

“How to Fix ESG Reporting”

Robert S. Kaplan, Harvard Business School

Karthik Ramanna, University of Oxford Blavatnik School of Government

28 June 2021

Abstract

Investors, advocacy groups, academics, and the 200 CEOs of the US Business Roundtable are asking corporations to take on an added purpose beyond pursuit of shareholder value. In response, many companies, now issue ESG (Environmental, Societal, and Governance) reports. These reports, however, fail to reflect the considerable diversity and measurement challenges among ESG’s three components. The most common environmental reporting standard for greenhouse gas (GHG) emissions ignores established financial and cost accounting practices that promote reliability. Many ESG societal metrics embody the subjective preferences of those attempting to regulate corporate behavior (e.g., curbing offshoring), and do not reflect a broad societal consensus about desirable and undesirable corporate outcomes. The third component, governance, has been quantified with input and compliance metrics, not outcomes. The consequences are ESG reports that are subjective, non-comparable, and unauditable.

We argue that a company’s non-financial reporting begin with widespread adoption of a narrow but meaningful set of environmental and societal performance metrics where broad agreement already exists about the preferred outcomes from corporate actions. For the societal dimension, this would involve reporting on areas such as avoiding indentured labor in the supply chain. For the environmental dimension, responding to the concern with accelerating climate change, the paper introduces a comprehensive framework that applies established accounting practices to the physical measurements of corporate GHG emissions. In summary, we advocate that corporate non-financial reporting adopt rigorous triple bottom line accounting for financial, environmental, and societal performance rather than the current approach of selectively aggregating subjective, ad-hoc corporate information into an ESG statement.

Investors, advocacy groups, academics, and even business leaders themselves, including 200 CEOs of the US Business Roundtable, have asked corporations to take on an added purpose beyond the pursuit of shareholder value. They want companies to become environmentally and socially accountable by reporting on a broader set of metrics than just those on income statements and balance sheets. In response, many companies, including 58% of companies in the S&P 500 Index, now issue ESG (Environmental, Societal, and Governance) reports, guided by voluntary standards set by multiple and often competing standard-setting bodies.¹ New investment vehicles and investment advisory groups have been created to direct investors' funds to companies performing well according to the ESG metrics in these reports.

ESG in its current form, however, is more a buzzword than a solution to these expanded demands for information on corporate performance. ESG, unlike other three-letter acronyms for management innovations, such as TQM, JIT, and BSC, is not a single concept. Each of ESG's three domains has unique measurement opportunities and challenges, a nuance that ESG advocates rarely acknowledge. Attempting to aggregate heterogeneous, diverse metrics into a common ESG performance statement requires highly subjective judgments, fraught with personal assumptions, bias, and error. The common element that unites E, S and G into a three-letter acronym is that none is a financial metric. But developing a reporting, evaluation, and investing system for metrics united only by what they are NOT is hardly a recipe for success.

Indeed, the absence of a common framework for the E, S and G elements produces contradictions even within a single ESG report. Consider a company under pressure from stakeholders to reduce the greenhouse gases emitted from its fleet of fossil-fueled vehicles. The company switches to electric vehicles, leading to a lower ESG-reported carbon footprint. But what if the raw materials suppliers for electric vehicles' batteries used 3TG conflict materials, tin, tantalum, tungsten, and gold, forcibly mined by indentured prisoners?

Similarly, consider a company that has been criticized and excluded from investment portfolios because its ESG report indicated a high incidence of workplace accidents. The company solves this problem by a combination of automation and outsourcing. Its next-year ESG report shows many fewer workplace accidents, but, likely unmeasured and unreported, is the loss of employment among former workers and an economic decline in its (former) local communities and supplier base.

The difficulty of reconciling across various ESG activities emanates from the challenges of objectively making the underlying moral judgments. Without a widely held consensus on the purpose of the corporation in society, judgments about what to measure, how to measure, or how to aggregate ESG data are ad-hoc and subject to manipulation. The situation places a huge burden on the auditors of ESG reports who typically solve this problem by issuing a double negative opinion, such as "We found no evidence of misreporting in the company's ESG report."

Some advocates for ESG reporting want to go further than disclosure by estimating monetary values for components in an ESG report and including each dollarized component in the company's income statement. Such an updated statement, they argue, represents a more comprehensive and inclusive

¹ The standard setting bodies, often self-appointed, include the Sustainability Accounting Standards Board, the Global Reporting Initiative (GRI), the Carbon Disclosure Project, the Task Force on Climate-related Financial Disclosures, and the World Economic Forum's International Business Council.

measure of the true profits of a company, net of its environmental, societal, and governance footprints. But valuations of the multiple and diverse components of ESG – such as a company’s carbon footprint, its labor practices, employment diversity, and governance practices – are far harder to calculate than the accruals based on future cash flows that underlie basic financial reporting. Consider the decades-long attempts by some accountants just to put human resources on a company’s balance sheet, attempting to quantify a CEO’s statement that “employees are our most valuable asset.” These efforts failed because the employee valuations are either irrelevant, such as how much was spent on hiring and training, or are arbitrary and unverifiable. Moreover, it will be even harder, if not impossible, to find a formula to *aggregate* the valuations of the diverse components of ESG: doing so would require some universally accepted ethical code to navigate the intra-ESG moral trade-offs described earlier.

The generally accepted relevance and reliability of financial accounting reflects over five centuries of development and its basis in cash, a single, well-understood commodity that is trivial to value: \$1 more of cash adds \$1 of value, and \$1 less of cash subtracts \$1. All financial accounting can be traced to measurable cash transactions in past and current periods, plus those that can be reliably estimated to occur in future periods.² Financial balance sheet, income, and cash-flow statements are produced by adding and subtracting cash-based components, with every item expressed in the same unit of value. While a universally agreed carbon tax may enable a translation of GHG emissions to a cash equivalent, a similar translation for virtually all the other components of an ESG report, particularly its “societal” and “governance” footprints, is a distant dream.

So, how do we move forward on ESG reporting? After all, despite the reporting challenges, the recent demands for corporate reporting on environmental and societal impacts are generally valid and understandable. The income and wealth gains from global capitalism have been accompanied by major adverse externalities, especially the degradation of the world’s atmosphere, geology, and water sources. Additionally, 1 billion people, 15% of the global population, continue to live in deep poverty, defined as incomes less than \$2 per day, and many other people in advanced economies have become unemployed or under-employed because of corporate outsourcing and automation.

In this article, we argue that ESG reporting must reflect its complex, multi-dimensional, and diverse dimensions to become as relevant and reliable as financial reporting. ESG advocates have impaired their cause by treating diverse non-financial performance as a single concept. This reductionism actually inhibits fundamental and rigorous thinking about how measurement is best done in each of ESG’s distinctive dimensions. For example, one widely used framework for greenhouse-gas reporting has deep conceptual flaws, as we will subsequently describe, because it does not build upon fundamental principles of financial and cost accounting.

Environmental (E) metrics are the most amenable for rigorous corporate reporting since they are based on objective, physical measurements of quantities of gases, solids, and liquids that companies use and produce. Given the potential existential threat to humanity from climate change, improving the measurement and reporting of corporate (and government) GHG emissions should have the highest priority.

² Even financial depreciation and amortization, which many finance professionals and academics disparage as “non-cash” expenses (and also ignore when calculating EBITDA), are calculated from actual and easily-measurable cash expenditures in prior periods.

Corporate societal (S) performance along dimensions where a general moral consensus already exists – such as avoidance of slave labor anywhere in a company’s supply chain – can also be communicated via a rigorous reporting system. Many other possible S metrics, however, such as the ratio of CEO to average-worker pay, require more subjective value judgments to be meaningfully interpreted. Translating these more-heterogeneous societal preferences about a company’s operations into widely usable outcome metrics about societal benefits and costs is a more controversial project.

Governance (G) reporting is the most conceptually muddled of the three ESG components. Governance is a process, not an outcome. Good governance is valuable only if it leads to better decisions and outcomes on the financial, environmental, and societal components of a company’s performance. Without outcome-based metrics for governance, advocates have defaulted to input measures, such as the diversity of board members, and compliance measures of avoiding litigation. Left unspecified is how input and compliance metrics predict meaningful improvement in corporate outcomes. Stand-alone and unvalidated governance metrics illustrate well the dysfunction from “if you can’t measure what you want, want what you can measure.”

The introduction of the ESG three-letter acronym by a UN-sponsored group of financial institutions two decades ago³ appears, in retrospect, to have taken focus away from the triple-bottom-line reporting, already underway at the time, for reporting economic, environmental, and societal outcomes. We argue that the triple-bottom-line approach is a more rigorous and defensible way forward to address the climate emergency and other corporate societal obligations rather than attempt to rescue an integrated ESG approach, particularly one that attempts ESG valuations.

We already have examples of how companies can supplement their traditional financial reports with non-financial metrics of company performance. For instance, the Balanced Scorecard, with measures of customer, process, innovation, and employee performance, can help managers better implement their profit-seeking strategies. A company wanting to pursue shareholder value, while also being responsive to external demands for environmental and societal accountability, could expand its scorecard to include environmental and societal dimensions.⁴ Crucially, for such a scorecard to be meaningful, the company should not attempt to aggregate the non-financial metrics into financial profits, even as the choice of these metrics should be informed by the company’s theory of value creation in society.

In the remainder of this article, we delve more deeply into the measurement of a company’s environmental and societal performance, and how such measures can approach the rigor, relevance, and auditability of financial measures of corporate performance.

Environmental Measurement and Reporting

The Washington Post reported in April 2021 that the world is half-way to doubling atmospheric CO₂ from pre-industrialization levels.⁵ Climate change due to unchecked man-made greenhouse-gas emissions may be a threat to humanity and many other species comparable to the Chicxulub meteor impact on dinosaurs.

³ The Global Compact, *Who Cares Wins: Connecting Financial markets to a Changing World*. 2004.

⁴ For more on this argument, see Kaplan and McMillan, “[Reimagining the Balanced Scorecard for the ESG Era](#),” HBR Online, February 3, 2021.

⁵ <https://www.washingtonpost.com/weather/2021/04/05/atmospheric-co2-concentration-record/>.

With the widespread understanding that climate change, caused by buildup of greenhouse gases⁶ (GHG) in the atmosphere, is approaching irreversible and possibly catastrophic levels, sound accounting for corporate GHG performance should have the highest priority for ESG reports. The objective should be to use GHG accounting to motivate companies to take actions to reduce total GHG emissions in their value-chains even in the absence of government mandates or carbon taxes. Customers' willingness-to-pay for a company's reduced GHG emissions could be inferred through their purchasing decisions based on a product or service's valid GHG metric. Should a regional or global carbon tax become a reality, governments would need access to valid and verifiable company-specific data to assess and collect it, which a GHG accounting system should supply.

Voluntary corporate action on GHG reductions, based on valid environmental measurement and reporting, might even be preferable to attempting to pass and enforce carbon taxes. If a carbon tax is not implemented and enforced globally, it could motivate a flight of corporate activity from taxed to untaxed regions of the world. Import tariffs against production in pollution-attracting jurisdictions would themselves be difficult to implement given current international-trade laws. And a worldwide carbon tax seems a distant goal with current geo-political considerations and issues with enforceability, including avoidance by state-owned enterprises, especially in countries with less-than-transparent legal systems that already subvert global agreements with hidden subsidies for their domestic employers.

In focusing on GHG measurement, we are not denying the relevance or importance of non-GHG environmental degradations of the atmosphere, soil, water, and biological diversity. We argue, though, that it is preferable to focus on learning how to measure and report on a narrower set of GHG indicators, in an integrated, comprehensive, and auditable way, rather than disperse resources and bandwidth by attempting to develop a theory of everything for environmental measurement. Also, whatever we learn about GHG measurement and auditing will likely apply and shorten the search for the measurement approaches useful for non-GHG environmental reporting.

The concern during the past several decades about GHG-caused climate change has led to an extensive scientific literature on its measurement. Most articles have focused on GHG measurement at a global and country level, but several articles and initiatives have produced frameworks for measuring GHG at the corporate level. In particular, the World Resources Institute and the World Business Council for Sustainable Development mobilized a working group of representatives from hundreds of companies, government agencies, universities, and NGOs. The project produced the Greenhouse Gas Protocol, which classified GHG emissions into three categories, along with explicit guidance for their measurement and reporting:

Scope 1: Direct GHG emissions from sources that are owned or controlled by a company, such as from its fleet of vehicles and its production equipment.

Scope 2: GHG emissions that occur at non-company owned facilities that generate electricity purchased and consumed by the company.

Scope 3: Indirect GHG emissions from upstream operations in a company's supply chain and downstream, by the company's customers and end-use consumers.

⁶ Greenhouse gases encompass CO₂, CH₄, N₂O, and fluorinated gases.

Scope 1 emissions are the easiest to measure, but, for most companies, also likely to be a small percentage of their total impact on global GHG emissions. Scope 2, from electricity consumption, was carved out from Scope 3 because it is far easier to measure and trace than other sources of Scope 3 emissions. Several hundred companies already follow the GHG Protocol standards by reporting on their Scope 1 and 2 GHG emissions.

Scope 3 emissions, usually the largest source of a company's total GHG footprint, are the most difficult to reliably and comparably measure across companies and time. As a result, companies' Scope 3 reporting is rarer. Many companies shy away from committing to explicit targets on their Scope 3 GHG reductions, ostensibly because of the measurement challenges and the lack of control over upstream and downstream emissions. In retrospect, these companies were correct in ignoring the request to report on Scope 3 emissions since such a report would be misleading, and an invalid way of including upstream and downstream GHG impacts of a company's operations.

The problems with Scope 3 measurement can be simply illustrated by considering the challenges faced by, for instance, a manufacturer of car doors for automobiles. Scope 3 requires it to track all GHG emissions from the processes of its upstream suppliers including: (1) the metallurgical extraction of coal and iron ore; (2) the transport of the coal and iron ore to a steel producer; (3) the production of sheet steel from the coal and iron ore (and other inputs); and (4) the transport of raw sheet steel from the steel factory to its own production facility. The company must also estimate the GHG impact of downstream activities including: (1) the transport of the car door to its customer, the automotive assembly factory; (2) the manufacture of the finished car; (3) the transport of the finished car to a showroom; and (4) the operation of the vehicle, for perhaps 15 years, by the end-use consumer.

This example illustrates why Scope 3 estimates have high measurement errors, are inefficient, and are also biased: effectively, a myriad of companies in a multi-tier supply and distribution chain report on the same emissions many times over across their corporate reports, often with different, idiosyncratic, and unvalidated assumptions.

The original (self-appointed) working group that generated the three-scope classification erred by ignoring fundamental financial and cost accounting principles for transferring materials costs through a supply and distribution chain. Corporate accounting does not require a company, such as the car door manufacturer, to estimate all the purchase prices paid by all organizations across all the stages of its supply chain. Rather, each company records only what it pays for goods and services from its immediate suppliers and what it receives when selling its products to immediate customers.

To simplify the argument, assume all transfers are made at cost (eliminating the mark-up for profit) from stage to stage. In this case, a car door company's acquisition costs would include the cost of extracting the original materials (incurred by the mining company) plus all the labor, machining and indirect costs added to the materials as they were handled and processed by the sequence of suppliers until the materials reached the car door manufacturer. This company's own labor, machining and indirect costs are then added to the purchased costs to calculate the total manufacturing cost of the door when sold and transferred, at the next stage, to the automotive assembly company. This process would continue down the supply chain until the car's eventual purchase by a consumer.

Retaining the (flawed) taxonomy of the GHG reporting protocol, the financial-accounting system requires every company to calculate only the financial equivalent of its Scope 1 operations: its labor, machining and indirect costs, often referred to as “overhead”, both manufacturing and administrative. It then adds this “Scope 1” amount to the purchase price of materials and other services, such as electricity purchases, and passes on the total to the next player in the supply chain.

The same financial and cost accounting principles can be applied to GHG reporting across supply and distribution chains. A well-functioning GHG accounting system should track and record the flow of GHG emissions through commercial value-chains using physical units of CO₂, CH₄, N₂O, etc., instead of monetary costs.⁷

To illustrate, start with the furthest-removed supplier for the car door company, a mining company (let’s say) in Western Australia, which extracts the coal and iron ore that eventually finds its way into the door.⁸ The mining company measures its Scope 1 emissions and, using a combination of chemistry, engineering, and cost accounting, assigns its total emissions to the tons of coal, iron ore and all other minerals extracted during a period (imagine an emissions analog to activity-based costing). This calculation produces an estimate of GHG emissions per ton of each type of material produced. While cost accounting treats the financial cost of a ton of material as an “asset,” when it records the cost as “inventory,” we can label the GHG units per ton of extracted material as an E-liability, reflecting its environmental liability to society.

When the mining company transfers the tons of coal and iron ore to a shipping company, the shipping company assumes the E-liability from the mining company onto its E-accounting books (much like it assumes the “inventory” on its financial accounting books). If the mining company transfers all materials mined in a period to downstream entities such as the shipping company, the mining company would have the same balance in its E-liability account at the end of the period as its beginning-of-period quantity.

As the shipping company’s ocean barge travels from Perth, Australia to, say, Port Talbot, Wales, it adds, to its E-liability account, the quantity of GHG produced to transport the barge (e.g., the E-liability of the fuel used to power the ship’s engines). The total GHG produced during the journey is allocated, probably by weight or volume, to the materials carried on board. At Port Talbot, if the shipping company physically transfers 38% of its ship’s iron ore and 6% of its metallurgical coal to a steel producer, it will, on its GHG accounting ledger, also transfer 38% of its iron ore E-liability and 6% of its coal E-liability to the steel company, which now “owns” those E-liabilities.

The steel company, of course, incurs its own Scope 1 emissions through operation of a blast furnace and hot and cold rolling mills, to produce coils of sheet steel. Through the same cost accounting process, the steel mill allocates its purchased and incurred E-liability to each ton of sheet steel produced. When a coil of sheet steel is transferred to a railroad company, each ton carries its share of accumulated E-liability from the originating mining company, all transportation to that stage, plus its pro-rata share of GHG emissions from the steel production process.

⁷ This will end up expanding the approach used for Scope 2 emissions, currently attributable only to electricity purchases, to emissions attributable to all corporate purchases.

⁸ Agri-businesses would start with the original grower, such as a plantation or smallholder farmer.

When the steel coil, several days later, is processed through the receiving dock of the car door manufacturing company in, say, Solihull, England, the coil's E-liability, which has now been augmented by its per ton share of the GHG emissions from the railroad company's transport, between Port Talbot and Solihull, will be transferred to the car door manufacturing company. This process continues until the consumer, purchasing the finished car, receives both the car itself and a report on the quantity of GHG emissions used in its total production and transportation. This final stage is akin to a consumer seeing nutrition information on a food item purchased in a grocery store – in many cases, the consumer's purchasing decision is influenced by this additional information. Blockchain technology, starting with the first stage of production, can be used to accumulate and transfer E-liabilities from stage to stage, reducing accounting and auditing costs across the entire system

Some companies may choose to directly eliminate GHG from the atmosphere, for instance by engaging in carbon capture or reforestation. When a company reduces GHG through such Scope 1 contra-emissions, it subtracts that amount from its E-liability account, and therefore is able to transfer a lower E-liability to the next company in its distribution chain, and, eventually, to the end-use consumer purchaser. This reduction makes the product more attractive, a source of competitive advantage, when selling to environmentally-sensitive consumers.

The GHG E-accounting system requires two major measurement steps: estimate the E-liabilities the company created and extinguished each period, and allocate this net E-liability, together with E-liabilities acquired, to the units of output produced during the period.

For the first step, environmental engineers will be required to estimate the quantity of GHG emissions from a company's primary-source GHG activities such as the burning of hydrocarbons for electricity, heat, and transport; industrial processes such as the making of metals, cement, glass, and chemicals; agricultural processes such as livestock emissions and deforestation or reforestation; and waste-management processes. This enables the recording and auditing of a company's E-liabilities each period.

The allocation of a period's net GHG emissions to a company's diverse set of products and services is identical to how corporate cost-accounting now uses activity-based costing to assign overhead and other indirect costs to products and services produced during the period.

With the two measurement challenges solved, companies can report, each period, on the stocks and flows of its E-liabilities in a period, just as they report on their opening inventory, annual purchases of raw materials, finished goods produced, cost of goods sold, and closing inventory. The company would, in its environmental statement, report its beginning of period net E-liability, E-liability acquired, net E-liability produced during the period, E-liabilities disposed (sold), and its net E-liability end-of-period balance.

Some environmental analysts may fear that the transfer of a company's entire Scope 1 emissions to downstream customers will enable the company to escape scrutiny for GHG-intensive operations. But similar to how any good financial analyst looks beneath a company's net income number (the "summary statistic") to analyze cost of goods sold and changes in inventory levels, any competent environmental analyst could unpack the reported details of a company's purchase, production, and disposal (sale) of E-liabilities, not simplistically look only at the end-of-period E-liability balance.

The proposed E-liability accounting system has several advantages over Scope 3 reports. First, it eliminates the double-, triple-, quadruple, etc.-counting inherent in Scope 3 measurement. Second, a company cannot reduce its reported Scope 1 emissions simply by outsourcing production and then refusing to estimate Scope 3 emissions because of high measurement error and lack of access to distant suppliers and end-use customers. Any GHG emissions produced by an outsourced supplier is transferred to the company when it purchases the supplier's production. Measurement of E-liabilities are incentive compatible. A company doesn't benefit from understating the E-liability it transfers to its customers because its end-of-period net E-liability would steadily increase. Conversely, a company attempting to overstate E-liability transfers to downstream customers will meet with resistance from the buyer, much the same way that customers resist price increases they feel are unwarranted. Negotiated arm's-length transactions between suppliers and customers will deter manipulation of E-liability transfers.

The system allows for a separate materiality standard for environmental reporting, based on quantity of GHG emissions, that is entirely separate from materiality considerations for financial reporting. Currently, major ESG reporting standards require companies to disclose whenever environmental considerations pose a materially *financial* risk to a company. This allows many GHG-intensive processes to go unreported when they don't have a material impact on a company's financial statements. The E-liability system can use a materiality standard specific for its E-liabilities regardless of immediate or long-term financial impact.

Finally, a company's end-of-period E-liability balance can be audited in much the same way as its financial asset and liability accounts. The external assurer (preferably a team of environmental engineers, cost accountants, and blockchain experts) verifies the company's internal GHG measurement and allocation models, its purchases and transfers, particularly of GHG-intensive products and services, and reconcile between beginning and end-of-period E-liability balances. Auditors can cross-check a client's E-liability transaction with corresponding activity in the client's financial accounts: a "red flag" would be raised when the E-liabilities booked seem unusually small, relative to industry peers, for the scale of the client's inventory movements in a period.

Much of the enthusiasm around ESG and GHG reporting comes from those in the investing community who, arguably, want to invest for a better planet. But a mandate applying only to publicly-traded companies provides a strong incentive for public companies to go private. All companies should report on their E-liabilities, especially large private ones such as Bechtel, Bosch, Cargill, Koch, and Mars, and those financed through joint ventures, limited partnerships, and venture and equity capital firms. And public and private corporations are not the only enterprises in the world that produce GHG emissions. State-owned enterprises and government agencies, including a country's massive defense, transportation, and energy departments, also produce many tons of GHG emissions. GHG reporting, if important for reducing emissions, should be required of all entities, public, private, governmental, and supra-governmental.

While waiting for such legislation and regulation to occur, voluntary E-liability reporting by large companies, such as the signatories to the Business Roundtable "corporate purpose" statement⁹, would enable them to put their rhetoric into practice, especially when they also mandate E-liability accounting

⁹ <https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans>.

for all their suppliers and customers. In this way consumers will see the E-liability, along with the price, of most of the products and services they purchase . The voluntary signaling of environmental performance by these major companies could create competitive advantages among consumers willing to make purchasing decisions based on reducing their personal E-liability footprint.

The E-liability system also provides the “tracks” on which a variety of carbon taxation-policy “trains” can run. Governments wanting to be in the vanguard of reducing GHG emissions can design an E-tax regime based on whose behavior, among producers, investors, and consumers, they most want to influence. The E-tax could function like a corporate value-added tax by assessing an obligation on a company’s E-liability disposals less its E-liability acquisitions. Alternatively, it could tax investors by assessing the obligation on the difference between a company’s end-of-period and beginning-of-period E-liability amounts. It could also stimulate consumer pressure by assessing the E-tax on the E-liability total of purchased final products and services, just like a sales tax.

Societal Measurement and Reporting

Measuring a company’s societal impact is even more complex than measuring a company’s net production of environmentally harmful gases, liquids, and solids. “Society” is not a homogeneous entity. Different members and groups within society have different opinions and preferences about what is desirable or undesirable corporate behavior. We can start, however, with components of corporate societal performance for which a general consensus exists. These consensual components could include reducing unsafe working conditions, eliminating use of child and slave labor, and avoiding bribery and corruption. Even though complying with these notions may seem universally uncontroversial, many companies still find it difficult to avoid such violations in their multi-tier global supply chains.

For example, US and European corporate chocolate producers poured massive resources into a well-intentioned sustainability program in the Ivory Coast and Ghana, which produce 60% of the world’s cocoa supply. The program’s goal was to certify that cocoa production did not occur on deforested land and did not use child labor. The program trained farmers and provided them with free seedlings to replace their old and unproductive trees. Yet, as reported in a June 5, 2019 headline in the Washington Post, “Mars, Nestlé and Hershey pledged nearly two decades ago to stop using cocoa harvested by children. Yet much of the chocolate you buy still starts with child labor.” The aging farmers, whose own children had left the farms to seek employment in urban centers, used the children of even poorer locals to slash and burn forested land to expand their operations. The cocoa sustainability program did lead the off-taking corporations purchasing more of their cocoa from certified Tier-1 suppliers. But the program failed to validate that Tier-1 suppliers purchased only from lower-tier suppliers that avoided use of child labor. As with reporting of GHG emissions across a multi-tier supply chain, reporting on compliance with generally expected societal norms may be productively enhanced through use of traceable and secure blockchain technology.

Beyond basic compliance with universal societal principles, many companies attempt to create societal benefits through philanthropy and employee voluntary participation in nonprofit organizations. Such “giving at the office” is helpful (to the extent that it does not distract from the corporation’s core mission), and it deserves documentation and recognition in “S” reporting. But metrics of dollars of contributions and employee hours in voluntary non-profit activities are measures of “S” inputs not “S” outcomes. To be meaningfully interpreted, philanthropic S reporting must connect to the corporation’s theory of societal value creation.

Moving beyond compliance and philanthropy metrics, businesses have huge impacts, positive and negative, on the socio-economic status of those who live in communities where they operate. When a company downsizes due to competition, global sourcing, or automation, its former employees and others living in their communities can be harmed. Plant closures are highly-visible events, and the near-term impacts on former employees and their communities can be significant. A component of societal reporting could be the company's estimate of the magnitude and nature of the negative near-term socio-economic impact on employees and community from its closure decisions. But measuring the socio-economic impact from such closures is complicated. It depends on the economic situation in the region, such as its current unemployment rate, the availability of alternative employment for the company's former employees, and of new customers for its former suppliers.

The adversity caused by competitive forces, moreover, is the normal dynamic of market-based capitalism. Innovative, rapid-growth companies, such as Apple, Walmart and Amazon, have succeeded by introducing highly-successful but disruptive business models that caused incumbent companies and their employees to be washed away in a Schumpeterian wave of creative destruction. Some advocates for S-reporting want to assign low grades to such disruptive companies because of their large negative impact on existing businesses, and the failing companies' employees, suppliers and communities. But such a grading policy reflects the preferences of those who benefit from a static (and ostensibly inefficient) status quo, and fails to reflect the preferences of the employees, suppliers, communities, customers, and, yes, investors of the innovating company. For instance, economists, studying the impact of Walmart's expansion during the 1985-2004 period, estimated that the company had reduced low-income consumers' cost of purchasing food and other retail products by 25%, a savings equivalent to all direct government aid to low-income families.¹⁰ Disruption is a feature, not a bug, of capitalism. Requiring no, or even little, harm to the status quo – the customers, suppliers, employees, and communities of all existing companies – is a recipe for stagnation and, ultimately, a huge loss of potential income, wealth, and employment growth.

Throughout history, the growth in income and employment from introduction of new technologies and business models has greatly exceeded that of incumbent and now obsolete companies. Easing the transition from one form of employment to another, and supporting those who have become unemployed during the transition, is a task performed better by governments than corporations. The success of income support, education, and retraining programs should be accountability metrics for those governmental programs. Funds for the governmental programs should be made available from the higher taxes paid to local and national governments by the new and more profitable company, and its employees.

This dynamic does suggest that successful companies should refrain from lobbying for special tax breaks and exclusions that cause the adjustment programs to impose an additional funding burden on the local community. It also suggests that any such lobbying, together with corporate activities to funnel profits through offshore tax-havens, must be declared as corporate harms in S reporting.¹¹ Curiously, the Business Roundtable's group of companies committed to redefining "corporate purpose" include some

¹⁰ Jerry Hausman and Ephraim Leibtag, October 2005, "Consumer Benefits from Increased Competition in Shopping Outlets: Measuring the Effect of Wal-Mart." [NBER WP 11809, December 2005.](#)

¹¹ Karthik Ramanna, "[Friedman at 50: Is It Still the Social Responsibility of Business to Increase Profits?](#)," California Management Review, 2020 62(3):28-41.

of the largest tax avoiders in America, including Apple and Amazon, have higher rates of environmental and labor-related compliance violations, and rely more on governmental subsidies than non-signatory peer firms.¹²

The converse of this situation also occurs. As companies expand and create opportunities for local employment and suppliers, they increase the region's socio-economic performance. For example, some companies now attempt to reach those who have remained untouched by corporate supply chains during the past 75 years of global economic expansion. As described in a recent paper¹³, companies can create lower cost and more sustainable supply of goods, services, and talent while improving the socio-economic status of people living in impoverished regions and communities. The complex ecosystems required for these inclusive growth initiatives are not easy to develop and sustain; the companies that succeed could receive external acclaim and investment by measuring and reporting on the improved incomes, education, health, employment opportunities and family cohesion they help to create. The total "S" economic impact of a company's activities includes not only its own profits but also the economic activity and profits created all along its supply chain, including wages paid to those employed by its suppliers.

Another possible area for "S" reporting is the nature of a company's core business itself. For instance, some companies such as tobacco cultivators, private-prison operators, weapons manufacturers, gambling operators, fossil-fuel extractors, and even certain pharmaceutical synthesizers face inherent ethical challenges to their existence. The degrees of these challenges vary across geographies and time, based on societal norms and on the size of the companies' perceived profitability. As institutional investors increasingly build equity portfolios of so-called ethical companies, all corporations will face the need to justify their core value-creation models in terms of prevailing and evolving societal norms.

Conclusion

Increased public pressure on corporations to disclose their environmental, societal, and governance performance has led to ESG reporting. But these reports have important components that are not founded on fundamental measurement and accounting principles, and that often default to measures of inputs and processes, not actual outcomes. Because of the urgent need for corporations and governments to become more pro-active, transparent, and accountable for their production of GHG emissions, we introduce a comprehensive framework for GHG accounting and reporting that can also serve as a basis for GHG taxes when the climate for such action becomes favorable. The implementation details for the framework still need to be tested and validated in practice, but all the measurement technologies for our proposed system for environmental accounting already exist.

Corporate reporting on societal outcomes is more complex because of diverse beliefs about the most beneficial or detrimental impacts of corporations on society. We suggest that societal reporting focus initially on areas where widespread agreement already exists about what constitutes good or harmful social outcomes, such as employee health and safety, eliminating use of child and slave labor in supply chains, and avoiding tax evasion. We also recommend that the governance component of ESG reporting

¹² A. Raghunandan and S. Rajgopal, "Do Socially Responsible Firms Walk the Talk," Columbia Business School Working Paper (April 2021).

¹³ Kaplan RS, Serafeim G, Tugendhat E, "Inclusive Growth: Profitable Strategies for Tackling Poverty and Inequality." Harvard Business Review 96, no. 1 (January–February 2018): 127–133.

be de-emphasized or eliminated entirely since valid, measurable governance outcomes do not yet exist. In summary, rather than attempt to boil the ocean with ad hoc ESG metrics, we propose that a company's non-financial reporting begin with wide-spread adoption of specific metrics of environmental and societal performance. After learning how to report and audit well a few, highly relevant and controllable metrics, companies can innovate to expand disclosures of a broader set of environmental and societal impacts.