosures. We analyze the challenges and conclude that the diversity of investor interests would be best served by the development of ESG data standards in three distinct areas. First, a coherent framework for sustainable investing requires methodological standards for ESG data collection,
aggregation, and validation. Second, *value-minded* sustainability investors need materiality-based standards to identify ESG factors that drive financial risk and opportunity. Third, *values-oriented* investors want impact metric standards that demonstrate in a trusted and carefully structured manner the social and environmental benefits delivered by companies.

**Background: Diversity of ESG Challenges**

Investor focus on corporate responsibility has grown substantially over the last decade with a particular spike in interest in sustainability in the past few years. This emerging segment of sustainability-minded investors, representing a wide spectrum of investment strategies, risk tolerances, and substantive issue interests has been increasingly demanding better corporate sustainability information often framed in terms of ESG (environmental, social, and governance) metrics (Esty and Cort, 2017; GSIA, 2016; UN PRI, 2018; Desclee et al., 2017; CFA Institute, 2017). The Global Sustainable Investment Alliance (GSIA) estimates that almost $23 trillion of assets are now managed using some form of responsible investment strategy (GSIA, 2016).

Much of this interest stems from investors seeking to align their portfolios with their values (whether those values are purely profit motivated or include some degree of values orientation and commitment to “doing good”). But the pace of growth and the breadth of interest also reflect empirical research from academics and practitioners that seem to show positive correlations between corporate sustainability and financial performance – at least in some circumstances. A variety of academic empirical studies have reported statistically relevant correlations between sustainability management practices, performance, policies, controls,
reputation, disclosure, or business strategy and some aspect of financial success such as stock price, return on assets, Tobin Q, or cost of capital (Ameer and Othman, 2012; Borgers et al., 2013; Cai and He, 2014; Dhaliwal et al., 2011; Endrikat, 2015; King and Lenox, 2001; Kitzmueller and Shimshack, 2012; Klassen and McLaughlin, 1996; Krupatskie and Darnall, 2013; Rezaee and Tuo, 2017; Trudel and Cotte, 2009; Yates-Smith, 2013).

Some of these studies, including Eccles et al. (2014), suggest that High Sustainability companies outperform their peers in both stock market and accounting results. Kahn et al. (2015) found similar positive correlations with financial performance with a sharper focus on management practices regarding specific material ESG issues within sectors. Positive reports have likewise emerged from the practitioner literature (Calvert and HBS, 2018; MSCI, 2014).

Thousands of empirical studies have now been undertaken in both the academic and practitioner arenas to test the correlation across a wide range sustainability assessments and marketplace outperformance. Friede et al. (2015) conducted a meta-analysis of over 2000 academic studies and found that almost half showed a positive correlation while only about 10% showed a negative correlation, with the remainder showing mixed or neutral results. An earlier meta-analysis by Orlitzky et al. (2003) had a similar finding with the authors concluding that “corporate virtue in the form of social responsibility and, to a lesser extent, environmental responsibility, is likely to pay off.” A team of Oxford University researchers and Arabesque Partners reviewed 190 academic studies that examined the business case for corporate sustainability – and found significant quantitative evidence that strong standards and top-tier ESG performance result in better operational results, lower costs of capital, and improved stock price performance (Clark et al., 2015). More recently, Alshehhi et al. (2018) reviewed 138
academic empirical studies from high quality journals and found that 78% report a positive correlation.

Like the growing asset manager population integrating ESG into investment strategies, we believe that the evidence supports the hypothesis that some (but not all) dimensions of ESG leadership may translate into superior financial performance – and therefore would be a useful component of successful investment strategies (Esty and Cort, 2017). But skepticism remains in many quarters (Vogel, 2005; Li et al., 2017, Rivera et al., 2017). A variety of unanswered questions and persistent doubts remain. For example, Orlitzky undercut the conclusion of his own meta-analysis, which showed a positive relationship between financial performance and ESG, with a later article that highlighted the significant noise in the underlying data (Orlitzky, 2013). Other authors have pointed to methodological flaws in a number of the studies and the persistent messiness of the data (Esty and Cort, 2017; Bose and Springsteel, 2017). Shahzad and Sharfman (2015) echo these concerns with a study that closely analyzes sample-selection biases. Other critics, including Vogel (2005) and Salzmann et al. (2005), suggest that the dominant determinant of financial performance is management quality and practices – and that all other factors pale in comparison, thus concluding that ESG and financial performance have no causal relationship. Finally, lessons from other empirical fields of research provide a warning about the risk of implicit bias toward positive results as researchers are less likely to publish negative correlations (Button et al., 2013).

Beyond these nagging areas of methodological doubt, we note that some very fundamental questions on the role of ESG as a driver of corporate financial results have not been answered: What specific ESG metrics affect financial outperformance and under what
circumstances? If we can identify critical ESG factors to financial performance, can we trust the data to differentiate true leaders from those engaged in puffery or greenwashing? Which ESG factors are dependent on each other? Do top-tier ESG scores lead to – or follow from – financial success? In other words: is strong ESG performance best understood as a leading indicator of top-quality management although not an important independent factor in determining financial results? Are ESG effects sufficiently consistent across sectors to enable comparisons between industries as well as among companies?

Given these unanswered questions and the persistent critiques of ESG methodologies (Esty and Cort, 2017) and data, investors have brought a very broad array of strategic approaches to sustainable investing. In the absence of established ESG metrics that clearly drive financial performance, investors must seek a wide range of information and develop bespoke methodologies to analyze the data that are available – and then transform their analyses into implementable investment decisions. The different investment priorities of individual asset owners – from maximizing financial returns to primary emphasis on social and environmental impacts – add to the sense of confusion. Well-constructed ESG data standards could create greater reliability in the metrics that underpin the variety of emerging reporting and disclosure approaches and promote greater confidence among investors and other stakeholders that they will be able to separate sustainability signals from noise.

Despite the infinite shades of nuance across the values, sustainability priorities, degrees of confidence in ESG data, risk tolerances, and investment strategies of investors and asset managers operating in the ESG investment arena, there have been several attempts to create broad categories of sustainable investors (GSIA, 2016; Krosinsky and Purdom, 2016). Building
on this base, we have identified five investment strategies that we believe are driving much of the activity in ESG standards development today:

- **Sustainable Alpha investors.** These investors seek outperformance in the market based on ESG data and sustainability leadership. Sometimes called *value-first investors* (Krosinsky and Purdom, 2016) or investors focused on the *value driver* model of portfolio construction (Lubin and Esty, 2014), they seek to identify companies that are positioned to take advantage of what they perceive to be large-scale marketplace opportunities created by the emergence of sustainability issues and pressures. In particular, they invest in companies that will be able to reduce risks, cut costs, or drive growth through their focus on the emerging sustainability imperative. Putting money into enterprises positioned to deliver progress toward the new energy economy and thus help respond to climate change would be an example of one such opportunity.

- **Smart Beta investors.** These investors seek to ride market trends but with a tilt in the direction of sustainability. They want ESG data to help them avoid volatility in their portfolios and achieve more consistent returns. They seek corporate metrics and information that help to highlight which companies are undertaking consistent and comprehensive assessment of ESG risks, integrating sustainability concerns into management practices, and advancing careful risk mitigation strategies. Many institutional investors fit in this category.

- **Activist investors.** These investors wish to use their role as shareholders to change corporate practices and thus move society toward a more sustainable future. The issues on which their activism focuses range widely, but they all seek to promote certain values
and policy outcomes. In seeking to change corporate behavior, these investors often want greater corporate transparency and therefore more disclosure of ESG data, particularly regarding what they consider to be material issues. For example, more and better data on company climate change impacts and policies represent a common target of activist investors – some of whom may threaten to divest from companies with sub-par performance or inadequate disclosure.

- **Impact investors.** *Impact* investors prioritize the potential for their investments in particular companies, assets, or projects, to deliver beneficial impacts to the environment or society above and beyond any financial returns. Indeed, impact investors are defined by their willingness to sacrifice some level of marketplace success in the interest of sustainability gains. These investors want impact metrics that gauge the success of the environmental and social efforts of the entities in which they have invested.

- **Screening investors.** These *values*-oriented investors want ESG data and information that will enable them to screen the companies in their portfolios to include or exclude equities or other investments based on various characteristics – often targeting whole sectors of the economy. Familiar negative screens include companies involved in the manufacture or sale of tobacco, weapons, alcohol, firearms, or fossil fuels. Positive screens might include renewable energy companies or certified B-Corps. Screening investors have relatively little interest in detailed ESG reports, focusing instead on industry classifications and the major revenue streams of particular assets.

Each of these investor types has different priorities, sustainability questions, doubts, expectations, and data needs. For instance, investors seeking to outperform the market through
consideration of ESG factors home in on the quality of ESG data and the methodological rigor of the empirical studies that attempt to find a correlation between certain ESG scores and financial performance. Many of these investors see arbitrage opportunities in the complexities of the existing data and studies. Thus, they are content to sift through the messy data and to conduct their own due diligence in order to generate unique insights. They see big data, artificial intelligence, and machine learning as tools that might provide new ways to gather or analyze ESG factors – and thus shed light on potential sustainability-driven long or short strategies. For these investors, while comparability is convenient, the quality of the underlying information is of paramount importance as it determines whether ESG metrics provide a reliable basis for their analyses.

Smart Beta investors and to some extent Activist investors seek more decision-useful data on which to assess the potential exposure of an asset to ESG-based issues – both downside risks and upside opportunities. These investors expect companies to expand their management strategies to better understand and address potential exposure to environmental or social issues and trends. As a group, these investors push for more transparency in the processes by which companies assess risk, more robust risk assessment criteria that better consider the potential internalization of ESG externalities, and greater disclosure of the potential financial implications of these risks – particularly in regulated financial reports. For these investors, comparability is the priority as they seek to design investment strategies that overweight or underweight specific companies or industries based on ESG factors across a wide spectrum of investable assets.

Values-oriented investors, such as Impact investors, seek better data on outputs and outcomes of business practices on society and the environment. For example, while a company
may disclose its efforts to improve diversity, the impact investor will likely seek data on how that effort affects economic development in the communities in which the company operates.

**Potential Value of ESG Data Standards**

It has been argued that this diversity of investment strategies and investor types underlies much of the current confusion and disagreement on the best path forward for ESG metrics and data standards (Esty and Cort, 2017). In fact, it is likely impossible, and probably counter-productive to the growth of the ESG-investing industry, to attempt to force homogeneity across investment approaches. Rather, data standards should focus on the underlying processes for determining, collecting and validating data in order to support more decision-useful information and reporting strategies for a wide variety of investment strategies. To this end, we see a need for three distinct types of ESG data standards:

**Methodological data standards.** The need for accurate, complete, and timely ESG data cuts across all the sustainable investor types that we have identified. Here we define data accuracy to include the integrity, correctness, completeness, and methodological consistency of the information reported. Whether data are reported by the companies themselves, compiled through third-party vendors, or gathered through innovative technologies such as satellite imaging or data scraping on the internet, our analysis suggests that virtually all sustainability-oriented investors of whatever stripe seek accurate ESG metrics that provide a true picture of the company or asset in question. While investors will always ask for more and better data, the current state of play for ESG data continues to lag behind financial data creating a barrier to scaled-up sustainability-oriented investing (Sridharan, 2018, Esty and Cort, 2017).
Integrity and the correctness of ESG data must be proven and cannot be assumed. Thus, we believe that ESG data need to be validated or verified through: (a) government regulatory standards and review, (b) third-party auditing of the company producing the data – including by the established reporting platforms such as GRI or CDP, or (c) the data vendors such as MSCI, Sustainalytics, Thomson Reuters, IHS Markit, ISS-oekom, or Bloomberg. To be “correct,” data must not only be validated as having been collected carefully and then reported accurately according to the established methodology but also be regularly updated. Timeliness remains a fundamental challenge in the ESG data arena. Some of the published metrics reflect circumstances from many years earlier. And much of the information available is reported on an annual basis in releases that are issued up to 18 months later. Depending on the investment strategy, such infrequent reporting and updating can render the ESG scores useless or even misleading.

A methodological data standard is one that provides guidance and a minimum threshold of practice for the collection, aggregation, and validation of ESG data. Templates from the accounting world include rules for data management and aggregation, tools for statistical analysis, procedures to avoid data inconsistencies, and auditing protocols (Kahn et al., 2015; Esty and Cort, 2017).

**Materiality-based standards.** Materiality-based standards address the need for comparability between companies or assets within a class or sector focused on ensuring that comparisons address the critical issues within an industry – and are not torqued by peripheral concerns. How do we compare ESG data between ExxonMobil and Royal Dutch Shell? How do we assess a bond issuance for renewable energy development against energy upgrades for a
building portfolio? These questions are particularly relevant to Smart-Beta, and Activist investors. They are also relevant to financial regulators seeking more robust data foundations upon which to build their policies. These questions of comparability require that different companies or asset types that have similar material ESG impacts begin to compile data on a consistent list of metrics and management processes using common methodological practices.

Materiality-based data standards can fall into one of two types. The first type builds on the assignment of a company to an industry or sector category (e.g., ExxonMobil may be classified into the oil and gas or energy sector) and then prescribes a list of material issues on which data are sought for that category. The Sustainability Accounting Standards Board (SASB) efforts to align disclosure rules around a prescribed set of metrics for a variety of sectors and industries (SASB, 2018a) exemplifies this approach. The SASB indicators and metrics were established through dialogues with a set of stakeholders with a specific focus on financial materiality -- and then codified in a series of disclosure standards. While SASB is targeted at materiality processes for selecting topics for disclosure and reporting, rather than underlying data systems, adoption would necessarily impact on the selection of data sets.

The second type of materiality-based standard posits that individual companies or assets are best positioned to determine which data sets are material on their own or through their own stakeholder-informed assessment of impacts and opportunities. In this case, the materiality standard focuses on the processes by which that assessment is undertaken to encourage consistency of approach to materiality rather than consistency of outcome. Again, the most relevant example comes from disclosure guidelines such as the Task Force on Climate-related Financial Disclosure (TCFD), which seeks better disclosure of climate risks from public equities
without prescribing which risks might apply to a given company or sector. These two models of materiality-based standards are not mutually exclusive and many of the leading standards organizations in ESG provide metrics of both types.

When considering the selection and treatment of material data, we see challenges with reliance on either SASB, which often appears to narrow the scope of material issues too severely – or the TCFD approach, which provides too much flexibility, thus limiting comparability and risking a result in which companies cherry pick the data to report only on ESG elements where their performance looks favorable. We see the logic for some company-specific data set selection but only on top of a mandatory baseline set of ESG metrics and a further set of industry-specific “material” ESG elements.

**Impact data standards.** Most relevant to the values-oriented impact investor, the impact metric standards focus on generating comparable data on externalized social and environmental impacts. These standards are meant to provide consistency and comparability in gauging the outputs and outcomes of ESG initiatives by companies and their delivery more broadly - of social value above and beyond any financial returns. How do we compare the socioeconomic benefits of telecommunications (e.g., entrepreneurship, financial infrastructure, women’s empowerment) to the benefits of clean energy development (e.g., health benefits from reduced air pollution, job creation, tax revenues)? The end-goal is to create a better picture of whether a company (or another asset) is a net benefit or detriment to society and how well the company moves us toward a more sustainable future.
Current State of ESG Data Standards – and Path Forward

Methodological Standards

The present challenges associated with ESG data were well documented in a 2017 special issue of the *Journal of Environmental Investing* (Esty and Cort, 2017; Bose and Springsteel, 2017; Douglas et al., 2017; Bartley et al., 2017; Glassman et al., 2017; Funk and Powell, 2017). These challenges include issues associated with data collection, analysis, and management, as conducted by companies as well as data aggregators and data providers. Such information is largely voluntarily collected and reported and is therefore not subjected to rigorous methodological standards or validation. The result, as described by Esty and Cort (2017), include methodological inconsistencies, large data gaps, and divergent ESG analytics that leave sustainable investors vulnerable to a general lack of data quality and comparability. Disparate approaches to data gap-filling, estimation, normalization, and a lack of consistency in the timeframe for disclosure add to these problems.

As we grapple with the collection and dissemination of ESG data, these challenges promise to expand with the rise of *Big Data analyses* that compile information from a wide array of sources that are then aggregated, often without careful attention to data normalization and comparability. In this regard, some of the trends that promise to further affect the ESG data upon which investors will be relying – both positively and negatively – include:

- Social media and the ability of an increasing number of stakeholders to access information from a wider range of sources in the matter of seconds;
• Artificial intelligence, computer algorithms, and the ability to compile data from hundreds or thousands of sources to paint a more complete picture of the organization;

• Machine learning, data scraping, and other technologies that allow more automated collection of data from nontraditional sources such as qualitative text, videos, audio clips, and imagery.

The result is that investors are accessing more data from a greater number of sources and processing that data from more perspectives – but with less consistency and clarity about who the real sustainability leaders are. In addition, companies have less and less control over their corporate data and the metrics that reach investors. Some observers have termed this trend “radical transparency,” referring to the idea that there will be no secrets in the age of Big Data (Brown et al., 2011).

From an investor perspective, two central challenges have emerged as a result of technology and Big Data. The first challenge centers on truth and accuracy. In an age where data are too often not validated, vetted, or standardized (i.e., data are not subjected to review against a clearly specified methodological standard), many investors and other readers of sustainability reports will be unable to differentiate between accurate and inaccurate data, let alone distinguish between shades of accuracy and other nuances of interpreted data. This chaotic data framework has led to confusion about who the true sustainability leaders are.

The second challenge for investors resulting from technology arises from the limited abilities of many investors to process additional sources of information. This challenge varies from the micro, meaning investors are only able to absorb a certain amount of information on a
topic as a result of time or access constraints, to the macro insofar as large data analytic firms rely on automation which results in significant numbers of false positive and false negative correlations. In both cases, processing capacity and speed play a critical role in the types of data selected and the resulting conclusions.

A recent Global Reporting Initiative (GRI) study sums up the data challenges in sustainability reporting succinctly (GRI 2015a):

“... reports are expected to be shorter and relevant but explain the context. The more focused the communication, the less chance companies have to misinform. But without context, the information is not useful. Companies will need to find the right balance between direct, ‘to-the-point’ information based on data which can be checked easily, and contextual descriptions that enable stakeholders to understand the efforts made or needed. Additionally, data in external communications should be used to underpin and support specific points the company wants to make in relation to its commitments and efforts made to tackle real issues.”

In response to the rising data expectations from investors and others, companies have moved increasingly to digital technology and online platforms to distribute information and data. A World Business Council for Sustainable Development (WBCSD) survey of member company reports indicated that 44% of reports include online content above and beyond the pdf downloadable format, an increase from 23%. In addition, 32% of reports had content primarily in digital formats with less emphasis on downloadable content (WBCSD, 2017). There has been almost no movement, however, toward standardization of data quality or control processes. This outcome persists even though companies are increasingly seeking methods to build credibility of their own disclosed information in the face of technology trends.
We have seen substantial convergence in data quality principles, particularly those prescribed by sustainability reporting standards such as the SASB and the GRI. The WBCSD reports that approximately 85% of reporting WBCSD member companies reference the GRI Reporting Standard (WBCSD, 2017). SASB reports that 42% provided disclosure on every SASB topic (SASB, 2017). SASB lists nine Principles for Metric Selection: Fair Representation, Useful, Applicable, Comparable, Complete, Verifiable, Aligned, Neutral, and Distributive. GRI lists six Principles for Defining Report Quality: Balance, Comparability, Accuracy, Timeliness, Clarity, and Reliability and four Principles for Defining Report Content: Stakeholder Inclusiveness, Sustainability Context, Materiality and Completeness. These principles point to the desire for information that is both material and decision-useful. Other standards, guidelines, frameworks, and data collection services align reasonably closely with GRI and SASB. For example, the recent guidelines from the Sustainable Stock Exchanges Initiative (SSE) make reference to indicators from both GRI and SASB. The TCFD also explicitly references SASB and GRI when defining reporting quality principles for climate change performance.

But principles for what we hope data will look like are not the same as standards for how we treat data to ensure that it meets these expectations. Despite the convergence of data quality principles, there has been relatively little movement toward a generally accepted ESG methodological data standard. To date, reporting standards including GRI, SASB, and the TCFD refer to accounting standards for guidance on data collection and dissemination such as those from the Financial Accounting Standards Board (FASB), the International Monetary Fund (IMF) (2001), and the Bank of England (2014).
These are recommendations within voluntary reporting standards and not regulatory requirements, and thus reporting varies considerably from company to company. There are, moreover, inherent challenges that make applying accounting controls to ESG data difficult. ESG data are typically more focused on intangible and qualitative values, making accounting control procedures difficult to apply. ESG data are also more frequently forward-looking, making reconciliation of data as a control mechanism less effective. Finally, ESG data are frequently collected in a more haphazard manner (e.g., over different time periods, by different people, using different methodologies), making auditing procedures a more intense process.

Nevertheless, there have been significant recent movements to align the control procedures for ESG data. Two efforts in particular bear mentioning. In 2017, Herz et al. (2017) drafted a white paper on how the Committee of Sponsoring Organizations of the Treadway Commission (COSO) *Internal Control Framework* could be applied to environmental and social performance data to improve the reliability (i.e., decision-usefulness) of information. In addition, the WBCSD, in partnership with COSO and in consultation with the International Federation of Accountants (IFAC) and the American Institute of Certified Public Accountants (AICPA) and others, released guidance on the application of enterprise risk management (ERM) processes, including integrated internal control frameworks to the assessment and compilation of ESG risks (COSO and WBCSD, 2018). While the sustainable investing world is not yet at the point of full agreement on these methodological standards, the two documents lay out a set of tools that companies can use to better identify ESG data used for disclosure or assessment of risks – and thus represent a step forward for those seeking consistency in ESG data.

**Materiality-Based Standards**
Rising investor ESG interest has triggered a significant focus on *materiality* and *risk assessment* for the data that underlie sustainability reporting. This intensified risk focus can be seen in the following developments:


- **2018 release of the draft COSO ERM Framework** focused on the integration of ESG risk considerations into traditional Enterprise Risk Management tools (COSO and WBCSD, 2018).

- **significant growth in regulatory requirements in financial disclosure of ESG information** that are overwhelmingly targeted at disclosures in the risk section of financial reports (WBCSD, 2018a).

To better understand the evolution of these standards, we must first look at the overarching interests of investors around the material ESG data reported by companies.

**Evolution of materiality.** Standards for disclosure in sustainability and ESG have led the way in developing guidance for risk assessment and materiality. The WBCSD found that 82% of member companies disclosed a materiality process and/or matrix in their 2017 corporate sustainability report, although the number of companies that aligned their disclosures to those materiality assessments was significantly lower at 37%. Research has shown, however, that a
significant discrepancy exists between the issues reported in sustainability reports and those reported in financial reports. According to WBCSD (2017):

“The report examined 170 companies, constituting more than USD $19 trillion in market capitalization, comparing material sustainability factors disclosed in sustainability reporting with the risk factors in mainstream corporate reporting. The report revealed that less than one in every three “material issues” (29%) disclosed in a company’s sustainability report were deemed to be material for the purposes of disclosure in the company’s legal risk filing. Of particular note Particularly concerning was the finding that 35% of companies had no alignment between the risks deemed “material” in the sustainability report and the risks disclosed in the legal filing.”

This divergence has become a major concern for stakeholders and investors as they try to determine whether the ESG issues in a company’s sustainability report are financially material.¹ As a result, the new emphasis and resulting expectations on risk assessment for ESG issues is different than historic materiality approaches in several significant ways:

1. **There is significantly more emphasis on the use of formal risk assessment tools when undertaking materiality assessments for sustainability reports.** The TCFD recommends the use of scenario analysis to provide better context and formal assessment of risks (TCFD, 2017). COSO lists a variety of statistically-based tools to assess and prioritize risks such as stochastic models and Monte Carlo simulations in addition to scenario analyses (COSO and WBCSD, 2018). This guidance reflects a significant change in what stakeholders consider to be decision-useful. Not only are stakeholders asking whether companies understand which ESG issues constitute a risk, they are also asking whether companies are using consistent criteria to assess the magnitude and probability of those risks.
2. *There is increasing emphasis on the financial implications of risk.* In part, this financial fear derives from calls for comparability of risks between companies and sectors – based on the premise that currency is the easiest comparable unit for comparing risks. It is also being driven by increasing interest in financial reporting of ESG risks including, in some cases, interest in monetized values of ESG risks in the audited corporate financial statements. Tools such as the Natural Capital Protocol (Natural Capital Coalition, 2018) and Social Capital Protocol (WBCSD, 2018b) continue to evolve in response to these expectations.

3. *There are greater calls for transparency of the reporting process.*² To compare material risks between companies, investors are increasingly aware that they must understand how the companies have arrived at their identified risks. This reality requires greater transparency of the materiality review process. Most materiality assessment disclosed today do not discuss, however, the process undertaken. Instead, they offer vague descriptions of the stakeholders engaged and occasionally a list of the criteria used.

An additional significant consideration for companies and investors when looking at disclosure of ESG risks is potential liability. There are a variety of mechanisms arising to provide legal protections of executives and boards that take a fiduciary approach to management of ESG issues. Eccles and Youmans (2016) have proposed a Board mechanism to support broader risk assessment of ESG issues material to corporations by expanding the scope of stakeholders (Statement of Significant Audiences and Materiality). A new legal filing structure,
the Benefit Corporation, has also risen in the US and Italy to provide legal protection for Boards that vote in the interests of broader stakeholder interests.

In addition to liability concerns for executives and Boards, there are concerns regarding potential liability from disclosing ESG risks in financial reports. Most of the information available in this space is from US legal determinations and the protections afforded by the above mechanisms have not yet been tested. Ajax and Strauss (2018) reviewed US case law and found that the seriousness with which US courts treat sustainability disclosures seems to depend on the form in which the sustainability disclosure occurs. They note a greater degree of leniency concerning the accuracy of information disclosed in voluntary formats.

**Evolution of materiality standards for ESG data.** In the face of these trends (more robust and transparent materiality processes, greater levels of executive accountability, and navigation of legal implications), a number of efforts have emerged to provide guidance to companies and investors. COSO and the TCFD are leading these efforts in alignment of ESG materiality in sustainability reporting and risk disclosure in financial reports. The COSO guidelines have the potential to allow companies to better align strategic goals and business objectives with ESG-related risk management, while maintaining effective governance. This way, COSO hopes to help companies improve risk management of ESG issues in a business-relevant manner. They are also designed to help foster communication of ESG risks to executives and boards of companies by educating them on how ESG risks will impact the business strategy and objectives. The TCFD represents the tip of the spear by codifying a risk-based analysis of climate change risks against the financial stability of a company. There are efforts underway by a variety of organizations to translate the TCFD recommendations into
practical implementation guidelines for different sectors. Both of these efforts recognize the need for standards of materiality to be applied specifically to the selection of data in order to make the reported information decision-useful. But for many stakeholders and investors, simply identifying the risks and mitigation efforts does not go far enough. They want concomitant data and analysis to demonstrate the scope and scale of the risk and clear performance benchmarks that will allow them to gauge the success of the mitigation efforts.

It remains unclear how close the corporate sustainability arena is to achieving the objectives set out by TCFD. As a result of the industry’s high profile as well as stakeholder pressure, the energy and oil and gas sectors are on the leading edge of this wave. Most integrated, publicly-traded oil and gas companies have released some sort of report in response to the TCFD. These reports vary significantly in content and the use of more formal risk assessment tools. But overall, it is not clear how much these reports are meeting the expectations of investors, with a lack of materially relevant data on top of the list of ongoing shortcomings (Eccles and Krzus, 2017). In fact, it appears that the expectations of investors themselves continue to evolve and shift but the lack of consistent data that would facilitate cross-company benchmarking remains a major issue. Of particular note in this regard is the report from SASB and the Climate Disclosure Standards Board (CDSB) discussing the convergence of indicators for climate risk assessment (SASB and CDSB, 2017).

Even as we see continuing evolution, this investor pressure has already led to a great deal of regulation requiring disclosure of ESG information in financial reports. There are almost 2,000 regulations in place globally that require some disclosure of ESG risks in financial reports – typically in the risk section of the annual financial report (WBCSD, 2018a). The pace at which
these regulations have emerged has been extraordinary with some analysts suggesting that ESG reporting requirements have increased by an order of magnitude over the last five years.

There are, however, key differences in the current approach to data requirements codified in these regulations and the expectations of investors looking for decision-useful information. One difference is the alignment of risk identification processes described above. There are also structural differences in accounting and valuation protocols (see discussion on valuing externalities below), audit protocols, thresholds of significance, governing bodies, and liability (see governance discussion above) that have made integration of more decision-useful information difficult. For example, many companies will discuss human rights protection efforts in the sustainability report but exclude this information in the financial report because by doing so it may create liability exposure, may result in calls for valuation of the risk, and may raise the expectations of shareholders to explain whether the protection measures are commensurate to the estimated value of the risk.

The result is that most ESG information in financial reports consists of boilerplate language, often devoid of meaningful data, which means that the information provided is largely useless to investors. According to SASB (2017), such vague information was used more than 50% of the time when companies addressed an issue of material interest.

Nevertheless, regulation continues to evolve in this space and the literature demonstrates a slow, but significant rise in the integration of ESG information into financial reports. The WBCSD reports that member companies that combine financial and non-financial information
into a single report rose from 23% in 2013 to 34% in 2017. Of these, 22% cited the International Integrated Reporting Council (IIRC) framework as a reporting standard (WBCSD, 2017).

In the meantime, standards in this space have focused primarily on lists of material issues relevant to given sectors or types of investments based on polling broad swaths of stakeholders (i.e., consensus-based materiality assessments). Recent surveys conducted by GSIA (2016), GRI (2016a), WBCSD (2018a), and others, point to a fairly consistent set of ESG issues considered to be material across the globe. The most common indicators listed in these reports include:

- Climate change and carbon
- Health and safety impacts
- Data and technology
- Food and water security
- Wealth inequality
- Human rights protection
- Natural resource management
- Ecosystem protection and environmental impact assessments
- Efficiency and waste
- New energy technologies
- Trust and transparency
- Internal risk management and corporate governance controls

These topic areas are also being picked up by data firms such as MSCI, Thomson Reuters, Bloomberg, Sustainalytics, and others, although there is significant regional and sectoral variation in indicators as well as treatments (such as weighting) that these analytic firms will prescribe.

These surveys to determine lists of consensus-based material issues also provide interesting insights on the qualities and sources of indicators in the future, for example:
• GRI has suggested that correlations between indicators will become more important to stakeholders and investors as solutions to these challenges will increasingly need to be systems-based (GRI, 2016).

• Several surveys have pointed to the materiality process as a key determinant of metrics, arguing that metrics should be based on the criteria underlying the materiality assessment rather than necessarily adhering to the suggestions of reporting frameworks (e.g., if carbon is determined to be material based on financial impact, metrics of monetary value make more sense than tons of CO₂ emissions).

• A previous GRI survey noted that firms “may consider making an effort to align their business decisions to one of the models, such as the circular economy, the shared economy or the green economy. The Sustainable Development Goals (SDGs) are also considered an important global reference when tackling concrete issues on the sustainability agenda.” (GRI, 2015b)

• The WBCSD Reporting Exchange survey has predicted a shift from specialist systems reporting on environmental aspects (response to government or investor questionnaires) to mainstream reports: “in 2013, over 80% of all published reporting requirements required disclosure using a specialist system. But by 2017, this percentage dropped to 70%, with nearly a quarter of all requirements focusing on the mainstream report as the preferred channel for disclosure. It appears that regulators are putting an increasing emphasis on disclosure through mainstream and sustainability reports, which may help make ESG risks and opportunities a common factor for decision-making for mainstream investors.” (WBCSD, 2018a)
In sum, we recognize that some convergence around the most critical ESG indicators – issues of concern -- for a given sector has begun to emerge. While GRI is the most widely adopted reporting framework, the core indicators consensus has also been influenced by sources such as the TCFD and SASB – and through organizations working in the ESG space such as CDSB, WBCSD, and the Carbon Disclosure Project (CDP), and through data compilers and analytic firms such as MSCI, Sustainalytics, and ISS-Oekom. We have not yet observed, however, a convergence toward common metrics definitions or data methodologies that would underlie these issue areas. Moreover, relying on existing data sources would likely result in standards that do not meet the divergent needs of the various investor types we have identified, either because some categories of investors have a more specific set of material issues on which they want to focus or because the criteria used by the existing data providers to establish “materiality” remains unclear, undefined, idiosyncratic, variable, or arbitrary.

There appears, therefore, to be a clear need for evolution in the materiality-based data standards space towards a standardized framework that codifies the procedures that companies or assets should undertake to conduct materiality and risk assessments. Such standards would build on the pioneering guidance from GRI and the more recent efforts of SASB, the TCFD and COSO and include guidance for how data are selected, criteria for assessment, processes for scenario testing, or quantitative probability testing as well as validation techniques.

**Impact assessment standards.** Measuring the social and environmental impact of a company or investment is an emerging field of study and practice. At an initial level, the measurement of impact is highly stakeholder dependent. Take, for example, an investment in job creation for a city. The city might be interested in measuring overall reduction in unemployment
rates as a measure of job placement whereas community activists might be more interested in changes in average wages as a measure of living standards. This subjectivity of measuring impact makes efforts to standardize the data more complicated and perhaps even counterproductive given the reality of divergent priorities.

At a deeper level, there are also different expectations as to whether we can measure the input (e.g., the money or time invested in creating the hypothetical jobs program), the output (e.g., the direct output of the investment such as the number of job training courses made available), or the outcome (e.g., the impact on people or the environment such as jobs created or reduction in unemployment). While measuring outcome is generally desirable from an impact investor’s standpoint, it is frequently costly and difficult to gather useful data on outputs. As a result, impact assessments are frequently a mix of input, output, and outcome metrics.

Adding to the difficulties of impact assessment standards are important questions around attribution and multipliers. Attribution refers to the question of how much of the observed outcome is attributable to the input. In our example, if we observe a one percent drop in unemployment within the city, how much of that change can be attributed to the jobs program that we invested in? Multipliers refer to unintended consequences of our investment. Again, taking our example, perhaps the jobs program has the unintended consequence of increasing education rates and eventually employment of the children of the previously unemployed.

One final challenge for potential impact assessment standards centers on establishing the proper policy targets. The last five years have seen wide adoption of a series of global goals and thresholds including: the SDGs (United Nations, 2015), Planetary Boundaries (Steffen et al.,
2015), and the Paris Climate Accord. These initiatives all provide some guidance on what the performance targets might be for various policy issues – supplementing prior sustainability scorecards developed at the Organization for Economic Co-operation and Development (OECD, 2008), Yale University (Wendling, et al., 2018), and elsewhere.

A growing number of companies have aligned their efforts with one or more of these global benchmarks to help to categorize material issues and define policy targets. Impact-oriented stakeholders have been actively seeking methods to assess environmental or social impact against these benchmarks to determine how close or far we (as a planet) are to exceeding those thresholds and allocating responsibility to companies based on their overall contribution (Addy et al, 2019). These benchmarks are also allowing investors and advocacy groups to connect the dots between global targets and company ESG expectations. This framework allows a greater level of tailored information collection to assess how companies are positioning themselves to align with global policy trends and/or take advantage of the megatrends sweeping across markets. Finally, these benchmarks are being used by governments to set national, regional, state, and local targets for social and environmental benefits. The nature and extent of these targets vary widely, as does the regulatory response (e.g., regulated markets, new reporting requirements, pollution limits, budgetary priorities).

Companies are responding to this rising interest. The WBCSD (2017) found that 79% of their member companies acknowledged the SDGs in some way and 45% aligned their sustainability strategy with at least some goal-level criteria. Even though we see an increase in alignment with the topics organized by the SDGs, we are still a long way from a standard
approach to measuring impact against those topic areas let alone setting corporate-level thresholds.

A number of organizations and initiatives are moving toward greater standardization of impact assessments, with three distinct areas of standardization emerging:

**Increased reference in reporting standards to shared value and impact metrics.** Described by Porter et al. (2011) at Harvard University, *shared value* refers to the measurement of business strategies and initiatives that create benefits for both the business and society. Shared value concepts have been embedded into both the GRI and SASB standards. More recently, “impact,” including the premise of shared value, has been codified as one of the four defining principles for sustainability under the recently released AccountAbility Principles (AccountAbility, 2018).

Investor standards have also arisen for measuring social and environmental impacts. First among these would be the Global Impact Investors Network (GIIN) and the IRIS database of impact metrics (www.thegiin.org). Broader uptake of investor-based impact metrics appears to be moving slowly in part because impact investing remains a niche area, representing approximately $22B in assets under management. As a result, the current investor frameworks for impact and shared value are comprised of principles plus a set of suggested metrics.

More recently, the UN Principles for Responsible Investing (UNPRI) issued a Market Map (UNPRI, 2018) in an attempt to educate investors on three aspects of impact investing: common definitions for ten impact investing themes, criteria and standard terms for identifying companies that are working within these themes, and a list of indicators that investors might
employ to measure performance of companies under each theme. The UNPRI is quick to point out that the Market Map is neither a framework nor a standard, but rather “a methodology to begin identifying impact investing companies.”

One particularly interesting area of work concerns climate change impacts. Some investment portfolios are experimenting with calibrations of whether companies are “2°C aligned” or operating in a manner consistent with “climate positive” criteria. Both of these approaches would require assessment of net carbon impact of assets at the company level.

**Target-setting.** Significant discussion in the practitioner literature has sharpened the focus on science-based climate change targets and context-based targets. Much of this literature is associated with the Science-Based Target Initiative. While a number of case studies of companies committing to or implementing these types of targets for carbon or water exist, it is difficult to point to any significant uptake in reporting standards or regulations. Company case studies of science-based targets show common features such as establishing baseline performance levels, prioritizing stakeholder-defined material issues, and frequently placing these targets into executive performance reviews and compensation packages.

**Valuation of externalities.** Over the last ten years, there has been substantial growth in the tools available to monetize or place a value on environmental and social externalities as well as calls for an “end to externalities” (Esty, 2017) – in particular business models that depend on putting company costs onto society such as pollution sent up a smokestack or out an effluent pipe into a nearby river. These tools include the Natural Capital Protocol, Social Capital Protocol (discussed above), Social Return on Investment (SROI), as well as accounting tools from each of
the four large accounting firms (e.g., KPMG’s True Value framework (KPMG, 2014) and Price Waterhouse Cooper’s Total Impact Measurement and Management tool (PWC, 2013).

For almost a decade, a small number of companies have undertaken valuations of social and environmental externalities. Just a few examples include Kering’s Environmental Profit and Loss Statement, NS (Dutch Railways) True Value Accounting, and socio-economic impact analyses by several large mobile telecommunications operators (Telenor, Orange, and Telefonica). The common trait in these reports is the assigning of monetary value to externalities based on a variety of tools such as replacement value, commodity pricing models, willingness to pay or accept consensus pricing, and other assessment techniques.

As with science-based target-setting, we have not yet seen significant adoption of these tools into reporting standards or regulations. It appears, however, that some companies see these tools as important to future integrated risk management assessment processes, and early successes in implementation may lead to wider adoption. GRI conducted a survey of reporting experts in 2015 and, based on the perceived importance of externality valuation, concluded (GRI 2015b):

“The language of future reporting will be ‘monetization of impacts’ and ‘valuation of externalities.’ Data technology will enable companies, experts and stakeholders to create methodologies that will use large amounts of data to get a more accurate valuation of externalities that can be monetized. Financial value language will be used to express natural and social value in future reporting. …A significant number of interviewees believe that if externalities metrics are well developed, the discrepancy between price and real costs will be resolved. This will help protect ecosystems, which are hugely valuable and currently neglected, and build social capital, which is not taken into account properly either.”

Moving Forward: Key Characteristics and Research Priorities for ESG Data Standards
No single narrow framework for ESG data will adequately address all investor needs. In responding to this diversity of sustainable investing interests, we argue that progress will be required in three distinct areas of ESG data standards development. For most investors, the priority seems to be on methodological standards for ESG data. Looking forward, we believe that corporate sustainability metrics will need to move from recent descriptions of how accounting controls might be applied to ESG data toward carefully crafted methodological standards for gathering data, generating defined metrics, and validating the numbers reported.

The ESG data framework we envision would need to address at a minimum:

- methodological standards for core ESG issues;
- validation procedures for all reported metrics;
- timeliness of data;
- consistent treatment of intangible value; and
- control processes for qualitative data and descriptive information (and associated validation techniques) used to project forward-looking data.

One of the key trends to watch will be the definition of “financially material ESG information.” As investor perceptions on this definition evolve, more and more data may move from the current state of limited comparability -- focused on data quality principles and broad assurance of voluntary sustainability reports -- toward greater levels of control dictated by methodological standards.

We see some consolidation of sustainability frameworks and agreement on core ESG indicators that are of interest to different investor groups based on the observed alignment of different reporting standards. The most urgent need for standardization centers on how to define materiality and specify risk assessment processes. Based on research illuminating the significant gap between ERM processes and materiality efforts conducted for sustainability reports, a
standard that defines critical characteristics of ESG risk assessment could offer a great deal of
value to investors and regulators of financial disclosure. Such standards should include:

- definitions of materiality and significance;
- criteria utilized to decide which issues are highest priority and time horizons for defining
  risks;
- engagement processes used to inform scoring against those criteria with tools and
  statistical methods for assessing probability of occurrence;
- internal governance structures; and
- decision-making processes to evaluate and disseminate the results.

Pushing this disclosure agenda forward will require a combination of efforts. First, an
evolution of emerging financial disclosure regulations around ESG risks and opportunities will
be needed. Rather than expanding the list of issues required under disclosure rules, there should
be a distinct movement toward consistency and transparency in assessing material ESG issues.
We see the need for a limited set of company-specific metrics but only on top of a mandatory
baseline set of ESG metrics and a further set of industry-specific “material” ESG elements.

The final area of standards evolution will be in impact measurement. In addition to the
movement toward aligning metrics to existing and emerging benchmarks of sustainability
performance at the policy scale, such as the SDGs and the Environmental Performance Index
(Wendling, et al. 2018), we see a need for new models of impact assessment. Specifically,
impact assessment standards should frame effective measurement based on a suite of metrics that
creates coverage across ESG issues, rather than attempting to define the perfect singular gauge of
impact. This systems-based approach to impact metrics would be more responsive to expectations for decision-useful information across a wide range of investment strategies.

In sum, the growing interest in sustainable investing across a range of investor categories and portfolio development strategies has outstripped the capacity of existing frameworks of ESG metrics to provide trusted data that are methodologically consistent (ensuring accurate company-to-company comparisons), clearly specified, and rigorous validated. To meet these needs will require a sharpened focus on ESG standards including methodological procedures – mandated perhaps by governments if industry participants cannot agree on uniform requirements.

References


Calvert & HBS (2018) How sustainability disclosure is helping drive stock prices,


CFA Institute (2017) Environmental, Social and Governance (ESG) Survey;

COSO and WBCSD (2018) Enterprise Risk Management: Applying enterprise risk management to environmental, social and governance risks, October,


GRI (2015a) “The Role of Data in a Sustainable Future”,


GRI (2015b) Sustainability and Reporting Trends in 2025- Preparing for the Future,


MSCI (2014) *Executive Summary: Intangible Value Assessment (IVA) Methodology*,


UNPRI (2018) *Impacting Investing Market Map*, August,  
https://www.unpri.org/thematic-and-impact-investing/impact-investing-market-map/3537.article


WBCSD (2018a) Insights from the Reporting Exchange: ESG Reporting Trends, 


WBCSD (2018b) Social and Human Capital Protocol, 


**Endnotes**

1 The authors agree with the GRI that companies should disclose ESG information that is material to stakeholders and may or may not be financially material. However, here we are specifically discussing the application of materiality to investors and the information that is reported in a financial disclosures.

2 “Process” refers to definitions of materiality, criteria utilized to assign priority (both internal and external), time horizon for defining risks, engagement processes used to inform scoring against those criteria, internal governance structures and decision-making processes to evaluate/disseminate results.
The ten themes identified and defined in the UNPRI Market Map are: energy efficiency; green buildings; renewable energy; sustainable agriculture; sustainable forestry; water; affordable housing; education; health; and inclusive finance.

The Science Based Target Initiative (sciencebasedtargets.org) is a joint initiative of CDP (formerly the Carbon Disclosure Project), World Resources Institute, World Wildlife Fund and the U.N. Global Compact that focuses on climate change and carbon target setting.