

June 9, 2021

Gary Gensler, Chairman  
U.S. Securities and Exchange Commission  
100 F Street, NE  
Washington, DC 20549

Dear Mr. Gensler,

On behalf of Impax Asset Management PLC, we are pleased to submit comments in response to the Commission's questions of March 15, 2021, about investor interest in the financial impact of climate change. We commend the SEC's current focus on climate risks and appreciate the steps the agency has taken to assess and understand the risks that climate change poses for investors. We believe these risks, and the attendant opportunities, are material and significant, and investors' ability to price climate risks correctly will be greatly aided by better disclosure from companies and other securities issuers.

Climate change presents a variety of risks and opportunities to investors, something that investors of all stripes are increasingly coming to understand. Estimates of the economic impacts of climate change vary, but are significant, ranging from 5-20% of global GDP,<sup>1</sup> a reduction of global incomes by up to 23% by 2100,<sup>2</sup> and from 1.8–16.9% of the net present value of global assets by 2100.<sup>3</sup> Even just in the United States, the Federal Reserve Bank of Richmond calculates that rising temperatures could reduce U.S. economic growth by up to one-third over the next century.<sup>4</sup> It is worth remembering that these are almost certainly underestimates, as none of them includes the possibility of climate tipping points<sup>5</sup> that could trigger even more damaging impacts, or the threat of climate-induced human displacement and mass migration.<sup>6</sup> The latter factor alone may be at the root of developed-country defense departments' decisions to identify climate change as a "threat multiplier."<sup>7</sup>

Financial institutions, too, are seeing the materiality of climate risks, often classified into transition risks and physical risks. **Transition risks**, or threats to the business models of companies whose operations

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<sup>1</sup> Nicholas Stern, "The Economics of Climate Change: The Stern Review," October 30, 2006.

<sup>2</sup> Marshall Burke, Solomon M. Hsiang and Edward Miguel, "Global Non-linear Effect of Temperature on Economic Production," *Nature*, Oct. 21, 2015.

<sup>3</sup> Simon Dietz, Alex Bowen, Charlie Dixon and Philip Gradwell, "'Climate Value at Risk' of Global Financial Assets," *Nature Climate Change*, April 4, 2016.

<sup>4</sup> Riccardo Colacito, Bridget Hoffmann and Toan Phan, "Temperature and Growth: A Panel Analysis of the United States," Federal Reserve Bank of Richmond Working Paper Series WP-18-09, March 30, 2018.

<sup>5</sup> Climate tipping points are events that could significantly worsen the trend toward rising temperatures or impacts. These include events such as changes in ocean circulation patterns that could signal abrupt climate change, collapse or loss of major continental ice sheets, and melting of permafrost that could significantly increase methane emissions. See, for example, CarbonBrief, "Explainer: Nine 'Tipping Points' That Could Be Triggered by Climate Change," and Timothy M. Lenton, "[Climate Tipping Points—Too Risky To Bet Against](#)," *Nature*, Nov. 27, 2019.

<sup>6</sup> Tim McDonnell and Amanda Shendruk, "[Climate Change Will Force Millions of Us To Move, But Where Will We Go?](#)" World Economic Forum, Sept. 4, 2020.

<sup>7</sup> United Nations, "[Climate Change Recognized as 'Threat Multiplier,' UN Security Council Debates Its Impact on Peace](#)," Jan. 25, 2019.

are dependent on carbon-intensive technologies, which we often break down into regulatory, litigation, and reputational risks, apply primarily to the largest emitters — companies in the utilities, materials, energy and industrials sectors. —By contrast, **physical risks**, which include severe precipitation, coastal storms, droughts, floods, sea level rise, heat, wildfires and the expansion of the ranges of many pests and pathogens, can affect companies in any sector. The widespread vulnerability to both these classes of risk is behind the creation of the Task Force on Climate Related Financial Disclosure (TCFD), one of the most comprehensive guides to climate risk reporting available, and one developed by the financial industry itself.<sup>8</sup> S&P Global, which covers a wide range of financial risk analytics, estimated in 2020 that 60% of the companies in the S&P 500 Index own physical assets that are exposed to at least one type of climate change physical risk.<sup>9</sup> S&P Global also recently launched a platform called Physical Risk Analytics to help investors understand physical risk, while other credit rating agencies, including both Fitch and Moody's, have acquired physical risk analytics capacity and are on the cusp of including climate risks in credit ratings for corporates.<sup>10</sup> S&P Global [reported](#) in 2017 that it had found 717 cases where environmental and climate-related risks were important factors in company analysis, and in 106 cases affected the credit ratings. That was four years ago; the numbers are doubtless higher now.

As dire as some of these portents are, there is also investment opportunity to be found in climate change. Concerns over the impacts of climate change are driving decarbonization of the world's economies — not yet fast enough to avoid warming of more than 2°C, but still a powerful, accelerating trend. For companies that are unable or unwilling to adapt to that new reality, there are indeed mounting risks, but for those that understand the opportunities, this transition will likely be a significant growth driver. We can already see this in investment results. Almost all the climate-friendly investment indices have shown higher returns than their respective conventional benchmarks, according to a 2016 [study](#), and the majority had higher risk-adjusted returns than conventional benchmarks. Another [study](#) two years later found that constructing a portfolio that took long positions in carbon-efficient firms and shorted carbon-inefficient firms would earn abnormal returns of 3.5-5.4% per year.

There are many other financial and academic studies that demonstrate the materiality of climate change to investors, and we have included references to many of them in the appendix. Yet despite this strong case for materiality, much of which has been developed over the past decade, there has been very little regulatory pressure on firms to disclose climate-related risks and opportunities. As one of the petitioners for the SEC's interpretive guidance on such reporting in 2007, we were heartened by the SEC's issuance of that guidance in 2010. However, since then, we have noted that there has essentially been no enforcement of that guidance, and while guidance itself may not be enforceable, the [document](#) did link climate risk and opportunity reporting to Regulation S-K, which is enforceable. The SEC's renewed interest in climate-related disclosures is therefore a step we welcome from the agency.

Please note that we have not attempted to respond to each of the 15 questions the SEC has asked. The numbering system we do use in this document comports with the SEC's original list of 15 questions.

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<sup>8</sup> See [Task Force on Climate-related Financial Disclosures](#) website, passim.

<sup>9</sup> "The [Big Picture on Climate Risk](#)," S&P Global, 2020.

<sup>10</sup> Kristoffer Tigue, "[Climate Change Becomes an Issue for Ratings Agencies](#)," Inside Climate News, Aug. 5, 2019.

1. How can the Commission best regulate, monitor, review, and guide climate change disclosures in order to provide more consistent, comparable, and reliable information for investors while also providing greater clarity to registrants as to what is expected of them? Where and how should such disclosures be provided? Should any such disclosures be included in annual reports, other periodic filings, or otherwise be furnished?

The SEC's [Investor Bulletin on How to Read a 10-K](#) notes that "The SEC staff reviews 10-Ks to monitor and enhance companies' compliance with the requirements. The SEC staff reviews 10-Ks and may provide comments to a company where disclosures appear to be inconsistent with the disclosure requirements or deficient in explanation or clarity." At least as a first step, the SEC staff who review annual reports should be attentive to disclosures of climate risks and issue written comments regarding their completeness and usefulness to investors.

The SEC would be well-advised to incorporate the provisions of TCFD reporting into any rulemaking on climate disclosure and into Regulation S-K or other regulatory framework that governs ESG disclosures. The TCFD reporting framework, first released in 2017 and revised twice since then to reflect updated metrics and real-world experience, is a solid framework that encompasses the full scope of climate-related risks and opportunities. In its 2020 update report, TCFD noted that organizations expressing support for its reporting protocol encompassed financial institutions responsible for assets of \$150 trillion.<sup>11</sup> Also, there is increasing movement in many places toward making TCFD reporting mandatory, with G7 finance ministers recently [announcing](#) a commitment to move towards mandatory disclosures based on the TCFD framework. In particular, the UK government has [announced](#) its intention to require climate disclosure, using TCFD standards, for large companies and financial institutions by 2025; New Zealand's government [announced](#) that it would make TCFD reporting mandatory for financial entities accounting for around 90% of the country's assets under management;; Canada recently [required](#) all companies receiving COVID-19 financial relief to report on climate change using TCFD; and the Principles for Responsible Investment started [requiring](#) all signatories to do TCFD reports starting in 2020.<sup>12</sup> The TCFD also noted that in most G20 jurisdictions, companies with publicly traded securities are already legally obliged to disclose material information in financial filings, including material related to climate risks and opportunities, something that the SEC also noted in its 2010 guidance. We also believe that these disclosures belong in annual reporting, as that is where material disclosures are required. Companies often choose to publish standalone sustainability, CDP or TCFD reports, and that, too, is fine, but at a minimum, such disclosures should be in annual reporting.

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<sup>11</sup> ["Task Force on Climate-related Financial Disclosures 2020 Status Report,"](#) Sept. 22, 2020.

<sup>12</sup> See also Martin Arnold and Patrick Temple-West, "Deal near on forcing companies to disclose climate risks, says central bank chief," Financial Times, June 1, 2021. [Deal near on forcing companies to disclose climate risks, says central bank chief | Financial Times \(ft.com\)](#)

While the number of companies reporting to the TCFD protocols is increasing, the vast majority of companies worldwide — particularly smaller and mid-cap companies, companies in emerging markets, and low-emitting sectors even within the large cap investment universe in developed countries—do not. What that means is that SEC staff reviewing existing disclosures are likely to find very little. It is difficult, we recognize, to see omissions, or disclosures that should be there and are not. At a minimum, we suggest that all companies in high-emissions sectors should be required to provide disclosures about transition risks: regulatory risk, the possibility or presence of litigation, and reputational risk associated with climate change. Regulatory risk can take a variety of forms, but all involve decisions made by governments to regulate emissions, either through cap and trade programs, carbon taxes, or regulation of carbon markets. Litigation risk is the risk that companies will be sued for contributing to climate change, and this risk is rising rapidly; a trend that began three decades ago and has risen markedly in the last year. The Grantham Institute reports that between 1986 and mid-2020, 1,587 cases of climate litigation have been brought,  $\frac{3}{4}$  of them in the United States. Most of these lawsuits have been against governments, but there have been and continue to be new cases brought against companies, including energy companies and banks.<sup>13</sup> Reputational risk is a broader category of risk, and includes damage to a company's reputation or social license to operate due to business activities or positions that the public considers to be harmful,<sup>14</sup> a set of activities that includes both GHG emissions and lobbying against government actions to address climate risks. These risks pertain directly to the big emitters, and are may also be critical to companies whose value chains are dependent on such high emitters. The [four](#) most carbon-intensive GICS sectors within the S&P 500 are, in descending order, Utilities, Energy, Industrials and Materials,<sup>15</sup> and companies in these sectors that do not report on any climate risks should be advised by the SEC of the omissions.

While transition risk pertains mostly to big emitters, physical risk can apply to any company. Over the past several months, we, together with the New York State Common Retirement Fund, have reached out to companies in the S&P 500 asking that they report the specific addresses of any assets whose loss or impairment would be considered a material event. This is to allow the companies, and their investors, to conduct a more precise assessment of the companies' exposure to the hazards that are increasing because of climate risk: floods, fires, droughts, severe precipitation and coastal storms, sea level rise, wildfire, and the expansion of the ranges of pests and pathogens. We also [petitioned](#) the SEC last year to require such reporting. We have since conversed with more than 60 companies in the S&P 500 about physical risks, and we have found only three that seemed to have seriously assessed what physical risk means and how to adapt to it. We understand that some companies — notably, electric utilities — may be prohibited from disclosing precise physical locations to protect against cybersecurity risk, but it is still worth considering requiring such disclosures for other companies.

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<sup>13</sup> Joana Setzer and Rebecca Byrnes, "Global trends in climate change litigation: 2020 snapshot," Grantham Research Institute on Climate Change and the Environment, Columbia Law School and Centre for Climate Change Economics and Policy, July 2020. [Global trends in climate change litigation: 2020 snapshot - Grantham Research Institute on climate change and the environment \(lse.ac.uk\)](#)

<sup>14</sup> Hauke Engel, Per-Anders Enkvist and Kimberly Henderson, "How companies adapt to climate change," McKinsey Sustainability, July 1, 2015. [How companies can adapt to climate change | McKinsey](#). See also First Sentier Investors, "License to Operate/Reputational Risk," Part 5 of The Risks and Opportunities of Climate Change, 2019. [How companies can adapt to climate change | McKinsey](#)

<sup>15</sup> This ranking is based only on Scope 1 and 2 emissions, which are widely reported, particularly by big emitters. Scope 3 emissions reporting is still too thin to support comparisons of company emissions reliably.

We realize how difficult it may be for SEC staff to recognize a reporting omission on climate physical risk. It's always far more difficult to see things that aren't there than to react to what is there. What we would suggest as a starting point for staff is some internal training on what physical risks are and access to materials that detail the geographic regions more exposed to each hazard. There are many sources available now. We urge the Commission to consult at least the following sources: [CarbonBrief](#), [Four Twenty Seven](#), [Jupiter](#), [S&P Global](#), [McKinsey](#), [WRI](#), and of course the work of the Intergovernmental Panel on Climate Change ([IPCC](#)). It might also be useful to start with a climate-related event, like the California wildfires the past few years, and check the disclosures of companies that have absolutely been affected: PG&E and other California utilities, for example, might make good starting points for understanding what companies do and do not disclose. It may also be useful to check quarterly reports of companies that depend on customer visits on a daily basis — like many big box or California retailers — to see what business interruptions may have been reported. When we examined the quarterly reporting of the top 100 firms in the S&P 500 in 2005, which was a terrible hurricane year, we found 46 companies that reported impacts from the hurricanes.

Steps such as these could help to sensitize the staff who review annual reports and other financial filings to what can be reported and will help make them more aware of omissions. These are only starting points, of course, and can be greatly aided by web scraping and machine learning technologies that can help find and organize big data sets like annual and quarterly reporting.

Finally, we believe that the SEC should explicitly reinforce that its existing *mandatory* reporting requirements do indeed include climate-related risks and opportunities, and that it consider rulemaking establishing the parameters of such reporting, as mentioned in the preceding paragraphs. Without such parameters, reporting will likely continue to be inconsistent and unreliable as an investment tool.

2. What information related to climate risks can be quantified and measured? How are markets currently using quantified information? Are there specific metrics on which all registrants should report (such as, for example, scopes 1, 2, and 3 greenhouse gas emissions, and greenhouse gas reduction goals)? What quantified and measured information or metrics should be disclosed because it may be material to an investment or voting decision? Should disclosures be tiered or scaled based on the size and/or type of registrant)? If so, how? Should disclosures be phased in over time? If so, how? How are markets evaluating and pricing externalities of contributions to climate change? Do climate change related impacts affect the cost of capital, and if so, how and in what ways? How have registrants or investors analyzed risks and costs associated with climate change? What are registrants doing internally to evaluate or project climate scenarios, and what information from or about such internal evaluations should be disclosed to investors to inform investment and voting decisions? How does the absence or presence of robust carbon markets impact firms' analysis of the risks and costs associated with climate change?

We urge the SEC to be specific about the metrics that should be used for such reporting, and we urge the Commission, if it does establish a standard, to insist that companies report on absolute emissions. If they wish to report on relative emissions or emissions intensity, that is fine, and both can be useful, but the thing that matters most for avoiding a planetary catastrophe is absolute emissions. Simply put, we must, on a global basis, achieve net zero emissions by around midcentury and then learn how to sequester more GHG than we emit; there is no other way to keep additional warming below 1.5° to 2°C. Not all companies are going to be able to decarbonize at the same rate, and indeed, there are some companies whose value chains depend on high-emissions materials, like steel, and they are absolutely essential to the world achieving net zero emissions. It takes steel to build a wind turbine; the process for manufacturing the silicon panels used to generate solar electricity is relatively energy intensive. While investors may not have the same expectations for the decarbonization trajectories of all companies, we need at least to understand what those trajectories are, in absolute terms.

One valuable source to consult in thinking through how disclosures should be made, and what metrics to specify, is the Climate Financial Risk Forum's (CFRF) work on disclosures, especially for companies in the financial sector.<sup>16</sup> While this guide covers only asset managers, banks and insurers, it is true that if these financial firms are required to disclose more it will likely drive all companies in the economy to disclose more, and in formats compatible with this reporting standard. CFRF notes that while TCFD reporting has helped, "disclosures of climate-related financial information ... remain insufficient for investors' needs."<sup>17</sup>

The CFRF report is also useful guidance on the topic of metrics for reporting, particularly for financial institutions (banks, insurance companies and asset managers). CFRF will likely publish its Phase 2 report

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<sup>16</sup> Climate Financial Risk Forum, "[Climate Financial Risk Forum Guide 2020 Disclosures Chapter](#)," June 2020.

<sup>17</sup> Ibid., p. 6.

near September 2021, and it promises to cover metrics related to financed emissions, fossil fuel exposure, investment in climate solutions, exposure to climate impacts and climate-related engagement and stewardship.

In answer to specific questions, we believe that markets are using some climate-related disclosures but that not all climate risks are being priced at the moment. That's particularly true of physical risk; in order to understand physical risk, investors need the capacity to understand climate modeling and the timelines and levels of increased probabilities of each physical hazard that is created by climate change. Few investors have that capacity, currently, but even if all of them did, the disclosures we get from companies on the locations of their significant assets are simply insufficient to the task of understanding each company's exposure to physical risk.

Regarding transition risk, it is very important to have all emissions reported — including Scope 1, Scope 2, and Scope 3 — and in absolute terms. We also think it is crucial to establish reporting protocols or standards for reporting both offsets and avoided emissions; both can be overhyped as pathways to decarbonization, and while that might be useful for short-term reputation management, it remains the case that the only thing that matters for long-term risk is actually reducing emissions and increasing sequestration. Markets are better at pricing transition risk than physical risk, because regulatory developments that place limitations on emissions are easier to anticipate than the physical impacts of climate change, and this gives investors a number of options for pricing or integrating transition risk into portfolios. Impax uses a tool we call SmartCarbon™ to manage portfolio exposure to transition risk; other investors have developed their own tools. To price these risks correctly, however, investors do need to know what emissions are. While many of the larger companies report Scope 1 and 2 emissions, Scope 3 reporting is far rarer, but in many cases Scope 3 emissions dwarf Scope 1 and 2 emissions. This is particularly true for financial institutions and transportation equipment manufacturers. It should also be noted that some companies' Scope 3 emissions are negative: Companies producing renewable energy equipment like wind turbines and solar panels do have positive Scope 1 and 2 emissions, but sales of these products allow their customers to substitute zero-emissions systems for fossil fuel combustion to produce electricity. Those negative emissions should also be reported.

With regard to scaling by company size, this is where relative emissions or emissions intensity can be useful. Again, while the big emitters often have more power to move the needle in mitigating climate change, *everyone* will need to decarbonize their operations, even if every company cannot conform to a single decarbonization trajectory.

As to your question about the cost of capital, there are several peer-reviewed and financial studies that speak to this point. We include references, with notes, below. Note that we have only referenced studies that speak directly to climate change and environmental performance; there are many more that have found lower costs of capital associated with better ESG scores generally.

1. Manthos D. Delis, "Being Stranded with Fossil Fuel Reserves? Climate Policy Risk and the Pricing of Bank Loans," EBRD Working Paper No. 231, Sept. 22, 2019.
  - a. "Do banks price the risk of stranded fossil fuel reserves? To address this question, we hand collect global data on corporate fossil fuel reserves, match it with syndicated loans, and subsequently compare the loan rate charged to fossil fuel firms — along their climate policy exposure — to non-fossil fuel firms. We find that before 2015 banks did not price climate policy exposure. After 2015, however, our results show an increase in

the cost of credit by 16 basis points for a fossil fuel firm with mean proved reserves, implying an increase in the total cost of borrowing for the mean loan by USD 1.5 million. We also provide some evidence that “green banks” charge marginally higher loan rates to fossil fuel firms.”

2. Mohammed Benlemlih and Li Cai, “Corporate Environmental Performance and Financing Decisions,” *Business Ethics: A European Review*, July 13, 2020.
  - a. “We investigate the financing strategies of environmentally responsible firms to understand how they set target capital structures and make incremental financing decisions. Literature shows that firms with better environmental performance have lower risk and better access to financing. However, it is not obvious how these firms choose to finance their investments. Using an extensive dataset of U.S. firms, we find that firms with superior environmental performance have significantly lower debt ratios and use mostly short-term debt for temporary financing needs. In doing so, environmentally responsible firms are able to achieve more tax savings and experience lower costs of financial distress. Our results provide new empirical facts about environmental performance and financing decisions, and they help explain the observed relationship between environmental performance and economic performance.”
3. Siamak Javadi and Abdullah Al Masum, “The Impact of Climate Change on the Cost of Bank Loans,” *Social Science Research Network*, February 2021.
  - a. “We find that firms in locations with higher exposure to climate risk, as measured by drought conditions, pay significantly higher spreads on their bank loans. Exploiting the economic link between a firm and its customers, we also show that the exposure of a firm’s customers to climate risk increases that firm’s cost of borrowing. Cross-sectional analysis indicates that the effect is driven by the long-term loans of poorly rated firms. Overall, our evidence suggests a slow increase in lenders’ attention to climate risk and that lenders have yet to fully understand and price all dimensions of this risk.”

Finally, with respect to the impact of carbon markets, it is worth noting that carbon markets do stimulate investment in mitigation. Prices of carbon in cap-and-trade regimes can fluctuate quite widely; carbon taxes tend to be more certain, predictable and easier to translate into risk pricing for investors. As this letter is written, the carbon price in the EU’s Emissions Trading Scheme has risen strongly since late 2020, to more than €50/tonne, and some expect that it could top €100/tonne or higher.<sup>18</sup> While these kinds of prices would require market adjustments, we also need these higher prices, most experts believe, in order to cut emissions to stay within the target temperature ranges established by the Paris Agreement. At the moment, we are not on a global path to staying within the Paris targets, but increasingly, financial institutions, companies and governments are announcing new intentions to reduce emissions to stay within those targets. Whether they will succeed is unknown, though, which is why any reporting regime should include scenario analysis of different future temperature trajectories. Scenario analysis is included and well described within the TCFD’s protocols, and many companies have already begun to use scenario analysis to estimate future climate risks. We believe that reporting will be significantly stronger and more useful for investors if scenario analysis is required, as specified by TCFD.

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<sup>18</sup> See, for example, Jess Shankleman, “BOE’s Breedon Says Banks Unprepared for \$150 Carbon Price,” *Bloomberg Green*, May 18, 2021.



We also believe that it would be helpful for the agency to specify standard scenarios or policy trajectories that allow investors to make useful comparisons.<sup>19</sup>

3. What are the advantages and disadvantages of permitting investors, registrants, and other industry participants to develop disclosure standards mutually agreed by them? Should those standards satisfy minimum disclosure requirements established by the Commission? How should such a system work? What minimum disclosure requirements should the Commission establish if it were to allow industry-led disclosure standards? What level of granularity should be used to define industries (e.g., two-digit SIC, four-digit SIC, etc.)?

We have long experience with the development and use of voluntary reporting standards, and can say with assurance that while these are useful, they have not, and likely will never, achieve the standards of comparability and precision that investors really need to price climate risks accurately. Especially when developed by entities that would be expected to use those standards, they have often been slow to incorporate reporting on difficult topics like climate risk, and often have had puzzling inconsistencies between industries or sectors. It is likely to be illuminating to examine the voluntary standards that exist, but we urge the Commission to establish mandatory reporting standards that all companies, or at least all companies within defined groups (like larger companies and big emitters) must observe.

4. What are the advantages and disadvantages of establishing different climate change reporting standards for different industries, such as the financial sector, oil and gas, transportation, etc.? How should any such industry-focused standards be developed and implemented?

Industry-specific criteria are often helpful, but all efforts should be made to establish universal standards for any issues that affect most companies. TCFD itself has [provided](#) guidance applicable to all sectors, the financial sector, and some non-financial sectors (e.g., Energy, Transportation, Materials, and Agriculture/Food/Forestry). For example, while the biggest emitters and their customers are much more vulnerable to transition risk than others, any company can experience physical risk, particularly when key parts of their supply chains are included. While physical risk reporting should probably have the same standards for most companies, we have noted in our engagement with S&P 500 companies on this issue that there are some that are prohibited from disclosing the precise locations of some assets due to security concerns; we know this is true for at least some electric utilities. However, we would urge the Commission not to assume that security or cybersecurity concerns should prohibit disclosure of the locations of assets just because companies express a concern over this; many of the locations of companies' facilities are already disclosed, if not in company reporting, then in government databases like Envirofacts and OSHA's establishment enforcement and inspection database.

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<sup>19</sup> Ian Simm, "Struggling to apply scenario analysis to climate change? There is a smarter way," Room 151, 26 May 2020.

Where there are industry-specific risks, like the possibility of stranded assets, it would be useful to have specific reporting requirements that would apply to the companies most likely to have them, particularly fossil fuel extraction companies and banks that have underwritten exploration and production of fossil fuel assets.

5. What are the advantages and disadvantages of rules that incorporate or draw on existing frameworks, such as, for example, those developed by the Task Force on Climate-Related Financial Disclosures (TCFD), the Sustainability Accounting Standards Board (SASB), and the Climate Disclosure Standards Board (CDSB)?<sup>[7]</sup> Are there any specific frameworks that the Commission should consider? If so, which frameworks and why?

We have already noted that these frameworks may provide useful insights for any work the SEC does on climate reporting. We would especially note the work of TCFD, which has proven particularly useful in understanding physical risks and is more widely used as time passes; in TCFD's 2020 status report the organization noted that more than 60% of the world's largest publicly traded companies support the TCFD. Support for the TCFD standard rose by 85% between 2019 and 2020, indicating that the standard is useful and feasible to comply with.

6. How should any disclosure requirements be updated, improved, augmented, or otherwise changed over time? Should the Commission itself carry out these tasks, or should it adopt or identify criteria for identifying other organization(s) to do so? If the latter, what organization(s) should be responsible for doing so, and what role should the Commission play in governance or funding? Should the Commission designate a climate or ESG disclosure standard setter? If so, what should the characteristics of such a standard setter be? Is there an existing climate disclosure standard setter that the Commission should consider?

As our knowledge of climate change grows, and the climate itself changes, it is useful for any reporting standard to adapt to changes in our knowledge. We believe it would be advisable for the SEC to consider a partnership with a reporting organization like the TCFD or Climate Disclosure Standards Board to keep up with developments both in science and risk reporting.

7. What is the best approach for requiring climate-related disclosures? For example, should any such disclosures be incorporated into existing rules such as Regulation S-K or Regulation S-X, or should a new regulation devoted entirely to climate risks, opportunities, and impacts be promulgated? Should any such disclosures be filed with or furnished to the Commission?

Given the experience with climate-related disclosures since the SEC's issuance of interpretive guidance in 2010, we believe that additional guidance, or rulemaking, and enforcement would be needed to

signal to publicly traded companies that such disclosure really is required. Thus far, we have seen very little reporting in response to the SEC's 2010 guidance, which referenced Regulation S-K. It is logical that any disclosures of climate-related risks and opportunities, especially those reported under regulations that require disclosure of all material items, be shared with the SEC, preferably through annual or quarterly financial reporting. However, since these financial reports are often written in boilerplate language and tend to minimize the materiality of events that could happen at some point not in the immediate future, we think it would also be useful for the SEC to consider creating a special climate reporting protocol, starting with the principles laid out in TCFD, that would allow for, and encourage, more detailed, fulsome reporting of climate risks and opportunities under various scenarios. This kind of disclosure almost never makes it into annual reports, much less quarterly financial reporting, in part because there is a strong tendency to discount possible future outcomes; we often see disclosures of ongoing litigation with statements such as, "We do not expect this to have a material impact."

Climate change is commonly regarded as a long-term risk, and as a recent [report](#)<sup>20</sup> pointed out, anything that can't be reliably counted on to happen within the next three years is usually ignored, or mentioned only in passing, and most often mispriced. It is common in finance as well as in the scientific community to pigeonhole many climate risks, particularly physical risks, as long-term risks. They are indeed long-term risks, but weather events that can be significantly damaging and are attributable to our changing climate can actually happen any time — and they are already affecting companies, municipalities, sovereign governments and their investors. Just this year, after Hurricane Harvey flooded the company's campus, Hewlett Packard Enterprise [announced](#) it would move its manufacturing operations out of Houston and noted that it would choose manufacturing locations less exposed to extreme weather. Following Hurricane Sandy, Con Edison [spent](#) \$1 billion to upgrade its facilities to protect its assets and customers from severe weather events. PG&E's 2019 bankruptcy is often [attributed](#) to its soaring liabilities following two terrible fire seasons in California, and while the company has emerged from its Chapter 11 bankruptcy, it [remains](#) vulnerable to wildfire risks, as does every other utility and many other companies in increasingly hot, dry and fire-prone California. Coastal storms, droughts and sea level rise can have significant impacts on the operation and viability of seaports around the world, and with 80% of all global merchandise trade by volume and 70% by value being seaborne, the potential for major economic disruption just from impacts on ports alone is [enormous](#). Hurricane Katrina resulted in the [closure](#) of three seaports that processed nearly half of American agricultural goods, with the result that national food prices rose by 3%.

Many of the physical impacts of climate change are not pinpointable in time and space, but we can assign probabilities, and the science of attribution of these events to climate change is improving in real time. Thus, we believe that it is important that the SEC, and the companies and issuers it regulates, should view physical risks not as distant long-term possibilities but indeterminate-term events, something that can happen in any given year, and examine the filings and statements of other companies that have been damaged by such events to help estimate their own value at risk. Discussions of these probabilities may not fit well into the annual reporting framework except as reports of what has happened recently, but anticipation of, and preparation for, such events could benefit from its own reporting framework. TCFD provides a good foundation on which to build such a protocol.

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<sup>20</sup> Generation Foundation and 2<sup>o</sup>Investing Initiative, "[All Swans Are Black in the Dark: How the Short-Term Focus of Financial Analysis Does Not Shed Light on Long Term Risks](#)," Feb. 2017.

8. How, if at all, should registrants disclose their internal governance and oversight of climate-related issues? For example, what are the advantages and disadvantages of requiring disclosure concerning the connection between executive or employee compensation and climate change risks and impacts?

It would be useful for investors to know how a company's board is involved in the strategic response to climate change: What committees are responsible for evaluating climate risks and opportunities and actions on mitigation and adaptation? Does the committee include members who have the expertise needed to oversee these issues, or does it have ongoing, real-time access to that expertise? How often is the board, or any responsible committee, updated on the company's strategies with respect to climate risks and opportunities? These are all useful data for investors to have.

TCFD spells out the components of governance as it relates to climate risks and opportunities. Recommendations include description of the board's oversight of climate-related risks and opportunities, management's role in assessing climate-related risks and opportunities, and corporate resilience in a changing climate, with recommended disclosures for each parameter. The SEC would be well served by looking into TCFD reporting on governance to see what companies are reporting under its protocols.

Links to executive compensation are starting to appear, but we do not yet have a good way to judge how meaningful they are. Often, any ESG-related criteria in NEO compensation packages are relegated to affecting the size of the bonus, which may be a significant portion of base pay, but for executives with generous long-term incentive plan (LTIP) packages may be a minimal portion of total compensation. Any climate-related incentives in executive pay packages should be evaluated accordingly: The less pay is affected, the more likely these are to be ineffective, compared with other incentives, especially in long-term pay. According to a recent [report](#) from Willis Towers Watson, while about half the S&P 500 use some ESG metrics in their executive incentive plans, only 4% use ESG metrics for LTIP. Long-term incentives are generally the largest [component](#) of executive pay for S&P 500 companies — usually more than 60%. It is also noteworthy that while most larger companies use some ESG incentives for executive compensation, that usually doesn't include climate-related metrics, like achievement of GHG emissions reduction. According to [Equilar](#), the most common ESG metrics used relate to culture and diversity. Environmental and safety-related metrics are more common in energy companies, the very companies for which climate change is most likely to pose an existential risk, and for whom mitigating climate change is often least feasible. A recent [report](#) from CarbonTracker found that the vast majority (nearly 90%) of the largest listed oil and gas companies have executive incentives to grow oil and gas production volumes.

9. What are the advantages and disadvantages of developing a single set of global standards applicable to companies around the world, including registrants under the Commission's rules, versus multiple standard setters and standards? If there were to be a single standard setter and set of standards, which one should it be? What are the advantages and disadvantages of establishing a minimum global set of standards as a baseline that individual jurisdictions could build on versus a comprehensive set of standards? If there are multiple standard setters, how can standards be aligned to enhance comparability and reliability? What should be the interaction between any global standard and Commission requirements? If the Commission were to endorse or incorporate a global standard, what are the advantages and disadvantages of having mandatory compliance?

In many of our engagements with companies over the years, we have often heard that they greatly prefer a single global standard for anything ESG-related. This was a common refrain, for example, in dialogues with computer companies in the early 2000s, facing the imposition of end-of-life regulations for electronic waste in Europe and a crazy quilt of different local and state regulations in the United States. It is often mentioned by automobile manufacturers in engagements over establishing targets for fuel efficiency and reduction of Scope 3 emissions. It is an entirely logical preference. Global standards, all else being equal, are preferable because it's more efficient to comply with a single standard than to juggle multiple standards.

However, longing for a single standard shouldn't be used as an excuse for no reporting at all, which is far more costly and inefficient for society, economies and financial markets as a whole. Failure to limit future warming to the limits set by the Paris Agreement will likely have catastrophic impacts on economies large and small, local and global. It would be reasonable for the SEC to work with other financial regulators to harmonize any reporting standards for climate-related disclosures, but we caution that the perfect should not be the enemy of the good; if the only way to move forward in the next few years is to establish a national standard for the U.S., it is still crucial to do that. We only have a decade or so left to take the steps that could keep warming below the limits of the Paris Agreement. Greenhouse gases stay in the atmosphere for decades to millennia; the emissions we make now will still be in the atmosphere at midcentury.

Working toward a global standard, or at least a standard accepted by key nations, would be a very good thing, and a recent report<sup>21</sup> advised the G7 nations to "support the acceleration of the adoption of climate risks and opportunities disclosures such as those aligned to the FSB's TCFD." That goal, however, should not stymie swifter action; the SEC should not let any difficulties in establishing a true global standard stand in the way of requiring climate risk and opportunities disclosures. The TCFD is a good means toward that end.

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<sup>21</sup> "B7 Climate and Biodiversity Statement: Principles and Recommendations for G7 Climate Ministers," May 2021.

10. How should disclosures under any such standards be enforced or assessed? For example, what are the advantages and disadvantages of making disclosures subject to audit or another form of assurance? If there is an audit or assurance process or requirement, what organization(s) should perform such tasks? What relationship should the Commission or other existing bodies have to such tasks? What assurance framework should the Commission consider requiring or permitting?

At a minimum, the SEC could start with communications with companies whose disclosures according to existing requirements and the 2010 guidance are deemed insufficient or even misleading. Much of what corporations disclose about sustainability is guided by peer pressure; companies usually want to look and be better than their peers when it comes to sustainability as well as other metrics. Making a few public examples of companies whose disclosures are inadequate would, we believe, encourage better reporting more broadly.

Beyond that first step, long-term, effective enforcement, and reiteration that disclosure of material matters is mandatory, will probably be necessary to make climate-related disclosures meaningful, comparable and universal. An audit standard would be quite useful, and there has been some interest at the Public Company Accounting Oversight Board (PCAOB) in possibly moving toward an audit standard for climate-related disclosures. A recent [article](#) by a member of PCAOB's board noted that "ESG matters can and do directly affect the financial statements ... however, CAMs (critical audit matters) that address ESG matters, or ESG CAMs, remain uncommon, particularly those addressing the effects of climate change. Only three of the approximately 2,400 or so audit reports with CAMs appear to have included a meaningful discussion of the impact of climate change on the financial statements." The world, however, is already dealing with a worsening set of climate-related events, and it is high time for an audit standard that includes the impacts of climate change. We urge the SEC to work with the PCAOB to help establish such a standard.

The best approach, we believe, is for disclosures of climate-related risks and opportunities to be covered by normal audit procedures, and if that were required, we believe that many audit firms would quickly establish the necessary skills to do so. The SEC could hasten the process of skills acquisition by investing in capacity building for the accounting firms as well.

11. Should the Commission consider other measures to ensure the reliability of climate-related disclosures? Should the Commission, for example, consider whether management's annual report on internal control over financial reporting and related requirements should be updated to ensure sufficient analysis of controls around climate reporting? Should the Commission consider requiring a certification by the CEO, CFO, or other corporate officer relating to climate disclosures?

We believe that a required certification by the CEO, CFO or other relevant NEO would be a good way to demonstrate the SEC's commitment to better climate-related financial disclosures. Senior management commitments or attestations are already required by some statutes, and we believe that these are useful in focusing management's attention on key issues.

12. What are the advantages and disadvantages of a “comply or explain” framework for climate change that would permit registrants to either comply with, or if they do not comply, explain why they have not complied with the disclosure rules? How should this work? Should “comply or explain” apply to all climate change disclosures or just select ones, and why?

We believe the best approach is mandatory reporting, with standards and metrics. Comply-or-explain measures have proved useful in expanding disclosure on some key issues, such as board diversity, but like anything that isn’t mandatory, they have not achieved the kind of universal comparability that mandatory standards have. Again, we have found many times that companies usually want to be at least on par with, or better than, their peer groups in sustainability-related matters, and a comply-or-explain framework is likely to achieve enough additional disclosure to improve both the extent and quality of company reporting on these matters.

15. In addition to climate-related disclosure, the staff is evaluating a range of disclosure issues under the heading of environmental, social, and governance, or ESG, matters. Should climate-related requirements be one component of a broader ESG disclosure framework? How should the Commission craft climate-related disclosure requirements that would complement a broader ESG disclosure standard? How do climate-related disclosure issues relate to the broader spectrum of ESG disclosure issues?

As mentioned above, there is a rich and diverse literature establishing the materiality of ESG matters in investment. We have long believed that ESG matters should be required disclosures from companies, just as financial matters are now. The approach the financial markets have taken to materiality is instructive: Accounting standards globally take the approach that issuers’ financial status and performance should be fully reported, without necessarily picking and choosing among various individual financial metrics (e.g., future tax liability or inventory turnover) as material or not material. The [mosaic theory](#) of finance holds that a full picture of a company’s status and prospects is based on all information about a company — public and non-public. Increasingly, financial markets are inclined to accept that ESG factors are related to financial performance.

We have collected hundreds of academic and financial studies and papers showing that more sustainable companies and funds do not sacrifice performance compared with less sustainable peers, and in fact are somewhat more likely to outperform than to underperform. A short list of recent studies that support links between ESG and financial performance is included in the appendix. There are many others, including in the academic peer-reviewed literature, that also establish the importance of ESG factors in companies’ financial performance.

Twenty years ago, it is probably fair to say, most financial market professionals saw ESG or sustainable investing as something that would deliver inferior performance to mainstream investing. That perception is changing rapidly, and while understanding of ESG factors is still not on a par with understanding of financial factors, investors of all sizes and types are increasingly interested in integrating sustainability into fund management. But our understanding of companies’ ESG performance is often limited to what we can find in voluntary disclosures from companies, press reports, interest-



group publications and regulatory websites. Without mandatory reporting and standards, we will continue to get reports from companies that are biased toward success stories and (often) silent on challenges or failures, media stories that are also biased toward bad-news reporting, and reports or studies that cover larger companies but almost never include entire peer groups, as investors prefer. We strongly recommend that the SEC move toward mandatory reporting of ESG matters and work with other agencies to establish standards and protocols for such reporting. Our U.S. industry association, the Forum for Sustainable and Responsible Investment, has [petitioned](#) the SEC to make rules requiring comprehensive corporate disclosure of ESG information. We urge the SEC to take this petition seriously.

Thank you for your attention to climate and ESG reporting and for your call for more information. We would be happy to answer any questions or discuss any of these matters with staff if you wish. Please feel free to contact Julie Fox Gorte, Senior Vice President for Sustainable Investing at Impax Asset Management LLC [REDACTED], or Chris Dodwell, Head of Policy and Advocacy, Director at Impax Asset Management PLC [REDACTED].

Sincerely,

Joseph F. Keefe, President  
Pax World Funds  
Impax Asset Management LLC

Julie Fox Gorte, Senior Vice President for Sustainable Investing  
Pax World Funds  
Impax Asset Management LLC



## Appendix: Connections Between ESG and Financial Performance

1. “Sustainable Investing Myth Busters,” Morgan Stanley Institute for Sustainable Investing, May 2017. [https://www.morganstanley.com/ideas/sustainable-investing-myth-busters?et\\_mid=16000&et\\_mkid=0232d9d436b7a4fad956135be8740563](https://www.morganstanley.com/ideas/sustainable-investing-myth-busters?et_mid=16000&et_mkid=0232d9d436b7a4fad956135be8740563)
  - a. Excerpt: “Analysis by the Institute shows that sustainable strategies have often performed in line with or even better than their traditional counterparts. The Institute conducted a proprietary study in 2015 called Sustainable Reality, which examined seven years’ performance of more than 10,000 mutual funds and 2,800 Separately Managed Accounts. The results showed that sustainable investments usually met, and often exceeded, the performance of traditional investments
1. “Sustainable Reality: Analyzing Risk and Returns of Sustainable Funds,” Morgan Stanley Institute for Sustainable Investing, 2019. [https://www.morganstanley.com/content/dam/msdotcom/ideas/sustainable-investing-offers-financial-performance-lowered-risk/Sustainable Reality Analyzing Risk and Returns of Sustainable Funds.pdf](https://www.morganstanley.com/content/dam/msdotcom/ideas/sustainable-investing-offers-financial-performance-lowered-risk/Sustainable%20Reality%20Analyzing%20Risk%20and%20Returns%20of%20Sustainable%20Funds.pdf)
  - a. Summary: A second Morgan Stanley study in 2019 compared the performance of sustainable funds to traditional funds from 2004 to 2018. A total of 10,723 exchange traded and open-ended funds were analyzed. “We compared their performance on total returns, a measure of performance net of fees, and downside deviation, a measure of risk. We found that sustainable funds provided returns in line with comparable traditional funds while reducing downside risk. What’s more, during a period of extreme volatility, we saw strong statistical evidence that sustainable funds are more stable. Incorporating environmental, social and governance (ESG) criteria into investment portfolios may help to limit market risk.”
2. Gunnar Friede, Timo Busch and Alexander Bassen, “ESG and Financial Performance: Aggregated Evidence from More Than 2,000 Empirical Studies,” Journal of Sustainable Finance & Investment 5(4), 2015. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2699610](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2699610)
  - a. Summary: The study combines the findings of about 2,200 individual studies and is by far the most exhaustive overview of academic research on this topic. The results show that the business case for ESG investing is empirically well-founded. Roughly 90% of studies find a non-negative ESG-CFP (corporate financial performance) relation while the majority of studies report positive findings. The positive impact of ESG on CFP also appears stable over time.
3. Yannick Ouaknine, Nimit Agarwal and Aiswarya Sankar, “SRI: Beyond Integration: Five-year Record Outperformance Delivered by Our Top ESG-rated Stocks,” Société Générale, March 2018.
  - a. Excerpt: “Top 10% of ESG-rated stocks outperformed Stoxx 600 by 28.2% since 2013”
4. Barclays, “Sustainable Investing and Bond Returns,” Impact Series 01, 2016. <https://www.investmentbank.barclays.com/content/dam/barclaysmicrosites/ibpublic/documents/our-insights/esg/barclays-sustainable-investing-and-bond-returns-3.6mb.pdf>
  - a. Summary: Barclays research shows that ESG is not an “equity-only” phenomenon but can be applied to credit markets without being detrimental to bondholders’ returns. The findings show that a positive ESG tilt resulted in a small but steady performance

advantage. No evidence of a negative performance impact was found. ESG attributes did not significantly affect the price of corporate bonds.

5. Savita Subramanian, Dan Suzuki, CFA, Alex Makedon, Jill Carey Hall, CFA, Marc Pouey and Jimmy Bonilla, "ESG: Good Companies Can Make Good Stocks," Bank of America Merrill Lynch, December 2016.
  - a. Excerpt: "Two reasons investors need to add ESG to their dashboard: It's not just for tree-huggers — incorporating environmental, social and corporate governance (ESG) considerations into one's framework is critical. First, these metrics have been strong indicators of future volatility, earnings risk, price declines and bankruptcies. Second, trends in the U.S. investment landscape suggest that trillions of dollars could be allocated to ESG-oriented equity investments, to stocks that are attractive on these attributes, over the next few decades ... ESG could have helped investors avoid 90% of bankruptcies. Based on our analysis of companies with ESG scores that declared bankruptcy, an investor who only held stocks with above-average ranks on both environmental and social scores would have avoided 15 of the 17 bankruptcies we have seen since 2008."
6. Savita Subramanian, Dan Suzuki, CFA, Alex Makedon, Jill Carey Hall, CFA, Marc Pouey, Jimmy Bonilla and James Yeo, "ESG Part II: A Deeper Dive," Bank of America Merrill Lynch, Equity Strategy Focus Point, June 2017.  
[https://www.iccr.org/sites/default/files/page\\_attachments/esg\\_part\\_2\\_deeper\\_dive\\_bof\\_of\\_a\\_june\\_2017.pdf](https://www.iccr.org/sites/default/files/page_attachments/esg_part_2_deeper_dive_bof_of_a_june_2017.pdf)
  - a. Excerpt: "ESG is the best signal we have found for future risk. Prior to our work on ESG, we found scant evidence of fundamental measures reliably predicting earnings quality. If anything, high quality stocks based on measures like return on equity (ROE) or earnings stability tended to deteriorate in quality, and low-quality stocks tended to improve just on the principle of mean reversion. But ESG appears to isolate non-fundamental attributes that have real earnings impact: These attributes have been a better signal of future earnings volatility than any other measure we have found."
7. BlackRock, "Sustainable Investing: Resilience Amid Uncertainty," 2020.  
<https://www.blackrock.com/corporate/literature/investor-education/sustainable-investing-resilience.pdf>
  - a. Excerpt: "The recent downturn was a key test of this conviction. In the first quarter of 2020, we have observed better risk-adjusted performance across sustainable products globally, with 94% of a globally representative selection of widely analyzed sustainable indices outperforming their parent benchmarks. While this short time period is not determinative, it aligns with the resilience we have seen in sustainable strategies during prior downturns, explored below in section 'Sustainability Performance in the Markets.' Furthermore, these results are consistent with the research BlackRock has been publishing since mid-2018, demonstrating that sustainable strategies do not require a return tradeoff and have important resilient properties."
8. Guido Giese, Linda-Eling Lee, Dimitris Melas Zoltan Nagy and Laura Nishikawa, "Foundations of ESG Investing Part 4: Integrating ESG Into Factor Strategies and Active Portfolios," MSCI Research Insight, June 2018.

- a. Excerpt: “We analyzed close to 1,200 global equity funds, finding that they have shown no significant level of ESG integration during the study period. However, our simulations showed that applying a consistent overlay to fund holdings using ESG ratings and ESG momentum led to an improvement in risk and risk-adjusted return characteristics.”
9. Georg Inderst and Fiona Stewart, “Incorporating Environmental, Social and Governance (ESG) Factors Into Fixed Income Investment,” World Bank Group, 2018.  
<http://documents1.worldbank.org/curated/en/913961524150628959/pdf/125442-REPL-PUBLIC-Incorporating-ESG-Factors-into-Fixed-Income-Investment-Final-April26-LowRes.pdf>
  - a. Summary: There is a growing body of research analyzing the relevance of ESG factors in fixed income. Whilst the methodology for individual studies varies greatly and may be questioned, overall, the research supports a widely held view that: 1) ESG factors can constitute material credit risk; and 2) incorporating ESG factors does not mean having to sacrifice return.
10. Reid Steadman and Daniel Perrone, “Integrating ESG Into Core Around the World: The S&P 500™ ESG Index and Beyond,” July 2019.  
<https://www.savvyinvestor.net/sites/default/files/node/paper/file/integrating-esg-into-core-around-the-world.pdf>
  - a. Summary: The S&P 500 ESG Index tracks the S&P 500 closely (see Exhibit 7), and it has done so despite excluding more than 30% of constituents based on the various eligibility criteria (see Exhibit 6). Realized tracking errors for the one-, three- and five-year periods were consistently within 1%, and the index volatility was nearly identical to the S&P 500 over those same periods. This return profile holds for the rest of the indices in the S&P ESG Index Series as well.
11. “Sacrifice Nothing: A Fresh Look at Investment Performance of Sustainable and Impact Strategies by Asset Class,” Cornerstone Capital Group, 2019.  
[https://cornerstonecapinc.com/wp-content/uploads/Sacrifice-Nothing\\_A-Fresh-Look-at-Performance.pdf](https://cornerstonecapinc.com/wp-content/uploads/Sacrifice-Nothing_A-Fresh-Look-at-Performance.pdf)
  - a. Excerpt: “We recently conducted a fresh review of the academic and practitioner literature on this topic. Sampling from 2,200 reports published over the past few decades, our review provides assurance that applying an ESG lens is consistent with fiduciary duty. (We would argue that it is essential to fiduciary duty.)”
12. Jim Reid and Luke Templeman, “Climate Change and Corporates: Past the Tipping Point with Customers and Stock Markets,” Deutsche Bank, September 18, 2019.
  - a. Summary: Deutsche Bank programmed its artificial intelligence platform to map company stock prices after reading the five million pages of company announcements released by the 1,600 MSCI World Index companies over the last two decades, along with every Dow Jones news article written over the period (something that would take a human more than a century to complete!) The results were startling: Companies that experienced positive press and announcements about climate change saw share price outperformance of 1.4 percentage points per year over the MSCI World index —

outperformance of 26%. Conversely, bad press resulted in underperformance. Furthermore, it was not the energy, materials and utilities sectors that were the most affected.

13. Savita Subramanian, Manish Kabra, CFA, Sameer Chopra, James Yeo, Paulina Strzelinska and Lucy Huang, “ESG from A to Z: A Global Primer,” Bank of America Merrill Lynch, November 25, 2019.

- a. Excerpt: “ESG analysis can help you steer clear of the meltdowns. Just this year, three out of the five biggest chairperson/CEO resignations in U.S. were related to E, S or G scandals. And in the last five years, corporate ESG blunders have destroyed more than half a trillion dollars of market cap in the U.S. market alone. In Asia, 73% of companies with credit downgrades over the last five years had below-median ESG scores.”

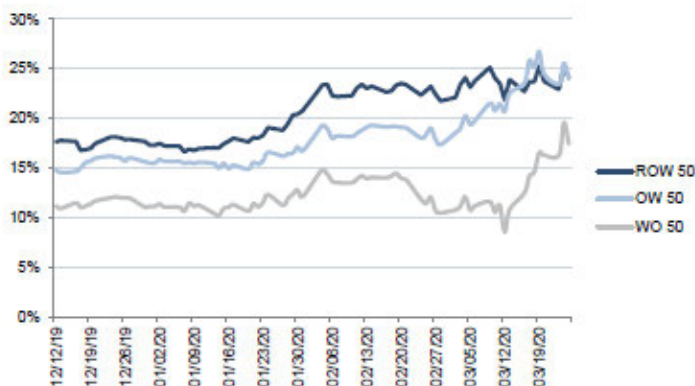
14. Evan Tylenda, CFA, Sharmini Chetwode, Derek R. Bingham, Nihar Kantipudi, Brendan Corbett, Keebum Kim and Dan Duggan, “GS Sustain: ESG — Neither Gone nor Forgotten,” Goldman Sachs Equity Research, April 2, 2020.

- a. Excerpt: “Perceived ‘ESG winners’ remain resilient in selloff. Valuation premiums for ESG favorites have crept higher during the crisis. While still too early to assess the robustness of ESG through a full downturn, at this early stage we find ESG favorites outperforming the broader market by 100-650bps YTD (Exhibits 2-3).”

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**Exhibit 2: Premiums for ESG fund favorites have expanded further in the downturn**

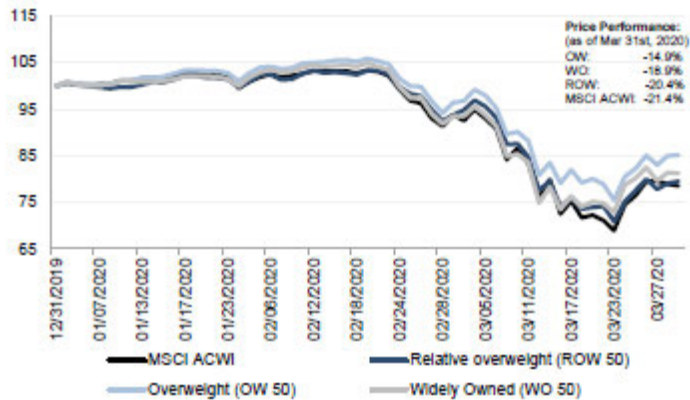
12-mo fwd consensus P/E multiples (trimmed mean) vs. MSCI ACWI GICS 2 peers (1/1/2020-3/25/2020)



Widely Owned 50 (WO 50): Top 50 companies most widely held in ESG funds. Relative Overweight 50 (ROW 50): Top 50 companies most overweight in ESG funds relative to their weight in the MSCI ACWI Overweight 50 (OW 50): Top 50 companies most absolute overweight vs. their weight in the MSCI ACWI

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**Exhibit 3: 'Nifty Fifty' lists have outperformed the broader market, with overweights outperforming the most**  
Average equal-weighted stock performance for 'Nifty Fifty' lists and MSCI ACWI indexed to 100 on Jan 1, 2020



Source: Bloomberg, Factset, Goldman Sachs Global Investment Research

Source: FactSet, Data compiled by Goldman Sachs Global Investment Research

15. Davide Benedetti, Enrico Biffis, Fotis Chatzimichalakis, Luciano Ruben Lilloy Fedele, and Ian Simm, "Climate Change Investment Risk: Optimal Portfolio Construction Ahead of the Transition to a Lower-Carbon Economy," October 2019.

[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3281390](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3281390)

a. Excerpt: "There is an increasing likelihood that governments of major economies will act within the next decade to reduce greenhouse gas emissions, probably by intervening in the fossil fuel markets through taxation or cap & trade mechanisms (collectively "carbon pricing"). We develop a model to capture the potential impact of carbon pricing on fossil fuel stocks and use it to inform Bayesian portfolio construction methodologies, which are then used to create what we call Smart Carbon Portfolios. We find that investors could reduce ex-post risk by lowering the weightings of some fossil fuel stocks with corresponding higher weightings in lower-risk fossil fuel stocks and/or in the stocks of companies active in energy efficiency markets. The financial costs of such de-risking strategy are found to be statistically negligible in risk-return space."

16. Vivian Hunt, Sundiatu Dixon-Fyle, Sara Prince and Kevin Dolan, "Diversity Wins," McKinsey, May 2020.

<https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Diversity%20and%20Inclusion/Diversity%20wins%20How%20inclusion%20matters/Diversity-wins-How-inclusion-matters-vF.pdf>

a. Excerpt: "The report demonstrates that the business case for gender and ethnic diversity in top teams is stronger than ever. Since we first published "Why Diversity Matters" in 2015, the likelihood of diverse companies outperforming industry peers on profitability has increased significantly."

17. Center for Social and Sustainable Products AG and South Pole Carbon Asset Management Ltd., "Climate-friendly Investment Strategies and Performance," November 7, 2016.

[https://yoursri.com/media-new/download/en\\_def\\_zusammenfassung\\_07-11-2016\\_klimafreundliche\\_investitionsstrategie.pdf](https://yoursri.com/media-new/download/en_def_zusammenfassung_07-11-2016_klimafreundliche_investitionsstrategie.pdf)

- a. Summary: Eleven different climate-friendly indices by the relevant market index providers MSCI and STOXX were analyzed. A quantitative analysis of these indices shows: Almost all more climate-friendly indices studied show a higher return than their respective conventional benchmark indices (10 of the 11 cases). A slightly higher risk was observed in seven of the 11 indices studied. If, in addition, the return is juxtaposed against the risk involved, then in eight out of the 11 cases, the investor has a better risk-return ratio in climate-friendly indices compared to the respective conventional benchmark index. In most cases, the investor is thus compensated for taking the additional risk by a correspondingly higher return.