



Emerging Research on Climate Change Risk and Fossil-Fuel Divestment

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Climate change is a significant risk and an important issue facing global markets today. As the effects of climate change continue to accelerate they will challenge corporate profitability and governments' budgets on a global scale, creating ripple effects in equity markets today and in the long term. These risks, and others associated with climate change, are embedded in endowments' investment portfolios.

The call for endowments to divest from fossil fuels is proving to be a key strategy in addressing these portfolio risks and the issue of climate change itself. It has already prompted many institutions and individuals to enter into dialogue and take action.

This document provides a frame of reference for endowments seeking to manage climate change risk in such a way that they are able to maintain the expected returns on their investment portfolios. It will address the risks that climate change poses to investment portfolios, the investment cost of fossil-fuel divestment, and the risks associated with fossil-fuel investments; it will also propose multiple tools that endowments can use to manage climate change risk in investment portfolios.

Though still in the early stages, research on the effects of fossil-fuel divestment/investment does exist. This document seeks to explain the current research, with the goal of informing endowments' decision-making processes.

Climate Change Risk to Investment Portfolios

As investors, we are constantly looking at the tradeoff between risk and expected return. Incorporating climate change risk into portfolio management is vital to creating a comprehensive risk picture.

What are the risks associated with climate change as they pertain to an investment portfolio? A 2011 report centered on identifying the implications of climate change risk for institutional investors' portfolio asset allocation—published by consulting firm Mercer, along with 14 global institutional investors, the International Finance Corporation of the World Bank Group and the Carbon Trust—found three direct risks to an investment portfolio. Mercer's analysis indicated that investment risk associated with climate change over the coming 20-30 years will result from the following:

- New investment opportunities in energy-efficient technologies could accumulate to \$5 trillion by 2030, and risk is inherent in their potential to devalue fossil-fuel investments. Investors also face the risk of non-exposure to this emerging opportunity set.
- Direct results of climate change—such as health and food security and physical changes to our environment—could cost as much as \$4 trillion by 2030. This includes adaptation and damage costs.
- Cost of carbon emissions could grow to as much as \$8 trillion by 2030; the longer policymaking continues to be delayed and uncoordinated, the higher the cost of emissions will be. This high cost will pose a risk to companies and the portfolios that invest in them, and certain sectors of the economy could be deeply impacted.



Another key finding is that certain asset classes have a higher sensitivity (both positive and negative) to climate change risk factors, including infrastructure, private equity, real estate and some commodities such as agriculture and timberland. According to Mercer's report, investment portfolio exposure to sustainable-themed equities and other sustainable assets perform better than traditional assets while also providing a hedge against the risks of climate change.

Dispelling the Divestment Myth

Skeptics are right in claiming that constraining a portfolio by avoiding all oil, gas and coal companies would decrease the investable universe and may therefore increase risk. This argument, however, doesn't consider the fact that the magnitude of this risk may be minimal.

Aperio Group, founded by Patrick Geddes (former CFO of Morningstar), is a specialized investment firm that creates and analyzes custom index strategies. In research published in January 2013, Aperio analyzed the real impact on risk when divesting from fossil fuels. To do this, Aperio utilized a multi-factor Barra model using both industry and fundamental factors—such as price-earnings ratios—to measure stock risk. The model generates a forecast for tracking error, which is the statistical measurement of deviation from a target benchmark such as the S&P 500, Russell 3000 or the MSCI All Country World Index.

To measure the impact of excluding oil, gas and consumable fuel companies, Aperio started by removing such companies from the Russell 3000 (a benchmark of the largest 3,000 companies in the U.S.) and then used a multi-factor model to create an optimized portfolio that resembled the Russell 3000 as closely as possible in terms of its risk-and-return profile. Based on this analysis, investors who want a portfolio free of fossil fuels can do so with a tracking error versus the Russell 3000 of 0.60%. Adding 0.60% of tracking error increases absolute portfolio risk by only 0.0101%, with a theoretical return penalty of less than half a basis point or 0.05%.

Aperio's exclusion analysis does suggest that screening negatively for fossil fuels affects a portfolio's risk and return, but it also shows that the impact may be less significant than presumed. The purpose of this commentary is not to judge whether endowments should implement fossil-fuel divestment, but rather to provide Trustees facing this decision with some of the research and tools that could be helpful in informing their decision-making process.

"Stranded" Assets

Research in this area continues to accelerate, but one key long-term investment risk that should be considered for fossil fuels concerns the potential stranded assets embedded in carbon investments. The value of these potentially stranded assets could change dramatically, for better or worse, under certain climate scenarios.

In this vein, the University of Oxford announced on February 11, 2013 that they are launching a new research program to help investors identify assets that could be left "stranded" (or dramatically devalued) because of climate change, declining resources, and the emergence of new green technologies. This program is backed by HSBC, Aviva, WWF-UK and Climate Change Capital.



In February 2012, London-based Generation Investment Management published a white paper entitled “Sustainable Capitalism” that drew upon their research on sustainable capitalism as a source of long-term value creation. In this research, Generation found that stranded assets carry certain risks and have the potential to cause significant reductions not only in the value of particular companies, but also in the long-term value of entire sectors—including oil, gas, and pharmaceuticals.

As technologies and investment risks have changed, there have been many examples of the stranded costs of investable assets. Recent examples include:

- Deregulation of the electric utility system in the 1990s
- Emergence of digital media, which is rapidly replacing print
- E-commerce replacing brick & mortar retail

Investment professionals are now studying the long-term investment issues of stranded carbon, and the notion of “unburnable reserves” is also emerging. According to The International Energy Agency’s World Energy Outlook (2012 edition), estimates suggest that, to have a 50% chance of limiting the global temperature rise to 2°C, only 33% of current fossil fuel reserves can be burned by 2050 (thereby leaving the other 67% stranded). Some of the key issues associated with stranded carbon assets that impact the value of fossil fuels include:

- A switch to lower carbon: “Lighter carbon” fossil fuels will displace “heavy carbon” fuels: e.g. from coal to oil to natural gas. This affects fossil-fuel companies as well as all the related energy generators and transporters in their industry.
- Carbon fuels usage: Decreased usage resulting in lowering of investment value of companies holding fossil fuels.
- Reporting challenges to investors: Are we getting full and proper Carbon Risk reporting from companies? As investors do we understand the material risks?
- Company valuation: Are fossil-fuel companies properly valued given growing carbon risks?

Many of these risks are now being viewed as “material” by global institutional investors. Until there are policies created to establish a fair price for widely understood externalities, investment professionals and academics should strive to quantify the impact of stranded assets and analyze the subsequent implications for assessing investment opportunities.

How an Endowment Can Address Climate Change Risk

There is a variety of tools available to institutional investors interested in addressing climate change in their investment portfolios. From a portfolio-construction standpoint, investors can work to create an Investment Policy Statement (IPS) which addresses the endowment’s position on ownership and engagement with fossil-fuel companies and climate change risk in general. The IPS can also address proactive and innovative investment approaches to build a more sustainable energy future. Below are six strategies to address climate change risk and opportunity:

1. Full fossil-fuel divestment through investment managers and products that avoid fossil



fuels entirely and/or employ screens across existing managers to avoid the list of approximately 200 oil, gas, and coal companies across all relevant investments, including public and private equities and corporate bonds.

2. Best-in-class fossil-fuel exposure by using third-party investment managers that are actively integrating climate change risk management into their investment selection process. These managers do not avoid all exposure to fossil fuels, but invest in the companies with the best environmental practices relative to their industry peers.
3. Climate-solutions investing opportunities related to the risks of climate change can be found in renewable-energy technology innovations, sustainable forest and agricultural land, building technologies, water resources, and many other sectors of the economy.
4. Shareholder advocacy, which can be done both directly and through the utilization of third-party investment managers that are actively engaging companies in changing corporate behavior through shareholder advocacy and proxy voting. Investors with direct ownership of fossil-fuel companies can work directly on climate risk-management issues through shareholder resolutions and engagement.
5. Policy-maker engagement targeting specific policy measures, at the local and global levels, including carbon taxes and carbon markets (e.g. California's first-in-the-nation mandatory carbon cap-and-trade system).
6. Join investor networks such as CERES Investor Network on Climate Risk, Institutional Investors Group on Climate Change and the UN Principles for Responsible Investing, which engage in robust investment research and efforts to address climate change.

Fossil-Fuel Divestment Considerations

Uncertainty:

The biggest obstacle to understanding the impact of fossil-fuel divestment is uncertain scenarios—it is extremely difficult to predict the future. Climate change risk analysis requires forward-looking analysis and cannot rely on the traditional technique of modeling historical asset-class relationships. This means utilizing tools such as scenario analysis.

Sonia Kowal, of Zevin Asset Management, reviewed Zevin's model on the forward-looking effect of reducing exposure to fossil fuels:

"In some scenarios, there is no effect on returns or even a positive effect if we can find better opportunities elsewhere. However in some cases, such as a shock scenario where there is unrest in the Middle East, we forecast energy companies to perform in such a way that can't be replicated by other sectors."

Opportunity Cost of Switching Investment Managers:

If existing investment managers in endowment portfolios are unable to effectively screen out fossil fuels (re-optimizing the portfolio by re-distributing the fossil-fuel capital across renewable energy companies and companies with similar fundamentals to energy companies), the Investment Committee will have to search for new active or passive solutions that can effectively reduce or eliminate exposure to fossil fuels. This can carry opportunity costs that need to be analyzed.



"I believe a fossil-fuel-free portfolio is a good investment strategy. While there's always a concern that any decision will impact returns, there is a strong argument that a portfolio free of fossil fuels is a smart investment. The available research, looking backward, shows that the return penalty would be tiny—but in any event, good investors rarely look backward. Looking to the future, the data on climate change makes it clear that something has changed, and as the rest of the world realizes this, fossil fuel stocks will come under increasing pressure. At the moment, other investors have not fully realized the risk that carbon reserves will become a stranded asset...this gives you an edge relative to those investors. I can tell you that in my own investments, I have directed my financial team to divest my holdings of fossil-fuel investments so that I will have a fossil-fuel free portfolio myself—in part because I am convinced it will outperform the market."

- Tom Steyer at Farallon Capital

Veris Wealth Partners believes that the challenges facing our planet today are unprecedented and—from climate change and water access to poverty and inequality, globalization and urbanization—are mounting. Each of these challenges will require the full mobilization of governments, investors, and the public to be a part of the solution. Ultimately, it is likely that companies' and investors' capital will be required to overcome these challenges. We see the discourse around climate change risk and divestment in investment portfolios as a very positive step toward addressing one of the greatest challenges of our time.

About the Authors



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Lily Scott is the Senior Research Associate at Veris Wealth Partners. She conducts research and due diligence across all asset classes and is the Chair of the Investment Working Group. She also assists the CIO in development and review of the Veris investment philosophy and capital market assumptions.

Prior to joining Veris, Lily worked as a Consulting Associate in the Boston office of Cambridge Associates, a global institutional investment consulting firm, where she worked on teams overseeing \$3.9 billion in nonprofit, high-net-worth and foundation investment portfolios.

Lily received a B.A. in Anthropology from Bates College and holds an M.B.A. in Sustainable Business from Bainbridge Graduate Institute. She is a co-founder of Young Women in ESG Investing, a professional networking group.

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Anders Ferguson is a founding principal of Veris Wealth Partners and leads the company's strategic marketing and business development team. He is a seasoned entrepreneur and financier and has been building sustainable companies and nonprofits since 1978. Anders specializes in sustainable alternative assets, capital formation, and business strategy. Prior to Veris, Anders chaired Uplift Equity Partners, a firm specializing in sustainable private equity. He speaks frequently about sustainable leadership and investing.

Anders is a co-founder of the Dalai Lama Fellows as well as the Global Leaders Academy, and is Chair of Friends of The Oberlin Project, Oberlin College. He was an advisor to the Evergreen Cooperatives initiative in Cleveland, OH, and served as a director of the National Cooperative Business Association and Foundation for 12 years. Anders studied agriculture at Purdue University and graduated from Oberlin College with a B.A. in History and Environmental Studies.

About Veris Wealth Partners

Veris Wealth Partners, LLC is an independent, partner-owned wealth management firm that aligns investors' wealth with their financial and social objectives. Veris believes that superior investment performance and positive impact are complementary parts of a holistic investment strategy. Veris is based in San Francisco with offices in New York City and New Hampshire.

For Your Reference



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