The Role of Accounting and Auditing in Addressing Climate Change

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Introduction and summary

U.S. federal securities laws are founded on the idea that transparency promotes well-functioning capital markets. This is particularly true when it comes to the urgent goal of reducing global greenhouse gas emissions to prevent the devastating impacts of climate change. For companies, those impacts include both physical risks, including the risk that facilities will be destroyed by fire or flood, and risks related to the global transition to a low-carbon economy. That transition may involve extensive policy, legal, technology, and market changes, each with associated risks. For example, policy actions to shift from fossil fuels to green energy and transformative technological innovations, such as electric vehicles and carbon-free grids, may pose financial, liability, competitive, and reputational risks for companies.

Robust disclosure by companies of the climate-related risks associated with their business, including their emissions, helps reduce the cost of capital needed to fund their own plans, whether they are leaders in the transformation or just trying to ensure their businesses and products remain relevant and viable in the future. Disclosure also facilitates efficient allocation of capital to companies that are best positioned to transition to low-carbon business models. And it gives the providers of capital—investors and financial institutions—the information they need to hold managers accountable for meeting goals.

The stated purpose of the U.S. Securities and Exchange Commission's (SEC) disclosure regime is "to foster uniform and integrated disclosure" by companies that issue or trade securities in U.S. markets.[1] When it comes to climate, though, the SEC has mostly discouraged uniformity and integration by resisting calls for consistent, mandatory disclosures that would give investors a basis to judge the impact of the climate crisis on a company's business model. Diversified investors, concerned about systematic risk, also want to know how a company is contributing to, or mitigating, climate risk. Instead, the SEC relies predominantly on the general principle that companies should disclose information that a reasonable investor would consider important or helpful to an investment decision—in SEC terms, information that is "material" to the investor—and leaves it to managers to decide whether and how to present that information. As a result, it is close to impossible for investors to compare strategies, risks, results, or performance across companies.

The SEC has recognized the sizable investor demand for climate-related information and has acknowledged that climate-related effects can be financially relevant—and thus, in each case, material to an investor. Yet it has not enforced its disclosure rules, either in financial statements, as required, or elsewhere (such as through mandated risk disclosures), effectively signaling that whether and what to disclose is up to a company's board and management. For all intents and purposes, investors are left to their own devices—for example, through engagement with company representatives, the submitting of shareholder proposals, and proxy voting—to pressure companies to voluntarily publish climate reports. Investors use this information to form a view as to whether the company has a sustainable business model and to negotiate and monitor a company's commitments to minimize negative environmental, social, and other impacts. Investors have had some success in pressing companies for change. In the past year, pledges from businesses and states to reduce their net carbon emissions to zero by 2050 have doubled.[2] But investors have no systemized way of obtaining reliable information about whether companies are progressing toward their stated climate goals—or what the financial impact of any progress is.

Not surprisingly, most companies that voluntarily issue climate reports present them in a way that makes it difficult to assess the company's performance over time or to compare it to other companies. Moreover, it is often impossible for investors to discern how a company's climate report relates to its financial statements. Climate reports tend to be replete with anecdotes and best-case scenarios. They are not audited, and auditors have no duty even to read them, much less evaluate whether the financial statements are consistent with the assertions in them.

Because climate matters may have an impact on a company's financial reports, it is critically important that climate-related disclosure be provided in a document that auditors are at least charged to read, so that they can consider whether the financial statements are missing key information that could bear on whether they are fairly presented and free of material misstatement. Equally important, investors—in other words, capital markets—are missing out on the immense benefits of consistent and reliable measurement of climate-related impacts on and by companies. High-quality disclosure that reduces information asymmetries between the providers and users of capital improves the efficiency of capital allocation, reduces the cost of that capital, and boosts investment. This synergistic effect of information disclosure in well-functioning capital markets is needed now more than ever to weather the extreme disruption of the energy transition that has already begun.

The current approach to climate disclosure is instead costly and ineffectual, and it thwarts investors' ability to hold managers accountable for reducing emissions and managing climate-related risks. Many banks have made their own climate-related commitments to limit financed emissions—that is, emissions by companies and products associated with the banks' portfolios. As a result, poor or misleading emissions reporting will increasingly limit companies' access to both short- and long-term credit at these banks. Investors are entitled to know that so they can factor such constraints into their own forecasts of future cash flows to decide whether to buy, sell, or hold. Moreover, by allowing companies to treat emissions as costless, the current SEC accounting framework exacerbates climate-related impacts to the U.S. economy and society, as well as the environment. In practical terms, investors have no way to discern what portion of earnings is attributable to good management of the company's assets as opposed to an unbounded opportunity to push costs off corporate accounts and onto society. The United States' sophisticated market, regulatory, and governance institutions can do better.

Accounting and auditing are key tools to communicate reliable climate information to investors and the market. There are four steps the SEC can take, entirely within its own authority, to bring those tools to bear in addressing the climate crisis.

- Fully enforce existing accounting and related disclosure requirements to reflect the financial impacts of the climate crisis and the transition to a low-carbon economy.
- Update disclosure, through a staff accounting bulletin and other guidance and rulemaking, to spread identified best practices about material climate-related information across industries and markets.
- Leverage the audit to build a solid bridge between climate-related risks and corporate financial reporting.
- Address the ways in which the existing U.S. accounting standards exacerbate systemic climate risks.

Climate-related risks are anticipated to impose costs that are so large they are difficult to measure but are likely to be in the trillions of dollars worldwide.[3] An all-economy approach is needed to reduce emissions and in turn the risks associated with climate change. The financial system affects the flow of money away from harmful activities and toward sustainable, climate-friendly investments. But it can only function effectively with reliable information that is accessible to investors. All companies will need to participate by measuring emissions and assessing and planning for the physical impacts of climate change on their business, as well as for the transition to a low-carbon economy. But the information that companies disclose to investors will not meet the call unless regulators step forward and ensure through accounting and assurance requirements that those disclosures are complete and accurate.

The SEC should enforce existing requirements to reflect climate-related risks

Climate-related risks bear on several areas of accounting and related financial disclosure. Accounting standards do not make exceptions for climate risks. But to date, few U.S. companies make clear how they take those risks into account in their financial statements, and the SEC has done little to enforce applicable requirements when it comes to climate-related financial risks. This should change, as SEC Acting Chair Allison Herren Lee has called for.[4] As described below, the SEC can immediately begin promoting more robust disclosure to prepare for the transition to a low-carbon economy simply by enforcing existing accounting and disclosure requirements and addressing current pervasive material omissions in corporate financial reports.

Existing financial reporting rules already require disclosure of material climate-related impacts

Both the physical risks from climate-related disasters and other effects and risks related to the transition away from greenhouse gas-producing products and activities can affect companies' asset values and trigger asset impairments. Climate risks can also affect a company's assumptions about the duration of an asset's viability or usefulness, for purposes of calculating depreciation expenses. In addition, climate risks can affect the need for and size of provisions for liabilities, such as asset retirement obligations associated with the retirement of tangible, long-lived assets, where a company will be responsible for removing equipment or cleaning up hazardous materials sooner than originally planned.

Climate-related commitments that companies make, such as commitments to achieve net-zero emissions by 2050, science-based emissions targets, and other climate-related corporate commitments and strategies, should be clearly and explicitly reflected in these areas of accounting. This means that if a company's announced commitment would require decommissioning an asset by a target year, then the company's depreciation expense should accord with that commitment. If the company believes it will be able to execute a strategy that would allow it to meet the commitment and continue to operate the asset past the target date, it should clearly disclose the sensitivity of its estimate of the asset's useful life to the success of that strategy. There may be extreme uncertainty about the path of the transition, but there should be no uncertainty about the basis of management's estimates that form a company's accounting today. Investors should at least be able to understand how much hinges on the long-term viability of an envisioned strategy and what the financial impact would be if the strategy were to turn out not to be viable.

Auditors play an important role in assessing and enforcing rigorous sensitivity analyses. U.S. audit standards require that auditors obtain an understanding of how management analyzed the sensitivity of its significant assumptions to change, based on other reasonably likely outcomes that would have a material effect on the company's financial condition or operating performance, and, among other things, evaluate the potential for management bias.[5] If an auditor determines that its work to test and evaluate an estimate or assumption constitutes a critical audit matter (CAM), then it must also explicitly discuss the matter in its audit report. A CAM is any matter arising from the audit of the financial statements that was communicated or required to be communicated to the audit committee, and that 1) relates to accounts or disclosures that are material to the financial statements; and 2) involved especially challenging, subjective, or complex auditor judgment. The U.S. audit regulator—the Public Company Accounting Oversight Board (PCAOB)—adopted the requirement to disclose and discuss CAMs in 2017 for audit reports of the financial statements of large, accelerated filers for periods ending on or after June 30, 2019, that are filed with the SEC.[6] Since then, the requirement has resulted in significantly more useful and insightful audit reports, including in areas affected by climate change.

Outside the United States, accounting and auditing standards-setters have provided detailed guidance to companies on how climate change and climate-related commitments should be reflected in corporate financial statements. In November 2019, the International Accounting Standards Board (IASB) issued a paper by one of its members, Nick Anderson, detailing with examples how climate change and mitigation strategies should be reflected in companies' financial statements.[7] The International Financial Reporting Standards (IFRS) Foundation, which oversees the IASB, published additional educational material to highlight how existing requirements in IFRS require companies to consider climate-related matters when their effect is material to the financial statements.[8] These are important statements and analyses by the IASB, the IFRS Foundation, and their staff that are justifiably receiving significant attention from both capital market regulators and climate policymakers, as well as from investors; companies; and, importantly, their auditors.

In the United States, some SEC filers have already realized that, to comply with existing requirements both domestically and abroad, they need to be clearer and more rigorous about the impacts of climate change in their financial reports. Auditors can play a key role in probing companies' accounts in a way that disciplines disclosure and strengthens the through line from the physical risks of climate change and the economic impact of the global energy transition to the estimates that underlie the company's current financial results and position.

For example, since mid-2019, a number of oil and gas companies have downgraded the value of their assets by more than $145 billion based on a re-evaluation of future oil price assumptions.[9] Some explicitly acknowledged in their SEC filings that they changed their assumptions to take into account the impact on demand of policies compatible with the Paris climate accord. Analysts suspect that the fact that more companies have not taken similar actions suggests that there may be significant, hidden losses that will only grow.[10] If the SEC continues to look the other way when companies omit these impacts, U.S. capital markets risk an extreme shock in the future.

To be sure, in 2010, the SEC issued "Commission Guidance Regarding Disclosure Related to Climate Change," which elucidated ways in which the SEC's long-standing disclosure requirements called for material climate-related disclosures.[11] That document stopped short of discussing applicable accounting rules. Nevertheless, long-standing U.S. accounting requirements are little different from IFRS on the topics that the IASB's Anderson highlighted. Investors had high hopes for the SEC's 2010 guidance, but the commission has not followed through on the guidance to deliver a meaningful improvement on the depth, clarity, consistency, comparability, or reliability of disclosure, either in the narrative portion of companies' SEC filings or in their financial statements.

External reviews have assessed the SEC's efforts to monitor compliance and found them inadequate

The good news is that the SEC continues to stand by the 2010 guidance.[12] The problem is that the guidance has not been enforced. In 2014, researchers at Ceres, a leading sustainability nonprofit, conducted a retrospective review of S&P 500 issuers' SEC filings after the 2010 guidance.[13] They found that in the first four years after the guidance was issued, the SEC staff had issued only 25 letters to 23 companies and "27 communications directed at asset managers belonging to 14 individual fund groups, out of more than 45,000 SEC comment letters sent to registrants" within the SEC's jurisdiction.

They also found that, on the whole, filers did not report "company specific material information" or engage in "quantifying risks or past impacts." Rather, they found, filers tended to use "boilerplate language of minimal utility to investors" that only "briefly discuss[ed] climate change."

A 2018 scan of an even broader group of companies, including SEC filers, by the Financial Stability Board's (FSB) Task Force on Climate-related Financial Disclosures (TCFD), also found wide variation in disclosure quality across industries, as well as minimal disclosure of resiliency strategies and material forward-looking financial impacts.[14] The FSB was established in the depths of the global financial crisis in 2009 to "assess vulnerabilities affecting the global financial system," among other mandates.[15] The SEC is a standing member of the FSB, along with the Board of Governors of the Federal Reserve System and the U.S. Department of the Treasury.[16]

The U.S. Government Accountability Office (GAO) followed up on Ceres' report with its own review of the SEC's climate-related disclosure program in 2018.[17] The GAO found, among other things, that the SEC had all but abandoned enforcement of material climate disclosures through file reviews and engagement with companies.[18] It also found that the SEC staff faced the same challenges in understanding climate disclosures that investors do:

> *When companies report climate-related disclosures in varying format, SEC reviewers and investors may find it difficult to navigate through the filings to identify, compare, and analyze the climate-related disclosures across filings, especially given the size of each individual filing.*[19]

In 2020, the GAO conducted another review of company disclosure of environmental, social, and governance (ESG) factors and again found that the absence of consistent, mandatory disclosure has frustrated investors.[20] The GAO also found several instances where companies used different definitions or calculations for the same topics, particularly when it came to climate disclosures. The GAO also noted a deferential posture in staff file reviews.[21] It reported that "[s]ome [SEC Division of] Corporation Finance review staff told us that in their reviews of public companies' 10-K filings they generally defer to companies' determinations about which ESG information is relevant to their business and should be disclosed."[22]

The GAO also noted that, "SEC implemented a hiring freeze from fiscal years 2017 to 2019," which an SEC Corporation Finance official told the GAO resulted in "a decrease of more than 350 positions during this time" and required reassignment of responsibility for reviewing nonfinancial information in 10-Ks from attorneys to accountants. The GAO reported mixed feedback, at best, as to whether newly assigned staff felt they had been provided thorough training for their new responsibilities.[23] Given the SEC staff's deferential approach, compounded by extreme resource constraints, it is no surprise that the SEC has not used its filing review process[24] to enforce its 2010 climate guidance or applicable accounting standards. Both can be fixed through enhanced staff training and resources.

Moreover, the deference to companies is misplaced: It contradicts long-standing SEC guidance, policy, and precedent. To be sure, SEC disclosure rules do require that financial statements be accompanied by commentary from management that provides context. Specifically, Regulation S-K requires, in annual reports on Form 10-K, that management's discussion and analysis (MD&A) address the liquidity, capital resources, and results of operations of the company, as well as "such other information that the company believes to be necessary to an understanding of its financial condition, changes in the financial condition and results of operations." It also requires that the MD&A section "focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results." These are important, principles-based requirements, grounded in the idea that a company's financial statements and accompanying footnotes "may be insufficient for an investor to judge the quality of earnings and the likelihood that past performance is indicative of future performance. MD&A is intended to give the investor an opportunity to look at the company through the eyes of management."[25]

But these principles-based requirements should not be misconstrued to allow complete deference to management regarding what must be disclosed. *In the Matter of Caterpillar, Inc.*[26] is the seminal SEC action demonstrating how these principles operate, with obvious implications for disclosure in the context of the uncertainty associated with the climate crisis and potential policy changes to address it.

The range of potential material impacts from trends and uncertainties must be disclosed

In *the Matter of Caterpillar, Inc.*, the SEC found that construction equipment maker Caterpillar Inc., based in Peoria, Illinois, should have disclosed the concerns of its board of directors that the dramatic increase in revenues experienced in the company's Brazilian subsidiary in 1989, which significantly contributed to the company's earnings, resulted from the combined effects of currency hyperinflation in Brazil and international exchange rates, and would not likely recur. The SEC found that Caterpillar not only failed to discuss the significant bottom-line impact of its Brazilian subsidiary but also failed to discuss Caterpillar's uncertainty over the future impact of the subsidiary's results on Caterpillar's overall results due to anticipated sweeping, yet unspecified, economic reforms that were expected to be instituted in Brazil. The SEC determined that Caterpillar should have disclosed the impact of hyperinflation in Brazil combined with lagging exchange rates on its reported year-end results, as well as that the rampant hyperinflation, among other issues, was likely to lead to sweeping economic reforms that could negatively affect future results.[27]

The lesson of *Caterpillar* is that when management is aware of trends and uncertainties—the risks of sweeping reforms to address climate change in 2020 being no less material than the risks of sweeping economic reforms to address inflation in Brazil in 1989—the range of potential material impacts must be disclosed and is not subject to company discretion. The SEC has simply not enforced disclosure of material climate risks in the same manner, for no legitimate reason.

The SEC should signal renewed commitment to enforcement of existing disclosure and accounting standards

The SEC should signal that the impacts of the climate crisis and the associated energy transition should be reflected in companies' disclosure and accounting. It should do so by vigorously monitoring and enforcing compliance with applicable requirements in reviews by its staff.

All registered public companies in the United States are required to file with the SEC annual and quarterly reports that include financial statements. Ideally, the SEC file reviewers should train their sights on enforcing the transparency of significant assumptions that companies use to make the estimates called for in accounting. The importance of SEC action to enforce disclosure of significant assumptions underlying companies' financial statements cannot be overemphasized. A closer look at changes in disclosures made by a handful of firms as a result of the 2015 Paris climate accord demonstrates why.

For example, in June 2020, oil and gas company BP recognized a permanent reduction in the value of its assets—referred to as impairment—of $16.8 billion based on shifting its long-term (through 2050) oil price assumptions from $70 per barrel to $55 per barrel and its long-term gas price assumptions from $4 per British thermal unit to $2.90 per British thermal unit.[28] In explaining the charge, BP's CEO Bernard Looney said:

> *In February we set out to become a net zero company by 2050 or sooner. …*
>
> *Since then we have been in action, developing our strategy to become a more diversified, resilient and lower carbon company. As part of that process, we have been reviewing our price assumptions over a longer horizon. That work has been informed by the COVID-19 pandemic, which increasingly looks as if it will have an enduring economic impact.*
>
> *So, we have reset our price outlook to reflect that impact and the likelihood of greater efforts to "build back better" towards a Paris-consistent world. We are also reviewing our development plans. All that will result in a significant charge in our upcoming*

> *results, but I am confident that these difficult decisions—rooted in our net zero ambition and reaffirmed by the pandemic—will better enable us to compete through the energy transition.*[29]

Total S.A. also pointed to the impact of Paris-aligned policies on demand projections in lowering its oil price assumption in its 2019 Annual Report, from $80 per barrel to $70 per barrel. This change triggered a permanent impairment charge to net income of $306 million.[30] The company subsequently announced further impairment in July 2020, explaining that, given its carbon-neutral strategy, some of its assets will be stranded.[31]

The fact that these and a handful of other companies disclosed material assumptions about long-term commodity prices that underlie their accounting estimates, as required, demonstrates how sensitive a $10 (12.5 percent) change in projected prices can be to a company's overall financial position and strategy. Yet many companies, especially in the United States, have not disclosed the significant assumptions embedded in their financials. A blindfold obstructs investors from seeing the company through the eyes of management.

The SEC's long-standing "Cautionary Advice Regarding Disclosure About Critical Accounting Policies," issued in the Enron era, requires that companies disclose significant assumptions that affect their accounts. It states, "Accounting standards require information in financial statements about the accounting principles and methods used and the risks and uncertainties inherent in significant estimates."[32]

In follow-up guidance, the SEC directs all companies to:

> *... address the questions that arise once the critical accounting estimate or assumption has been identified, by analyzing, to the extent material, such factors as how they arrived at the estimate, how accurate the estimate/assumption has been in the past, how much the estimate/assumption has changed in the past, and whether the estimate/assumption is reasonably likely to change in the future. Since critical accounting estimates and assumptions are based on matters that are highly uncertain, a company should analyze their specific sensitivity to change, based on other outcomes that are reasonably likely to occur and would have a material effect. Companies should provide quantitative as well as qualitative disclosure when quantitative information is reasonably available and will provide material information for investors.*[33]

The SEC should make clear that there is no question that critical assumptions that go into current asset valuation and impairment tests must be disclosed, and that this Enron-era guidance still stands.

As impairments rise, many stranded assets cannot simply be written off. Many jurisdictions impose costs on companies to decommission or retire assets with infrastructure in place for production. U.S. accounting standards require companies to recognize liabilities for such asset retirement obligations. As companies continue to write down oil and gas assets in light of lower expected future prices, undoubtedly some affected assets will need to be retired earlier than originally planned and thus companies will need to pull forward anticipated costs of decommissioning, which should increase reported liabilities. Companies may also have to recognize new asset retirement obligations in connection with assets previously thought to have indeterminate lives. SEC reviews should remind companies of the importance of ensuring that their accounting for asset retirement obligations is consistent with the accelerating market changes that have prompted impairments as well as with any commitments an individual company has made.

The SEC should also scrutinize companies' accounting for transactions under emissions and other pollutant pricing programs that may come into effect. As of 2018, more than 1,200 such programs were in operation in the United States, including state-run carbon cap-and-trade systems, wetland mitigation banking systems, water and air quality trading, and renewable energy certificates.[34] There are even more abroad. SEC file reviews should consider whether companies' participation in such programs is accurately presented. Moreover, even in cases where companies' current participation in such programs does not have a quantitatively material impact, companies should disclose the impact of potential policy changes on their future financial performance, as in the *Caterpillar* matter discussed above. There has been considerable criticism that the prices used in such state and local programs are far too low for the programs to be effective.[35] Changes in such programs, or a more sweeping national carbon pricing program, as recommended in September 2020 by the Subcommittee on Climate-Related Market Risk of the Market Risk Advisory Committee to the U.S. Commodity Futures Trading Commission,[36] could have significant impacts.

The SEC should update its climate disclosure requirements

More rigorous enforcement of existing accounting and disclosure standards will go far to clear the fog and allow investors to see the real impacts of climate change and the energy transition on companies' financial results, position, and cash flows. SEC staff correspondence with companies is public and will inform other companies about disclosure weaknesses that need to be corrected. But the SEC should also update its guidance to address developments since 2010 in a holistic way that not only addresses investor protection but also facilitates capital formation and promotes fair, orderly, and efficient markets in the face of extreme business and market disruption.

Companies in a wide variety of industries are feeling growing—and in some cases already intense—competitive pressure due to the energy transition in ways that were not as acute or widespread in 2010. Investors deserve insight into companies' strategies to address both the challenges and opportunities of potential disruption. The SEC has had a great deal of success in confronting past periods of disruption with thoughtful, iterative guidance, and it should marshal that experience in managing disclosure through the climate crisis and energy transition. The SEC has a long history of successful use of guidance to assist companies in understanding how its principles-based disclosure requirements apply in specific situations.

For example, in 1998, the commission issued interpretive guidance on disclosures it considered material to describe companies' work to address the Y2K computer bug. (see text box) In 1999, at the height of the dot-com bubble, the commission's Office of the Chief Accountant issued Staff Accounting Bulletin No. 101 to address poor and widely inconsistent application of accounting standards on revenue recognition.[37] In 2005, after the SEC and the Public Company Accounting Oversight Board discovered widespread problems with the way many companies were accounting for leases, requiring correction and reissuance of companies' audited financial statements, the SEC's then-chief accountant issued a public letter to the audit profession to provide direction on appropriate application of existing lease accounting standards.[38]

The SEC's new climate risk guidance should be modeled after its successful approach to Y2K risks

The SEC's highly successful approach to improving the quality and consistency of reporting on the risks and effects of the Y2K crisis in the 1990s is instructive for motivating transparent and meaningful disclosure in the face of today's climate crisis. Specifically, as the 20th century closed, technology experts, defense officials, and other government leaders became concerned that corporate computer systems were on a course to a systemic malfunction because of a class of software bugs relating to formatting and storing calendar data for dates beginning in the year 2000. Indeed, even at the time, the catastrophic risks associated with the bugs were compared to environmental catastrophes.[39]

In order to protect investors' interest in robust and comparable disclosure about the risks companies faced and the remedial efforts they were undertaking, the SEC took several important steps. These steps included forming an internal task force to evaluate the quality of corporate disclosures, issuing staff legal bulletins and other guidance, and ultimately issuing a commission interpretive release in 1998 because "many companies [we]re not providing the quality of detailed disclosure that we believe investors would expect."[40]

In order to address the widespread noncompliance, the 1998 interpretive release undertook a materiality analysis, which concluded with the commission's determination that, "Because of the prevalence of computers and embedded technology in virtually all businesses and the potential consequences of not adequately addressing the Year 2000 problem, *we believe that almost every company will need to address this issue*."[41] The 1998 interpretive release went on to provide that when a company had a year 2000 disclosure obligation, full and fair disclosure would require discussion of at least four topics: 1) the company's state of readiness; 2) the costs to address the company's year 2000 issues; 3) the risks of the company's year 2000 issues; and 4) the company's contingency plans.

As the SEC did in its 1998 interpretive release on Y2K risks, it should tether climate disclosures to certain foundational, universal topics that will provide investors important context to facilitate a full and fair understanding of material impacts on companies from the climate crisis and the energy transition. While the 1998 interpretive release addressed a different subject matter, it is instructive in how to apply the principles-based framework of materiality with sufficient precision to elicit from a broad and disparate group of companies a consistent foundation of information that is material to investors.

The United States has no time to lose and much to make up for. Transparency through rigorous and reliable corporate disclosure is what will preserve the competitiveness of U.S. businesses and markets through the climate crisis and the energy transition.

At the top of the list are a new Staff Accounting Bulletin on the role of climate risks and information in applying applicable financial reporting frameworks, including accounting and disclosure in connection with corporate climate commitments; the recommendations of the Task Force on Climate-related Financial Disclosures on material climate-related financial disclosures, including the use of rigorous climate scenarios in sensitivity analyses required under applicable accounting standards; guidance on disclosure of climate commitments, including the status of those commitments, interim targets in furtherance of the transition to net-zero greenhouse gas (GHG) emissions by 2050, and the impacts of failure to meet the company's transition plan;

and the impact of the proliferation of bank commitments to disclose greenhouse gas emissions associated with their portfolios, including implications for companies seeking to obtain financing from those financial institutions.

The SEC staff should issue a Staff Accounting Bulletin

The SEC staff has unique opportunities to gather information about weaknesses and inconsistencies in accounting for the effects of climate change, net-zero pledges and other climate commitments, and other climate-related financial impacts. These opportunities include analysis of trends in file reviews and comment correspondence with companies, PCAOB inspection findings on audit deficiencies and other trends, engagement with the Financial Accounting Standards Board (FASB) and its staff, insights from enforcement matters, and economic and financial research and analysis by the SEC's Division of Economic and Risk Analysis. These information sources provide the staff with a deep sense of compliance problems and enable the staff to develop and publish helpful and detailed examples, through the highly respected Staff Accounting Bulletin series. The SEC should use this tool as soon as possible to correct widespread weaknesses in accounting for the effects of climate change. Once a bulletin is issued, the SEC and PCAOB staffs can monitor adherence to it and, as necessary, provide updates through additional guidance, including published questions and answers, which are another disclosure management tool the SEC has used effectively to improve compliance.

The SEC should adapt the TCFD's framework for disclosure

Investors have tried hard to fill material gaps in disclosure about climate-related financial impacts by urging companies to issue reports on how climate change and the energy transition affect their businesses. They have put shareholder proposals on corporate ballots. They have tried to engage directly with corporate boards and management. And they have tried group engagement through shareholder coalitions such as Climate Action 100+. Many private sector bodies have attempted to facilitate useful disclosure by producing standards that call for relevant and responsive disclosures that enable apples-to-apples comparisons among different companies' disclosures. These have been extremely constructive initiatives.[42]

At the same time, voluntary reports inevitably are susceptible to greenwashing. Because the standards are voluntary, neither the standard-setting bodies nor investors have much leverage to stop companies from cherry-picking which metrics to use, essentially customizing disclosures and thwarting the goal of comparability. Moreover, voluntary climate reports are usually unconnected to companies' financial reports, defeating the goal of elucidating the financial impacts of the climate crisis and energy transition. And in any event, they are usually unverified, or only weakly verified, with no connection to the audit of the financial statements. Investors' efforts to address these deficiencies themselves through continued engagement with companies have largely failed, leaving major, material gaps in disclosure. In other words, whether through deliberate greenwashing or just haphazard, uneven, and unverified disclosure, voluntary reporting is inadequate to the task at hand.

The SEC needs to get involved. It has a critical role to play in leveling the playing field for investors as well as in ensuring that markets run efficiently on relevant and reliable information. SEC officials have long acknowledged that climate-related risks can be material, including, most recently, Chairman Jay Clayton in his final testimony before the Senate Banking Committee.[43] The disagreement is over whether the SEC should specify disclosure as it has in past periods of disruption or whether it should leave it to market participants to negotiate sufficiently relevant and comparable disclosures for markets to use in pricing. The resounding answer after years of trying is that market participants have not been able to solve the problem on their own. As the GAO reports discussed above found, both SEC staff and investors have struggled with inconsistently presented and unreliable disclosures that hinder effective investment analysis. With banks rapidly adopting new financing requirements to protect their own exposure to climate risks, poor disclosure of GHG emissions, deforestation and other climate impacts, it will also soon be difficult to assess companies' ability to obtain both short- and long-term financing and thus to continue as going concerns.

What is required is a holistic framework for material, climate-related financial disclosures that addresses the full spectrum of information needed to manage and reduce systemic market risk. The obvious starting point is the recommendations of the FASB's TCFD. After all, U.S. banking and securities regulators had a significant hand in forming the TCFD as well as in shaping its recommendations with the financial industry. Indeed, the recommended disclosures are already framed in terms of the SEC's disclosure requirements—and based on a conservative reading of the SEC's own materiality standard at that. Thus, SEC registrants ignore the TCFD's recommendations at their peril. Increasingly, both customer markets and capital markets are demanding net-zero business models and strategies from the companies with which they do business.

As of December 2020, more than 1,500 companies with combined revenues of $12.5 trillion had set or pledged to set net-zero targets.[44] Institutional investors representing $5 trillion in assets under management have now committed to align their portfolios with a 1.5 degrees Celsius scenario by 2050 via the Net-Zero Asset Owner Alliance launched a year ago.[45] Whether as customers or as financers, companies and investors that have made such commitments do not want to take on the burden of being associated with financing or enabling excess emissions and will increasingly shut out high emitters that do not have credible net-zero plans. Disclosure about the existence, status, and impact of such plans (or the absence of them) is not only desired today but is critical to a company's access to finance and material to investment decisions and voting.

The TCFD's framework for climate-related financial disclosure is designed to allow capital markets to understand and compare companies with respect to: 1) their governance around climate-related risks and opportunities; 2) the resiliency of their strategies in the face of physical climate changes, as well as climate-related policy changes that may affect the company; 3) how they manage climate-related risks; and 4) material metrics and targets they use to assess and manage climate risks and opportunities.[46] It is an important foundation for disclosure about corporate processes that, with sunlight, should make those processes more rigorous and corporate leaders more aware of what they need to do to manage through the transition. A recent Center for American Progress report, "The SEC's Time To Act: A New Strategy for U.S. Corporate Climate Disclosures," also called for TCFD-compliant reporting and further recommended that the SEC begin requiring all filers to disclose information related to specific climate-related risks, such as water stress, natural disasters, heat stress, diseases, and more, to enhance comparability across firms.[47]

There are many important aspects of the TCFD's framework, but an essential one is robust scenario analysis. This is perhaps the single most urgent need from an audit and reliability perspective. As discussed above, the estimates that companies use in constructing their financial results, positions, and cash flows are sensitive to changes in critical assumptions about the path and pace of changes in energy sources. These changes include technologies that bring the cost of new sources of energy in line with, or lower than, the cost of fossil fuels. They also include regulatory interventions designed to incorporate the cost of harmful GHG emissions into energy costs, driving the effective cost of using fossil fuels up. These interventions can take a variety of forms, including carbon pricing and other incentive programs, to implement policymakers' road map to meet the net-zero ambition of the Paris climate accord.

Both the providers and users of energy need to use scenario analysis to evaluate the sensitivity of their respective financial results, positions, and cash flows to changes in demand and regulatory interventions. To date, though, most companies' disclosed scenario analyses provide little insight at all; instead, they are largely assertions, without supporting methodologies and calculations, that under a comfortable range of possible technology and policy pathways the company's strategy will be viable.

These companies risk material misstatements or omissions in their current financial reports, as well as potentially materially misguided strategies for the future. Guidance from the SEC on acceptable approaches to such scenario analyses to support financial reporting is essential, and as discussed in the next section, the assumptions and methodologies used in these analyses should be audited.

The SEC should ensure that the impact of corporate climate commitments, or lack thereof, is evident in companies' financial statements and accompanying disclosures

New SEC guidance should also require companies to be clear as to whether they have announced a net-zero or other commitment or otherwise adopted such a strategy, just as the SEC's 1998 interpretive guidance required companies to report on the state of their readiness for the year 2000. Those that have adopted strategies should report on the status of climate-related commitments and strategies. Those that have not should provide pro forma disclosure of what the impact of a policy to achieve net-zero emissions by 2050 would be on their strategies and financial results, so that investors can see how dependent the company's financial results, position, and cash flows are on not pursuing such a policy.

Achieving net-zero emissions by 2050 will require companies to operate within a total GHG emissions budget. These milestone disclosures will be an important discipline to motivate companies to adopt robust processes to model and estimate both the amount and timing of future emissions so that they can operate within that budget.

The SEC should provide guidance on disclosure of financing risks related to emissions

The Partnership for Carbon Accounting Financials (PCAF) is a partnership of financial institutions that have committed to measure and disclose financed emissions in a harmonized way to help financial institutions align their portfolios with the Paris climate accord.[48] On November 18, 2020, the PCAF launched the Global GHG Accounting and Reporting Standard for the Financial Industry, which establishes a common standard for financial institutions to measure and disclose the carbon emissions of the companies that they service with loans, insurance policies, and equity financing. The PCAF standard will have profound effects on high-emitting companies' access to capital.[49] More than 90 financial institutions globally—representing more than $19.7 trillion in assets—have joined PCAF and committed to reducing the emissions they finance, and PCAF membership is growing.[50]

The new standard sets forth a methodology for financial institutions to measure financed emissions across six asset classes: listed equity and corporate bonds, business loans and unlisted equity, project finance, commercial real estate, mortgages, and motor vehicle loans.[51]

It will undoubtedly continue to evolve and expand as more institutions adopt and implement it, but it already has broad implications for companies' liquidity and access to financing, depending on their GHG emissions. Beyond accounting, the PCAF standard will be the leverage point around which the net-zero commitments of financial firms will flow through to the real economy, as financial firms seek to address the systemic risk posed by climate change.

The implementation schedule of the PCAF standard is ambitious. It requires member financial institutions to begin immediately measuring and reporting their share of the direct GHG emissions (known as Scope 1 under the widely recognized Greenhouse Gas Protocol) of companies represented in their lending and investment portfolios, as well as indirect emissions related to electricity purchased and used by those companies (Scope 2), with reporting on all other indirect emissions (Scope 3) to be phased in over time, starting with the oil, gas, and mining sectors in 2021.[52]

Companies seeking the services of financial institutions should be concerned that inaccurate or incomplete emissions reporting could jeopardize their financing. As discussed above, the SEC's Regulation S-K requires that MD&A include discussion of a company's liquidity, capital resources, and results of operations, as well as "such other information that the company believes to be necessary to an understanding of its financial condition, changes in the financial condition and results of operations." The potential marketwide impact of the PCAF standard warrants SEC guidance on disclosure of how companies' emissions affect their financing risks. Ultimately, this should include direct reporting of emissions in the SEC filing as well, so that investors can judge and monitor financing risk.

The SEC should leverage and expand audits to enhance climate-related disclosures

Third-party assurance is a critical, underused tool to drive more rigorous and reliable climate accounting and disclosures. The hallmark of the audit is the auditor's inside access to management records, which gives the auditor the opportunity to probe, test, and challenge all of managements' assertions in those statements, including both line items and footnote disclosure. In this way, audits can get beneath the surface of management claims in ways that even SEC file reviews cannot, providing market confidence in reporting. Assurance is urgently needed to improve the rigor and reliability of corporate climate disclosures in time to avoid a serious loss of market confidence in corporate reporting if and when errors and omissions in material, but sloppy or overly rosy, disclosures about climate impacts come to light.

The auditor is responsible for understanding "[t]he company's objectives and strategies and those related business risks that might reasonably be expected to result in risks of material misstatement."[53] The work gives the auditor a unique opportunity to discern, test, and strengthen the through line from climate-related risk and strategies to a company's financial results and position. Some auditors' reports, but not nearly enough, even discuss climate-related matters—for example, the long-term commodity price assumptions that go into an impairment test, or the role of climate strategy in shortening an asset's useful life and increasing current depreciation expense (such as the audit reports included in BP's and National Grid's 2019 annual reports filed with the SEC).[54] These reports show clearly how the audit drives rigor and reliability into climate-related financial disclosures.

The auditor is also responsible for evaluating a company's ability to continue as a going concern and for disclosing when, based on that evaluation, there is substantial doubt about the company's ability to do so. In the face of the extreme disruption and uncertainty that the climate crisis and the energy transition impose on some companies, the auditor's work to evaluate companies' ability to continue as a going concern is critical. This work relates to companies' assertions about liquidity and access to capital in management's discussion and analysis accompanying their financial statements. But the MD&A itself is not audited, notwithstanding how important it is.

Independent audits are a critical tool to promote robust and reliable corporate disclosures

3 ways audits improve reporting

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The auditor is also responsible for evaluating a company's ability to continue as a going concern and for disclosing when, based on that evaluation, there is substantial doubt about a company's ability to do so.

Unless a climate-related disclosure is included in the financial statements, it is outside the scope of the audit, which means it is not tested for accuracy, even if it is financial in nature. To be sure, the Public Company Accounting Oversight Board's Auditing Standard No. 2710, "Other Information in Documents Containing Audited Financial Statements,"[55] does require the auditor to read the document containing audited financial statements and consider whether the other information in that document, or the manner of its presentation, is materially inconsistent with information appearing in the financial statements or contains a material misstatement of fact. But it does not require the auditor to test any information outside the financial statements. Moreover, the standard applies only to annual reports and does not impose any obligations with respect to any other documents, such as climate or other sustainability reports.

There is also a PCAOB standard on optional attestations of MD&A. The PCAOB has no authority to require issuers to engage their auditors to perform such an attestation, whereas the SEC does have that authority but has never used it. Some companies voluntarily obtain and provide investors some form of assurance over specific management assertions, predominantly GHG emissions. That assurance varies widely in scope, depth, and quality; usually has no connection to the financial statement audit and may not even be performed by an auditor; and in any event is not subject to PCAOB oversight or auditing standards.[56] This puts material climate-related financial disclosures in a bad state.

Enormously important investment decisions are made based on what companies say about their GHG emissions. Yet investors must take those assertions on faith alone. The SEC has been too permissive about allowing companies to shield material climate-related disclosures from testing and attestation by an auditor. It should work with the PCAOB to expand the coverage of the audit to bridge the gap between material climate disclosures and the financial statements in an integrated way.

The SEC should encourage the PCAOB to amend its standards to ensure that climate-related financial disclosures are tested and that the results of those tests are taken into account in the financial statement audit. In addition, the SEC should direct the PCAOB to develop new standards on auditing climate-related scenario analyses; the status of corporate climate commitments; pro forma presentations of what the impact of a policy to achieve net-zero emissions by 2050 on their strategies and financial results, positions, and cash flows would be; and GHG emissions.

Without high-quality assurance to validate the rigor of the processes and the reasonableness of the assumptions and estimates used in scenario analyses and reporting on net-zero commitments, disclosures are likely to be superficial and overly optimistic, as they have been in voluntary climate reports to date. Even robust company-maintained disclosure controls—as important as they are—do not replace the need for independent external assurance. Therefore, the SEC should ensure that the disclosures are made in a way that will provide for them to be assured, either through expansion of the financial statement audit or through new required audit reports to cover additional disclosures. While most of these procedures will primarily call for substantive analytical testing, auditing of GHG emissions should, as with auditing inventory, use relevant technology for measuring and monitoring—for example, by using representative samples of actual measurements at facilities, instead of only the desktop calculations that characterize much of the voluntary emissions assurance conducted today.[57]

Auditor assurance can also help ensure that claimed emission offsets achieve their intended purpose and are properly claimed as offsets to emissions. Many companies attempt to offset the carbon-producing impact of their operations by investing in programs intended to preserve carbon-absorbing forests.[58] Carbon offsets may be important to reduce net emissions to qualify for financing. They may also be used to achieve targets that are integral to a climate strategy that is, in turn, integral to the financial statements. For example, carbon offsets may be the basis that a company uses to justify not shortening an emitting asset's life, where shortening it could trigger a material change in depreciation or an asset retirement obligation. The more important such offsets are to a company's bottom line, the more important it will be to ensure that they are justified.

The SEC should direct the PCAOB to issue guidance on appropriate procedures to rely on reports and confirmations from carbon offset programs. These programs are essentially outsourced to service organizations, not unlike outsourced payroll service providers. PCAOB Auditing Standard 2601, on "Consideration of an Entity's Use of a Service Organization,"[59] sets forth factors an auditor should consider when auditing the financial statements of an entity that uses a service organization for certain kinds of transactions. This standard also provides guidance for the auditors of such a service organization to report on the organization's controls over handling of transactions. Such reports allow the financial statement auditors of multiple companies that use the same service organization to leverage the work of the service organization's auditor in their financial statement audits and reduce redundant audit work.

Adapting the PCAOB's standard on service organizations to carbon offset programs will be an important step in improving the reliability and credibility of carbon offsets claimed in companies' climate-related financial disclosures and protecting against fraud in an area that is likely to grow considerably. This could be an efficient way to verify the legitimacy of claimed offsets and protect the U.S. financial system from that risk of fraud.

Building on the audit

Additional steps regulators should take to provide for assurance over climate-related risk disclosures

1. Issue audit guidance and, as needed, amend PCAOB audit standards to explicitly address, and provide examples related to, auditing climate impacts on financial statements.
2. Amend PCAOB Auditing Standard No. 2710, "Other Information in Documents Containing Audited Financial Statements," to require auditors to read and consider climate disclosures outside the 10-K for consistency with financial statements.
3. Develop a rigorous audit standard for GHG emissions disclosures, including current emissions and emissions associated with reported reserves.
4. Develop a new standard on auditing climate-related scenario analyses.
5. Augment PCAOB Auditing Standard 2601, on "Consideration of an Entity's Use of a Service Organization," to provide for service auditor reporting on the validity of claimed carbon offsets.

The SEC should address systemic risk in U.S. accounting standards

Finally, the Securities and Exchange Commission should work with the Financial Accounting Foundation (FAF), which oversees accounting standard-setters at the Financial Accounting Standards Board, to address ways in which the existing financial accounting standards exacerbate systemic risk.

According to a September 2020 report of the Commodity Futures Trading Commission's Climate-Related Market Risk Subcommittee of the Market Risk Advisory Committee: "Climate risk is in part a manifestation of the failure of the current economic system to price externalities and capture them in current accounting, performance measurement, and incentive systems." Specifically, it found that climate risk "comes from traditional accounting practices that ignore these externalities and the prospect of their regulation. This mispricing naturally leads to the misallocation of capital, including the continuing distortions in energy systems that promote climate change."[60] This is a significant finding and warrants the FAF's and the FASB's consideration.

As the federal financial regulator with direct responsibility for oversight of the accounting standard-setters, through Section 108 of the Sarbanes-Oxley Act of 2002,[61] the SEC too should examine and address this failure.

Outside the United States, the IFRS Foundation has taken note of the role that accounting frameworks play in perpetuating negative externalities and proposed to establish a new Sustainability Standards Board[62] to work alongside the International Accounting Standards Board to improve the consistency and comparability of sustainability reporting. The IFRS Foundation plans initially to focus on climate risks, given the urgency of the global demand from policymakers and investors. This is a bold initiative that, in a way, will force the SEC to take stock.

It is not clear yet how integrated the IASB's new sister board's standards would be with IFRS. Of course, integration will be important to address the externalities that are compounded by lack of recognition in financial reporting; indeed, running two sets of standards in silos would not only be counterproductive but could also leave the sustainability standards in the same limbo of voluntary use as they are today. If sustainability standards are integrated into IFRS, the SEC would see its non-U.S. filers submitting more comprehensive mandatory disclosure than U.S. filers, even if it did nothing.

In many ways, non-U.S. companies' accounts issued abroad are already more informative, the result of stronger national commitments to the Paris climate accord abroad and the proactive engagement of both the IFRS Foundation and the IASB. The United States' standard-setters, which the SEC oversees, are standing on the sidelines, to the detriment of U.S. markets and investors in U.S. securities and at the expense of the long-term competitiveness of U.S. markets and companies. The differences both directly and indirectly bear on companies' financial positions and preparedness to confront the climate crisis and the energy transition.

Addressing the charge of the subcommittee of the U.S. Commodity Futures Trading Commission will involve broader sustainability disclosure about companies' impacts on climate and society. But the FASB should also prioritize opportunities to improve existing accounting standards in ways that will better prepare U.S. markets for the energy transition. One area it should focus on is improving accounting for workforce costs. Investors in U.S. securities markets have never needed to know more about companies' capacity for innovation in the face of the extreme disruption of climate change and the energy transition. Human capital plays a critical role in that regard. Moreover, as President Joe Biden has emphasized, ensuring a just transition for fossil-fuel industry and other workers is a necessary step to achieve deep decarbonization and an equitable economic recovery.[63] Yet under U.S. accounting standards, workforce outlays are hidden within costs of goods sold or sales, general, and administrative expenses. In contrast, they are disaggregated under IFRS, which means that investors can see how much a company spends on personnel.[64]

Emerging research has used the transparency in financial statements prepared under IFRS to discern what portion of non-U.S.-based companies' investments in human capital lead to future value.[65] This is a compelling insight that should move the FASB—and the SEC—to require similar transparency from U.S.-based companies in short order. In the face of the massive disruption of climate change and the transition to a lower-carbon economy, markets want and need to know which companies are in a position to put such value to use in managing through the crisis. Investors in U.S. companies should be able to glean such insights too.

Only national regulators have the authority to mandate climate and other sustainability reporting. And only the SEC can decide the direction and fate of the FASB and U.S. accounting standards when it comes to climate, human capital, and other environmental, social, and governance matters. The SEC also has the authority, and with that the responsibility, to designate acceptable accounting standard-setters and provide for their independent funding. But much hangs on whether the SEC will use that mandate to tackle the climate crisis or to elucidate other systemic creators or destroyers of value.

Conclusion

Investors and capital markets can only price and manage climate-related financial risks and opportunities if they have access to consistent, comparable, and reliable information. The SEC has a critical role to play in ensuring that the U.S. disclosure regime delivers robust, actionable information that will accurately disclose the impact of the climate crisis on companies and the impacts of companies on the climate crisis. Doing so will help companies, investors, regulators, and policymakers drive a successful transition to a net-zero economy. The SEC's light touch on climate disclosures to date is rooted in a focus on short-term risks and near fanatical adherence to the idea that rules that require specific disclosures are bad. It does not have to be this way. The regulatory infrastructure to use transparency to give investors and markets the information needed to manage risks is already in place. It just needs to be revitalized. The SEC has all the tools it needs—including its own long-standing rules, guidance, and enforcement mechanisms as well as accounting standards and independent, third-party assurance—to lay out the map and guardrails for corporate disclosures that will both protect investors and let capital markets discipline and enforce risk management.

About the author

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