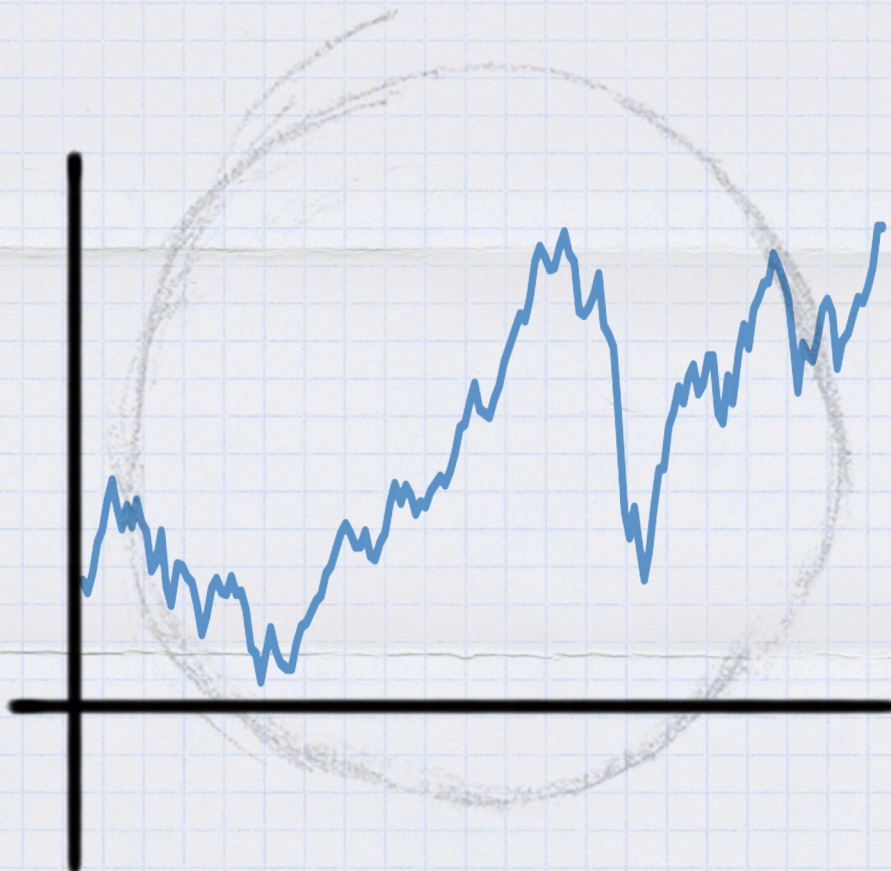


INSTITUTIONAL PATHWAYS TO FOSSIL-FREE INVESTING

Endowment Management in a Warming World

Joshua Humphreys



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About the Sponsors



350.org was founded in 2008 by writer Bill McKibben and a team of seven college friends. In less than five years, we've helped create a network of over 500,000 supporters and over 1,000 partner organizations in over 180 countries. 350.org exists to unite an international grassroots movement that can solve the climate crisis. Together, our movement works to change the world through bold and creative action. From our global mobilizations to the Fossil Free divestment campaign to stopping the Keystone XL pipeline, 350.org has shown that change often occurs when thousands of people rally together around a common demand and vision of a better world.

Responsible Endowments Coalition (REC) is the leading voice for responsible investment in higher education in the United States. REC educates and empowers students and campus communities on over one hundred campuses nationwide to encourage their institutions to incorporate environmental and social issues into investment practices. REC also trains the next generation of leaders on the importance of understanding money in creating change.

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Introduction

In the face of increasing demands from students and other stakeholders concerned about the role of traditional energy companies in accelerating climate change, institutional investors are asking tough questions about the feasibility of divestment from fossil fuel companies.

Based on the real-world experiences of leading asset managers and asset owners that have successfully invested without reliance on fossil-fuel companies over the last decade, this paper charts three distinctive pathways for institutional investors to follow in order to transition their portfolios away from fossil fuels and toward investment opportunities in a cleaner, more sustainable future:

1. Fossil Fuel Divestment

The first pathway involves freezing new investment in the 200 largest fossil-fuel companies, measured by proved carbon reserves in oil, gas or coal, selling off stock and bond holdings in these same companies, and instructing commingled fund managers to unwind their positions over the next five years.

2. Fossil Fuel Divestment, with 5% Sustainable Reinvestment

The second pathway builds upon the first by reinvesting a minimum of 5% of a divested portfolio in fossil-free sustainable investments that tackle the climate crisis.

3. “Total Portfolio Activation” for Sustainability and Climate Responsible Investment

The third and final pathway involves divestment and then strategic reallocation across all asset classes in order to manage climate risk and embrace sustainable opportunities in a holistic way.

Although each pathway can be understood in isolation, collectively the pathways build upon one another, making them as relevant to institutional investors only beginning to grapple with the challenge of fossil-fuel divestment as to those that are seeking to deepen their engagement in fossil-free investment.

Over the last three years, public campaigns to divest from coal, oil and gas companies have emerged on more than 300 college campuses across North America and at hundreds of other asset-owning institutions, from cities, towns, and states with public employee retirement systems to religious congregations, foundations and other endowed nonprofit organizations and cultural institutions. With the support of a variety of civil society organizations, including As You Sow, the California Student Sustainability Coalition, Coal Swarm, Energy Action Coalition, Green Corps, Responsible Endowments Coalition, the Sierra Club and the Sierra Student Coalition, the Sustainable Endowments Institute, and the Wallace Global Fund, students began launching campaigns in 2011 to shut down coal-burning power plants on their campuses and to divest from the 15 dirtiest publicly trade coal companies – dubbed the “Filthy Fifteen.”¹ At Swarthmore College that same year, a student group known as Swarthmore Mountain Justice expanded its campaign beyond coal to

¹ On the national “Divest Coal” campaign, see <http://www.wearepowershift.org/campaigns/divestcoal>; and the “Coal Divestment Toolkit: Moving Endowments beyond Coal,” 2012, available at http://www.wearepowershift.org/sites/wearepowershift.org/files/Coal_Divestment_Toolkit_2012.pdf (accessed March 2013).

call for immediate divestment from a broader group of the dirtiest fossil-fuel companies, dubbed the “Sordid Sixteen,” and then within three years from the entire fossil-fuel sector.²

Last year, environmental writer and activist Bill McKibben made a public appeal for an even wider divestment of college endowments from the world’s largest fossil-fuel companies.³ Shortly thereafter the organization he co-founded – 350.org – joined the campaign by calling for divestment from the stocks and bonds of the 200 leading publicly traded fossil-fuel companies, measured by carbon in their proved reserves of oil, gas, and coal. With the backing of many of the same organizations that have been organizing coal divestment since 2011, the movement for fossil-fuel divestment has exploded over the last year, attracting both success and stiff resistance.

As of this writing, five colleges, including Hampshire College in Massachusetts, College of the Atlantic and Unity College in Maine, and Sterling College and Green Mountain College in Vermont, have announced plans to divest their endowments from the top-200 listed fossil-fuel firms. Numerous other endowed foundations and nonprofit organizations, including the Wallace Global Fund and the Santa Fe Art Institute, have made similar commitments to go fossil-free, while dozens of national religious congregations are actively discussing fossil-fuel divestment proposals brought by their members. Local synagogues and churches in communities across the United States, from New York State to Milwaukee, Wisconsin, as well as abroad, have begun announcing decisions to divest.⁴ More than ten municipalities have also made divestment announcements, including the cities of Seattle and San Francisco. Legislation demanding state public pension plans divest from fossil-fuel companies has now been proposed in several state houses, including in Maine, Massachusetts, and Vermont.

Reconceptualizing Risk

In conventional investment circles, one of the main concerns related to fossil-fuel divestment is the potential risk that it presents to endowment portfolios because of the wide exposure most investors have to the conventional energy sector, which represents roughly 9-12 percent of most broad market indices. Many institutional investors assume that excluding such a significant sector from a portfolio will limit the universe of potential investment opportunities and therefore lead inevitably to underperformance against the market as a whole. To make their case, some endowment managers – and studies commissioned by the American Petroleum Institute, the oil and gas industry’s main lobby – have cited the relative, historical outperformance of the energy sector when compared to broad stock market indices or to other asset classes commonly found in a diversified endowment portfolio.⁵

² See Swarthmore Mountain Justice, “Fossil Fuel Divestment 101,” May 2013, available at <http://swatmountainjustice.files.wordpress.com/2013/04/fossil-fuel-divestment-101-may-2013.pdf>.

³ Bill McKibben, “Global Warming’s Terrifying New Math,” *Rolling Stone*, July 19, 2012, available at <http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719> (accessed March 2013).

⁴ See, e.g., New York Interfaith Power & Light, at <http://www.newyorkipli.org/people-of-faith-divest-from-fossil-fuels/> (accessed April 2013); Katherine Bagley, “Climate Change Divestment Campaign Spreads to America’s Churches,” *InsideClimate News*, January 10, 2013, available at <http://insideclimatenews.org/news/20130109/fossil-fuel-divestment-movement-climate-change-global-warming-bill-mckibben-american-churches-oil-coal-natural-gas> (accessed April 2013); and “Fossil Fuels Divestment Decision Passed by Uniting Church,” *Australian Religious Response to Climate Change*, April 23, 2013, available at <http://www.arrcc.org.au/fossil-fuels-divestment-decision-passed-by-uniting-church> (accessed April 2013).

⁵ Robert J. Shapiro and Nam D. Pham, “The Financial Returns from Oil and Natural Gas Company Stocks Held by American College and University Endowments,” *Sonecon*, December 2012, available at <http://www.api.org/oil-and-natural-gas-overview/industry-economics/-/media/Files/News/2012/12-December/API-report-industry-returns-for-college-university-endowments.pdf> (accessed March 2013).

The problem with this view is manifold. First, empirical research has repeatedly shown that negative portfolio screening on a wide range of environmental, social and corporate-governance (ESG) issues need not lead to performance trade-offs. Major meta-studies by Deutsche Bank and Mercer have shown that a vast majority of academic studies of ESG investment performance have found either neutral or positive relationships between financial performance and the incorporation of ESG factors into portfolio management.⁶ Recent analyses specifically of fossil-fuel divestment have also shown minimal additional portfolio risk associated with excluding coal, oil and gas companies from passive index strategies.⁷

Secondly, as the boom and bust of financial bubbles have repeatedly and painfully highlighted, recent performance data from the past may not be a good indication of future trends. Any investment manager is obliged to explain that past performance does not guarantee future results. In the case of fossil fuels specifically, analysts and investors are beginning to grapple with the prospect that the historical outperformance of fossil-fuel companies may be as illusory as the tech boom of the 1990s and the housing bubble at the beginning of this century.

Indeed, the forward-looking climate-related financial risks associated with stranded fossil-fuel assets loom much larger over institutional investors than the hypothetical portfolio risk associated with excluding traditional energy companies. According to the Grantham Research Institute at the London School of Economics and the Carbon Tracker Initiative, listed fossil-fuel companies face considerable risk of devaluations from a bursting “carbon bubble” because 60-80 percent of the proved coal, oil and gas reserves that affect their financial value are effectively “unburnable” if the world is to avoid severe climatic destabilization.⁸ In order to remain within the widely accepted climate threshold of no more than a 2°C rise in global average temperature beyond pre-industrial levels before 2050, a majority of fossil-fuel reserves will ultimately need to remain in the ground. These unburnable carbon reserves may therefore become “stranded assets” for the fossil-fuel companies and state-owned enterprises whose business models depend on extracting and refining them. Conservative estimates for the financial worth of these unburnable carbon reserves have ranged from \$20 trillion to \$27 trillion, so any associated write-down of fossil-fuel company valuations could very easily dwarf the recent \$2 trillion housing meltdown—by a full order of magnitude. Whether these carbon reserves can ultimately remain buried is what Capital Institute’s John Fullerton has called our sobering \$20 trillion “Big Choice.”⁹

Consequently, it should come as little surprise that Standard and Poor’s, the credit-rating agency, recently issued an analysis highlighting medium-term risks of negative outlook revisions and potential credit downgrades for the oil sector, beginning as early as 2014-2017 for moderately-sized, unconventional oil companies and then spreading to major integrated oil-and-gas producers beyond

⁶ Mercer, “Demystifying Responsible Investment Performance: A Review of Key Academic and Broker Research on ESG Factors,” UNEP Finance Initiative, 2007, available at http://www.unepfi.org/fileadmin/documents/Demystifying_Responsible_Investment_Performance_01.pdf (accessed April 2, 2013); id., “Shedding Light on Responsible Investment: Approaches, Returns and Impacts,” 2011, available at <http://www.mercer.com/articles/1423880> (accessed April 2013); “Sustainable Investing: Establishing Long-term Value and Performance,” Deutsche Bank Group, June 2012, available at https://www.dbadvisors.com/content/media/Sustainable_Investing_2012.pdf (accessed April 2013).

⁷ Patrick Geddes, “Do the Investment Math: Building a Carbon-Free Portfolio,” Aperio Group, 2013, available at http://www.aperiogroup.com/system/files/documents/building_a_carbon_free_portfolio.pdf (accessed April 2013).

⁸ James Leaton, et al., “Unburnable Carbon: Wasted Capital and Stranded Assets,” Carbon Tracker Initiative, 2013, available at <http://carbontracker.live.kiln.it/Unburnable-Carbon-2-Web-Version.pdf> (accessed April 2013).

⁹ Fullerton, “The Big Choice: Money or Planet?” *Guardian*, October 12, 2011, available at <http://www.guardian.co.uk/sustainable-business/blog/carbon-reduction-commitment-finance> (accessed April 2013).

2017.¹⁰ Even without a binding global climate regime or carbon taxes, regional and national climate-related policies and low-carbon incentives have already gradually begun to erode the comparative economic advantages of the traditional fossil-fuel energy sector, especially in comparison to increasingly affordable renewable energy sources. For fossil-fuel drillers and miners, the higher costs associated with extracting unconventional sources of fossil fuel – such as the Canadian tar sands, deepwater drilling, hydraulic fracking for shale gas and “tight oil,” or mountaintop-removal coal mining – are creating unprecedented constraints on corporate operating cash flows, on one hand, while generating lower returns on investment, on the other.

Recently, one of the world’s largest fossil-fuel companies, Shell, published its long-range “Lens” scenarios projecting the increasing predominance of solar energy within the energy mix, a trend that would lead to even further erosion of the market power of conventional fossil-energy sources by the end of the century. Despite these trends, fossil-fuel companies have stubbornly continued to reinvest substantial amounts of their retained earnings into the discovery and development of new fossil-fuel reserves – rather than in renewable energy, efficiency, and low-carbon technologies. Carbon Tracker has estimated this “wasted capital” expenditure by the 200 largest oil, gas and mining companies at more than \$670 billion over the last year alone.¹¹ Investors in these companies consequently face substantial risks from these activities in the extractive fossil-fuel industry and may be missing opportunities to deploy their capital in support of the secular trend toward renewable energy and less carbon-intensive technology and business. In this light, placing bets against the house on the long-term profitability of fossil-fuel companies looks more like speculation than long-term capital stewardship.

The fossil-fuel divestment campaigns have taken aim at precisely this dynamic, publicizing the misallocation of capital by endowments in particular and calling for institutional investors to reinvest in a more sustainable, low-carbon economy. For institutions seeking to invest in the future, divestment from fossil fuels provides merely the first, most immediate steps in a much longer process of re-designing portfolios for the necessary transition to a clean-energy world. Preparing a portfolio to manage carbon risks and seize climate-related investment opportunities means thinking carefully about a wide array of issues across asset classes – and optimizing the whole portfolio around themes of sustainability and carbon intensity. In the following pages, we present three pathways that lead institutional investors through the process of divesting from fossil fuels and then reinvesting in sustainability and low-carbon climate solutions.

Pathway 1: Fossil Fuel Divestment

Divestment provides the first pathway for fossil-free investment. The foundational divestment pathway follows three core steps:

1. An immediate freeze of all new investment in the Carbon Tracker top 200 oil, gas and coal companies, as measured by proved carbon reserves.
2. Sell direct holdings in the Carbon Tracker 200 as expeditiously as possible.

¹⁰ Simon Redmond and Michael Wilkins, “What a Carbon-Constrained Future Could Mean for Oil Companies’ Creditworthiness,” Standard & Poor’s, RatingsDirect, March 1, 2013, http://www.carbontracker.org/wp-content/uploads/downloads/2013/03/SnPCT-report-on-oil-sector-carbon-constraints_Mar0420133.pdf (accessed March 2013).

¹¹ Leaton, et al., “Unburnable Carbon: Wasted Capital and Stranded Assets.”

3. Unwind commingled holdings in the Carbon Tracker 200 over a five-year period.

Divestment is a process that will not occur overnight. However, the first step that can be immediately executed is to freeze any new investments in the securities, whether stocks or bonds, of the Carbon Tracker 200. Institutional investors can also immediately communicate with all their external managers working in listed equities or fixed income, including hedge fund managers, that they are instituting a fossil-free policy that requires compliance with a no-buy list constituted by the Carbon Tracker 200. Separate account managers, who do not commingle their client's assets with others', can begin to implement such a freeze and prepare to execute the sales, at their client's discretion and direction. Whether managed internally or externally through separate accounts, selling directly owned securities of the Carbon Tracker 200 can be executed as expeditiously as possible.

Rather than divest from all of the Carbon Tracker 200 companies, some schools may decide to ease their transition by beginning with divestment from the "Filthy Fifteen" largest coal companies, as the original Divest Coal campaign proposed and Brown University's Advisory Committee on Corporate Responsibility in Investment Policies recently recommended in a modified way.¹² In a recent quantitative analysis, Patrick Geddes, chief investment officer of the investment firm Aperio Group, has shown that the additional portfolio risk of divesting from the "Filthy Fifteen" coal companies in a passively managed public equity strategy amounts to a tracking error of only 0.14 percent from the underlying broad market Russell 3000 index. Coal divestment conceived in this way presents, in Aperio's words, "virtually no risk penalty."¹³ When Geddes reviewed the application of a stricter fossil-fuel exclusion of the entire oil, gas and fuel industry, he found an additional tracking error of 0.5978 percent from the portfolio's benchmark, which increased absolute portfolio risk by a minimal 0.0101 percent. This creates a theoretical return penalty of less than half a basis point (0.0034 percent). Whatever impact fossil-fuel divestment may have on portfolio risk, it appears to be "far less significant than presumed" by many conventional analysts.¹⁴

At the same time, as we have seen above, broader fossil-fuel divestment – not only from equities but also from corporate bonds – also provides downside risk protection against the increasing uncertainties surrounding the valuation of fossil-fuel securities due to a likely carbon bubble. Long-dated bonds of fossil-fuel companies, some with maturities extending decades into the future, could readily become toxic financial assets as the credit quality of their issuers deteriorate in reaction to belated market responses to the harsh reality of stranded asset risk and systemic climate risk.

Despite these clear warning signs – from groups as diverse as Standard & Poor's, Shell, Mercer, prominent insurance companies and re-insurers, HSBC, and the International Energy Agency – external managers of commingled funds may nevertheless prove resistant to implementing a fossil-free policy at the request of a single client or a small number of clients. Divestment from commingled funds will therefore very likely require additional time for managers to unwind positions or for clients to replace uncooperative managers. A five-year horizon for commingled fund divestment allows adequate time to avoid any abrupt changes in the portfolio management process, and Figure 2 presents precisely such a phased transition for an average college endowment,

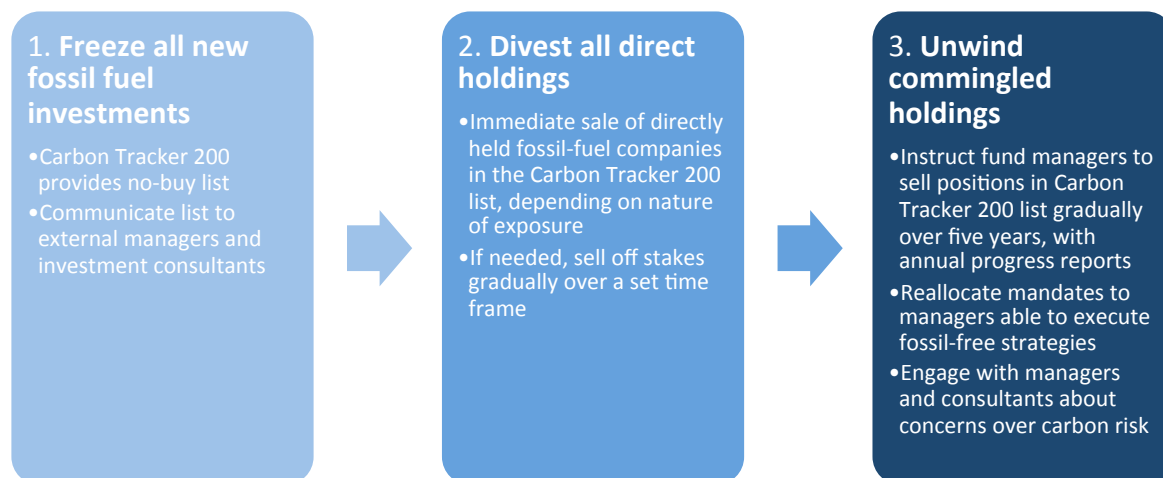
¹² Divestment Recommendation, The Advisory Committee on Corporate Responsibility in Investment Policies, Brown University, April 9, 2013, available at <http://www.brown.edu/about/administration/advisory-committee-corporate-responsibility-investment-policies/actions-progress> (accessed April 2013).

¹³ Geddes, "Do the Investment Math: Building a Carbon-Free Portfolio."

¹⁴ Ibid.

with a diversified portfolio.¹⁵ The average college endowment has been estimated to have less than four percent of its portfolio exposed to fossil-fuel companies within its public equity and fixed-income allocations. Middlebury College, for example, recently announced that 3.6 percent of its \$900 million endowment was invested in fossil fuel companies. Bowdoin College subsequently reported that approximately 1.4 percent of its \$900 million endowment was invested in the Carbon Tracker 200.¹⁶ Over a five-year period, schools can readily transition such fairly limited fossil-fuel exposures, whether held directly or indirectly, while maintaining their broader asset allocation.

Figure 1. Divestment Pathway to a Fossil-Free Portfolio in Five Years



In a best-case scenario, investment advisers will embrace client requests as a challenge worth tackling. Stephen Mulkey, president of Unity College, the first college to pledge going fossil free last year, has reported that “Our investment company [Spinnaker Trust in Portland, Me.] has been thrilled to help us. Divesting isn’t unfeasible. It is quite possible and quite practical.”¹⁷ In 2008, long before the recent divestment campaigns, Unity’s Board of Trustees had initiated its own transition away from fossil fuels, in an effort to align endowment investments with the college’s strong sustainability initiatives. The Board approved a gradual decrease in its overall exposure to “big energy” investments, from approximately 10 percent of endowment in 2008 to approximately 2.5 percent in 2012. Once the fossil-fuel divestment campaign morphed last fall, the College announced that it would aim to divest completely from the Carbon Tracker 200 within five years.

More recently, Unity College’s Vice President of Finance and Administration, Deborah Cronin, highlighted that the school’s bias toward exchange-traded funds (ETFs) for its emerging-market exposure will ultimately make it difficult to avoid fossil fuels entirely, due to the lack of adequate sectoral ETFs to build an alternative, fossil-free, emerging-market strategy. The anticipated fossil-

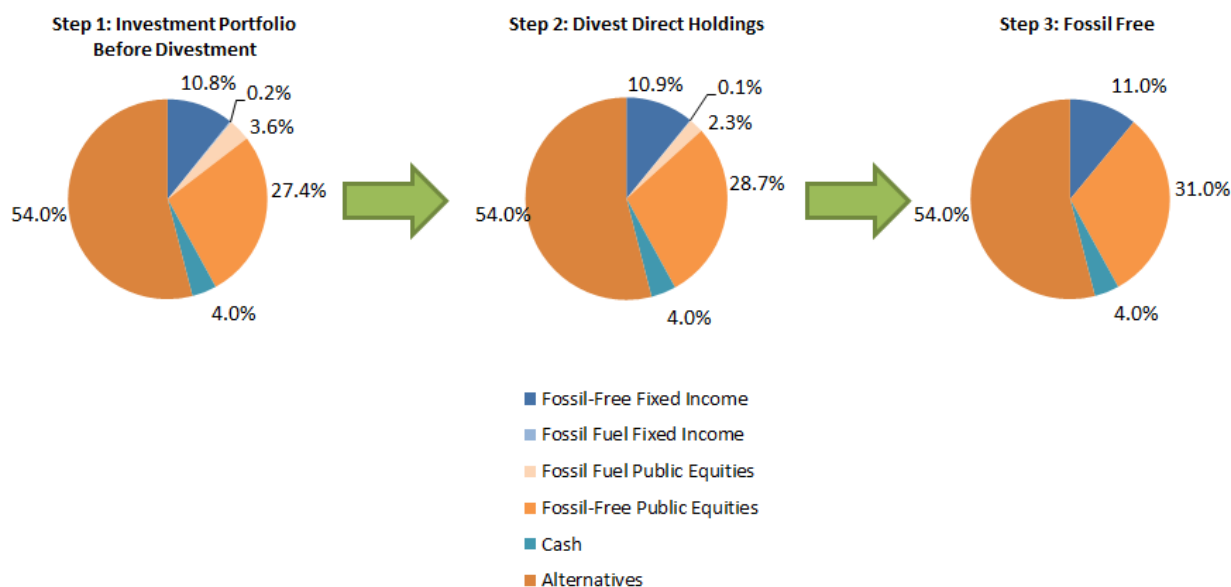
¹⁵ Average dollar-weighted asset allocations are drawn throughout this study from the *Nacubo/Commonfund Study of Endowments* for fiscal year ending 2012. The estimated direct and indirect endowment fossil fuel exposures in public equities and fixed income are based on Tellus Institute analyses of data and information from Barclays, Breckinridge, Commonfund, MSCI, S&P, and Responsible Endowments Coalition.

¹⁶ Garrett Casey and Linda Kinstler, “1.4 Percent of College’s Endowment Invested in Fossil Fuels,” *Bowdoin Orient*, February 9, 2013, available at <http://bowdoinorient.com/article/7954> (accessed April 2013). On Middlebury, see “Like Harvard, Middlebury Endowment Debates Fossil Fuels,” *aiCIO*, January 23, 2010, available at http://www.ai-cio.com/channel/NEWSMAKERS/Like_Harvard_Middlebury_Endowment_Debates_Fossil_Fuels.html (accessed April 2013).

¹⁷ Mulkey, quoted in Katherine Bagley, “Spreading Like Wildfire, Fossil Fuel Divestment Campaign Striking a Moral Chord,” *Inside Climate News*, December 6, 2012, available at <http://insideclimatenews.org/news/20121206/climate-change-activists-350-bill-mckibben-divestment-fossil-fuels-universities-harvard-coal-oil-gas-carbon> (accessed April 2013).

fuel exposure target is therefore less than 1 percent, rather than 0 percent. (The emergence of fossil-free indices and strategies may open new opportunities for ETF and emerging-market managers to create new investment products in response to this kind of unmet demand.) Cronin also clarified that since initiating the new policy several years ago, “the portfolio has met or exceeded market benchmarks despite the shift away from fossil fuel holdings.”¹⁸

Figure 2. Portfolio Reallocation in the Divestment Pathway: Fossil Free in Five Years



In other cases when managers prove to be less willing to accommodate client requests for fossil-fuel exclusions, endowment officers, trustees, and investment committee members will need to educate themselves about fossil-free investment opportunities, ideally with the assistance of the investment consultants they use to support investment decision-making, asset allocation, manager selection and due diligence. Increasing numbers of investment consulting and management firms providing outsourced CIO services have begun tracking managers and funds that incorporate environmental, social and governance (ESG) factors into their investment processes or that make “impact investments” and “mission-related investments.” Cambridge Associates, LLC, one of the largest investment consulting firms to foundations and endowments, has had a dedicated team focused on mission-related investing since 2008. Mercer, a major international investment consulting firm, has a Responsible Investing division that has tracked the ESG investing universe carefully for more than a decade and developed some of the most robust models incorporating climate change into its strategic asset allocation process.¹⁹ The boutique investment consulting firm Investure, LLC, which manages money for numerous mid-sized endowments, including Dickinson, Middlebury and Smith Colleges and Rockefeller Brothers Fund, among others, has launched a client-directed Sustainable Investments Initiative that has begun identifying investment opportunities and committing client capital to them in both listed global equities and private equity. Other investment consulting firms

¹⁸ See “College Reports No Loss from Fossil Fuel Divestment,” Plansponsor.com, April 11, 2013, available at http://www.plansponsor.com/College_Reports_No_Loss_from_Fossil_Fuel_Divestment.aspx (accessed April 2013); and Jesse Pyles, Presentation to “Investment and Divestment: Making Sustainable Choices with College Endowments,” AASHE Webinar, February 26, 2013, available at http://www.aashe.org/files/resources/unity_college_divestment_webinar_02.26.13.pdf (accessed April 2013).

¹⁹ “Climate Change Scenarios – Implications for Strategic Asset Allocation,” Mercer, February 2011, available at <http://www.mercer.com/articles/1406410> (accessed March 2013).

that work closely with philanthropic foundations, such as Imprint Capital, RBC's SRI Wealth Management Group, Veris Wealth Partners and Federal Street Advisors have developed deep expertise in this space. Endowment officers and trustees involved in investment decision-making will consequently need to engage with their investment consultants early in the divestment process in order to determine whether they have adequate expertise to support the endowment's transition. If not, endowments may need to find a more suitable consultant with the requisite experience.

Endowments, particularly smaller endowments, may also need to work together to engage with their commingled fund managers or investment consultants in order to demonstrate that their interest in fossil-free investment is not an isolated occurrence. Indeed, it was the collective engagement of several foundation and endowment clients of consultants such as Cambridge Associates and Investure that led those firms ultimately to develop their initiatives related to sustainable and mission-related investing. Likewise, investment managers have repeatedly created specialized screened funds when client demand makes the product development compelling for them. Even hedge funds and private equity managers are known to sign side-letter agreements with their limited partners agreeing to adhere to specific social or environmental policy exclusions as long as they can continue to execute their underlying strategy. As increasing numbers of institutional investors continue to announce their commitments to divestment, investment managers will rise to the occasion and begin creating fossil-free versions of their strategies – or risk losing institutional investor mandates. Engagement by endowments with their managers and consultants during this period of transition away from fossil fuels will be a critical part of the divestment process.

Pathway 2: Divestment and Targeted Reinvestment in Sustainability and Climate Solutions

Building upon divestment, the second pathway to fossil-free investment involves reinvesting at least five percent of a portfolio into proactive sustainable investments and climate solutions. Increasing numbers of asset managers and institutional investors are not simply avoiding exposure to fossil fuels; they are also actively managing climate risks and seeking opportunities to support sustainable businesses and “generative enterprises” that are operating within ecological constraints, providing solutions to climate challenges, developing renewable energy sources, or creating energy- and resource-efficient products and clean technologies.

As Figure 3 highlights, investors need not be fully divested to begin re-allocating their capital toward more explicitly sustainable investments during the transition from fossil fuels. Many endowments have in fact already begun investing more proactively in various environmentally sustainable ways that are fossil free, even if they have yet to embrace divestment from the stocks and bonds of major fossil-fuel companies. The growing use of innovative green revolving loan funds to finance energy-efficient improvements on college campuses provides one notable case of this practice.²⁰ Although most schools finance these funds through their operating budgets, several schools including Caltech and Weber State have made green revolving fund investments from endowment assets. The Caltech Energy Conservation Investment Program (CECIP), for example, is an \$8 million allocation within Caltech's \$1.75 billion endowment. Launched in 2009, CECIP has been used to finance energy-

²⁰ Sustainable Endowments Institute's Billion Dollar Green Challenge provides numerous resources on the implementation of green revolving funds. See Joe Indvik, with Rob Foley and Mark Orłowski, “Green Revolving Funds: An Introductory Guide to Implementation and Management,” Sustainable Endowments Institute and AASHE, January 15, 2013; and Emily Flynn, with Orłowski and Dano Weisbord, “Green the Bottom Line 2012,” Sustainable Endowments Institute, October 30, 2012, both available at <http://greenbillion.org/resources/> (accessed April 2013).

efficiency projects that have resulted in an eight-percent reduction in energy use per square foot on campus, 15 GWh in avoided energy use, and a 20-percent return on investment since inception.²¹ The Sustainable Investments Initiative discussed above, managed by Investure on behalf of several of its endowed clients, including Middlebury and Dickinson Colleges and Rockefeller Brothers Fund, has committed tens of millions of dollars to proactive sustainable investments in global public equities and cleantech private equity, amounting to roughly one percent of the portfolios of Middlebury and Dickinson and 10-15 percent of RBF's endowment. Even Yale University, with an endowment totaling nearly \$20 billion, has reportedly allocated more than seven percent of its endowment to sustainable investments, including over \$100 million in cleantech venture capital, green investments in emerging markets focused on solar and wind power technologies, and more than three million acres of sustainable timberland acquired over the last two decades, now worth some \$1.3 billion.²² At the same time, despite mounting student and alumni protest, Yale's Advisory Committee for Investor Responsibility has resisted calls for fossil-fuel divestment while the university's Investments Office, led by prominent chief investment officer David Swensen, has actively and aggressively invested in oil and gas as part of the very same asset class of natural resources in which its sustainable timberlands are found.²³ The adoption of sustainable investing initiatives are vital steps down the reinvestment pathway, but the severity of the climate crisis demands that colleges do far more with their portfolios than make mere gestures to sustainability in the hope of scoring green points. Investing only one percent, or a fraction of one percent of endowment assets in sustainable solutions, without addressing a college's broader portfolio exposure to dirty energy is the equivalent of walking the wrong way up a down escalator.²⁴

Some institutional investors have begun, however, to make a more concerted effort to harmonize divestment from fossil fuels with their reinvestment in a cleaner-energy future. As part of its transition away from fossil fuels, the Wallace Global Fund, a philanthropic foundation with environmental grantmaking programs and an endowment worth more than \$150 million, has targeted a five-percent re-allocation to cleantech investments, in both public and private equity. Since 2010 the Fund has divested all of its direct holdings in fossil-fuel companies and most of its indirect holdings in commingled funds. By 2014, Wallace Global has committed to unwinding these final commingled funds, which constitute less than one percent of its portfolio at this point. During this process, it has already exceeded its reinvestment target with more than five percent in what it terms "impact and mission-related investments" in clean energy and technology. Additionally, the Fund has widely incorporated ESG criteria across an additional 88 percent of its portfolio. Although the process of re-allocation of the portfolio remains relatively early in its execution, the fund's investments outperformed their portfolio benchmark in 2012, the first full year of the new

²¹ For more on CECIP, see Rebecca Caine, "California Institute of Technology, Caltech Energy Conservation Investment Program," Green Revolving Funds in Action: Case Study Series (Cambridge, Mass.: Sustainable Endowments Institute, 2011), available at <http://greenbillion.org/wp-content/uploads/2011/10/Caltech.pdf> (accessed April 2013).

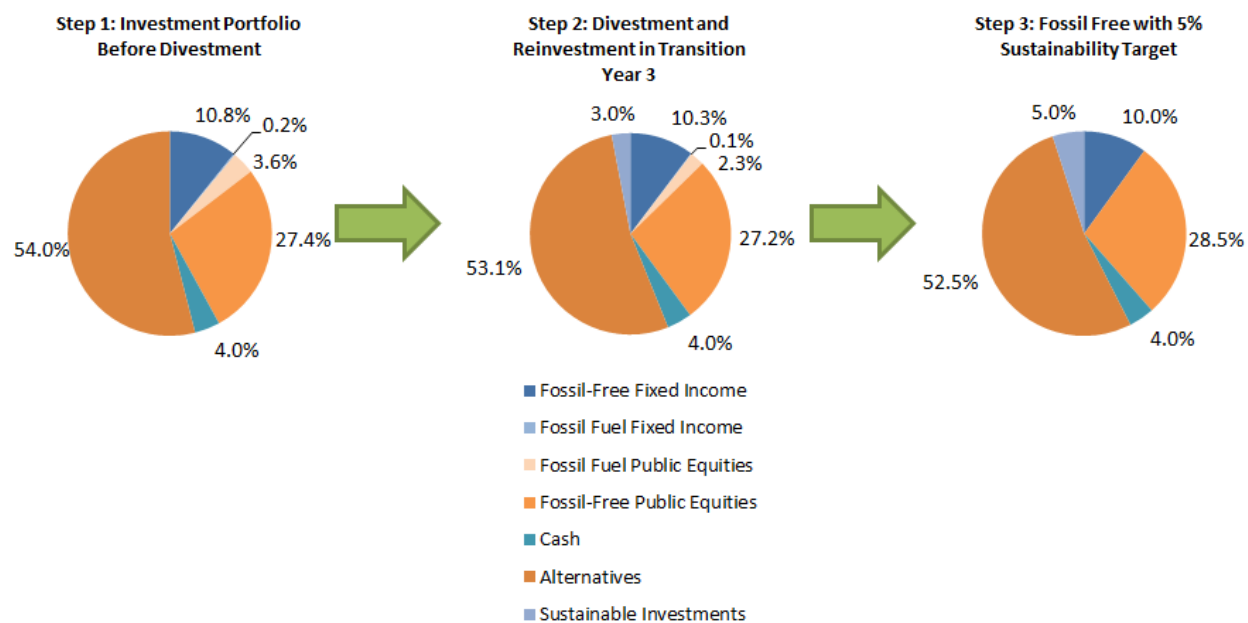
²² Anecdotes about Yale's sustainable investments were prominently highlighted in the 2009 report of The Yale Endowment, available at http://investments.yale.edu/images/documents/Yale_Endowment_09.pdf (accessed April 2013). The university's Office of Sustainability reported \$1.4 billion in "certified sustainable timber land and renewable energy and clean tech investments" to the AASHE STARS program in 2011. See <https://stars.aashe.org/institutions/yale-university-ct/report/2011-06-29/PAE/investment/PAE-18/> (access April 2013).

²³ On the divestment situation at Yale, where a major petition drive has been organized by Fossil Free Yale, see Jacob Osborne, "Earth and the Endowment," *The Yale Herald*, March 7, 2013, available at <http://yaleherald.com/news-and-features/earth-and-the-endowment/> (accessed April 2013); and Sophie Gould, "For Fossil Fuel Divesting, an Uncertain Future," *Yale Daily News*, February 8, 2013, available at <http://yaledailynews.com/blog/2013/02/08/for-fossil-fuel-divesting-an-uncertain-future/> (accessed April 2013).

²⁴ Similar concerns about the disconnect between colleges' missions and their investments have been underscored recently by Robert G. Eccles and George Serafeim, "Richest Universities Are Too Quiet on Sustainable Investing," Bloomberg, January 10, 2013, available at <http://www.bloomberg.com/news/2013-01-08/richest-universities-are-too-quiet-on-sustainable-investing.html> (accessed April 2013); and Joshua Humphreys, Christi Electricis, Catie Ferrara and Ann Solomon, "Environmental, Social and Governance Investing by College and University Endowments in the United States: Social Responsibility, Sustainability, and Stakeholder Relations," IRR Institute and Tellus Institute, July 2012, available at <http://tellus.org/publications/files/esgendorments.pdf> (accessed April 2013).

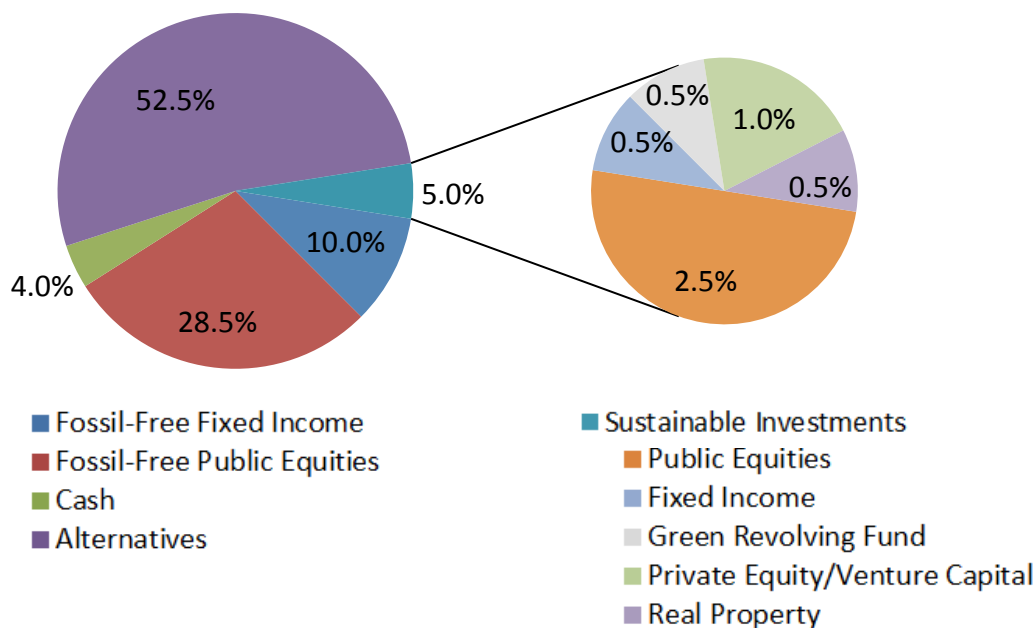
strategy's deployment, earning 11.8 percent against an unscreened custom index earning 10.6 percent.

Figure 3. Divestment and 5% Targeted Sustainable Reinvestment in Five Years



For the average endowment with a diversified asset allocation, the process of divesting and reinvesting in a five-percent sustainability target can be undertaken gradually over five years as part of the normal rebalancing process. As Figures 3 and 4 make clear, immediate divestment from direct holdings in fossil-fuel companies and a gradual unwinding of commingled fund exposures would create opportunities to reinvest one percent of the average 11-percent fixed-income allocation, 2.5 percent of an average 31-percent allocation to public equities, and 1.5 percent of a 54-percent average allocation to alternative asset classes such as private equity, venture capital, and real property assets. By year three in a simulation presented in Figure 3, using an average college endowment asset allocation, the estimated exposure to fossil-fuel stocks and bonds, whether direct or through commingled funds, can be reduced from approximately 3.8 percent to 2.4 percent. When combined with re-allocations to alternative investments and the implementation of green revolving funds, divestment opens opportunities for three percent of the portfolio to be redeployed in more proactive clean and green investments. Regardless of the effects divestment may ultimately have on capital markets and fossil-fuel companies, its effects on portfolio management are real. While many critics of divestment like to talk about the "costs of divestment," the process of fossil-fuel liquidation and substitution opens new opportunities for capital redeployment into sustainability solutions.

Figure 4. Fossil-Free Portfolio with 5% Sustainable Reallocation

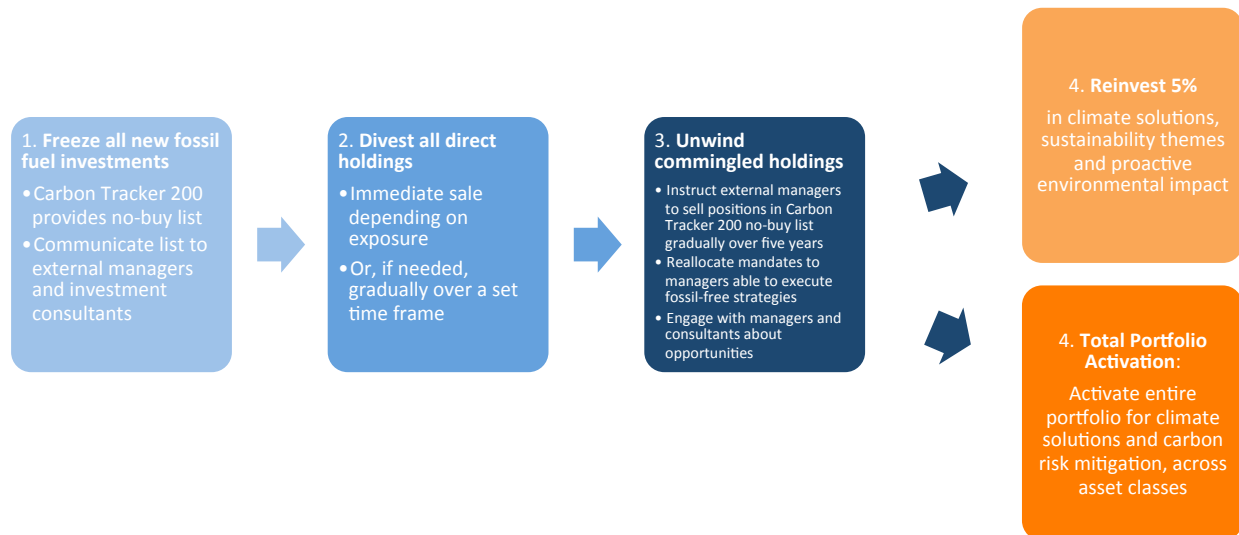


By Year Five of the simulation, the portfolio has become fossil free and its five-percent targeted reinvestment has been allocated, across a variety of asset classes, as shown in Figure 4. Half of the target (2.5 percent of the entire portfolio) can be re-allocated to sustainable, fossil-free domestic and international public equities, through existing strategies with investment managers such as Generation Investment Management, Impax Asset Management, Portfolio 21, and Trillium Asset Management, among others. One percent of the 11-percent fixed-income portfolio can be re-allocated to sustainability, with half in green revolving funds, using the Caltech model, for example, and the other half in sustainable bond funds managed by fixed-income investment firms such as Breckinridge and Community Capital Management.²⁵ Within the 1.5-percent allocation to sustainable alternative investments, one percent can be dedicated to cleantech private equity and venture capital, whether invested directly in private placements, with individual private equity funds, or through more diversified cleantech “funds-of-funds.” The remaining half percent of alternative investments are re-allocated in sustainable real assets, such as green building or sustainable farmland, ranchland or timber. In each asset class comprising the five-percent reinvestment target, there are ample institutional-investment opportunities that incorporate sustainability factors in a wide variety of ways or proactively pursue positive environmental impacts.²⁶ The power of the reinvestment proposition, however, stems ultimately from its harmonization with fossil-fuel divestment.

²⁵ For fixed-income opportunities, see Community Capital Management, “A Case for Sustainable Fixed Income Investments,” white paper, September 2011, available at <http://www.crafund.com/files/Sustainable%20Fixed%20Income%20Investments.pdf> (accessed March 2013).

²⁶ Useful examples of sustainable investment opportunities available across asset classes can be found in Joshua Humphreys and Ann Solomon, “Sustainability Trends in US Alternative Investments,” Washington, DC: US SIF Foundation, October 2011, available at http://www.ussif.org/store_product.asp?prodid=6 (accessed April 2013); “Report on Sustainable and Responsible Investing Trends in the United States,” Washington, DC: US SIF Foundation, 2012, available at <http://www.ussif.org/trends> (accessed April 2013); Valerie LaVoie and David Wood, “Climate-related Investing across Asset Classes,” Institute for Responsible Investment, Boston College Center for Corporate Citizenship, 2009, available at http://bcccc.net/Handbook_ClimateRelatedInvesting.pdf (accessed April 2013); and Tracy Pun Palandjian, “Investing for Impact: Case Studies across Asset Classes,” Parthenon Group and Bridges Ventures, 2010, available at

Figure 5. Two Pathways to Fossil-Fuel Divestment and Sustainable Reinvestment



Pathway 3: Fossil-Free Total Portfolio Activation

The final pathway to fossil-free investment takes the reinvestment proposition multiple steps further, integrating sustainable and “climate responsible” investments across an entire diversified endowment portfolio. Building upon the previous pathways, it begins with divestment from fossil fuels and reinvestment into sustainable opportunities – but ultimately aims to activate the full portfolio around themes of climate-related strategic asset allocation, carbon risk mitigation, sustainability solutions, and positive environmental impact. What we have elsewhere termed “Total Portfolio Activation” provides one conceptual framework for this third pathway.²⁷

Activating a total portfolio for climate responsible investment provides a more ambitious, holistic model for investing what might genuinely be termed an “endowment of the future.” If the quintessential feature of a long-term institutional endowment is the oft-cited imperative of inter-generational equity, then fossil-free total portfolio activation can be understood as a means to keep that promise. Paradoxically, some in the endowment community have recently claimed for themselves the same mantle of guardians of inter-generational equity by opposing fossil-fuel

<http://www.parthenon.com/GetFile.aspx?u=%2fLists%2fThoughtLeadership%2fAttachments%2f15%2fInvesting%2520for%2520Impact.pdf> (accessed April 2013).

²⁷ Joshua Humphreys, Ann Solomon, and Christi Electris, “Total Portfolio Activation: A Framework for Creating Social and Environmental Impact across Asset Classes,” Tellus Institute, August 2012, available at <http://tellus.org/publications/files/tpa.pdf> (accessed April 2013). Useful complementary approaches can be found in John Fullerton, “Beyond Divestment,” Capital Institute, March 28, 2013, available at <http://www.capitalinstitute.org/blog/beyond-divestment> (accessed March 2013); Bill Baue, Cary Kroskinsky, and Mark W. McElroy, “Crossing Thresholds: From Fossil Fuel Divestment to Sustainable Investment,” *Sustainable Brands*, March 27, 2013, available at http://www.sustainablebrands.com/news_and_views/new_metrics/crossing-thresholds-fossil-fuel-divestment-sustainable-investment (accessed April 2013); LaVoie and Wood, “Climate-related Investing across Asset Classes”; Leslie E. Christian, “A New Foundation for Portfolio Management,” RSF Social Finance, 2011, available at <http://rsfsocialfinance.org/wp-content/uploads/downloads/2011/10/A-New-Foundation-for-Portfolio-Management.pdf> (accessed April 2013); and Mercer, “Climate Change Scenarios – Implications for Strategic Asset Allocation.”

divestment. Bowdoin College's investment office, for example, recently estimated that the portfolio turnover required to divest the college's \$900 million endowment of its relatively small 1.4-percent exposure to the Carbon Tracker 200 and to replace its exposed commingled funds with fossil-free index funds would have generated average annual returns five percent lower than the college experienced over the last decade. Based on this analysis, Paula Volent, senior vice president for investments at Bowdoin, drew the curious conclusion that "[o]ver a ten-year period we would lose over \$100 million."²⁸ By assuming that the future performance of fossil-fuel stocks will simply extend their unsustainably frothy growth from the last decade, Volent, like the authors of the oil and gas lobby's position paper against divestment, ignores the mounting evidence of a carbon bubble and the substantial material risks that climate change now poses to investor portfolios over the next decade.

But Volent's *non sequitur* about the future also relies upon a false premise about the past. After all, passive indexing is not the only way to invest in public equities. Investment managers using a diverse array of active investment styles have successfully navigated public markets in the recent past independent of the relatively strong performance associated with the securities of oil, gas and coal companies. For example, Portfolio 21, an investment firm in Portland, Oregon, with approximately \$500 million in assets under management, has run a fossil-free global equity strategy that has outperformed its unscreened benchmark, the MSCI World Equity Index, by 212 basis points since its inception in 1999, on an annualized basis net of fees. Impax Asset Management Ltd., a \$3.5 billion specialist manager focused on investing globally in resource efficiency, has run its all-cap Leaders Strategy without exposure to the Carbon Tracker 200 list of fossil-fuel companies since its launch in 2008; the strategy also underlies the Pax World Global Environmental Markets Fund, whose institutional share class has outperformed its unscreened benchmark by 69 basis points since its inception in 2008, on an annualized basis, net of fees. Trillium Asset Management LLC, a Boston-based manager with more than \$1 billion in assets under management, has managed fossil-free portfolios for institutional clients since 2005; its all-cap Sustainable Opportunities strategy has generated competitive returns since its inception in 2008, closely tracking its unscreened benchmark, the S&P 1500, while outperforming it, gross of fees, over the last full calendar year.²⁹ These are but three notable examples of strong-performing, actively managed fossil-free investment strategies, with extended track records in both domestic and global public markets. Naturally, the competitive past performance of leading investment managers running fossil-free strategies is by no means a guarantee of future results, any more than the American Petroleum Institute's efforts to stress the "alpha" derived from investments in its member companies in recent years means fossil-fuel stocks will inevitably outperform in the future. The point is not that fossil-free, climate responsible investments will always "beat the market," but instead that for those investment consultants and endowment managers seeking prudent fossil-free investment options, there are many more places to turn than may initially meet the eye, particularly when passively looking only through a rearview mirror.

Although much of the debate over fossil-fuel divestment remains consumed with backward-looking analyses of benchmark-tracking error within public equities, the framework of total portfolio activation provides precisely such a broadened view of the investment horizon – one particularly well suited to diversified endowments, which now have on average a majority of their assets allocated to more illiquid alternative investments. Considering the reinvestment proposition across the total portfolio invites managers to ask more fundamental questions about their capital

²⁸ Volent, cited in Casey and Kinstler, "1.4 Percent of College's Endowment Invested in Fossil Fuels."

²⁹ For further details on these managers, please see the accompanying Case Studies that follow the Bibliography.

stewardship: what is the purpose of an endowment's globally diversified investments? How will those investments not only support their institutions today, but also foster the kind of world that will sustain the livelihoods of future generations, on campus and in the communities where the capital is ultimately being deployed? How can the endowment's assets have positive impact in the world, while generating sustainable and responsible returns on investment? As the financial crisis brutally reminded many in the endowment community, the elusive quest for frankly unrealistic and unsustainable returns led many long-term investors to assume far more risk than they realized or were prepared to manage.³⁰ Even many of the largest, most widely emulated endowments have still, four years after the nadir of the financial crisis, yet to claw their way out of the craters they created for themselves during the 2007-09 period.

Figure 6. Sustainable Fossil-Free Investing Opportunities across Asset Classes

Cash & Equivalents	Fixed Income	Public Equity	Private Equity	Real Property
Institutional money market accounts, cash management, and laddered certificates of deposit using: <ul style="list-style-type: none"> - Sustainability banks - Community development banks - Community development credit unions 	<ul style="list-style-type: none"> - Green Revolving Funds - Qualified Energy Conservation Bonds - Build America Bonds - World Bank Green Bonds - Carbon-beta corporate bonds - Green MBS and <u>muni</u> bonds - Community development loan funds 	<ul style="list-style-type: none"> - Domestic and global sustainable investing themes - Environmental markets - Green energy and clean technology - Carbon portfolio optimization - Active climate engagement strategies - "Threshold investing" within ecological limits 	<ul style="list-style-type: none"> - <u>Cleantech</u> venture capital - Energy-efficiency growth equity and <u>LBOs</u> - Community development venture capital - Environmental impact investment funds - Sustainable food and consumer product companies 	<ul style="list-style-type: none"> - Green building - Smart growth, <u>brownfield</u>, urban-infill, and transit-oriented development - Sustainable timberland, farmland, and ranchland

Managing an endowment for a carbon-constrained future will ultimately require strategic asset allocation that takes climate change seriously as a systemic risk. The global investment consulting firm Mercer has stressed the inadequacy of traditional asset allocation methodologies to capture the risks of climate change, particularly for long-term investors.³¹ By considering investment risks and opportunities associated with a variety of long-term climate scenarios, whether related to technological innovation, the physical impact on the environment or the policy impacts on economic activity, Mercer has identified for different asset classes varying levels of sensitivity to climate change that can shape strategic asset allocation. The firm found, for example, that alternative asset classes commonly constituting endowment portfolios, such as private equity, infrastructure, real estate, farmland and timberland, generally exhibit higher levels of sensitivity to climate risks than most segments of conventional asset classes such as public equities and fixed

³⁰ As discussed in Joshua Humphreys, "Educational Endowments and the Financial Crisis: Social Costs and Systemic Risks in the Shadow Banking System," Tellus Institute, 2010, available at <http://www.tellus.org/publications/files/endowmentcrisis.pdf> (accessed May 2013).

³¹ Mercer, "Climate Change Scenarios – Implications for Strategic Asset Allocation."

income.³² From the perspective of total portfolio activation, conventional asset classes also present ready opportunities for climate responsible investing, within listed equities, fixed income and even cash, as Figure 6 highlights. Across its climate scenarios, Mercer found that exposure to sustainable-themed equities, efficiency and renewable energy in both public and private equity, timberland and farmland could act as a valuable hedge and improve total portfolio resilience. In this sense, divestment from fossil fuels should be viewed less as a “constraint” on an endowment manager’s potential investment universe than as a key for unlocking assets for a much more creative, constructive deployment of capital.

Conclusion

The three pathways to developing fossil-free investment strategies make it abundantly clear that divestment from major oil, gas, and coal companies is perfectly feasible for institutional investors with diversified portfolios. Although divesting from major fossil-fuel stocks and bonds provides the foundation for each scenario, two of the pathways go beyond divestment by developing reinvestment propositions into more sustainable opportunities and solutions to the climate crisis, across asset classes. Divestment from stocks and bonds is merely the *sine qua non* for institutional investors to begin re-investing their portfolios in a lower-carbon economy of the future. Numerous asset managers and institutional investors have already managed portfolios without exposure to the risks that fossil fuels present, and the empirical results of their efforts have been competitive and compelling.

Although the third pathway—of Total Portfolio Activation for positive environmental impact—may be the most challenging to implement at this time because of the dearth of investment options in certain areas, the fact remains that any investor can begin strategically re-allocating a much greater percentage of portfolio assets in support of climate solutions. Opportunities for climate responsible investment currently abound across asset classes, not only in conventional asset classes such as public equities, fixed income and cash, but also in alternative asset classes and innovative investment vehicles, from green revolving funds on campus to domestic cleantech venture capital and private equity, from green building in local communities to sustainable farmland and forestry abroad. The failure of investment consultants to bring fossil-free investment opportunities to the table when the question of divestment arises should be a red flag for trustees, administrators, investment officers, and investment committee members. The examples presented throughout this paper and the case studies that follow – from small-to-mid-size foundations and endowments that have vocally embraced divestment, such as Hampshire, Sterling, and Unity Colleges and the Wallace Global Fund, to far larger multi-billion-dollar endowments such as Caltech and Yale that have allocated portions of their portfolios to green revolving funds and sustainable alternative investments – highlight that ample opportunities exist to begin putting institutional assets to work in more environmentally proactive ways.

Ultimately, in order to manage an “endowment of the future” using Total Portfolio Activation, more institutional innovations will nevertheless be needed. Index providers will run fossil-free versions of their major indices, across investment styles, sizes, and geographies, including both mature and emerging markets. Active public equity and fixed-income fund managers will develop new fossil-free versions of their strategies. Investors in asset classes that are particularly vulnerable to climate

³² Ibid., p. 13.

change will develop new ways of mitigating those risks; industries, sectors and asset classes that are poised to benefit from climate mitigation and adaptation will deepen their sustainability features.

Fortunately, many asset managers, indexing firms, and other financial intermediaries are rapidly developing new products and services to respond to investor demand for additional fossil-free investment options across new asset classes, geographies and investment styles. Indeed, since the explosion of the fossil-fuel divestment campaign last year, increasing numbers of investment managers, financial advisers and plan providers have already created new fossil-free investment vehicles, and investment consultants and managers are receiving unprecedented inquiries from plan sponsors and clients about the feasibility of implementing fossil-free strategies. Fossil-free investing in our warming world will ultimately be a long-term enterprise, but the imperative for divestment from companies most actively responsible for the climate crisis is upon us today. With the pathway clear, it is high time for more endowments to take the first steps on the long road to a more sustainable future.

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Appendix

Institutional Pathways to Fossil-Free Investment: Case Studies

Portfolio 21 Global Equity Strategy 2

Trillium Asset Management, LLC Sustainable Opportunities Strategy 5

Impax Asset Management Ltd. Leaders Strategy 8

Wallace Global Fund 11

Case Study: Portfolio 21 Global Equity Strategy

Generating compelling returns through long-term sustainable investing within ecological limits

Portfolio 21, based in Portland, Oregon, has worked at the frontiers of social and environmental investing since 1982. In 1999, the firm created one of the first sustainability-themed global equity mutual funds, known as Portfolio 21 Global Equity Fund (PORTX). The fund is designed as a low-turnover, multi-cap, core portfolio that incorporates environmental, social, and governance (ESG) factors into its investment analysis process and seeks to identify companies from around the world that are operating within ecological limits. In 2007, Portfolio 21 added an institutional share class (PORIX), with a minimum investment of \$1 million and a lower fee structure designed for institutional investors.

Portfolio 21's investment strategy has avoided fossil fuel companies since its inception not as a response to calls for divestment but rather as a result of its unique bottom-up research process. The management team seeks to invest in high-quality, forward-looking companies from across the globe that provide competitive returns and growth potential while mitigating the environmental impacts of their operations. From the outset of the strategy's launch in 1999, Portfolio 21's approach to ESG analysis has been deeply informed by Ecological Footprint analysis developed by the Global Footprint Network and The Natural Step, an innovative "Framework for Strategic Sustainable Development."³³ Out of this framework, the firm developed a series of Principles for Investment focused on ecological limits, environmental stewardship and strategy, human rights and equality, societal impacts, and corporate governance.

Portfolio 21's research process begins by setting baseline summaries for sub-industry groups across a wide range of themes and indicators that help assess the strength of individual companies within its sustainability framework. Among the baseline considerations are issues such as a company's innovation and competitiveness, the responsiveness of its products and services to wider needs, market leadership, business fundamentals, a record of mitigating environmental risks, and ethical

INSTITUTIONAL GLOBAL EQUITY STRATEGY

Firm:	Portfolio 21
Firm Assets:	\$477.6 million
Fund Assets:	\$387.8 million
Fund Inception:	9/30/1999
Portfolio Managers:	James Madden, CFA Anthony Tursich, CFA
Minimum Investment:	\$1,000,000
Holdings:	73 positions
Annual Turnover:	28% (6/30/12)
Annual Expense:	1.17%*
Top 10 holdings:	
Google	4.84%
Novo Nordisk	4.82%
Roche	4.16%
Samsung	2.99%
Novartis	2.60%
Baxter	2.40%
IBM	2.27%
Scenska Cellulosa (SCA)	1.91%
Apple	1.76%
Novozymes	1.72%

NOTE: Assets and holdings as of 12/31/2012. Minimum investment is for institutional share class (PORIX).

*Excludes 2% redemption fee on shares held less than 60 days.

³³ For more on this process, see Ashley Hamilton, "Portfolio 21," in Cary Krosinsky, et al., eds., *Evolutions in Sustainable Investing: Strategies, Funds and Thought Leadership* (Hoboken, NJ: John Wiley & Sons, 2012), ch. 10; and "Portfolio 21 Investments, Portland, Oregon, USA," A Natural Step Network Case Study (2002), at <http://www.naturalstep.org/en/usa/progressive-investment-management-eugene-oregon-usa> (accessed April 5, 2013). On the Global Footprint Network's Ecological Footprint, developed by Mathis Wackernagel and Bill Rees, see <http://www.footprintnetwork.org/>.

management. Companies are ranked within their sub-industry group based on these factors. The research team then calculate specific

environmental scores for each

company, based on more than two dozen proprietary environmental indicators, and they also analyze 30 qualitative social and governance indicators. The highest-scoring companies out of this in-depth research process are then recommended to the investment management team for ultimate investment decision-making.³⁵

Performance ³⁴	1 Year	3 Year	5 Year	10 year	Since Inception (9/30/1999)
Portfolio 21 Institutional Shares (PORIX)	15.51%	5.31%	0.13%	8.44%	4.66%
MSCI World Net	15.83%	6.93%	1.18%	7.51%	2.54%

Although the universe of investment opportunities that has emerged from this filtering process has grown considerably over the last decade, as increasing numbers of companies grapple with the reality of resource constraints and the sustainability of their operations, fossil fuel companies and other businesses working within extractive industries have failed to meet the firm's quality standards.

(The firm has developed similarly informed judgments for companies involved in nuclear energy, agricultural biotech, animal testing, tobacco, weapons and gambling.) For Portfolio 21, the multiple risks faced by fossil fuel companies in particular – from climate and energy policies to geopolitical and geological risks – and the environmental health and safety liabilities that are intrinsic to their core businesses simply cannot be managed effectively.³⁶ The growing reliance by fossil fuel companies upon increasingly unconventional energy sources – from tar sands and tight oil to arctic and deepwater drilling, hydraulic fracking, and mountaintop removal coal mining – have only

magnified resource intensity and environmental risks.

Avoiding fossil fuels in this way raises questions about alternative investment opportunities and portfolio risk management. Given the low-beta, high-yielding profile of many traditional energy companies, Portfolio 21 intentionally targets low-multiple, high-dividend stocks in sectors that have positive financial correlation to the energy sector. As Portfolio 21 president John Streur has recently highlighted, “There are many companies in other sectors – big, well-established, stable, high-quality, global companies – engaged in forward-thinking business practices that are helping to move our economy toward using less resources and a lower carbon future. There are many companies to choose from in lieu of fossil fuel stocks.”³⁷

Portfolio 21's Investment Selection



The results have been compelling. Portfolio 21's overall Global Equity Strategy has outperformed the MSCI World Equity Index since its inception in 1999; indeed, the institutional share class has outperformed the

³⁴ Annualized, as of December 31, 2012. Synthetic historical returns for the institutional share class before its inception in 2007 are based on the actual performance of the retail share class, adjusted for fees (but excluding 2.0% redemption fee on shares held less than 60 days). Past performance does not guarantee future results.

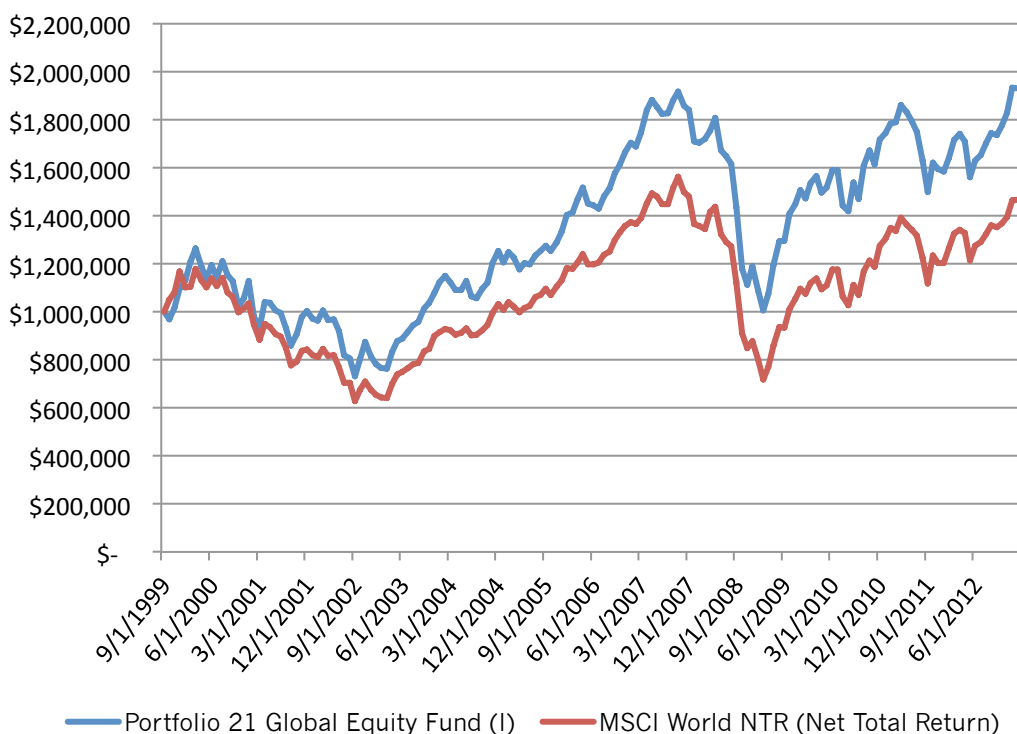
³⁵ “Investment Philosophy,” Portfolio 21, at <http://www.portfolio21.com/fund/philosophy/> (accessed April 4, 2013).

³⁶ “Managing Investment Portfolios without Fossil Fuel Stocks,” Portfolio 21, at <http://www.portfolio21.com/wp-content/uploads/downloads/2013/01/Fossil-Fuel-Position-Paper-FINAL.pdf> (accessed February 20, 2013).

³⁷ John Streur, “Fossil-Free Investing: A Response to the Counter Arguments,” Portfolio 21 Investments, March 11, 2013, at <http://www.portfolio21.com/blog/fossil-free-investing-a-response-to-the-counter-arguments/> (accessed March 30, 2013).

benchmark by 212 basis points annualized over that period, after fees.³⁸ One of the strategy's strengths has been its ability to maintain below-benchmark risk, while generating competitive returns. According to Morningstar, the fund's risk profile has remained below-average since its inception in 1999.³⁹ Additionally, the institutional share class has outperformed its benchmark by 105 basis points annualized over the past five years and by 93 basis points annualized over the last decade, while generating a 15.5% return over the past calendar year – only modestly trailing the benchmark. In short, Portfolio 21 has demonstrated for more than a decade that a global investment strategy that avoids fossil fuels – and many other unsustainable industries – need not come at the cost of financial performance or increased portfolio risk.

Performance of \$1 million investment in Portfolio 21 Global Equity Fund (Institutional) vs. MSCI World Index since strategy inception (net of fees)⁴⁰



This case study was co-authored by Jaime Silverstein, joint research fellow at Sustainable Endowment Institute and Tellus Institute, and Joshua Humphreys, fellow at Tellus Institute, with research assistance by Christi Electricis, associate at Tellus Institute.

³⁸ Annualized performance, as of December 31, 2012. See n. 30.

³⁹ Morningstar, as of December 31, 2012.

⁴⁰ See n. 30.

Case Study: Trillium Asset Management, LLC

Sustainable Opportunities Strategy

High-conviction investing in the transition to a more sustainable economy

Boston-based Trillium Asset Management, LLC, manages more than \$1 billion for institutional clients, including mutual funds, foundations, endowments, religious institutions, and other non-profits, as well as high-net-worth individuals and families. Since its founding in 1982, Trillium has specialized in sustainable and responsible investment, and the firm is well known for its pioneering approaches to shareholder advocacy and corporate engagement. Although Trillium has been involved in environmental and clean energy investing for decades, its strategic approach to fossil-free investing has emerged only over the last ten years, as a response to client demand and the result of a deeper integration of environmental, social and governance (ESG) factors into the firm's investment decision-making process.

One of Trillium's first institutional clients to embrace a fossil fuel-free investment strategy was a mutual fund company: the Green Century Balanced Fund (GCBLX). Designed for environmentally and socially responsible retail investors, the fund has not invested in the exploration, drilling and refining of coal, oil and gas since Trillium became the fund's sub-adviser in 2005. After immediately freezing any new fossil-fuel investments, Trillium divested all of the fund's remaining legacy positions in traditional energy companies within six months. Under Trillium's management, it was also the first mutual fund to measure its portfolio's carbon footprint, which was recently determined to be 49.5 percent less carbon intensive than the S&P 500 index.⁴¹ The fund has been rated four stars by Morningstar for its overall risk-adjusted performance since inception.⁴²

Subsequently in 2008, Trillium launched a dedicated Sustainable Opportunities strategy for institutional investors and private wealth clients seeking proactive investment opportunities in

SUSTAINABLE OPPORTUNITIES STRATEGY

Firm:	Trillium Asset Management, LLC
Firm Assets:	\$1.1 billion
Strategy Assets:	\$88 million
Fund Inception:	10/1/2008
Portfolio Managers:	Matt Patsky, CFA Paul Hilton, CFA Laura McGonagle, CFA
Minimum Investment:	\$2,000,000
Holdings:	40-55 positions
Annual Turnover:	35-45%
Annual Expense:	1.0%*
Top 10 holdings:	
Apple	3.96 %
IBM	3.52%
Starbucks	3.15%
ABB	3.04%
Discovery Comm.	2.94%
Cisco	2.87%
Middleby	2.80%
Oracle	2.75%
UPS, Inc.	2.63%
Kansas City So.	2.59%

NOTE: Assets and holdings as of 12/31/2012.

*On first \$2M in assets under management, with 0.75% on next \$3M; 0.50% on next \$20M; 0.45% on next \$25M; and 0.40% on amounts over \$50M.

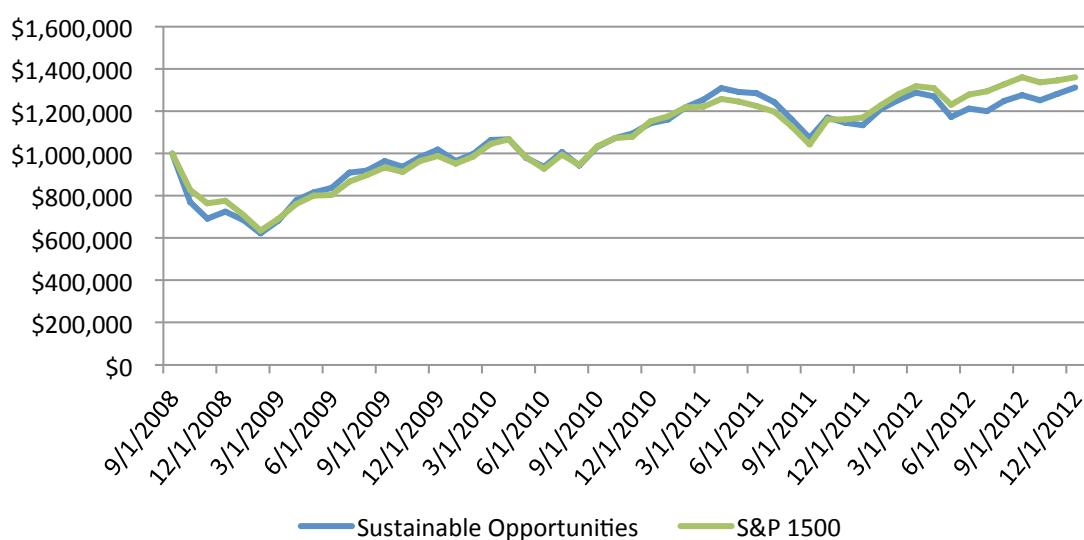
⁴¹ "A Green Portfolio: 2009 Carbon Footprint Analysis, Green Century Balanced Fund," Green Century Funds (2009), available at http://www.greencentury.com/pdf/globaldocuments/Carbon_Footprint_Analysis.pdf (accessed March 30, 2013); and "A Green(er) Portfolio: 2013 Updated Carbon Footprint Analysis, Green Century Balanced Fund," Green Century Funds (2013), available at <http://www.greencentury.com/pdf/globaldocuments/carbon-footprint-2013.pdf> (accessed April 5, 2013).

⁴² Morningstar, as of December 31, 2012, for peer group funds classified as Moderate Target Risk.

companies leading the transition to a more sustainable economy. The strategy takes a long-only, high-conviction approach to three core themes: economic empowerment, green solutions, and healthy living. It is one of the few investment products to exclude fossil fuels from its inception. From the very beginning, the Trillium portfolio management team quickly realized that fossil fuel companies did not provide solutions to the growing global sustainability challenges the strategy aims to address.

Performance ⁴³ 4Q12	1Yr	3Yr	Since Inception (10/1/2008)
Sustainable Opportunities (Gross)	3.09%	16.45%	7.34%
Sustainable Opportunities (Net)	2.91%	15.64%	6.58%
Standard & Poor's 1500 Index	0.04%	16.17%	7.48%

Performance of \$1 million investment in Trillium Sustainable Opportunities strategy vs. S&P 1500 since strategy inception (net of fees)



Using fundamental equity analysis, Trillium's Sustainable Opportunities strategy seeks reasonably priced, high-growth companies. Although benchmarked against the broad-based, domestic All Cap S&P 1500 index, the strategy takes larger, more concentrated positions and has greater international exposure than its benchmark. The number of holdings ranges from 40-55 positions, with less than half the portfolio generally turning over from year to year. Excluding traditional energy can create short-term impacts on portfolio performance during market cycles when fossil-fuel companies diverge from the broader economy, but the Trillium team has found that the performance of energy companies has largely mirrored macro-economic market trends. The strategy's financial performance has consequently been compelling since its launch during the throes of the financial crisis, and it has grown to more than \$100 million in assets through the end of the first quarter of 2013.

⁴³ Composite annualized performance, as of December 31, 2012. For the purposes of establishing and maintaining compliance with the Global Investment Performance Standards (GIPS®), Trillium has elected to define itself exclusive of wrap-fee assets under management both currently and historically.

Looking forward, the Trillium team believes the lack of traditional energy exposure also provides the strategy with additional risk protection, particularly given the regulatory uncertainty surrounding the effects that climate change policies and environmental regulations will ultimately have on the industry. As lead portfolio manager and Trillium CEO Matt Patsky has recently highlighted, “By divesting now from companies that hold fossil fuel reserves, investors may avoid the risk of the potential devaluation of the fossil fuel reserves that companies now hold, but may never be able to use. Should burning these reserves become cost-prohibitive, the reserves may become Stranded Carbon Assets and of no value to shareholders.”⁴⁴

Since its inception, Sustainable Opportunities has generated positive financial returns, while closely tracking its benchmark. Over its last full year of performance, ending in December 2012, the strategy outperformed its benchmark before fees, and since inception it has trailed the S&P 1500 by only 14 basis points, highlighting that one can pursue strong, competitive financial returns in pursuit of sustainable investment, without exposure to the climate risks and uncertainties that fossil fuel companies present to investor portfolios.

This case study was co-authored by Christi Electric, associate at Tellus Institute, and Joshua Humphreys, fellow at Tellus Institute, with research assistance by Jaime Silverstein, a joint research fellow at Sustainable Endowments Institute and Tellus Institute.

⁴⁴ Patsky, quoted in “Fossil Fuel Free Investing,” Green Century Funds (2013), available at <http://www.greencentury.com/pdf/FFFpositionpaper.pdf> (accessed March 15, 2013).

Case Study: Impax Asset Management Ltd.

Leaders Strategy

Global equity investing in resource optimization across a range of market sectors

Impax Asset Management, headquartered in London, is a specialist investment manager focused on global equity investments in resource optimization. In a world defined increasingly by long-term trends of rising global population and consumption, urbanization, and natural-resource scarcity, Impax focuses on growth opportunities in companies that efficiently use and deliver resources worldwide. Since 1998, Impax has invested in companies providing innovative solutions in energy efficiency, alternative energy, resource recovery, water, and food and agriculture, in both public and private markets. Among its offerings within public equities, Impax's global all-cap Leaders Strategy seeks long-term capital growth by investing around the world in companies active in the growing resource optimization markets. Energy efficiency is the strategy's leading theme, although its holdings also include investments in water infrastructure, pollution control, waste management, environmental support services, and other diversified environmental companies. While the strategy has a large allocation to energy through energy efficiency, the strategy's investment universe, by definition, does not include fossil fuel companies.

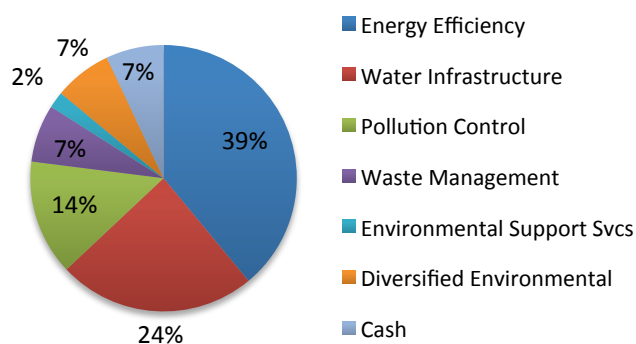
The strategy is accessible to US institutional investors through the institutional share class of the Pax World Global Environmental Markets Fund (PGINX), which Impax sub-advises.

To construct the strategy's portfolio, Impax combines its top-down thematic focus with bottom-up research that seeks growth companies at reasonable valuations while integrating environmental, social and

LEADERS STRATEGY	
Firm:	Impax Asset Management, LLC
Firm Assets:	\$3.5 billion
Strategy Assets:	\$508 million
Inception:	March 2008
Portfolio Managers:	Bruce Jenkyn-Jones Simon Gottelier Hubert Aarts
Minimum Investment:	\$250,000
Holdings:	40-65 positions
Annual Turnover:	46%
Expense Ratio:	1.15%
Top 10 holdings:	
GEA Group	3.4%
Watts Water	3.4%
Emerson Electric	3.4%
Agilent Technologies	3.3%
Pall Corp	3.3%
China Everbright	3.2%
IMI PLC	3.1%
Murata Manufacturing	2.9%
Xylem	2.8%
Linde	2.8%

NOTE: Assets and holdings as of 12/31/12. Minimum investment, expenses, and holdings data are for the institutional share class of the Pax World Global Environmental Markets Fund (PGINX).

Portfolio Diversification



governance (ESG) factors into its risk-management process. Beginning with a universe of some 1,400 companies, the investment team distills opportunities through a multi-stage filtering process that results in an investable range of 300 companies. Impax's analysis generates ESG ratings for each company on a 5-point scale. Low-rated firms are excluded from the portfolio, while mid-range ESG scores provide the team with weighting limits for portfolio holdings. The research team at Pax World Management applies an additional layer of ESG analysis to the Global Environmental Markets Fund. Because markets for resource efficiency and optimization remain poorly understood, mispricing frequently occurs, providing numerous opportunities for a specialist manager concentrating on the space.⁴⁵ The final portfolio has between 40 and 65 holdings in companies with minimum market caps of \$500 million. Approximately one third to one half the portfolio turns over in any given year.

Performance ⁴⁶ 4Q12	1 Yr	3Yr	Since Inception (3/2008)	
Global Environmental Markets Fund	8.0%	20.9%	7.4%	2.4%
Global Environmental Markets Fund (net)	7.6%	19.5%	6.2%	1.2%
MSCI World (Net)	2.5%	15.8%	6.9%	0.5%

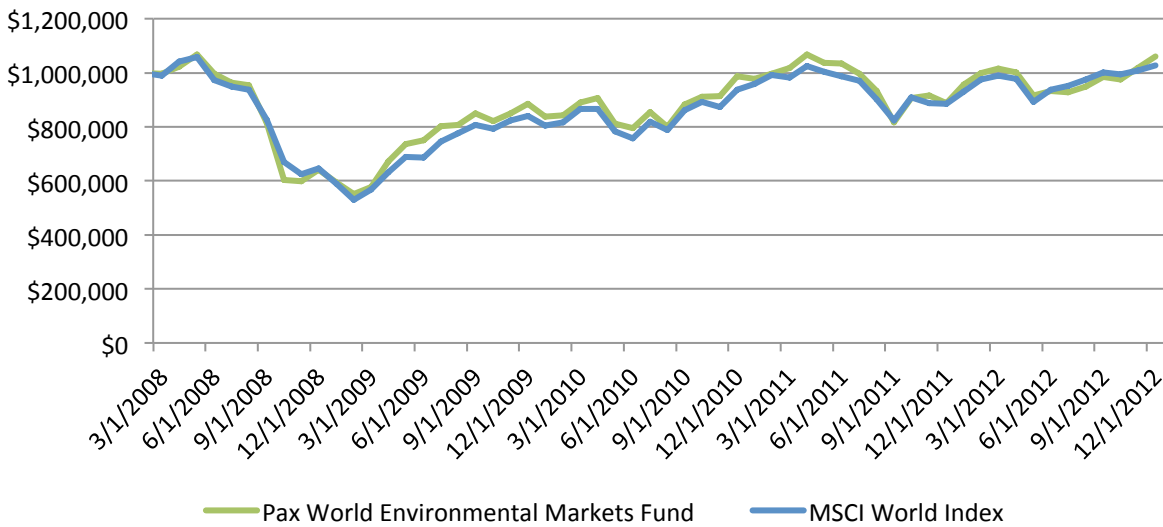
Since its inception in March 2008, the Pax World Global Environmental Markets Fund has outperformed the MSCI World Index by 69 basis points on an annualized basis, net of fees. The fund's 19.5% net performance over the most recent calendar year also outperformed the MSCI World Index by 509 basis points. At a time of global population

growth, rising middle-class affluence in emerging markets, and increasing demand for natural resources, Impax's Leaders Strategy has generated competitive returns by investing in leading companies that optimize scarce global resources, without exposure to fossil-fuel firms.

⁴⁵ "Resource Scarcity and the Efficiency Revolution," Impax Asset Management, 2012, http://www.paxworld.com/system/storage/2/1f/9/1797/Resource_Scarcity_and_the_Efficiency_Revolution_083112.pdf (accessed March 2013).

⁴⁶ Annualized performance, as of December 31, 2012, for the institutional share class of the Pax World Global Environmental Markets Fund (PGINX), sub-advised by Impact Asset Management, using the Leaders Strategy. Data for this table and the following figure provided by Impax Asset Management, Ltd., Pax World Management LLC, FactSet, WM Reuters, and MSCI.

Performance of \$1 million investment in Pax World Global Environmental Markets Fund (PGINX) since inception (net of fees)



This case study was co-authored by Jaime Silverstein, joint research fellow at Sustainable Endowments Institute and Tellus Institute, and Joshua Humphreys, fellow at Tellus Institute, with research assistance by Christi Electricis, associate at Tellus Institute.

Case Study: Wallace Global Fund

Foundation Endowment

Re-investing in clean energy while transitioning toward a 100% fossil-free, sustainable investment portfolio

The Wallace Global Fund is a philanthropic foundation based in Washington, DC, with a mission “to promote an informed and engaged citizenry, to fight injustice, and to protect the diversity of nature and the natural systems upon which all life depends.” The Fund was founded in 1995 by Robert B. Wallace, the son of Henry A. Wallace, Vice President under Franklin D. Roosevelt during the Second World War and former Secretary of Agriculture during the New Deal. Guided by Henry Wallace’s global vision of scientific innovation, human well-being, and social change, the Wallace Global Fund’s grantmaking supports initiatives for environmental sustainability, corporate accountability, women’s human rights, an independent media, and strong democratic institutions and civil society.

The Wallace Global Fund has become a major supporter of fossil fuel divestment and clean energy re-investment, as a strategic extension of its philanthropic mission. Indeed, the Fund’s executive director Ellen Dorsey has been an outspoken advocate of endowed institutions’ “owning what they own”: namely, taking responsibility for their investments and aligning their portfolios with their stated charitable missions.⁴⁷

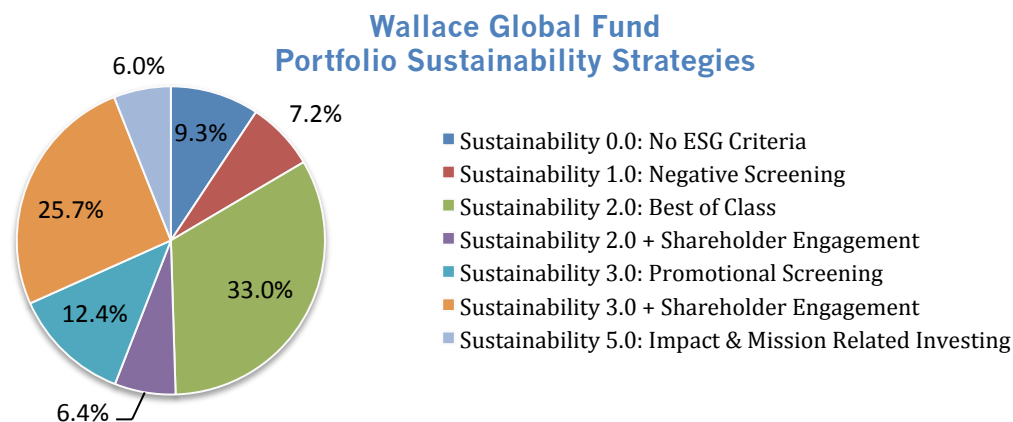
Since 2009 the Fund has undertaken an unprecedented process of portfolio review and re-allocation into mission-aligned responsible investments. Although the Wallace Global Fund had made some sustainable investments in clean technology in the past, only in 2010 did the foundation’s Board decide to embrace a much deeper approach to aligning investment and mission and to make it an

WALLACE GLOBAL FUND	
Endowment:	\$155.3 million
Executive Director:	Ellen Dorsey
Investment Consultant:	RBC Wealth Management
Recent Performance:	
Wallace Global Fund	11.80%
Custom Benchmark	10.58%
ESG Screening Criteria:	
	1. Environmental Performance
	2. Fossil Fuels
	3. Nuclear Power
	4. Mining and Minerals
	5. Employee and Labor Relations
	6. Community Impact
	7. Human Rights
	8. Social Justice Movements
	9. Political Contributions
	10. Water Privatization
	11. Industrial Agriculture
	12. Military and Weapons
	13. Prisons
	14. Product Safety and Integrity
	15. Corporate Governance
	16. Tobacco Productions
NOTE: Assets as of 12/31/2012. Performance is for most recent calendar year, ending 12/31/12. Custom Benchmark reflects a blended return of the following indices: 25% S&P 500, 15% MSCI EAFE, 7% Russell 2000, 5% MSCI Emerging Markets, 30% BGCI, 8% Treasury Bills, and 10% HFRI Index.	

⁴⁷ Ellen Dorsey, Keynote Speech, Power Up! Student Convergence, Swarthmore College, February 23, 2013; and Naomi Klein, “Time for Big Green to Go Fossil Free,” *The Nation*, May 1, 2013.

explicit matter of fiduciary duty. The Fund revamped its investment committee, bringing in a pioneering group of professionals from the sustainable and responsible investing community to work closely with the Board, the Executive Director, and program staff. It hired a new investment consulting firm, RBC Wealth Management, with a seasoned team of experienced consultants in environmental, social and governance (ESG) investing.

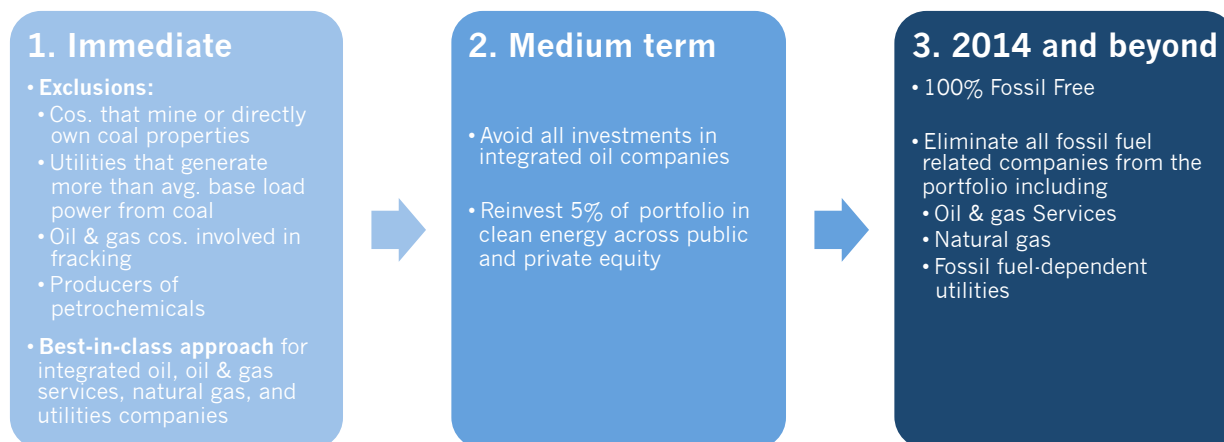
Under this new management and governance arrangement, the Fund developed a comprehensive strategy of incorporating ESG factors into investment screening, making targeted high-impact investments, and using shareholder engagement to encourage companies to strengthen their policies and practices around ESG issues, particularly as they relate to the Fund’s core programmatic mission. The Fund developed an ESG Investment Policy Statement outlining 16 key ESG criteria, which have subsequently been applied across 90 percent of the portfolio using a variety of negative, “promotional” and “best-of-class” screening techniques. Managers are rated on a 5.0-point sustainability spectrum, with lower ratings for those that do not incorporate ESG criteria or only apply negative screens and higher ratings accorded to those pursuing positive impact or embracing shareholder strategies.



As a grantmaker funding climate-justice movements and the early coal divestment campaigns, as well as the current fossil-free investment movement, the Fund placed fossil fuel screening among its key ESG criteria. However, it also took a phased approach to transitioning toward a fossil-free portfolio, in order to adjust its exposure in response to market opportunities. In the most immediate stage, the Fund focused on excluding companies that mine or own coal, utilities that generate more than the national average of their base-load power from burning coal, and oil and gas companies exposed to risks associated with the controversial techniques of hydraulic fracturing. For other oil and gas companies and utilities, during this first phase, it took a best-in-class approach.

Over the medium term, the Fund has sought to avoid all investments in integrated oil and gas companies, shifting increasingly away from its best-in-class posture toward a tighter fossil-free filter. The Fund has also targeted a five-percent re-allocation of its portfolio to higher-impact investments in renewable energy and clean technology, in both private and public equity – a target it has already surpassed.

Three-stage Transition to a Fossil-free Portfolio (2009-2014)



In a third phase, the Fund has set a goal of eliminating all fossil fuel related companies from the portfolio by the end of 2014, whether held directly or indirectly. Currently, more than 99 percent of the Fund's portfolio is now fossil free, with the remaining exposure limited to a small number of holdings in commingled funds that the Fund remains on track to unwind as scheduled. In its direct holdings, Wallace Global has already divested from the 200 largest fossil-fuel companies identified by the Carbon Tracker Initiative.

Although Wallace Global's portfolio re-allocation remains a work in progress, the Fund has generated impressive financial results, earning an 11.8-percent return on investment during the last full calendar year, besting the 10.6-percent return of its unscreened benchmark, while also re-investing a targeted portion of its endowment in clean-energy solutions to the world's climate crisis.

This case study was co-authored by Christi Electris, associate at Tellus Institute, and Joshua Humphreys, fellow of Tellus Institute.

