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Climate Change Defines the Fiduciary

By George Michael Gerstein, Esq.[*]

It is now high time for fiduciaries to begin or continue a process to identify and manage both the investment risks and opportunities arising from climate change in accordance with their fiduciary obligations under the Employee Retirement Income Security Act of 1974 (ERISA), especially Department of Labor (DOL) Interpretive Bulletin (IB) 2015-01. This process would encompass engaging plan service providers, particularly investment managers, on what steps they are taking to address both the risks and opportunities, recognizing that critical disclosures continue to evolve. This process would also include shareholder engagement with issuers on improved disclosure and transparency regarding climate risks in accordance with IB 2016-01.

This article discusses the unique nature of climate change risk to investments: namely, that it is likely to affect all asset classes and sectors, creating both risk and opportunities for fiduciaries. It is expected to unfold over the long-term and its exact magnitude cannot (yet) be known, complicating the investment models currently utilized. Now that nations around the globe have been galvanized to take action, fiduciaries should expect regulatory and technology developments that will help sort winners and losers. Physical impact of climate change on companies is expected to continue to take a toll on supply chains and bottom lines. Unfortunately, disclosures from companies on their climate change risk lack important standardization and clarity; however, efforts are afoot to help investors better understand the link between climate change risk and investment performance.

FIDUCIARY FRAMEWORK

ERISA is the federal law that governs the investment of private retirement plan assets. ERISA §403 and §404 impose strict obligations on plan investment committees and other fiduciaries, such as investment managers, to invest plan assets in a manner that is solely in the interest of the plan's participants and beneficiaries and for the exclusive purpose of providing benefits to these individuals. Effectively, fiduciaries must act prudently and diversify investments (unless under the circumstances it is clearly imprudent to do so), and under no circumstance may a fiduciary subordinate the interests of participants and beneficiaries.

The DOL has considered whether retirement plan investments that are ''selected because of the collateral economic or social benefits they may further in addition to their investment returns'' comport with ERISA's fiduciary obligations.[1] These types of investments have been broadly viewed by the DOL as encompassing ''socially responsible investing, sustainable and responsible investing, environmental, social and governance (ESG) investing, impact investing, and economically targeted investing (ETI).''[2] Though ''sections 403 and 404 of ERISA do not permit fiduciaries to sacrifice the economic interests of plan participants in receiving their promised benefits in order to promote collateral goals,'' the DOL ''has consistently recognized that fiduciaries may consider such collateral goals as tie-breakers when choosing between investment alternatives that are otherwise equal with respect to return and risk over the appropriate time horizon.''[3]

Crucially, IB 2015-01 clarifies that ''[ESG] issues may have a direct relationship to the economic value of the plan's investment,'' and, as a result, ''such issues are not merely collateral considerations or tie-breakers, but rather are proper components of the fiduciary's primary analysis of the economic merits of competing investment choices.'' This means that ''[f]iduciaries need not treat commercially reasonable investments as inherently suspect or in need of special

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[1] IB 2015-01, 29 C.F.R. §2509.2015-01, 80 Fed. Reg. 65,135 (Oct. 26, 2015), *withdrawing* 29 C.F.R. §2509.08-1.

[2] *Id.*

[3] *Id.*

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scrutiny merely because they take into consideration environmental. . .factors.'' In other words, ''[w]hen a fiduciary prudently concludes that such an investment is justified based solely on the economic merits of the investment, there is no need to evaluate collateral goals as tie-breakers.''[4]

The DOL has also long held the position ''that the fiduciary act of managing plan assets which are shares of corporate stock includes decisions on the voting of proxies and other exercises of shareholder rights.''[5] In IB 2016-01, the DOL broadly reaffirms ''the importance of proxy voting and shareholder engagement practices,'' and notes that ''[t]he existence of financial benefits associated with shareholder engagement is suggested by the fact that a growing number of institutional investors are now engaging companies on ESG issues.'' As an example, the DOL cited to the fact that, ''[g]lobally, over 1300 asset managers and asset owners have signed the Principles for Responsible Investment, the second principle of which states that the managers and owners will be active owners and incorporate ESG issues into ownership policies and practices,'' and that issuers ''are also being required to be more transparent in the way they address ESG issues.''

IB 2016-01 reflects the DOL's recognition that the exercise of shareholder rights by ERISA fiduciaries is ''important to long-term shareholder value.'' In terms of proxy voting, the DOL has stated that, ''[t]he fiduciary duties described at ERISA section 404(a)(1)(A) and (B), require that, in voting proxies, the responsible fiduciary consider those factors that may affect the value of the plan's investment and not subordinate the interests of the participants and beneficiaries in their retirement income to unrelated objectives.''[6] In voting, the fiduciary should also consider ''whether the plan's vote, either by itself or together with the votes of other shareholders, is expected to have an effect on the value of the plan's investment that warrants the additional cost of voting.''[7] Similarly, ''activities intended to monitor or influence the management of corporations in which the plan owns stock is consistent with a fiduciary's obligations under ERISA where the responsible fiduciary concludes that there is a reasonable expectation that such monitoring or communication with management, by the plan alone or together with other shareholders, is likely to enhance the value of the plan's investment in the corporation, after taking into account the costs involved.''[8] One specific area of shareholder engagement the DOL highlighted is ''the nature of long-term business plans. . .on climate change preparedness and sustainability. . . .''[9]

CLIMATE CHANGE IN CONTEXT

The investment risks to investors from climate change are inherently long-lasting, pervasive, and complex. The sheer scale of these risks present special challenges to all fiduciaries. According to the Financial Stability Board's Task Force on Climate-related Financial Disclosures (Task Force):

> One of the most significant, and perhaps most misunderstood, risks that organizations face today relates to climate change. While it is widely recognized that continued emission of greenhouse gases will cause further warming of the planet and this warming could lead to damaging economic and social consequences, the exact timing and severity of physical effects are difficult to estimate. The large-scale and long-term nature of the problem makes it uniquely challenging, especially in the context of economic decision making. Accordingly, many organizations incorrectly perceive the implications of climate change to be long term and, therefore, not necessarily relevant to decisions made today.[10]

Yet, these risks are only just beginning to become more universally recognized. Because of the scale and long-term nature of these risks, this should not be a surprise. Climate change risk is not like inflation risk. Moreover, investors largely embrace short-termism, and the boards of companies and fiduciaries are juggling multiple priorities.[11] All of these characteristics currently thwart widespread acceptance of, and attention to, these risks. Because climate change is expected to unfold over the long-term, the investment risks associated with climate change may feel even more abstract. But as BlackRock Investment Institute (BlackRock) has noted:

> Markets tend to focus on the shark closest to the boat. Risks we can see, especially visceral ones, occupy most of our attention. Contentious elections, referenda and monetary policy decisions dominate headlines. The effects of climate change are less visible and perceived by many as distant. This leads to a bias toward inaction. Bottom line: We believe climate factors have been underappreciated and

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[4] *Id.*

[5] IB 2016-01, 29 C.F.R. §2509.2016-01(1), 81 Fed. Reg. 95,879 (Dec. 29, 2016).

[6] *Id.*

[7] *Id.*

[8] *Id.*

[9] *Id.*

[10] Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017) (Task Force), p. ii, available at https://www.fsb-tcfd.org/publications/final-recommendations-report/.

[11] Mercer, Investing in a Time of Climate Change, 2015 (Mercer), pp. 18, 20, 23, available at https://www.mercer.com/our-thinking/investing-in-a-time-of-climate-change.html.

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> underpriced. Yet this could change as the effects of climate change become more visible.[12]

It also cannot be denied that the science of climate change is complex and controversial. This complexity and controversy frames, and, perhaps to some degree, taints, a further analysis of the investment implications of climate change. Even should one agree with the premise that Earth's climate is changing, an investment analysis of climate change raises its own challenges. For example, Mercer indicated that ''[c]limate risks generally demand longer-term (>3 years) measurement, with risk metrics such as sea-level rise, carbon-price developments, and low-carbon investment flows outside the average investor's range of knowledge or experience.''[13] Suffice it to say, it is understandable that much about climate change and the implications for fiduciaries is obscure to most. Consider, for example, how an investment manager should analyze the following conclusions by the Intergovernmental Panel on Climate Change in its 2014 Synthesis Report Summary for Policymakers (IPCC): (A) since the 1950s, many of the observed changes, such as the warming of the atmosphere or the oceans, sea level rises and reductions in snow and ice, ''are unprecedented over decades to millennia;'' (p. 2) (B) that ''[t]he rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia. . .;'' (p. 4) (C) that there exist ''atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years;'' (p. 4) (D) the ''[i]mpacts from recent climate-related extremes, such as heat waves, droughts, floods, cyclones and wildfires, reveal significant vulnerability and exposure of some ecosystems and many human systems to current climate variability;'' (p. 8) (E) that ''[c]limate change is projected to undermine food security;'' (p. 13) and (F) that ''[i]n urban areas climate change is projected to increase risks for people, assets, economics and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges.'' (p. 15).

Consider also what a fiduciary should do when faced with the following information that:[14] ''[c]hanging weather patterns will also impose inland flood and drought risk for many areas, with implications for agricultural, wildlife and water resources management;'' ''[t]he single greatest threat posed by global warming is the rise in sea levels, which are expected to increase coastal flood frequency and severity from tropical cyclones, extratropical cyclones and tsunami events;'' and ''[t]he recent consequences of Cyclone Nilam for Eastern India and the impacts of Superstorm Sandy for the coastal United States are poignant examples of the *existing* coastal flood threat.'' Fiduciaries may be hard-pressed to draw any portfolio-related conclusions from this data. This is, in a sense, the crux of the issue.

Though the nexus between the scientific observations stated above and the financial performance of markets, asset classes and products may seem remote to most fiduciaries, it is important we understand the broader context: ''[i]t is widely recognized that continued emission of greenhouse gases will cause further warming of the Earth and that warming above 2° Celsius (2°C), relative to the pre-industrial period, could lead to catastrophic economic and social consequences.''[15] On this basis, approximately 200 governments entered into the United Nations Framework Convention on Climate Change (Paris Accord) in 2015 pursuant to which they agreed to ''holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. . . .''[16] The Paris Accord could be viewed as an impetus or starting point for a cascade of events and consequences. Because things have been set in motion, the effect on portfolios will likely become more and more pronounced. According to Mercer:

> [c]limate change is an environmental, social and economic risk, expected to have its greatest impact in the long term. But, to address it, and avoid dangerous temperature increases, change is needed now. Investors cannot therefore assume that economic growth will continue to be heavily reliant on an energy sector powered predominately by fossil fuels. This presents asset owners and investment managers with both risks and opportunities.[17]

In other words, ''[i]n order to build portfolio resilience, investors cannot assume the future will mirror the past, particularly when economic growth is heavily reliant on an energy sector powered first and foremost by fossil fuels. The future may look very different, which means a fundamental impact on economies and investors.''[18] With these risks come opportunities for those companies that adapt to the transition to a low-carbon economy. However, the Task Force acknowledges, ''the current understanding of the potential financial risks posed by climate change—to companies, investors, and the financial system as a

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[12] BlackRock Investment Institute, Adapting portfolios to climate change: Implications and strategies for all investors (Sept. 2016) (BlackRock), p. 3, available at https://www.blackrock.com/investing/insights/blackrock-investment-institute/climate-change.

[13] Mercer, p. 18.

[14] As provided in Guy Carpenter's report, ''Rising Sea Levels Ranked as the Greatest Climate Change Threat'' (Sept. 3, 2013) (emphasis in original).

[15] Task Force, p. 1.

[16] Task Force, p. 1, quoting Paris Accord.

[17] Mercer, p. 6.

[18] *Id.* at p. 24.

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whole—is still at an early stage.''[19] An understanding of the links between climate change risks and performance of financial products is increasing every day.

To be sure, fiduciaries have over the years attempted to address environmental issues into the investment process. Historically, Europe has led in sustainable investing, though recent growth, driven by institutional investors, has been strongest in the United States.[20] Yet, ''less than 1 percent of the total capital of the 15 largest US public pension funds is allocated to ESG-specific strategies, such as ESG-screened passive indexes, active management using ESG insights, or private-market management with a fully integrated ESG strategy.''[21] One explanation for this is that ''many institutional investors continue to treat ESG as a sideshow rather than an integral part of their investing,'' and that ''[w]hile ESG and corporate-governance teams are commonplace, they are often held at arm's length from core investment activities.''[22] Perhaps the future of climate change investing is bright; a recent State Street survey found that only 35% of institutional investors believe ESG equals lower returns, whereas only 10% say they view the fiduciary duty as a barrier to ESG integration, and 74% see three-plus years as a realistic timeframe to gain outperformance from ESG investments.[23]

The investment management process has become more sophisticated in terms of environmental factors. McKinsey notes that, ''[s]ince 2008, many institutional investors have strengthened their risk management — for example, by adding tools and skills needed to run scenario analyses on how their portfolios might behave in times of stress.''[24] However, ''most focus narrowly on 'tail' value-at-risk scenarios driven by broad macroeconomic volatility. . .[whereas]. . .[t]hey ought to complement this approach with considerations of unpredictable shocks, such as regional water shortages, avian-flu pandemics, and increases in (or the introduction of) externality pricing.''[25]

BlackRock, for example, takes a multi-step process as part of its climate risk program. First, it considers various factors, such as a company's efficiency in generating sales with fewer resources (e.g., carbon, water, etc.). Next, it tries to estimate the applicability and scope of many of the risks discussed at length (below), such as the possibility of carbon taxes and impacts of weather on labor productivity and on the issuer. Lastly, they search for whether the issuer has filed green patents (as an indication of being proactive and seizing the opportunities associated with a transition economy) and whether there were any climate opportunities disclosed.[26]

A common historical approach to ESG investing was primarily *exclusionary screening*, ''which entails full or partial exclusion or divestment of certain holdings in response to investors' values and societal norms.''[27] Though this is still an active process, more and more institutional investors are adopting ''explicit integration of ESG considerations across asset classes (including more active engagement with companies on these issues) as a means of managing downside risk and achieving appropriate risk-adjusted returns.''[28] In respect of the various investment approaches, JPMorgan states:

> Exclusionary Screening: Exclusionary, or negative, screening is often the approach most commonly associated with sustainable or socially responsible investing. . . .It entails excluding from portfolios the stocks or bonds of companies that are involved in certain activities (often measured as a percentage of revenue they generate) or sectors that do not align with investor norms or standards. [] When specific stocks or sectors are eliminated from a broader benchmark, a tracking error may be introduced, meaning the possibility of a negative impact on performance.
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> ESG Integration: This approach involves integrating consideration of environmental, social and governance (ESG) issues, where material, into investment due diligence and analysis. The principal objective of ESG integration is to ensure that relevant issues, factors and risks that have the potential to impact companies are considered alongside traditional financial analysis during the investment process. [] Because ESG integration is part of the fundamental research process, it can be applied to any asset class. Until recently, ESG integration has been most commonly applied to equities, including listed and private equities. However, ESG factors are increasingly being integrated into analysis of fixed income products. Efforts such as shareholder proxy voting and corporate engagement are also strategies

[19] Task Force, p. 1.

[20] Decoding the Elements of Sustainable Investing — J.P. Morgan Private Bank (JPM), p. 2, available at https://am.jpmorgan.com/blob-pbstudio/1383335319956S/83456/sustainable-investing-2016.pdf.

[21] Jonathan Bailey, Bryce Klempner, and Josh Zoffer, Sustaining sustainability: What institutional investors should do next on ESG, McKinsey & Company (June 2016) (McKinsey), pp. 1–2, available at http://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/sustaining-sustainability-what-institutional-investors-should-do-next-on-esg.

[22] McKinsey, pp. 1–2.

[23] State Street's Center for Applied Research Reveals Industry Wide Shift as Investors Find Sustainable Value Through ESG (Mar. 27, 2017) (SSC), available at http://newsroom.statestreet.com/press-release/corporate/state-streets-center-applied-research-reveals-industry-wide-shift-investors-.

[24] McKinsey, p. 5.

[25] *Id.*

[26] BlackRock, p. 11.

[27] JPM, p. 2.

[28] *Id.*

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that are often considered elements of ESG integration. ESG integration is generally used as a strategy to manage downside risk and achieve appropriate risk-adjusted returns. It is typically not employed as a means of intentionally generating positive social or environmental benefits—though companies that perform well on ESG measures certainly may also have positive impacts on society.

Positive Screening: This approach involves proactively selecting companies identified as positive performers or, in some cases, well-established investment targets relative to industry peers on the basis of their management of non-financial factors. [] Examples of strategies could include those focused on identifying companies that are the least carbon-intensive in their sectors, while others may aim to identify those that outperform on a combined set of ESG measures. [] In addition, some positive screening approaches may utilize ESG research or ''ratings'' from a third party, which often employs its own unique methodological criteria, weightings and scoring approaches.

Thematic Investing: Thematic investing identifies companies whose business models focus on specific sectors and related innovations or improvements over industry peers with respect to social or environmental impacts. [] As with all types of thematic investing, investors will need to weigh potential financial returns and other investment considerations along with the desire for positive social and/or environmental outcomes.

Impact Investing: Impact investing is an approach that intentionally seeks to create positive social and environmental impacts alongside financial returns. [] Impact investments may support the objectives that align with the philanthropic or organizational mission of the investor.[29]

BlackRock points out that ''a growing number of tools is available to more systematically integrate climate factors,'' including the optimization of benchmarks to account for climate factors, meaning, ''overweighting green companies and underweighting climate offenders, while keeping a portfolio's return profile as close to the benchmark as possible.''[30] This should help fiduciaries. Yet, problems remain, such as the fact that ''[t]he more climate friendly a portfolio becomes, the larger the tracking error. . .tends to be.''[31] Yet another approach is to ''[e]ngage with companies through dialogue with management and by filing shareholder resolutions (via the asset manager).''[32] Glenn Booraem, Vanguard Group's investment stewardship officer, in explaining why Vanguard has now begun to press issuers to disclose climate change impact on their business and asset valuations via shareholder resolutions, stated: ''Our support for these proposals is not a matter of ideology, it's a matter of economics.''[33] Later on in the article, we will visit similar approaches by State Street Global Advisors (SSGA) and Wellington Management Company (Wellington).

Still yet another roadblock to understanding climate change investment risks and opportunities is nascent, inconsistent, and even unreliable data on an issuer's contribution towards, and risk to, climate change. This particular obstacle is so vital that it is examined thoroughly in ''Disclosure Challenges and Possible Next Steps,'' below.

At bottom, however, climate change presents unique risks and opportunities for fiduciaries. Allianz considers climate change risk to be both ''systemic and global in nature'' and ''non-diversifiable and cannot be hedged unless we find a second inhabitable planet in close reach.''[34] The author of this article agrees with Bill Maher when he said, in criticizing a notion that humans can simply pick up and move to Mars, ''[y]ou're here, you're home. Stop looking for the Goldilocks planet, this is it,''[35] and will assume, for purposes of this article, that no alternative to Earth is currently viable and that fiduciaries must consider the investment risks and opportunities uniquely presented by climate change here on Earth. Opportunities emerge from price anomalies and those companies that adapt to the transition to a low-carbon economy, such as producing or using renewable energy. Allianz predicts:

> We are at the beginning of this transition and it is far from over; business disruption looms. In our view it is also not clear that, despite large scale efforts to follow COP 21, we will avoid the 2°C warming which scientists are so warning of. It is likely that both mitigation and adaptation will have major ramifications for investors.[36]

RISKS AND OPPORTUNITIES

Fiduciaries face a number of significant investment risks associated with climate change. First, govern-

[29] *Id. at* pp. 4–6.

[30] BlackRock, p. 9.

[31] *Id.*

[32] JPM, p. 3.

[33] Ross Kerber, Vanguard seeks corporate disclosure on risks from climate change, Reuters (Aug. 14, 2017), available at https://www.reuters.com/article/us-vanguard-climate-idUSKCN1AU1KJ.

[34] Allianz Global Investors — Climate Risk Investment Positioning (Allianz), pp. 3–4, available on their website at https://www.allianzgi.com.

[35] Real Time with Bill Maher, New Rule: Make Earth Great Again (Apr. 21, 2017).

[36] Allianz, p. 5.

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ments are introducing, and are expected to continue unveiling, new rules, taxes, and subsidies in an attempt to adhere to the Paris Accord or otherwise reduce their nations' emissions to help guard against the Earth's warming in excess of 2 degrees Celsius above pre-industrial levels. These governments may directly or indirectly affect various types of issuers. Second, physical damage caused by increasingly common extreme weather can significantly affect an issuer's assets (including write-downs), along with the resulting disruption to supply chains and employee health. Third, policy decisions and market forces, responding to the need to both lower emissions and adapt to a changing planet, are now spurring technological developments, which may alter market dynamics, favoring those issuers who adapt and spurning those who do not. Here is where many opportunities for fiduciaries may arise. Fourth, current valuations do not appear to be correctly pricing in the cost of climate change.

Variability Inherent in Climate Change

As the Task Force has acknowledged, the long-term nature and scope of climate change renders it a unique but nonetheless significant risk factor.[37] Mercer points out that ''[a]lthough investment modelling provides a useful guide, existing modelling is not able to capture very long-term structural changes—precisely the type of change we would expect as the world manages the risks posed by climate change.''[38] These risks (and opportunities) are products of forecast long-term structural changes to the global economy caused by global warming. But, the changes brought about by climate are long-term and variable, and, according to Mercer, ''sustainable global economic growth is not going to follow the same path as historical economic growth. . . .''[39] As previously noted, ''[c]limate risks generally demand longer-term (>3 years) measurement, with risk metrics such as sea-level rise, carbon-price developments, and low-carbon investment flows outside the average investor's range of knowledge or experience.''[40]

These factors make a fiduciary's job difficult especially because ''[t]he greater the level of change, the more disparity between the winners and losers, and today's 'giants' often become tomorrow's 'dinosaurs,' as those that fail to adapt are left behind. Such changes can create new industries at the expense of existing industries.''[41] Though this difficulty is inherent in climate change risk, scenario analysis (discussed later) may prove to be a valuable solution to this complexity.

Factor #1: Governmental Action

The first major component of climate risk relates to forthcoming changes in policy and law at the international, national, and local levels. The most prominent recent example of this is the ratification of the Paris Accord. Allianz contends that the Paris Accord ''implies a high-speed trajectory with reference to net zero carbon emissions in the second half of the century,'' which means that, for numerous developed nations, ''they must reduce their carbon dioxide emissions by 95% by 2050'' resulting in a ''transformation to a low carbon emitting economy [that] implies risks and opportunities for specific industry sectors and corporates.''[42] This would encompass the proliferation in many countries of regulations, ordinances, building codes, taxes, and other policies designed to mitigate and adapt to climate change (e.g., the reduction in greenhouse gas (GHG) emissions). Notably, governments could create or eliminate subsidies on clean energy or green infrastructure, as well as impose or increase taxation (e.g., carbon pricing) related to climate change.[43] The existence and extent of subsidies can have serious consequences on sectors. BlackRock points to Spanish subsidies of solar panels, which initially ''led to an unprecedented boom in solar power development in 2008,'' but the industry eventually ''collapsed when those subsidies proved to be too generous and the government cut them, and is only now crawling back.''[44] Solar Markets in other countries, including Germany, Japan, and the U.S., apparently also exhibit these ''boom-to-bust dynamics. . . .''[45]

The extent to which regulatory, tax, subsidy or other policies develop, and, therefore, potentially affect a portfolio, raises a series of important questions and considerations. Some key ones are:

1. *Will all regulatory and similar responses be consistent across the world?* Not necessarily because ''[t]here is no one-size-fits-all solution to reducing emissions. Developed regions such as the European Union (EU) and United States are placing a greater emphasis on improving energy efficiency, while emerging market (EM) economies such as India and China are prioritizing low-carbon energy generation such as wind and solar power.''[46]

2. *Is it preferable to experience new regulatory, tax/subsidy and other policy developments sooner than later?* Fewer developments early on renders this risk factor less significant, but, it could lead to more extreme weather events and drastic (and sudden) regulatory, tax/subsidy, and other policy developments, resulting in a deferred yet potentially more stringent policy response. On the other hand, greater regulatory action sooner will increase the cost of transitioning to a low-carbon economy, though could lead to lower overall cost.[47] Regardless, new regulations will in-

[37] Task Force, p. ii.
[38] Mercer, p. 44.
[39] *Id.*
[40] *Id.* at p. 18.
[41] Mercer, p. 44.
[42] Allianz, p. 3.
[43] Mercer, p. 32.
[44] BlackRock, p. 7.
[45] *Id.* at p. 7.
[46] BlackRock, p. 3.
[47] *Id.* at p. 8.

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crease the risk of litigation and fines against an issuer.[48]

3. *Can we reasonably expect regulatory, tax/subsidy, and other policy developments in the developed nations?* Likely, but there may be unpredictability, as well. Consider the following statement from President Donald J. Trump: ''Thus, as of today, the United States will cease all implementation of the non-binding Paris Accord and the draconian financial and economic burdens the agreement imposes on our country. This includes ending the implementation of the nationally determined contribution and, very importantly, the Green Climate Fund which is costing the United States a vast fortune.'' He went on to add: ''I'm willing to immediately work with Democratic leaders to either negotiate our way back into Paris, under the terms that are fair to the United States and its workers, or to negotiate a new deal that protects our country and its taxpayers.''[49] But consider also the United States Climate Alliance, a banding of various states to reduce GHG emissions in response to the President's decision to withdraw from the Paris Accord.

4. *How significant will these regulatory, tax/subsidy, and other policy developments be?* According to Mercer, ''[a] key feature of any climate policies that are meant to reduce emissions should be assigning a cost to [carbon dioxide] emissions, and increasing the cost sufficiently over time to shift [behaviors] towards a zero-carbon economy.''[50] According to the World Bank, ''[i]nstead of dictating who should reduce emissions where and how, a carbon price gives an economic signal and polluters decide for themselves whether to discontinue their polluting activity, reduce emissions, or continue polluting and pay for it.''[51] However, this calculation, often referred to as the ''social cost'' of GHG emissions, ''is an enormously complex and uncertain exercise. . .[as it]. . .requires understanding the effect of a ton of a greenhouse gas on global temperatures; the effect of temperature change on agricultural yields, human health, flood risk, and myriad other harms to the ecosystem; monetizing these various damages into dollar terms; and determining how much to balance harm to future generations against the interests of the current generation.''[52] For example, scientists at Stanford University believe the cost of GHG emissions ''could actually be six times higher than the value that the United States now uses to guide current energy regulations, and possibly future mitigation policies. . . .''[53] The scientists specifically point to the fact that new studies suggest that climate change may not only affect a nation's output, but also its growth, resulting in ''a permanent effect that accumulates over time, leading to a much high social cost of carbon.''[54] The calculated cost of carbon emissions ''is perhaps the most critical component of regulatory policy in this area because, by calculating the costs of climate change, the social cost of carbon allows for the calculation of the monetary benefits of regulations that reduce greenhouse gases.''[55] The higher the social cost of carbon, the more rigorous the regulations can be promulgated. So, if ''current market prices . . .do not yet reflect the social costs of burning fossil fuels,''[56] then even a low social cost of GHG emissions will make certain business practices, particularly those with a large carbon footprint, will become more expensive to operate. This would certainly be the case if an issuer were a large emitter of GHG.

Greenstone has argued for a low discount rate to determine the social cost of carbon emissions — ''[w]hen one considers the possibility of large temperature changes for given increases in emissions. . .great sea level rise in relatively short periods of time, the possibility of physical 'tipping points', or human responses to these changes that include mass migration, then the case for a low discount rate appears strong.''[57] Ultimately, BlackRock anticipates that ''higher and more consistent carbon pricing is a scenario that investors should prepare for,'' because ''[i]t would incentivize companies to innovate to cut carbon emissions,'' which, ''in turn, could be a catalyst for investment risks and opportunities related to technological disruption. . . .[and] help investors better quantify the carbon risks embedded in their portfolios.''[58] Mercer expects that the ''increasing cost on carbon could erode expected gains in some sectors and produce annual losses.''[59]

Factor #2: Physical Damages, Supply Chain Disruption, Employee Health, and Stranded Assets

A second component of climate risk is the physical damage to specific assets, such as property damage, as well as risks to employee health and supply chain disruption.[60] As previously noted, the IPCC identified a significant risk in ''climate-related extremes, such as heat waves, droughts, floods, cyclones and wild-

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[48] Task Force, p. 10.

[49] Statement by President Trump on the Paris Climate Accord (June 1, 2017).

[50] Mercer, p. 32.

[51] The World Bank, Pricing Carbon, available at http://www.worldbank.org/en/programs/pricing-carbon.

[52] Ted Gayer, The social cost of carbon, Brookings Institution (Feb. 28, 2017), available at https://www.brookings.edu/testimonies/the-social-costs-of-carbon/.

[53] Ker Than, Estimated social cost of climate change not accurate, Stanford scientists say (Jan. 12, 2015), available at http://news.stanford.edu/2015/01/12/emissions-social-costs-011215/.

[54] *Id.*

[55] Statement of Professor Michael Greenstone, Director of the Energy Policy Institute at the University of Chicago (Feb. 28, 2017) (Greenstone).

[56] BlackRock, p. 15.

[57] Greenstone.

[58] BlackRock, p. 15.

[59] Mercer, p. 20.

[60] Task Force, p. 6.

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fires. . . .''[61] BlackRock has indicated that ''[t]he frequency of extreme weather events causing $1 billion or more in losses has risen sharply over the past decade. . . .[t]his poses risks to coastal real estate, agriculture and companies will supply chains in geographically vulnerable areas'' with the result that ''[e]conomic growth in states hit by extreme weather events is 10% to 15% lower than usual in the month of the event and remains below trend even 12 months afterward. . . .''[62] In terms of employee health, citing to a study, BlackRock states: ''Daily productivity typically declines by 1.7% for each 1°C rise in average temperatures above 15°C. . .,''[63] not terribly surprising given that the IPCC indicated that ''[i]n urban areas climate change is projected to increase risks for people, assets, economics and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges.''[64] An issuer's raw materials may be endangered by climate change; Mercer, for instance, points out that ''[c]oal has exposure to water scarcity risk, more so than gas, but less water-intensive than oil and nuclear.''[65] Supply chains could be broken. Allianz notes that, ''in the past severe flooding in Thailand led to global shortages in car-paint production with impacting on German car manufacturing.''[66]

Coca-Cola is a case study for how a company can be directly affected by climate change and how one can adapt. They found that ''[i]ncreased droughts, more unpredictable variability, 100-year floods every two years'' each had significant ramifications on one of its major supplies, water, which has led it to use water conservation techniques. According to the New York Times, ''Coke reflects a growing view among American business leaders and mainstream economists who see global warming as a force that contributes to lower gross domestic products, higher food and commodity costs, broken supply chains and increased financial risk.''[67] Another example is Nike. Many of Nike's factories are in Southeast Asia, a region that has experienced a high number of recent extreme weather events. NYT reports that, ''[i]n 2008, floods temporarily shut down four Nike factories in Thailand, and the company remains concerned about rising droughts in regions that produce cotton, which the company uses in its athletic clothes.'' Because of this risk, Nike reportedly discloses the impact of climate change on its business lines and has shifted to synthetic materials for its clothing so as to be less reliant on cotton.[68]

A potential source of significant losses is the risk of *stranded assets*. These are types of assets that ''may not deliver expected returns because of regulatory, technological and economic reasons connected to climate change risk.''[69] Stranded assets are one reason why ''[t]he damage from climate change could shave 5%-20% off global GDP annually by 2100. . . .''[70] In order to avoid reaching the 2C warming limit (via taxation, regulation, etc.), BlackRock (referring to a World Resources Institute estimate), reveals that ''three-quarters of proven coal, oil and gas reserves would have to remain in the ground,'' meaning, they would be stranded and, therefore, subject to write-downs, whose sums ''are enormous.''[71] These assets may give way to their replacement of new assets as part of a transition to a low-carbon economy, creating opportunities for the manufacturers of those new assets. There could also be price anomalies of existing assets whose vulnerability to becoming stranded or otherwise restricted (because of climate change), are not priced in. Prospective assets, either to stand on their own or replace existing vulnerable assets, may similarly be mispriced.[72]

Factor #3: Technology Disruption and Innovation

Another major factor of climate change risk relates to the technology needed to transform energy production and provide resilient infrastructure as part of the transition to a low-carbon economy. This could create opportunities for fiduciaries. Particularly, ''[s]peed, scale, and success of low-carbon technologies, coupled with the extent of transformation/disruption of existing sectors, or development of new sectors, are the key metrics of this factor.''[73] This factor refers to technology to transform energy production and adaptation to climate change, such as resilient infrastructure. The Task Force noted: ''Organizations that invest in activities that may not be viable in the longer term may be less resilient to the transition to a lower-carbon economy; and their investors will likely experience lower returns.''[74] The cost associated with these technology developments will be a larger budget for research and development, but may be offset by the savings an issuer can enjoy through improved technology, as discussed below.

BlackRock has identified several examples of technology disruptions that have created, and continue to create, opportunities for those issuers that adapt to a low-carbon transition, such as: (1) technology advances in electric cars, the proliferation of shared rides, and the development of driverless cars, which could lead to declining demand for traditional cars

[61] IPCC, p. 8.
[62] BlackRock, p. 5.
[63] *Id.*
[64] IPCC, p. 15.
[65] Mercer, p. 47.
[66] Allianz, p. 5.
[67] Coral Davenport, *Industry Awakens to Threat of Climate Change*, NY Times (Jan. 23, 2014).
[68] *Id.*
[69] Allianz, p. 3.
[70] BlackRock, p. 3.
[71] *Id.*
[72] Mercer, p. 55.
[73] Mercer, p. 29.
[74] Task Force, p. iii.

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and gasoline ''much quicker than markets may expect''; (2) greater use of light-emitting diodes (LEDs), spurred by the mandatory phase-out of incandescent lights, ''[which] will cut power consumption from lighting by 40% from 2013-2030,'' leading to energy savings for issuers; and (3) the declining cost to produce and deliver renewable energy, such as wind and solar, which ''could add as much to the global energy supply in 2015-2020 as U.S. shale oil did in the previous five-year period,'' and which has become more price competitive. These technology advances, according to BlackRock, create opportunities to invest in renewable infrastructure and could potentially affect utilities' credit ratings and ability to pay dividends.[75]

Factor #4: Pricing Anomalies

According to BlackRock, ''[w]e believe market prices do not yet reflect the effect of rapid changes in regulations, business models and technology.''[76] Mispricing could be particularly acute for stranded assets, as previously discussed. Allianz agrees that climate risks do not appear to be priced into current valuations, thereby presenting opportunities for fiduciaries.[77] Insufficient disclosures on climate change risks, which is improving, is a contributor to this mispricing, as discussed below. Also, the fact that current investment modeling is not designed to address long-term, large-scale risks, such as climate change, may also explain price anomalies.

Factors 1–4: Dividing the Winners and Losers

The factors discussed above are expected to fundamentally affect virtually all issuers. According to the Task Force, ''[t]he expected transition to a lower-carbon economy is estimated to require around $1 trillion of investments a year for the foreseeable future, generating new investment opportunities,'' [but] [a]t the same time, the risk-return profile of organizations exposed to climate-related risks may change significantly as such organizations may be more affected by physical impacts of climate change, climate policy, and new technologies.''[78] Alex Struc of Pacific Investment Management Company believes that ''companies that position themselves for the transition should be able to deliver steady performance, while for those inflexible or unwilling to change, the costs may prove severe.''[79] The proof is starting to be in the pudding. Arabesque Partners, in its study, stated the following:

> Research investigating the effects of sound sustainability policies on a firm's cost of debt has shown that firms with superior environmental management systems have significantly lower credit spreads, implying that these companies exhibit a lower cost of debt (after controlling for firm and industry characteristics).
>
> Firms with significant environmental concerns have to pay significantly higher credit spreads on their loans. For instance within the pulp and paper industry firms that release more toxic chemicals have significantly higher bond yields than firms that release fewer toxic chemicals.
>
> Furthermore, it has recently been demonstrated that more eco-efficient firms have significantly better operational performance as measured by return on assets (ROA).
>
> Research has also documented a direct relationship between the environmental performance of firms and stock price performance. In particular, it has been demonstrated that positive environmental news triggers positive stock price movements. Similarly, firms behaving environmentally irresponsibly demonstrate significant stock price decreases. Specifically, following environmental disasters in the chemical industry, the stock price of the affected firms reacts significantly negatively. It has been further shown that firms with higher pollution figures have lower stock market valuations.
>
> There is also wider evidence that exclusion from sustainability stock indices causes significant negative stock price reactions.
>
> 90% of the cost of capital studies show that sound ESG standards lower the cost of capital. 88% of the studies show that solid ESG practices result in better operational performance. 80% of the studies show that stock price performance is positively influenced by good sustainability practices.[80]

The Task Force added: ''There is growing evidence and examples of organizations that have successfully reduced operating costs by improving efficiency across their production and distribution processes, buildings, machinery/appliances, and transport/mobility—in particular in relation to energy efficiency but also including broader materials, water and waste

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[75] BlackRock, pp. 5–7.

[76] BlackRock, p. 6.

[77] Allianz, p. 3.

[78] Task Force, pp. (ii)–(iii).

[79] Kwame Anochie & Alex Struc, Sustainable Investing: PIMCO's Environmental, Social and Governance (ESG) Initiative (June 2016), available at https://www.pimco.com/en-us/insights/viewpoints/viewpoints/sustainable-investing-pimcos-environmental-social-and-governance-esg-initiative/.

[80] Gordon L. Clark, Andreas Feiner & Michael Viehs, From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance, Arabesque Partners (Mar. 2015) (Arabesque), pp. 23, 31–32, 38, 40, 48, available at https://www.arabesque.com/research/From_the_stockholder_to_the_stakeholder_web.pdf.

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management.[81] As an example of where technology can lead to cost savings, Arabesque Partners noted: ''Over the 2012 fiscal year, Walmart saved about 231 million dollars by means of efficient waste management and recycling; an estimated 150 million dollars were saved over 2013 through renewable energy projects and a zero waste program.''[82]

Other reported opportunities that emerge from a transition to a low-carbon economy include: (1) ''[o] rganizations that pro-actively seek opportunities in new markets or types of assets may be able to diversify their activities and better position themselves for the transition to a lower-carbon economy''; (2) ''[n]ew opportunities can also be captured through underwriting or financing green bonds and infrastructure (e.g., low-emission energy production, energy efficiency, grid connectivity, or transport networks.)'';[83] and (3) ''[c]urbing carbon emissions requires significant spending on green infrastructure and a reduction in fossil fuel subsidies. . .[that]. . .creates large investment opportunities in areas that attract capital or industries at risk of disruption.'' Green bonds are ''an evolving solution'' whose proceeds ''are ring-fenced to fund eligible climate change mitigation projects, with a focus on renewables, energy efficiency and transport.''[84]

Climate change risks and opportunities affect all investors. BlackRock notes that, ''[l]ong-term investors are likely more exposed to physical risks, stranded assets and the impact of climate change on economic growth. Yet we also see them as better positioned to invest in new technologies that take time to bear fruit.'' However, ''even short-term investors can be affected by regulatory and policy developments, the effect of rapid technological change or an extreme weather event.''[85] Mercer believes that climate change ''will inevitably have an impact on investment returns, so investors need to view it as a new return variable.''[86] The Task Force contends that ''[w]hile climate change affects nearly all economic sectors, the level and type of exposure and the impact of climate-related risks differs by sector, industry, geography, and organization.''[87] This means that, ''[f]or the fiduciaries overseeing investments, climate change poses portfolio risks but also opens up new opportunities,'' as ''the necessary reduction in carbon emissions will require a fundamental change in the energy mix that underpins, to some extent, every investment in a portfolio.''[88] McKinsey, for example, points out that there are important differences between asset classes and investment cycles; ''ESG factors will be less material for many hedge-fund strategies than for managers investing in real assets or global equities, for example.''[89] Mercer stated the following in its illuminating 2015 report:

> Renewables have the greatest potential for additional returns: depending on the scenario, average expected returns may increase from 6.6% p.a. to as high as 10.1% p.a. Oil and utilities could also be significantly negatively impacted over the next 35 years, with expected average returns potentially falling from 6.6% p.a. to 2.5% p.a. and 6.2% p.a. to 3.7% p.a. respectively.
>
> Emerging markets, infrastructure, and real estate are positively aligned with a low-carbon scenario.
>
> Real assets, which include real estate, infrastructure, timber, and agriculture investments, are identified in the research as increasingly exposed to the risk of physical damage caused by climate change. These assets are typically held for over 10 years, yet few large investors with significant real-asset exposure are assessing or managing these risks at the portfolio level.
>
> Investment portfolios are typically well-diversified across a broad range of different asset classes and geographies, some of which will be more sensitive to climate change than others. Indeed, asset classes and regions will also differ in terms of whether we expect climate change impacts to be beneficial or detract from investment returns. [the IT sector performs much better in Mercer's scenario analysis than, say the energy sector, under the various risk factors].
>
> UK, Australian, and Canadian equities [are expected to] be more sensitive given the higher exposure of these regional equity markets to carbon-intensive sectors.
>
> Emerging market equities are more sensitive to the climate change risk factors associated with physical damages of climate change (physical impacts and resource scarcity) than developed markets, and also are more likely to face costs around adaptation to climate change. Thus, emerging markets are likely to receive greater relative gains from more ambitious mitigation policies than developed markets.[90]

Arabesque Partners concludes ''that it is in the best economic interest for corporate managers and inves-

[81] Task Force, p. 6.
[82] Arabesque, p. 17.
[83] Task Force, p. 7.
[84] Backrock, p. 4, 14.
[85] *Id.* at p. 2, 8.
[86] Mercer, p. 7.
[87] Task Force, p. 8.
[88] Mercer, p. 2.
[89] McKinsey, p. 4.
[90] Mercer, pp. 15, 16, 19, 41 and 46.

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tors to incorporate sustainability considerations into decision-making processes.''[91] BlackRock also believes that fiduciaries can and should incorporate climate change-related factors into their investment processes and analysis, and incorporating these factors into that process need not result in a lower rate of return:

> Yet we see climate-aware investing—incorporating climate considerations in the investment process—as a necessity. This does not mean giving up returns, we believe. Benchmarks that take climate into account have the potential to perform in line with or better than regular counterparts. . . .We could see climate-aware portfolios outperform amid tighter regulations, faster technological changes or more frequent weather events.[92]

Ron O'Hanley, president and chief executive officer at State Street Global Advisors stated, ''Over the long-term, environmental, social and corporate governance issues can have a material impact on a company's ability to generate returns,'' and that ''[i]nvestors, especially those with a fiduciary role, must consider what the world looks like today, tomorrow and beyond.''[93] Arabesque Partners added, ''It is in the best interest of institutional investors and trustees, in order to fulfill their fiduciary duties, to require the inclusion of sustainability parameters into the overall investment process.''[94] These investment managers realize that climate change can present significant investment risks and opportunities.

DISCLOSURE CHALLENGES AND POSSIBLE NEXT STEPS

A scientific understanding of climate change is complex. It is no wonder, then, that asset owners and investment managers need to largely rely on disclosures from the issuers themselves on how climate change will impact — for good or bad — a company within a portfolio. A significant impediment for fiduciaries to account for climate change in their investment decisions is to gather and ascertain information that is clear, consistent, and meaningful across issuers. Unfortunately, there are a multitude of disclosure frameworks, covering different topics, using inconsistent terminology and utilizing various metrics. This has made it challenging for fiduciaries to fully assess climate change risk to their portfolios. Fortunately, there is recognition that a standard disclosure framework is important, and the Task Force's recent recommendations on disclosures are an important step forward.

Current Challenges

Currently, there are many climate change-related metrics and analytic tools that are designed to help measure and rank companies based on environmental and other factors, such as GHG emissions and waste management. There are a number of voluntary reporting initiatives, as well as mandatory disclosure regimes, such as a recent European Union directive, initiatives by stock exchanges to increase ESG disclosures, and a SEC Concept Release related to a range of business and financial topics under Regulation S-K.[95] Some of the voluntary disclosure frameworks have been offered by: (1) the Task Force; (2) the Sustainability Accounting Standards Board; (3) the Global Sustainability Standards Board; (4) Principles for Responsible Investment; (5) CDP (formerly the Carbon Disclosure Project); (6) Climate Disclosure Standards Board; (7) International Integrated Reporting Council; and (8) the Global Impact Investing Rating System. Unsurprisingly, this has led to confusion and fatigue on the part of the recipients, such as investment managers, of these disclosures. For example, the State Street Corporation Survey, ''The Investing Enlightenment: How Principle and Pragmatism Can Create Sustainable Value Through ESG,'' a global survey of investors, found that 92% still want portfolio companies ''to explicitly identify ESG factors that materially affect performance,'' and nearly half say they need more ESG data in order to make informed decisions.

BlackRock, in its 2016 report, ''Exploring ESG: A Practitioner's Perspective''[96] stated the following in terms of three major challenges of existing climate-related disclosures:

1. **Reliance on self-reported data to questionnaires and industry bodies.** Company disclosed information is sparse and disparate across industries and regions. The reliance on self-reported data to private aggregators allows companies to disclose favorable data or opt out completely. Furthermore, there is no accountability or overarching governing body ensuring accuracy of reported information.
2. **Inconsistent collection, management, and distribution of ESG data.** ESG data is collected, managed, and dispersed by multiple data providers and is not easily accessible to all investors in a standard form. This creates a challenge for investment professionals attempting to systematically compare companies across industries and regions, either in real time or over historical time periods.
3. **Disparate approaches to measure and report ESG information to investors.** Due to different methodologies and disclosures, index providers

[91] Arabesque, p. 10.

[92] Blackrock, p. 9.

[93] SSC.

[94] Arabesque, p. 48.

[95] Point of view: Sustainability reporting and disclosure: what does the future look like?, PwC (July 2016), p. 3, available at https://www.pwc.com/us/en/cfodirect/assets/pdf/sustainability-reporting-disclosure-transparency-future.pdf.

[96] June 2016, p. 8.

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and asset managers report ESG considerations inconsistently, creating challenges for investors seeking to compare ESG investment strategies, objectives and outcomes consistently.

A more harmonious disclosure framework on climate related risks and opportunities would be advantageous to all because not only would consistent and reliable information actually aid in the assessment of climate risk from a portfolio standpoint, but also because ''[a]s the unprecedented volume of ESG information continues to be disclosed, it is increasingly being scrutinized by stakeholders. . . .As a result, new legal and reputational risks have emerged. In some circumstances, stakeholders have filed product liability and class action securities lawsuits against companies, claiming companies' inaccurate or misleading ESG-related statements induced them to purchase products or securities. In turn, companies' reputations and stock prices can suffer.''[97]

The Task Force's recent final recommendations attempt to harmonize the various disclosure regimes. These recommendations aim to help fiduciaries understand the potential financial risks from climate change that face the companies in which the fiduciary invests because ''inadequate information about risks can lead to a mispricing of assets and misallocation of capital. . .'', as discussed earlier in this article. These disclosure recommendations would be voluntary and, critically, they would incorporate the concept of *materiality*.

Disclosures are only useful if they allow asset owners and managers to clearly understand how climate change could create return opportunities or present financial risks for a particular investment. Disclosures should impose a materiality standard to help investors and their fiduciaries sift through mountains of complicated data, and thereby help asset owners and managers put this information into context. As McKinsey noted:

> First, investors have struggled for some time to determine which ESG concerns are relevant to particular investments. In response, some leading institutions have embraced the idea of ''materiality,'' derived from the concept of material information in accounting. Much as knowledge that could influence investors' decisions is deemed material, so too are ESG factors that will have a measurable effect on an investment's financial performance. . . ..companies that address material ESG issues and ignore immaterial ones outperform those that address both material and immaterial issues by 4 percent and outperform companies that address neither by nearly 9 percent.[98]

More specifically, in order for fiduciaries ''to make more informed financial decisions, [they] need to understand how climate-related risks and opportunities are likely to impact an organization's future financial position as reflected in its income statement, cash flow statement, and balance sheet. . . .''[99] That valuations do not appear to be fully capturing climate risk, as discussed above, would likely be corrected with more robust information. The problem is that it is not always readily apparent what to disclose or even how to understand the implications of climate change on an organization. The Task Force identifies the following possible reasons: ''(1) limited knowledge of climate-related issues within organizations; (2) the tendency to focus mainly on near-term risks without paying adequate attention to risks that may arise in the longer term; and (3) the difficulty in quantifying the financial effects of climate related issues.''[100] According to SSGA, ''boards should regard climate change as they would any other significant risk to the business and ensure that a company's assets and its long-term business strategy are resilient to the impacts of climate change.''[101]

Certainly ''[a]s understanding of, and approaches to, climate-related issues evolve over time, so too will climate-related financial reporting.'' If anything, useful disclosures on an undoubtedly complex issue should, according to the Task Force, provide information that is ''specific to the potential impact of climate-related risks and opportunities on its markets, businesses, corporate or investment strategy, financial statements, and future cash flows.'' Disclosures ideally would also be specific and complete, by ''demonstrat[ing] the effect on selected risk metrics or exposures to changes in the key underlying methodologies and assumptions, both in qualitative and quantitative terms.'' The Task Force recommends that climate change disclosures be drafted ''with the objective of communicating financial information that serves the needs of a range of financial sector users (e.g., investors, lenders, insurers, analysts).''[102] Per Wellington:

> Carbon risk disclosures help us assess whether and how a company is thinking about the potential impacts of climate change on its

[97] PwC, p. 3.

[98] McKinsey, p. 2.

[99] Task Force, p. 8.

[100] *Id.*

[101] SSGA's Perspectives on Effective Climate Change Disclosure (Aug. 14, 2017) (SSGA), available at https://www.ssga.com/investment-topics/environmental-social-governance/2017/perspectives-on-effective-climate-change-disclosure.pdf.

[102] Task Force, Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures (June 2017) (Task Force Annex), pp. 67–68, available at https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Annex-062817.pdf.

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business and how it plans to address climate-related risks. With energy and utility companies, where we saw the bulk of proposals this year, the disclosure is not meant to force a company to commit to the Paris Accord's global temperate increase maximum of 2-degrees. Rather, it is used to acknowledge that other actors, including governments and competitors, may be doing so, which could lead to shifting industry dynamics. Neither is the purpose of the disclosure to predict a specific outcome. In our opinion, the best disclosures recognize that there are many climate-related uncertainties and show that a company is seeking to create shareholder value across all potential scenarios. In short, they help shareholders see that the company has a strategy in place to adapt to various outcomes.[103]

Notably, the Task Force recommends not only that asset owners and managers seek, review, and analyze this type of information about issuers within a portfolio, but also that the asset owners and managers should *themselves* produce disclosures on climate change risk. Under these recommendations, the asset owners' disclosures would be owed to beneficiaries, whereas the investment managers would send disclosures to their clients. Simply put, one can imagine a retirement plan investment committee providing participants with these disclosures, which would likely be based, in part, on similar disclosures from the plan's investment managers. Here's a way to conceptualize this approach:

- Retirement Plan Investment Committee
  - Seek and secure portfolio-level disclosures from investment managers
  - Prepare plan-level disclosures for participants
- Investment Managers
  - Seek and secure issuer-level disclosures from companies comprising portfolio
  - Prepare portfolio/strategy/asset class/product-level disclosure for Retirement Plan Investment Committee
- Issuers
  - Prepare issuer-specific disclosure for its shareholders (e.g., the investment managers).

The rationale for investment managers, for example, disclosing this type of information to its clients is to enable the asset owner, and the underlying beneficiaries, to ''better understand the performance of their assets, to consider the risks of their investments, and to make more informed investment choices.'' Also, ''[b]ecause asset owners and asset managers sit at the top of the investment chain, they have an important role to play in influencing the organizations in which they invest to provide better climate-related financial disclosures.''[104] We will discuss later on the role investment managers can play in pressuring issuers to either introduce or enhance climate change disclosures by the issuers.

With these principles in mind, and as recommended by the Task Force, retirement plan investment committees should first consider disclosing to plan beneficiaries, and investment managers should consider disclosing to the plan investment committees, how climate-related risks and opportunities affect the plan's investment strategies. This can be done at a portfolio level, or, in the case of the investment manager, on a product or strategy or asset class-specific level. The disclosures should take into account different climate-related scenarios, as discussed more fully, below.[105] Depending on the role of the investment manager, the granularity of the information could be more or less detailed and could be the subject of negotiation or even as a factor in selecting investment managers. For example, ''[a]n investor in a segregated account might receive more detailed reporting, including items such as the aggregate carbon intensity of the portfolio compared with a benchmark, the portfolio's exposure to green revenue (and how this changes over time), or insight into portfolio positioning under different climate scenarios.''[106]

The Task Force makes a number of substantive recommendations. Before addressing these, it is important to first note that the recommended disclosures should leverage *existing* frameworks so as to promote consistency and uniformity in terminology, substance, and format, while, at the same time, not overburdening issuers, investment managers, and asset owners. Issuers could incorporate these disclosures into their public filings. Climate change risk disclosures are not intended to add to, or supersede, existing disclosure requirements, but rather ''to help organizations meet existing disclosure obligations more effectively.''[107] An improvement in climate-related disclosures could go a long way. In the State Street survey, 60% of institutional investor respondents cited lack of industry disclosure standards as a ''significant barrier to full integration.''[108]

Setting Expectations

1. The Task Force recommends that the investment committees and investment managers encourage, and ultimately expect, the boards of the issuers to disclose in public filings ''the actual and potential impacts of

[103] Wellington, Global ESG Research Update, Second Quarter 2017, available at https://www.wellington.com/en/pub/global-esg-research-update-%E2%80%94-new-era-carbon-risk-assessment-and-disclosure.

[104] Task Force, pp. 38, 39.

[105] Task Force Annex, pp. 35, 39.

[106] Task Force , p. 34

[107] *Id.* at pp. 17, 34.

[108] SSC.

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climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.'' These disclosures would include a description of the specific material risks and opportunities the organization has identified on a short, medium and long-term basis. Moreover, there should be a description of ''how climate-related issues serve as an input to their financial planning process, the time period(s) used, and how these risks are prioritized,'' ideally ''reflect[ing] a holistic picture of the interdependencies among the factors that affect their ability to create value over time.''[109]

2. The Task Force also suggests that investment committees and managers evaluate the filings of issuers for disclosure on the company's governance around climate-related risks and opportunities, including a description of the board's role in ''assessing and managing'' these risks and opportunities. These disclosures would include the processes and frequency by which board members are informed of climate risks and whether the board considers climate-related issues when establishing strategies, goals and business plans. This part of the disclosure would encompass definitions of terminology and how and whether climate-related risks were considered and managed.[110]

3. The Task Force further recommends that investment committees and managers expect issuers to ''provide their internal carbon prices as well as climate-related opportunity metrics such as revenue from products and services designed for a lower-carbon economy.''[111] SSGA states that ''[e]stablishing a price for carbon (carbon price) is a tool that companies in the high-impact sectors have used to capture and monetize the costs/impacts of their activities as they relate to climate change. It allows for companies to express and incorporate the cost of operations, compliance and future regulations into strategic decision-making.''[112] Issuers should also disclose, in accordance with the Greenhouse Gas Protocol (GHG Protocol), their Scope 1, Scope 2, and, as applicable, Scope 3 GHG emissions and related risks.[113] Under the GHG Protocol, Scope 1 refers to ''direct GHG emissions,'' which are those emissions that ''occur from sources that are owned or controlled by the company,'' and would include those emissions covered by the Kyoto Protocol. Scope 2 refers to ''electricity indirect GHG emissions'' which ''accounts for GHG emissions from the generation of purchased electricity consumed by the company.'' Scope 3 covers ''other indirect GHG emissions'' and ''allows for the treatment of all other indirect emissions.''[114] According to SSGA, ''[o]ur focus on GHG emissions is due to the direct impact these emissions have on climate change. We view establishing company-specific GHG emissions targets as one of the most important steps in managing climate risk.''[115]

Seeking and securing this information from issuers will not be easy and will take some time. This still remains an issue. According to SSGA:

> Over the course of four years, SSGA has held over 240 climate-related engagements with 168 companies. Through these engagements we found that few companies can effectively demonstrate to investors how they integrate climate risk into long-term strategy. This is particularly important for companies in the oil and gas, utilities and mining sectors where long investment horizons could render assets stranded.

Wellington noted that recent success of shareholder proposals had ''focused on carbon risk assessment and disclosure,'' reflecting a growing demand for these types of disclosures from issuers. SSGA recently asked that companies in these types of high-impact sectors provide information on (1) governance and oversight of climate risk, (2) long-term GHG emissions goals, (3) the average and range of assumptions on carbon prices, and (4) the impacts of scenario planning on long-term decision-making.

Putting Pen to Paper

1. As recommended by the Task Force, the investment committees and investments managers may wish to disclose how they are identifying, assessing, and managing climate risks and opportunities. The investment committee, could, for example, explain to plan participants how it has encouraged issuers to disclose more useful data on climate-related issues. Investment managers could disclose to the investment committees how they identify material risks and opportunities on a portfolio and/or strategy or asset class basis.[116] Again, these disclosures would encompass definitions of terminology and how and whether climate-related risks were considered and managed.

2. The Task Force also suggests that the investment committee provide the *weighted average carbon intensity*, to the extent the needed data are available or can be reasonably estimated, on either a portfolio or strategy level.[117] The weighted average carbon intensity is a metric used in other voluntary disclosure initiatives and, relative to other metrics, can be somewhat more easily explained to non-experts. The weighted average carbon intensity metric grew out of asset owners and managers expressing concern to the

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[109] Task Force, pp. 14, 20.

[110] *Id.* at pp. 14, 19, 21.

[111] *Id.* at p. 22.

[112] SSGA, p. 2.

[113] Task Force, pp. 14, 22.

[114] The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, p. 25, available at http://www.ghgprotocol.org/corporate-standard.

[115] SSGA, p. 2.

[116] Task Force Annex, pp. 35, 38.

[117] *Id.* at p. 3.

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Task Force about reporting on GHG emissions in respect of their own clients/beneficiaries' investments in light of existing challenges and lack of clear accounting guidance on how to both measure and report these GHG emissions. Particular concern was raised about the accuracy and completeness of the data provided by the issuers and uncertainty over how to apply this data to asset classes other than public equities. In response, the Task Force replaced the proposed GHG metric in reportable data with a weighted average carbon intensity metric, a gauge of exposure to carbon-intensive issuer companies.[118] While this information may not be provided for every aspect of a particular portfolio, it may become more and more widespread in terms of issuer reporting. The New Zealand Superannuation Fund recently announced that it shifted part of its portfolio to a low-carbon index, thereby lowering its ''carbon emissions intensity'' by almost 20%. CEO Adrian Orr was quoted as saying that the Fund was joining other ''leading investors around the world (in) adjusting their portfolios to address climate change risk and capture opportunities stemming from the transition to a low-carbon economy.''[119]

3. Investment managers may also consider disclosing the metrics (e.g., GHG emissions) they used to identify opportunities or risks in managing the portfolio. It would also be important for investment managers to explain how these metrics have changed over time.

4. As recommended by the Task Force, investment committees and investment managers may also wish to disclose other metrics of climate change beyond the weighted average carbon intensity of a portfolio. For example, there could be disclosure of a portfolio's *carbon footprint*. According to Neuberger Berman, carbon footprint analysis ''provides a snapshot of how a given company may be contributing to the carbon intensity of the economy. . . .'' Because energy consumption results in GHG emissions, one could track energy costs to ''wring out inefficiencies from both its suppliers and distribution channels. . . .'' Carbon footprint analysis, according to Neuberger Berman, would measures both direct and indirect GHG emissions' intensity, which can be thought of as total emissions as a function of revenue, number of employees or some other metric, and ''therefore, can be used to evaluate a company as it grows over time, whether organically and/or via acquisitions. . . .[and]. . . also facilitates the comparison of companies of different sizes and companies in different businesses.''[120]

Scenario Analysis

It is a plain fact that climate change's impact on a portfolio, strategy, asset class, or individual issuer is uncertain in terms of timing and magnitude. For example, asset class returns are likely to materially vary based on whether Earth warms by 1.5, 2, 3, or 4 degrees Celsius. To address this issue, the Task Force recommends that organizations utilize *scenario analysis*, though it acknowledges that this level of analysis in its early stages:

> Scenario analysis is a well-established method for developing strategic plans that are more flexible or robust to a range of plausible future states. The use of scenario analysis for assessing the potential business implications of climate-related risks and opportunities, however, is relatively recent. While several organizations use scenario analysis to assess the potential impact of climate change on their businesses, only a subset have disclosed their assessment of forward-looking implications publicly, either in sustainability reports or financial filings. The disclosure of organizations' forward-looking assessments of climate-related issues is important for investors and other stakeholders in understanding how vulnerable individual organizations are to transition and physical risks and how such vulnerabilities are or would be addressed.[121]

Wellington ''expect[s] that scenario analysis will increasingly become the market standard.''[122] SSGA adds, ''[b]y incorporating results from scenario-planning exercises into long-term strategy, companies can better position themselves to capitalize on opportunities and to mitigate risks.''[123] Moreover, for climate risks to be put into context, it would be important to use a scenario analysis because the risks and opportunities on sectors or asset classes, for example, are expected to vary based on the level of global warming. It is imperative, however, that though climate change is a long-term phenomenon, and while it remains entirely uncertain whether the Earth's warming will remain below the 2°C goal, asset owners and managers should not ''prematurely conclud[e] that climate-related risks and opportunities are not material. . . .''[124]

Still Evolving

Allianz recognizes the limitations of current climate change disclosures. In addition to consistency, reliability, and data coverage issues, ''the approach is backward-looking and does not capture the various shades of climate change risk []. In particular, carbon risk reports do not highlight the capability to transform to a 2°C economy—there are huge differences between and within industry sectors and corporates.''

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[118] Task Force, pp. 36–37.

[119] Douglas Appell, NZ Super shifts its 40% passive global equities allocation to low carbon index, Pensions & Investments (Aug. 15, 2017).

[120] Carbon Footprint Analysis: Assessing carbon impact from a broad perspective can provide valuable investment insights, Neuberger Berman (Mar. 1, 2017) (NB), pp. 1–2, available at http://www.nb.com/pages/public/en-us/insights/carbon-footprint-analysis.aspx.

[121] Task Force, p. 25.

[122] Wellington.

[123] SSGA, p. 3.

[124] Task Force Annex, p. 3.

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Allianz further claims that "[b]y assessing climate risk on simple metrics such as carbon intensity, carbon reserves on the balance sheet or exposure to green technologies, in our view, one does not get a clear understanding of the underlying risks/opportunities posed by a transition towards a low carbon economy."[125]

BlackRock states:

> Corporate information on climate factors is improving but still has holes [], and the timing and intensity of climate-related events are unknowns. These vagaries create opportunities for generating alpha [] for those willing to do detailed research. This means asset owners and managers can fulfill their fiduciary duties under both old-fashioned interpretation of maximizing returns and the new view of including climate-related ESG factors.[126]

CONCLUDING REMARKS

Fiduciaries should begin or continue a process to identify and manage both the investment risks and opportunities arising from climate change in accordance with fiduciary obligations under ERISA, especially IB 2015-01. This process would encompass engaging plan service providers, particularly investment managers, on what steps they are taking to address both the risks and opportunities, recognizing that critical disclosures continue to evolve. This process would also include shareholder engagement with issuers on improved disclosure and transparency regarding climate risks in accordance with IB 2016-01.

The fact is, climate change will likely have a material impact on retirement plans by virtue of the coming regulations around the world designed to mitigate carbon and other GHG emissions, the proliferation of technology that will help companies mitigate their GHG emissions (and, thereby help guard against these new regulations stranding assets or driving business lines or practices into the ground), and adapt to a low-carbon economy. The physical effects of climate change, whether that be catastrophic property damage, reduced employee productivity, or write-downs, will have major ramifications for fiduciaries, but the extent of the effects are a function of how much the Earth warms over pre-industrial levels. It is impossible to know what level of warming, and the effects of climate change on plan investments, will unfold over the years.

The unique nature of climate change, its politicization, and its inability to fit neatly into existing investment models, all create barriers for fiduciaries addressing this issue head-on. Another obstacle is that current disclosures lack a common terminology and methodology, compounding the inherent complexity of climate change, making it very difficult for fiduciaries to link climate change risk to specific investments or portfolios. Disclosures need to improve to help ERISA fiduciaries satisfy their obligations. Shareholder engagement could help in this regard. Even if armed with helpful disclosures, fiduciaries will need to understand that climate change is unique: it will unfold over many years and its intensity and impact are not yet certain. Yet the signs are there to prompt close scrutiny by the fiduciary. As BlackRock noted:

> A tide of new regulations to combat climate change is rising. The risks are underappreciated, yet could soon start to unfold. Significant spending on sustainable infrastructure and government incentives are needed to meet emissions-reduction targets. These present large investment risks and opportunities.
>
> Even if you are skeptical about the science of climate change, there is no escaping a swelling tide of climate-related regulation. Technological changes in areas such as renewables and batteries are already causing disruption, while pressures on companies and asset owners to support sustainability are increasing.
>
> Risks for the long-term investor is not short-term portfolio volatility, but events that could lead to a permanent loss of capital. The effects of climate change need to be part of that equation, we believe.[127]

Gone are the days when addressing climate change in an investment decision is treated as a collateral benefit. Rather, the evidence emerging forecasts a risk so material that it will affect virtually every investor. Accounting for the collective recognition of nations all around the globe to more aggressively keep warming in check, new opportunities are likely to arise for those fiduciaries who seize them. Climate change does not need to cause major losses to a plan, but it can; climate change could itself be a source of alpha for a plan, but it is not foregone. In either case, the fiduciary's eyes need to be wide open to this phenomenon, and they no longer need to twist and turn to justify the investment decision; simply, climate change now defines the fiduciary.

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[125] Allianz, pp. 5–6.

[126] BlackRock, p. 10.

[127] BlackRock, pp. 3, 8.

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