**Are Pensions Ready for Climate Aware Investing? A Commentary on *Climate Change Scenarios—Implications for Strategic Asset Allocation***

**Keith Black, PhD, CFA, CAIA**
Associate Director of Curriculum, CAIA Association

A consortium of authors, representing Mercer, Carbon Trust, International Finance Corporation (IFC), and other institutional investors and researchers recently released a report titled "Climate Change Scenarios – Implications for Strategic Asset Allocation." This report seeks to add climate change as one of the sources of systemic risks facing those tasked with the asset allocation of institutional investors. In addition to the quantitative work of mean-variance optimization for asset allocation, investors are encouraged to implement a qualitative overlay that considers how climate change will impact their portfolio.

While most investors are familiar with the physical effects of climate change, some may be unaware of the impact that climate change can have on their equity and fixed income investments. For example, investing in firms in the utility, materials, and construction sectors that are most vulnerable in a transition to a low carbon world may lead to lower profits for investors once regulatory certainty is achieved and those firms pay higher compliance costs. By choosing to overweight the forward-looking firms whose operations already anticipate how to slow the effects of climate change and comply with potential policies, investors can overcome the potential earnings drag that may result from firms that delay their inevitable investments in environmental compliance.

This lengthy yet informative report is at its best when it presents four possible climate change scenarios and the likely outcome for each asset class under each of the four scenarios.

The scenario most likely to occur is that of regional divergence, a theme that already seems to be well underway. In this first scenario, European and East Asian governments and businesses are the world's most forward looking as they seek to mitigate climate change effects as quickly as possible. Russia is far behind, as its emission levels are high and a policy response has yet to be seen. Most other countries fall between these two extremes. The regional divergence scenario anticipates that Europe and East Asia will attract $2.5 trillion (USD) of the entire world's $3.5 trillion in climate change investments over the next twenty years. Because the policy makers in these regions have (or will have) detailed their agendas, investors in these regions can be more confident in making investments in green projects.

The second most likely scenario is that of delayed action, where world policy makers continue to wait to implement climate change policies. This inaction persists for at least the next ten years, during which time the cost of compliance may have significantly increased. When faced with an issue that is worsening at an unanticipated rate, policy makers may overreact and implement policies with shorter time frames—and therefore higher costs—for industrial compliance.

The most positive outcome described in the report comes under the Stern Action scenario. Policy responses are known in short order, which spurs higher levels of investment due to the less risky investment environment. New technologies are developed quickly, which reduces the impact of climate change in the coming years.

The least likely and most dire scenario presented is that of a climate breakdown. In this projection, as policy makers ignore the issue, climate change continues to worsen for a much longer time period than under the delayed action scenario. In the short term, the costs for compliance are low because there is little regulation in place. However, the long-term costs can be astronomical, as the impact of climate change is increasingly felt before abatement measures are met.

Informative matrices, which detail the impact of each scenario on investment types or by region, are presented throughout the report. For example, sustainable equity and efficiency and renewable investments are portrayed as being positively impacted in the first three scenarios, while agricultural land is positively affected only in the Stern Action scenario. Similarly, the delayed action scenario affects all regions negatively, while Europe and China benefit from regional divergence.

Most investors have heard that strategic asset allocation determines 90% of return variation. Common allocations of institutional portfolios derive over 70% of this risk from equity allocations, with the balance from credit risk and illiquid investments. Under the report's methodology for parsing portfolio risks, 11% of total risks can be attributed to climate change (10% from policy uncertainty and 1% from technology).

The outlook for each asset class is also presented. Investment in climate sensitive assets, including timberland, agricultural land, sustainable equities, efficiency, and renewable assets is encouraged. In order to offset the 11% of portfolio risk stemming from climate policy and technology risk, the asset allocation optimizer suggests up to a 40% weight on climate sensitive investments in a portfolio's strategic asset allocation.

This suggestion seems to go much too far, as few investors are willing to make such a large allocation in an area with continued technological and policy volatility. For example, under the Stern Action scenario, renewables and nuclear energy are expected to

grow rapidly to offset the declining use of fossil fuels without carbon sequestration. The recent issues with the Fukushima nuclear reaction in Japan may possibly move the nuclear agenda into reverse. Investors with an overweight portfolio allocation to nuclear utilities may have suffered from this potential change in climate policy.

In fact, we can make a parallel here between Liability Driven (or, Aware) Investing (LDI) and Climate Aware Investing (CAI). After the passage of the Pension Protection Act (PPA) of 2006, Pyramis Global Advisors estimated that the implementation of LDI strategies by US corporate pension plans doubled in just two years. Of course, the PPA drew an explicit link between the funded status of a pension plan and the corporation's costs and contributions to the plan. There are concerns, however, that in today's low interest rate environment, LDI is sacrificing returns to reduce surplus volatility.

The questions here are (1) whether CAI is as likely to increase in use as LDI was after the passage of the PPA, and (2) whether it is advisable. While CAI is an attractive idea, it will likely have a slower rate of adoption than was recently seen in the response to PPA. LDI had several certainties that are not present in CAI. First, interest rates have a clear link to the present value of the liabilities: as interest rates decline, liabilities increase but the values of fixed income holdings in the asset allocation also rise. That is, the link between interest rates and asset-liability surpluses is well known. Second, the US regulators put in place clear economic consequences for those corporate pensions that do not choose to adopt LDI techniques should their degree of underfunding increase.

In contrast, CAI does not have the same drivers for adoption. First, what is the link between climate change and asset values or asset volatility? The Mercer report suggests a variety of scenarios, each of which has different impacts on each region or asset class. Far from having the certainty of a current regulation behind it, CAI seeks to reduce the asset volatility driven by policy uncertainty, even though policy may move in four different directions that may result in wildly different outcomes and investment implications. CAI suggests large allocations to relatively small and illiquid asset classes, including timberland, agricultural land, sustainable equities, and renewable assets in the form of private equity. With the 2008 crisis still fresh in the minds of pension managers, an increase in the allocation to illiquid asset classes may not be the most attractive option, especially for plans in which the government has chosen to reduce or delay pension contributions. While investments in climate sensitive areas of real estate and private equity can have a meaningful physical impact on climate change in the long run, policy volatility may make specific investments and technologies less profitable and more risky than planned. What is the link between climate aware investing and pension liabilities? The rapid adoption of LDI was based on a clear link between the volatility of assets and

the volatility of liabilities. If climate change were to clearly point to increased or decreased longevity of pensioners, Climate Aware Investing could become quite popular, since certain investments would clearly hedge the liabilities of the pension plan. In the absence of this correlation, though, investors may consider Climate Aware Investing to be just another risk factor in the asset allocation process.

Clearly, this report is informative and a necessary addition to the literature on the challenges that climate change presents to institutional investors. The material presented is valuable, especially where an explicit link is made between climate scenarios and the outlook for different asset classes and regions. However, the report lays out four different scenarios, each having a different impact on each asset class. While CAI can clearly reduce asset volatility when the investor's chosen scenario comes to pass, an incorrect calculation on which policy will be enacted at which date in which geographic region may have the opposite of the intended effect. Rather than reducing asset volatility through Climate Aware Investing, investors may be adopting greater liquidity risk, as well as unwittingly accepting potentially higher asset volatility, if their climate change scenario was not chosen wisely.

**Biography**

Keith Black, PhD, CFA, CAIA is the Associate Director of Curriculum for the CAIA Association. He can be reached at mailto:kblack@caia.org.