NEW YORK STATE DEPARTMENT OF LAW CHARITIES BUREAU

28 Liberty Street New York, NY 10005 http://www.charitiesnys.com

LETITIA JAMES Attorney General

COMPLAINT/INQUIRY FORM

The Charities Bureau has jurisdiction to investigate complaints that involve 1) wrongdoing by charitable corporations, trusts or other nonprofit organizations; 2) fraudulent or misleading solicitation and improper expenditure of money for charitable purposes; and 3) improper activities of executors, administrators, trustees and personal representatives responsible for honoring pledges or bequests to a charity. This Bureau generally does not become involved in governance disputes within nonprofit organizations. The Bureau also responds to general inquiries concerning matters within its jurisdiction.

INSTRUCTIONS: 1. Please TYPE or PRINT clearly.
2. Please complete the entire form.
3. Please enclose copies of any documents relating to this complaint or inquiry.

1. Your Contact Information:

Name: Nadia Vitek

Address: 709 Stewart Ave, Apt B05, Ithaca, NY 14853

Home phone number: (765) 430-2048 Business phone number: n/a

Fax number: n/a Email address: nmv33@cornell.edu

2. Give the following information, if available, for the organization and/or individuals about whom you are complaining or inquiring:

Organization Name: Cornell University

Organization Address: Office of the President, 300 Day Hall, Cornell University, Ithaca, NY 14853

Organization phone number: (607) 255-5201 Organization email address: president@cornell.edu

Individual Name	Individual Title/Position	Individual Address	Individual Phone No.

3. Details of your complaint or inquiry (Please include as much specific detail as possible- continue on additional sheets if necessary).

Please see the attached document, page 2.

4. If you have any documents in your possession that relate to your complaint or inquiry, please attach copies of them.

5. Have you submitted your complaint or inquiry to the organization? Yes

Please see 'Cornell Board of Trustees Resolution on Divestment (January 29, 2016),' page 195.

6. Have you submitted your complaint or inquiry to any other government agency? No

7. Is a court action pending? No

8. List the names, addresses and telephone numbers of any other individuals who may have knowledge of the contents of this complaint or inquiry.

Please see the attached document, page 6.

9. Do you have any objection to the contents of this complaint or inquiry being forwarded to or discussed with another government agency? No

10. Do you have any objection to your name and/or address being forwarded to or discussed with the organization or person who is the subject of this complaint or inquiry?

Objection to Name and Address: No

Objection to Name only: No

The Attorney General is not your private attorney but represents the public by enforcing laws designed to protect the public and charities from misleading or unlawful practices. If you have any questions concerning your personal legal rights or responsibilities, you should contact a private attorney.

Signature	Print Name	Date
Nadia	Nadia Vitek	11/22/19

Attorney General Letitia James
New York State Department of Law
Charities Bureau
28 Liberty Street
New York, NY 10005

Nadia Vitek
709 Stewart Ave, Apt B05
Ithaca, NY 14853

Dear Attorney General James —

The following information supplements the complaint form included here and submitted to your office on November 22, 2019.

3. Details of the complaint

We — concerned students and faculty of Cornell University — are writing to draw your attention to certain violations of charitable and fiduciary duties that are occurring through the Board of Trustees of Cornell University's continued investments in fossil fuel companies.

Under the Cornell University Charter, the Board is bound to "promote the liberal and practical education of the industrial classes in the several pursuits and professions of life," to improve the agricultural resources of the state, and to protect the physical property of the university (see New York Education Law § 5701 *et seq.*). In addition, as a financial manager making investment decisions to promote these charitable goals, the Board is bound by fiduciary duties of loyalty, prudence, and acting with reasonable care, skill, and caution (see the Prudent Management of Institutional Funds Act, Non-Profit Corporation Law § 550 *et seq*). Cornell's investments in companies that sell oil, gas, and coal violate these duties by directly promoting the harms stemming from climate change and risking the profitability of the university's investment portfolio. Such harms — including drought, sea level rise, species extinction, and social and ecological instability — damage the state's lands and agriculture, as well as Cornell's physical property. Furthermore, fossil fuel extraction disproportionately targets and disadvantages low income communities and Black and Indigenous people of color, all of whom are represented at Cornell. In addition, fossil fuel companies (through entities such as the American Petroleum Institute) engage in scientific misinformation campaigns to obscure climate science and hide the effects of global warming; such efforts, funded in part by the Board of Trustees' investments, directly interfere with the educational priorities laid out in the Cornell charter and Academic Code of Integrity. Finally, as this office alleges in *New York v. ExxonMobil* (N.Y Supreme Court index no. 452044/2018), fossil fuel companies have long engaged in a fraudulent attempt to hide the financial risks associated with emissions regulations and future fossil fuel extraction. To invest in such companies in light of this well-known fraud — as Cornell continues to do — is a violation of the Board's fiduciary duties.

Institutional investors have recognized that continued investment in fossil fuel companies is inconsistent with efforts to address global warming (see *The Financial Case for Fossil Fuel Divestment; Trillion-Dollar Transformation*; and "Outline of Possible Interpretive Release by

State AGs of The Uniform Prudent Management of Institutional Funds Act," attached). As New York City mayor Bill de Blasio noted in January 2018 when he announced plans to divest more than $5 billion in municipal assets from such firms: "As climate change continues to worsen, it's up to the fossil fuel companies whose greed put us in this position to shoulder the cost of making New York safer and more resilient." Fossil fuel companies will not change their illegal behavior until and unless investors stop funding their operations. Institutions bound to protect the state's environment and economy, the interests of youth and future generations, and their own physical property simply cannot continue to invest in such companies — reaping short-term profit at the cost of long-term damage — without running afoul of their legal obligations.

As students, we are especially cognizant of the serious harms and risks that inaction on climate change has caused. The day is long past when educational institutions can turn a blind eye to their complicity in this crisis. In light of Cornell's recent adoption of new Core Values, including "Respect for the Natural Environment" ("We value our role in advancing solutions for a sustainable future and we recognize the close relationship between people and the Earth, acting in ways to live and work sustainably"), we believe the time has come to address the Board of Trustees' illegal behavior, and we call on the Attorney General to initiate an investigation.

4. Documents related to the complaint

The following documents are attached:

- *The Financial Case for Fossil Fuel Divestment* by the Sightline Institute and the Institute for Energy Economics and Financial Analysis (2018)

- *Trillion Dollar Transformation* from the Center for International Environmental Law (2016)

- "Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?" by the Oxford University Stranded Assets Programme (2013)

- "Outline of Possible Interpretive Release by State AGs of The Uniform Prudent Management of Institutional Funds Act" by Bevis Longstreth (2016)

- "Cornell Core Values," Cornell Office of the President (2019)

- Cornell Board of Trustees Resolution on Divestment (January 29, 2016)

- "Climate Action: Mayor, Comptroller, Trustees Announce First-In-The-Nation Goal to Divest From Fossil Fuels," New York City Hall Press Office (January 10, 2018)

5. Response of the Cornell Board of Trustees to our complaint:

The Board of Trustees is well aware that its fossil fuel investments violate its charitable and fiduciary duties. In 2015, all five governing bodies within Cornell voted to recommend divestment from fossil fuels. In response, the Board issued a policy regarding divestment:

> Divestment should be considered only when a company's actions or inactions are "morally reprehensible" (i.e., deserving of condemnation because of the injurious impact that the actions or inactions of a company are found to have on consumers, employees, or other persons, or which perpetuate social harms to individuals by the deprivation of health, safety, basic freedom, or human rights.

Additional factors included whether "[t]he divestment will likely have a meaningful impact toward correcting the specified harm, and will not result in disproportionate offsetting negative societal consequences" and whether "[t]he company in question contributes to harm so grave that it would be inconsistent with the goals and principles of the University." The Board found that its investment in fossil fuel firms did not meet these standards, and refused to divest. *See* Board of Trustees Resolution on Divestment (January 29, 2016).

Contrary to the Board's decision, the conduct of fossil fuel companies is in fact "morally reprehensible" and "contributes to harm" whose gravity exceeds most other forms of injury imaginable. As this office notes in its litigation against ExxonMobil:

> Increasing GHG emissions have resulted and will continue to result in significant adverse global impacts, including but not limited to: the increase in number and severity of extreme weather events, including floods, hurricanes, heat waves, and drought; wildfires; rising sea levels; ocean acidification; increased air pollution; and exacerbation of the spread of infectious diseases. (N.Y Supreme Court index no. 452044/2018, Complaint ¶ 35).

Cornell's management is thus on notice that its investments run directly contrary to the interests of the university, its students, and the state, but has refused to respond appropriately.

CO-SIGNERS

Name	Affiliation to Cornell University
Nadia Vitek	Student, Class of 2022
Sabrina Xie	Student, Class of 2021
Clara Vorndran	Student, Class of 2022
Angeliki Cintron	Student, Class of 2022
Katie Sims	Student, Class of 2020
Mira Kudva Driskell	Student, Class of 2023
Avery MacLean	Student, Class of 2023
Emma Eisler	Student, Class of 2022
Russell Rickford	Professor, History
Bruce Monger	Professor, Earth and Atmospheric Sciences
Evelyn Kennedy-Jaffe	Student, Class of 2022
Nikita Saja	Student, Class of 2023
Nicholas Sutera	Student, Class of 2022
Bo Miebach	Student, Class of 2021
Emma Silva	Student, Class of 2022
Nima Homami	Graduate Student
George DeFendini	Student, Class of 2022
Baxter Hamilton	Student, Class of 2022
Leanna Zilles	Student, Class of 2021
Gabe Biers-Browne	Student, Class of 2023
Daniel Kirchner	Student, Class of 2021
Julia Trahan	Student, Class of 2022
Thea Shames	Student, Class of 2021
Nikita Sajai	Student, Class of 2023
Sabiha Obaid	Student, Class of 2023
Annaliese Sander	Student, Class of 2023
Ethan Rubin	Student, Class of 2023
Joanna Papadakis	Student, Class of 2021
Dan Cameron Burgdorf	Graduate Student
Kayla Quintero	Student, Class of 2021
Sebastian Aragon	Community Member
Liv Cramer	Student, Class of 2023
Elizabeth Leape	Student, Class of 2021
Nainika D’Souza	Student, Class of 2021

Lucas Lawrence	Student, Class of 2023
Anna Boese	Student, Class of 2023
Hannah Brodsky	Student, Class of 2022
Ellie Pfeffer	Student, Class of 2023
Ezra Stein	Student, Class of 2020
William Chan	Student, Class of 2023
Gabriel Ewig	Student, Class of 2023
Johnburger	Faculty, Physical Education

The Financial Case for Fossil Fuel Divestment

Institute for Energy Economics and Financial Analysis
IEEFA.org

July 2018

Tom Sanzillo, Director of Finance, IEEFA

Kathy Hipple, Financial Analyst, IEEFA

Clark Williams-Derry, Director of Energy Finance, Sightline Institute

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Executive Summary

A diverse group of stakeholders — mainstream and "sustainable" investors, shareholder activists, environmental groups, students, and politicians — are grappling with the question of why institutional funds remain invested in fossil fuels and how divestment can be achieved in a manner consistent with investment objectives and fiduciary needs.

This discussion is driven principally by a worldwide concern with how fossil fuel use is accelerating the destruction of the climate.

The Fossil Fuel Sector Is Shrinking Financially, and the Rationale for Investing in It Is Untenable

Often overlooked in the divestment debate is the financial case for divestment. This paper makes the case for divestment as a proper financial response by investment trustees to current market conditions and to the outlook facing the coal, oil and gas sectors. It is driven principally by the likelihood that future returns from the fossil fuel sector will not replicate past performance.

The financial case for fossil fuel divestment is strong. Over the past three and five years, respectively, global stock indexes without fossil fuel holdings have outperformed otherwise identical indexes that include fossil fuel companies.[1] Fossil fuel companies once led the economy and world stock markets. They now lag.

Paradoxically, the sector's sudden fall from grace was largely caused by a price drop that grew out of a major technological innovation in the oil and gas sector: hydraulic fracturing (fracking). After oil prices crashed in 2014, oil company revenues plummeted, expensive capital investments failed, massive amounts of reserves were written off as no longer economic, and major bankruptcies occurred.

This decline exposed long-standing weaknesses in the industry's investment thesis, which was to assume that a company's value was determined by the number of barrels of oil (reserves) it owned.

In the new investment environment, cash is king, which creates a conundrum for the industry. Aggressive acquisition and drilling will likely lead to more losses for investors. If oil and gas companies pull back, on the other hand, and acknowledge the likelihood of lower future returns and more modest growth patterns, their actions will only confirm the industry is shrinking financially.

In the new investment thesis, fossil fuel stocks are now increasingly speculative. Current financial stresses — volatile revenues, limited growth opportunities, and a negative outlook —- will not merely linger, they will likely intensify. Structural headwinds will place increasing pressure on the industry causing fossil fuel investments to become far riskier.

A Cumulative Set of Risks Undermines the Viability of the Fossil Fuel Sector

Climate change is hardly the only challenge facing the fossil fuel industry. The broader factors bedevilling balance sheets stem from political conflicts between producer nations,

[1] MSCI AXWI Fossil Fuels Index

competition, innovation, and attendant cultural change. These risks can be grouped into a few broad categories, such as "pure" financial risk; technology and innovation risk; government regulation/oversight/policy risk, and litigation risk (described in Appendix III).

The absence of a coherent, industry-wide value thesis that embraces the changes taking place in the global economy places fossil fuel investors at a distinct disadvantage. Successful oil and gas investing now requires expertise, judgment, an appetite for risk, and a strong understanding of how individual companies are positioned with respect to their competitors both inside and outside the industry.

Passive investors could once choose from a basket of oil and gas industry securities and have little reason to fear they would lose money. Today, that is no longer the case, a reality that is pushing passive investors into other blue-chip stocks with stable returns. In short, potential returns on coal, oil, and gas equities are no longer worth the risk.

The risk posed by fossil fuel investments requires fiduciary action, and how each fund resolves the issue must be based on its own history, mission, operating environment, investment goals, and approach to risk.

The decline of the fossil fuel sector requires a response from trustees of investment funds big and small. While a decision on divestment will be driven by the particular goals and standards of each fund, it is clear that every fund must now consider fossil fuel divestment.

Objections to the Divestment Thesis Rely Upon a Series of Assumptions Unrelated to Actual Fossil Fuel Investment Performance

Detractors raise a number of objections to divestment, mostly on financial grounds, arguing that it will cause institutional funds to lose money or undermine their ability to meet their investment objectives, thus ultimately harming their social mandates. Such claims form a dangerous basis for forward-looking investment and are a breach of fiduciary standards. Objections to divestment are rebutted in detail in this paper. An FAQ section, included in Appendix I, provides an introduction to specific divestment issues.

Higher prices, as some investors argue, are not going to solve the sector's woes, as described in Appendix II, which outlines risks facing the sector in both high- and low-price environments.

Appendix III discusses risks related to fossil fuel sector litigation.

Introduction

This paper presents a financial case for investment funds to divest from fossil fuel companies. The days when investment funds could expect powerhouse performance from fossil fuel companies, and the resulting boost to the funds' bottom lines, are over. While investor perception and action with regard to the fossil fuel sector remain dangerously wedded to the past, the reality is that fossil fuel profits are smaller than they were and will become smaller still in the years ahead.

Further, the financial risks of continued investment in the coal, oil and gas sectors are growing. Taken cumulatively, the sector's performance issues and risks require trustees to ask: Why are we in fossil fuels at all?

Without data and analysis presented in a clear-eyed fashion on how any given fund can get to a fossil fuel free position, trustees lack adequate options going forward. That said, trustees who require their financial advisors to create an investment plan that meets investment targets and is fossil fuel free may be surprised that there are solid and prudent answers to the hard questions this issue poses.

The Case in Brief: Fossil Fuels Are No Longer a Sure-Fire Investment

This paper does not recast the scientific[2] or moral[3] case on climate change, nor does it provide a legal[4] fiduciary argument for divestment. Nor is this paper a how-to on divestment for trustees,[5] although the implications are clear.[6] These questions have been competently handled by others.

Instead, this paper makes a financial case for divestment as a proper financial response by investment trustees to current market conditions and to the outlook facing the coal, oil and gas sectors. It is driven principally by the likelihood that future returns from the fossil fuel sector will not replicate past performance.

For decades, fossil fuel investments were the major driver of world equity markets; they also made large, reliable annual contributions to institutional funds. In the early 1980s, for example, fossil fuel stocks accounted for seven of the top 10 companies in the Standard and Poor's 500. Today, only one, ExxonMobil, is in that class; and while it used to be the largest firm among the top 10, it has fallen to seventh.

This transition has become particularly pronounced over the past five years, when fossil fuel sector has lagged almost every other industry in the world. Instead of bolstering portfolio returns, energy stocks dragged them down and investors lost billions of dollars.

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[2] The Intergovernmental Panel on Climate Change (IPCC).
[3] *Huffington Post*. It's Time for Interfaith Moral Action on Climate Change. June 9, 2012.
[4] Center for International Environmental Law (CIEL). Trillion Dollar Transformation: Fiduciary Duty, Divestment and Fossil Fuels in an Era of Climate Risk. December, 2016.
[5] See The Global Coal Exit List (GCEL).
[6] Tom Sanzillo, IEEFA. The Case for Divesting Coal from the Norwegian Government Pension Fund Global. May, 2015.

Paradoxically, the sector's sudden fall from grace was caused largely by a price drop that grew out of a major technological innovation in the oil and gas sector: hydraulic fracturing (fracking). Fracking increased the supply of cheap oil and gas, and it emerged as a new source of supply that disrupted the dominance of OPEC and its supporters. After oil prices crashed in 2014, oil company revenues plummeted, expensive capital investments failed, massive amounts of reserves were written off as no longer economic, and major bankruptcies occurred. This decline exposed long-standing weaknesses in the industry's investment thesis, which was to assume that a company's value was determined by the number of barrels of oil (reserves) it owned.

In the new investment environment, cash is king, which creates a conundrum for the industry. Aggressive acquisition and drilling will likely lead to more losses for investors. However, if oil and gas companies pull back and acknowledge lower future returns and more modest growth patterns, their actions only confirm the industry is shrinking financially.

Higher prices are not going to solve the sector's woes. Recently, oil prices have begun rising from their low of $28 per barrel in 2016 to where they are now, above $75 per barrel. But even with this two-year run-up in prices, energy stocks were the second-to-last performing sector in 2017, as information technology, health, consumer discretionary, real estate, utilities and manufacturing all posted stronger returns, as did the Standard and Poor's 500 as a whole. And whatever benefit higher prices bring to companies' balance sheets, they increase the competitive advantage of renewables and push consumers to work harder to reduce their dependence on fossil fuels.

The weakness of the industry is likely to continue as oil prices remain relatively low (well below $100 per barrel) and are buffeted by short- and long-term volatility shocks driven by market and political events. Fossil fuel stocks, once prime blue-chip contributors to institutional funds, are now increasingly speculative. Revenues are volatile, growth opportunities are limited, and the outlook is decidedly negative.

The trend toward lower energy costs and more energy and technological innovation tilts away from fossil fuel investment, which is largely inflationary, volatile, and disruptive to national economic growth strategies. The sector is ill-prepared for a low-carbon future, due both to idiosyncratic factors affecting individual companies and an industry-wide failure to acknowledge, and prepare for, the energy transition.

In sum, the risks faced by the industry are daunting. The world economy is shifting toward less energy-intensive models of growth, fracking has driven down commodity and energy costs and prices, and renewable energy and electric vehicles are gaining market share. Litigation on climate change and other environmental issues is expanding and campaigns in opposition to fossil fuels have matured. They are now a material risk to the fossil fuel sector and a force for the reallocation of capital to renewable energy and electric vehicles as a source of economic growth. The risks, taken cumulatively, suggest that the investment thesis advanced by the coal, oil and gas sector that worked for decades has lost its validity.

The absence of a coherent, industry-wide value thesis that embraces the changes taking place in the global economy places fossil fuel investors at a true disadvantage. Successful oil and gas investing now requires expertise, judgment, an appetite for risk, and a strong understanding of how individual companies are positioned with respect to their competitors both inside and outside the industry.

Sophisticated investors now are treating oil and gas companies as speculative investments. They are looking for cash, in the form of dividends and share buybacks, and are skeptical of high levels of capital expenditures for exploration and drilling.

Passive investors could once choose from a broad basket of oil and gas industry securities, with little reason to fear they would lose money. Today, that is no longer the case, and passive investors, as a result, are being pushed into other blue-chip stocks with stable returns. In short, potential returns on coal, oil, and gas equities are no longer worth the risk.

The Divestment Solution

The level of risk posed by fossil fuel investments requires fiduciary action. How each fund resolves the issue must be based on its own history, mission, operating environment, investment goals, and approach to risk.

Going forward, investment strategies look to maximize returns by allocating capital to those segments of the market that are growing. It should not be difficult to find alternatives to oil and gas stocks given their lagging sector-wide performance. Investment opportunities that meet the financial targets of institutional funds abound. Current growth trends in the world economy provide a road map and form the basis for fossil-free indexes. Many funds may also opt to reallocate some capital to grow the renewable energy and electric vehicle sectors.

Detractors of divestment raise a number of objections on financial grounds: foremost, that divestment will cause institutional investment funds to lose money or undermine their ability to meet their investment objectives, thus ultimately harming their social mandates. They say divestment will force foundations to cut back on their grants and universities to reduce their scholarships, while public pension funds will be unable to meet their obligations, forcing governments to raise taxes.

As this paper shows, the markets for the last five years and for the foreseeable future demonstrate that indexes without fossil fuels do than those with fossil fuels. Most of the claims of prospective fund losses from divestment are derived by looking at the past performance of the fossil fuel industry. Such claims form a dangerous basis for forward-looking investment and are a breach of fiduciary standards.

Divestment opponents also argue that conversion fees and ongoing compliance costs will wipe out any potential gains from a transition away from fossil fuels. These arguments fail to note the growing number of fossil-free investment products on the market, itself a response to demand from large and small institutional fund trustees who asked for an answer to the question.

Many critics justify their opposition to divestment by misstating the movement's origins and scope of action. But the movement's goals are clear: to halt the use of fossil fuels, both as part of a climate-change movement and as part of a broader push toward economic change. The climate movement engages the issue in a variety of ways, by mobilizing popular opinion and by seeking to change the behavior of governments, fossil fuel corporations and financial institutions; divestment is but one way to bring the discussion about fossil fuels to the financial community and to elevate it in the popular debate.

Similarly, capital market momentum away from fossil fuels and toward other forms of energy is taking place in many ways and in many venues. It will not be accurately measured or guided

solely by analysis of spreadsheets or by the ruminations of specialized financial analysts. The issue requires leadership. The financial case for divestment seeks to align climate goals with the broader technological and financial forces taking place around the world. The climate effort is a permanent part of public dialogue being carried out by grassroots leaders and experts across our technological, scientific, financial, political, and legal institutions. It is also a permanent part of forward- looking economic growth. New industries are growing, job opportunities are being created, and whole communities are coming to life.

Playing a fiduciary role and filling broader responsibilities as citizens, family members, and community members are not in conflict with one another. They are fused. The fiduciary question— why are we in fossil fuels? — is only the start. The larger divestment question is: What are the standards of care and diligence that today's fund trustees wish to pass on to those who come next?

The Financial Performance of the Fossil Fuel Sector Has Been Weak

The Sector, Once a Market Leader, Now Lags

For decades, the fossil fuel sector literally fuelled the growth of the world economy. Coal was essential to the Industrial Revolution. During the early part of the 20th century, oil and gas leaped over coal, and together these fuel sources helped drive the economic growth of the U.S.

Table 1: Standard and Poor's Top Ten 1980-2018

	1980	1990	2000	2010	2018
1	IBM	IBM	GE	Exxon*	Apple
2	AT&T	Exxon*	Exxon*	Apple	Microsoft
3	Exxon*	GE	Pfizer	Microsoft	Amazon
4	Standard Oil Indiana*	Phillip Morris	Citigroup	Berkshire	Facebook
5	Schlumberger*	Shell Oil*	Cisco Systems	GE	Berkshire
6	Shell Oil*	Bristol Meyers	Walmart	Wal-Mart	JP Morgan
7	Mobil*	Merck	Microsoft	Google	ExxonMobil*
8	Standard Calif*	Walmart	AIG	Chevron*	Alphabet, Inc. B
9	Atlantic Richfield*	AT&T	Merck	IBM	Alphabet, Inc. C
10	GE	Coca Cola	Intel	Proctor Gamble	Johnson & Johnson

* Represent Oil and Gas companies. Source: https://us.spindices.com/indices/equity/sp-500

As the driver of the global economy, fossil fuel companies also led the stock market. In the 1980s, for example, seven of the top 10 companies in the Standard and Poor's 500 Index were oil companies. Figure 1 below illustrates the sector's role (using ExxonMobil as a proxy) over the past 15 years.

Figure 1: ExxonMobil Growth Compared to Standard and Poor's 500, 2003 to Present

Source: Yahoo.com Finance

As Figure 1 shows, ExxonMobil significantly outperformed the Standard and Poor's index from 2003 through 2014, helping to drive the entire market upward. Since 2014, however, the reverse has been the case, with ExxonMobil and the energy sector broadly significantly underperforming and acting as a drag on the entire index.

Fossil fuel companies have become financial laggards during the past three to five years, and their declines reflected in investment returns. Institutional investors use the MSCI index to guide and gauge trillions of dollars in investments. For the past five years, the MSCI index without fossil fuels has outperformed the index with fossil fuels.[7] In short, a portfolio without fossil fuels over the past five years has done better than a portfolio with fossil fuels. (See Figure 2.)

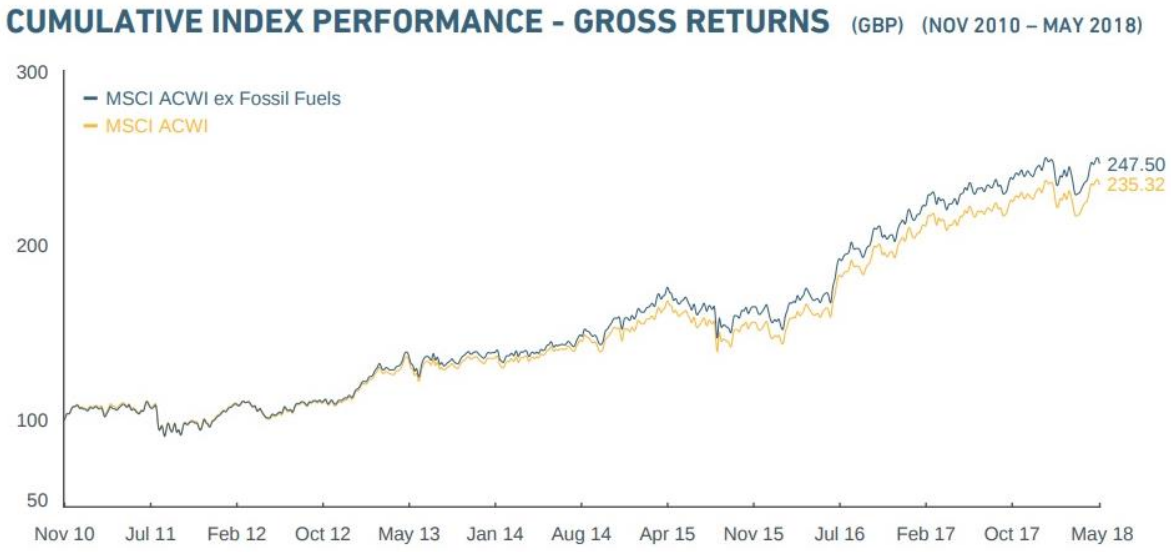
Specific indicators of the sector's recent decline:

- Today, only one oil company, ExxonMobil—the world's largest private sector oil company, the standard-bearer for the oil and gas industry, and a company that once outpaced the rest of stock market—is in the top 10 of the S&P 500. It has lagged the index since July 2013.[8]
- ExxonMobil's recent performance is a stark indication of the decline of the oil and gas sector as a whole. The company had revenues of $466 billion in 2008 and approximately half that in 2017, at $237 billion. It paid out $43 billion to shareholders in 2008, but only $13.7 billion in 2017. Further, in 2016, following several years of write-offs of uneconomic reserves by other oil majors, ExxonMobil wrote off 20% of its global holdings.

[7] MSCI ACWI ex Fossil Fuels Index (GBP). May, 2018.
[8] Yahoo! Finance. Exxon Mobil Corporation (XOM). YSE- Nasdaq Real Time Price.

- Energy was the second-worst performing sector in 2017, losing 4% when the S&P 500 overall gained more than 19%.
- The coal industry, which has faced stiff competition from lower natural gas prices and increasingly competitive wind and solar generation, continued its secular decline as natural gas prices stabilized or trended slightly lower. In 2017, large numbers of coal plant retirements occurred alongside declining generation from remaining units.

Figure 2: Cumulative Returns of MSCI World Index vs. MSCI World Index ex Fossil Fuels, 11/2010 - 5/2018



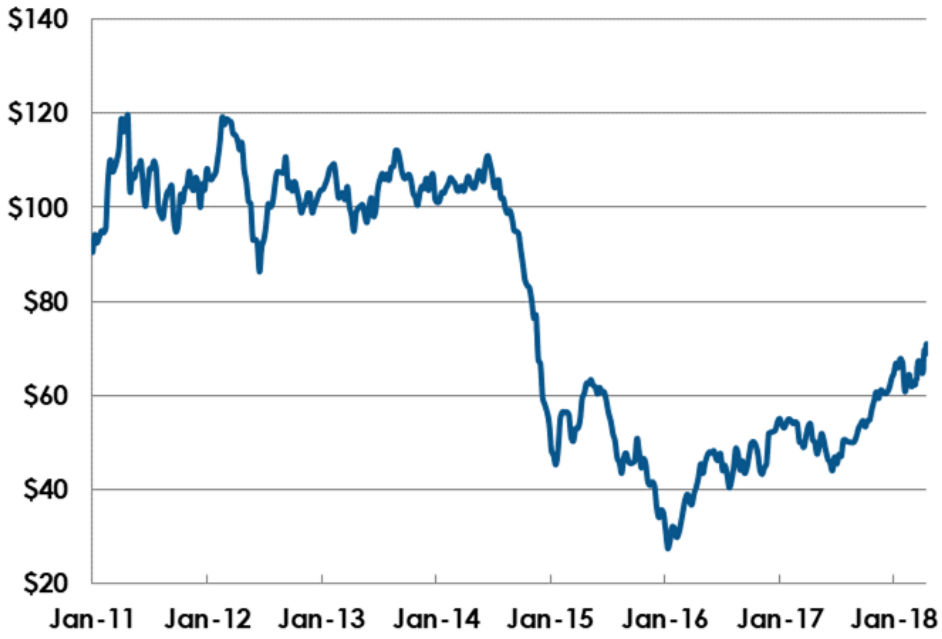
Source: https://www.msci.com/documents/10199/b4b02abd-f3a7-4a4b-b459-e996a672cd8f

How Did This Once-Powerful Sector Lose its Grip?

Ignore the slick rhetoric flowing from oil and gas company public relations departments. An honest analysis of the sector reveals that the fracking boom has been a bust. Investors have poured hundreds of billions of dollars into North American oil and gas production over the past decade along with many tens of billions of dollars more into oil and gas pipelines, with surprisingly poor results. Oil and gas companies—large and small, global and U.S.-focused—have lagged far behind broader stock market indexes,[9] frustrating investors who had hoped that the shale renaissance would ultimately yield robust profits.[10]

[9] *Bloomberg News*. Big Oil Gets Little Love With Toxic Troika Shadowing Revival. April 23, 2018.
[10] *Wall Street Journal*. Wall Street Tells Frackers to Stop Counting Barrels, Start Making Profits. December 13, 2017.

Figure 3: U.S. Oil Prices Adjusted for Inflation



Source: World Bank and Bureau of Labor Statistics.

The mid-2014 collapse in global oil prices (see Figure 3 above) triggered many of the industry's current financial woes. Prior to that, oil prices regularly topped $100 per barrel, and many market analysts believed prices would continue to rise indefinitely. Today, few forecasters envision a return to $100 per barrel oil; and while some dissenters remain, the oil price mantra on Wall Street has now become "lower for longer."

These low prices yielded a stunning contradiction: in the middle of an oil and gas production boom, the industry's financial clout shrank. Since the oil price rout, the industry has suffered a series of financial problems: declining revenues; lower profits; major asset write-downs; rising long-term debt loads; and dwindling capital spending that foretells fewer opportunities for profitable growth. Many industry analysts expected that higher oil prices in 2017 would improve the sector's fortunes, but oil and gas stocks notched yet another dismal year, badly trailing the broader market indexes.

Understanding the oil and gas industry's current financial weakness— and how the industry moved so quickly from strength to fragility— requires some foundational knowledge in two areas: the current structure of the global oil and gas industry and the history of oil prices leading up to the 2014 price crash.

Coal's Decline: No Sign of Ending

The U.S. coal industry's decline shows no sign of stopping. Growth in natural gas has come at the expense of coal, a trend that will persist and lead to continued coal-fired plant retirements across the U.S. and diminished coal growth globally— especially as the growth in renewables in India and China continues to outpace expectations.

In the U.S., coal plant retirements will continue through 2018. Power generators are expected to retire— or announce the retirements of— 16,200 megawatts of coal-fired plant capacity in 2018.[11] Even though some coal companies have exited bankruptcy and have been restructured, with the attendant billions of dollars of value destruction, the outlook for the industry remains bleak.

Coal once accounted for 50% of U.S. electricity generation; today its market share hovers around 30%, and that share is likely to keep shrinking.[12] Low natural gas prices and increasing wind and solar generation will put increasing pressure on coal plants.

Wind and solar will continue to undermine coal in three ways. First, both wind and utility-scale solar PV have no fuel costs. To state the obvious, it is difficult to compete with free. Wind and utility-scale solar as a result, are dispatched first to the energy grid, displacing generation from more expensive fossil plants. Coal plants, as another result, generate less power. Second, wind and utility-scale solar PV help keep energy market prices low — even zero or negative— during many hours of the day. This means that coal plants earn less for each MWh they sell. And third, distributed rooftop solar PV reduces the load on the system, which also leads to less generation at coal.

[11] Bloomberg New Energy Finance, "The Future of Energy Global Summit," New York, April 9-10. 2018
[12] *S&P Global Platts*. US coal production to decline as share in power generation mix drops: EIA. April 11, 2018.

Down But Not Out: The Oil and Gas Sector Today

The oil and gas sector is vast and, at least in terms of physical output, both domestically and internationally, still growing. The 50 largest oil and gas companies in the world, including both state-owned and publicly traded companies, recorded revenues of about $5.4 trillion in 2015. ExxonMobil, Chevron, Marathon, Conoco, and Enterprise Products— the U.S.-based corporations among the globe's top 50— accounted for a combined $680 billion of revenues that year. The U.S. produces 11% of the world's oil supply, and the 10 largest publicly traded oil and gas companies in the U.S. have a combined market capitalization of $837 billion.[13]

While the oil and gas industry is presented sometimes as a monolith, it is actually a sprawling set of interrelated sub-industries with activities that fall into three general categories:

- **Upstream.** Also known as the exploration and production (E&P) segment of the oil and gas industry, upstream operations explore for new reserves and use a variety of technologies— conventional onshore drilling, deep-sea drilling, fracking in tight shales, and even tar sands mining— to extract hydrocarbons in forms ranging from ultra-light methane to sludgy heavy oils.
- **Midstream.** Midstream operations serve as the oil and gas industry's transportation system, moving raw fuels from producing regions to processing plants, refineries, and petrochemical facilities. Midstream companies also transport refined products to consumer markets. The U.S. midstream segment is known primarily for its complex network of pipelines, but it also moves oil and refined produces by rail and marine vessels.
- **Downstream.** This segment refines raw hydrocarbons into a vast array of products: fuel for automobiles, trucks, airplanes, trains, and boats; natural gas that is consumed in homes, power plants, and major industries; and petrochemical feedstocks used to provide hundreds of different chemical compounds for manufacturing. Dow Chemical alone, for example, has more than 7,000 product families, most derived from fossil fuels.

The U.S. Department of Energy reports that the oil and gas sector— including extracting and refining hydrocarbons and producing electricity from oil and gas— employed nearly 880,000 workers in the U.S. in 2016.[14] Other sources place total oil, gas, and petrochemical employment at 1.39 million.[15] Yet extraction of oil and gas directly employs fewer than 150,000 workers across the U.S., down from 200,000 in late 2014.[16] And despite strong recent gains in U.S. oil and gas output, employment in oil and gas extraction has stabilized: higher production in recent years has not led to more jobs. In fact, the U.S. oil and gas extraction industry employs about the same number of workers today as it did a decade ago when the fracking boom was first taking off.[17]

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[13] Statista. 2018 ranking of leading United States oil and gas companies based on market capitalization (in billion U.S. dollars).
[14] U.S. Department of Energy. U.S. Energy and Employment Report. January, 2017, p. 29.
[15] Statista, Total oil, gas, and petrochemical employment in the United States in 2015, by occupation (exclusive content)
[16] U.S. Department of Labor Bureau of Labor Statistics. Employment, Hours, and Earnings from the Current Employment Statistics survey (National).
[17] Ibid.

Companies in the oil and gas sector face significant challenges: geological and technological issues; massive capital costs; long lead times (particularly for major projects); and far-flung operations that are often in difficult locations and face challenging environmental conditions and public opposition. Businesses in the sector often share risks and costs through joint ventures and complex partnerships, which in turn introduce their own set of execution challenges. The sector is buffeted by macroeconomic risks— fluctuations in commodity prices, exchange rates, interest rates, and overall economic growth— as well as shifting political climates. And the industry often faces significant costs to mitigate or remediate the substantial environmental harms it causes.

Despite the obstacles the industry faces, for many decades the oil and gas sector produced value to shareholders and significant revenue for many governments. This is why the industry's slipping financial performance is causing serious problems. Governments that rely on oil and gas revenue now face severe funding shortages that, in several notable instances, have resulted in political turmoil and even challenges to government legitimacy. Meanwhile, flagging stock market performance has forced many investors who relied on fossil fuel returns to rethink their strategy toward the entire industry.[18]

Oil Prices Since the 1980s

Starting in the early 1980s— when the OPEC-driven oil shocks of the 1970s were still fresh memory— global oil prices entered a period of decline and relative stability. Adjusted for inflation, oil prices generally trended downward for nearly two decades, falling near all-time, inflation-adjusted lows in the late 1990s. (See Figure 4 below.)

But in the early 2000s, global oil prices began to rise. Unlike the 1970s oil shocks, these increases were due more to geology than geopolitics. Production from larger and older oil fields had begun to decline, and new oil discoveries had grown scarce. Oil prices rose steadily as production growth slowed and new supplies became more expensive. These developments prompted many energy market analysts to conclude that the world had entered a new era of inexorable price increases.

[18] *The Wall Street Journal*. Big Oil Investors Rethink Their Bets. January 3, 2018.

Figure 4: Oil Prices, 1982-2017

Source: World Bank and Bureau of Labor Statistics.

For nearly 15 years— over a stretch interrupted only briefly by the chaos of the global commodity bubble and economic collapse that occurred from 2007 through 2009— forecasts of scarce supplies and high prices gradually tightened their influence on global markets. Confident that oil prices would continue rising, oil and gas investors turned increasingly to capital-intensive "extreme oil" projects, including deep-water drilling, Arctic exploration, and oil-sands extraction. Even under the best of circumstances, these projects would take decades to recover their up-front costs, let alone turn a profit. Still, convinced that global oil prices would continue to rise, investors believed that high-cost, extreme oil reserves ultimately would yield handsome returns.

Those convictions began to fall apart in mid-2014. Oil prices in June 2014 stood at $105 per barrel, but by January 2015 had dropped below $50. The declines continued in fits and starts over the next year, with spot oil prices bottoming out in February 2016 at less than $30 per barrel.

This 18-month price shock stemmed neither from geology nor geopolitics, but from technology and investment. The preceding decade of high prices had encouraged smaller U.S. oil companies to experiment with new ways of coaxing oil and gas out of the ground. Over time, the industry succeeded, combining and refining old technologies, including horizontal drilling, seismic imaging, and hydraulic fracturing, or fracking. Wall Street caught wind of fracking's early successes and began to pour capital into the nascent tight-shale industry. U.S. hydrocarbon production rose quickly— starting first with natural gas in the mid-2000s, and later with oil in 2009.

Initially, prices stayed high even as U.S. oil output grew. A key reason oil prices did not fall immediately was that some OPEC members trimmed production to keep supplies tight and oil prices elevated. But the continuing rise of U.S. oil production started to erode OPEC's market share, squeezing profits for governments that were heavily reliant on oil revenue. So, in mid-2014, the cartel unexpectedly fought back against the U.S. shale oil industry by refusing to cut

production, keeping global supplies elevated.[19] OPEC oil ministers expected that the resulting price crash would undercut the finances of U.S. oil and gas companies, souring investors on U.S. shale oil, and thereby eliminating a growing competitor.

The oil cartel's strategy worked, at least in the short term: the price crash did trigger a major realignment of oil industry finances. Many companies had no choice but to write off costly reserves and extreme oil projects launched during the era of high prices. Others sold assets for less than they paid for them. A host of smaller product and service companies filed for bankruptcy. As revenues plummeted, stock prices and capital expenditures collapsed, and the industry took on massive debt to weather the storm.

Looking long term, however, OPEC's efforts to cripple the U.S. shale industry look like they will fail. The price collapse forced free-spending oil and gas companies to improve their financial discipline and drilling efficiencies. After a brief dip, U.S. oil output is again on the rise and likely will top 11 million barrels per day by the end of 2018. And even though new OPEC production restraints have boosted prices from their early 2016 lows, global oil prices recently topped $70 per barrel, most analysts expect them to remain roughly at that level going forward.

[19] *Vox*. Oil prices keep plummeting as OPEC starts a price war with the US. November 28, 2014.

Oil's Powerful Influence on National Budgets and Economies

Due to its current central importance in the global economy, the price of oil has a significant impact on the budgets of both producing and consuming nations. High prices benefit the former at the expense of the latter, and vice versa.

Oil-Producing Nations

Many of the world's largest oil companies are state-owned enterprises, including those in Russia, Qatar, Saudi Arabia, Venezuela, Libya, Iran, Syria, Iraq, and Norway. The function and structure of state-owned oil and gas companies differ from those of private companies owned by shareholders. Like all oil companies, state-owned companies must generate revenues that cover the cost of operations, borrowing, and reinvestment, but instead of distributions to shareholders, they must make distributions to the government's budget and often payments to key individuals in the ruling elite. A prolonged low-price environment has serious political repercussions for oil-producing countries whose governments are dependent on industry revenue to support national budgets. As these revenues decline, the governments fall into fiscal distress, public spending is curtailed, and the legitimacy of those in power can be challenged. The governments of Saudi Arabia, Norway, and Qatar, for example, have all recently issued unprecedented national budget-tightening measures along with warnings of further cuts. Recent street protests in Iran, Iraq, and Russia in part stem from social distress caused by the loss of oil-related revenues and subsequent cuts in services.

Rising prices intensify the volatility of the oil and gas sector as a place to do business. As oil prices rise, government budgets supported by state-owned enterprises improve. The recent rise from $60 per barrel to $80 per barrel is generally good news for these countries. Growing cash reserves for state-owned enterprises can create appetites for expansionary investments overseas in both upstream and downstream projects, all of which (particularly the downstream ventures) come with risk. Rising prices also drive pressure, particularly among U.S.-owned drillers, to increase production and disrupt OPEC's current supply cuts. In the short run, there will be continued market volatility as prices climb and the negative impacts from higher prices start showing up in higher inflation, larger trade deficits, currency weakness, and diminished expectations for economic growth.

Oil-Consuming Nations

In the past, oil and gas price shocks caught consumer nations— including India, Japan, China, South Korea, and much of Europe— flat-footed. Having no alternatives, national governments at first try to buffer consumer price increases with subsidies and market interventions. This adds pressure to national budgets. For consumer nations such as Japan[20] and India, large, long-term oil price increases can sap their economic growth strategies. High prices bring inflation, trade deficits, currency imbalances, fiscal stress, and anaemic economic growth.[21]

Today, consumer nations, and perhaps consumers themselves, are positioned differently. Learning from past business cycles and looking to lower the cost of energy, these countries are adopting large-scale strategies to hedge against global price volatility. The current rising price cycle will be a test of how far along consumer countries are and how quickly they respond to the rising price environment. The cycle will also highlight what kind of policy and market incentives they will need to further protect themselves from price volatility.

[20] *Reuters*. Japan's manufacturers' mood sours as yen, oil prices rise. April 19, 2018.
[21] *Reuters*. Rising bond yields, oil prices hammer Asian currencies. May 8, 2018.

Understanding Today's Fossil Fuel Industry: Growing Risks and Vulnerabilities

Taken alone, any of the risks faced by the industry would be daunting. The world economy is shifting toward less energy intensive models of growth; fracking has driven down commodity and energy costs and prices; renewable energy and electric vehicles are taking market share; litigation on climate change and other environmental issues is expanding; and campaigns in opposition to fossil fuels have matured and are a material risk to the fossil fuel sector.

Taken together, the risks suggest that the investment thesis advanced by the coal, oil and gas sector that worked for decades has lost its validity. If the industry continues with aggressive acquisition and drilling activities going forward it likely lead to more losses for investors, but to pull back and acknowledge lower future returns and more modest growth patterns only confirms the problems the industry confronts. How the industry will resolve this is uncertain, but for individual and institutional investors it is time to reconsider investments in the fossil fuel sector.

A New Investment Thesis for the Industry?

Investors who are seeking to understand climate risk need first to understand that the fossil fuel sector is no longer a "blue chip" investment in which investors can expect steady, powerful growth in cash and value. The value portion of the stocks, as reflected in the reserve portfolios, is no longer a guarantor of future profitability. The cash flow of the companies is now key, and is tied to an increasingly volatile sector with downward pressure on prices— and, more importantly, profits.

Like any business, the oil and gas sector's fundamental financial health hinges on three critical variables: the total volume of products the industry sells; the cost of producing those products; and the prices it receives for its products.

Yet for years, global investors believed that a fourth factor was just as critical for an oil or gas company's long-term financial prospects: the size of its hydrocarbon reserves. According to this investment thesis, global oil and gas production was the fuel for— and synonymous with— economic. Growth would inexorably lift prices, revenues, and profits for the oil and gas sector. Price spikes and price troughs— and the trajectories of rising and declining prices— had a specific financial function, with spikes providing capital to support more growth. As the global economy grew, demand for oil and gas would periodically collide with supply constraints creating periods of price volatility. The industry, when challenged by conditions to innovate scientifically and technologically, would make improvements and navigate any political conflict.

Companies had to be prepared to deliver returns in any investment climate. The key was to maintain an abundant portfolio of oil and gas reserves. Investors supported large acquisition budgets as part of the long-term bet they made on the industry, and they treated reserves as a key metric of long-term value.[22]

[22] Steve Coll, *Private Empire: Exxon Mobil and American Power*. New York: Penguin Books, 2012, pp. 186-193.

This investment thesis succeeded for decades, and many investors simply assumed that new reserves, even those acquired at great cost, would ultimately yield handsome rewards. Driven by this factor, oil and gas executives placed a high priority on steadily restocking reserves through a combination of exploration, acquisitions and creative accounting. And they bet big on high-cost oil projects— tar sands, Arctic drilling, and deepwater extraction— that required decades of high prices to recover the initial capital costs.

During the early years of the shale boom, the oil and gas sector doubled down on the reserve growth thesis. Small and midsized E&P companies entered bidding wars for shale oil fields and paid high costs to drill and prepare new wells for production. Integrated supermajors, such as ExxonMobil, Shell, and BP, spent lavishly on shale oil assets, sometimes by swallowing smaller companies whole. Pipeline companies piled up debt to build (and often overbuild) new oil and gas transportation networks to service the vast amounts of oil and gas that the industry was preparing to produce. The industry quickly gained experience and confidence in coaxing oil out of basins that had previously been dismissed. And Wall Street— long accustomed to viewing oil reserves as a key metric of financial value— flocked to the sector.

But even as the oil and gas industry and investors poured money into the shale revolution, the production boom it had unleashed was steadily upending the investment thesis that equated oil and gas reserves with long-term value.

Fracking undermined the old reserve-based investment thesis in two ways. First, it eroded the assumption that global oil and gas supplies inevitably would be subject to periods of constraint. Burgeoning oil and gas output in the U.S.— along with hints that fracking technology could spread globally— rendered old estimates of total global reserves meaningless. And if oil and gas were not in short supply (at least on a time frame that mattered to Wall Street) investors could not rely on reserves as a gauge of long-term value.[23]

Second, the price collapse caused by the new abundance of oil and gas actually *destroyed* the economic value of many reserves. Accounting rules define proved reserves in both geologic and economic terms: a reserve represents the amount of oil and gas that could be profitably extracted at expected future prices. But as expectations for future prices fell, many so-called reserves became unprofitable. This forced the industry to "de-book" many reserves and write off many investments as worthless. The result was a seeming paradox: oil and gas production was soaring even as whole segments of high-priced reserves were rendered valueless.

As the old, reserve-focused investment thesis withered, the oil and gas sector was gradually becoming just another commodity, subject to the same short-term financial concerns—about prices, profits, cash flows, debt, dividends, and asset quality— as the rest of the global market.

Yet by the metrics of financial success that apply to other mature industries, much of the sector had been chalking up dismal results for years. Even when prices were high in the early part of the shale boom, many companies spent more to acquire and develop new reserves than they were earning from production. To sustain their capital spending while maintaining robust dividend pay-outs, the sector borrowed heavily from the debt markets. For any other mature industry, this sort of debt-fuelled spending spree would have set off warning bells. But the old

[23] *Wall Street Journal*. Wall Street Tells Frackers to Stop Counting Barrels, Start Making Profits. December 13, 2017.

reserve-focused investment thesis fuelled investors' belief that profligate capital spending would ultimately yield handsome profits, letting the sector off the hook, at least for a while.

The elevation of cash flow, rather than reserves,[24] as the key metric of value in the oil and gas industry is forcing a comprehensive re-evaluation of the sector's financial health. Investors increasingly view oil and gas companies— even the supermajors such as ExxonMobil and Chevron— as speculative investments whose fortunes are intimately tied to the ups and downs of commodity markets.

And now that cash flow matters to investors, *oil and gas prices matter*.[25] The direction of oil prices, and the specific effects of prices on revenue and profit, increasingly determine how investors evaluate oil and gas companies. And unfortunately for the oil and gas sector, there are financial and political risks at both ends of the spectrum.

The results of the low-price environment have been on display for the past several years: a sharp decline in revenue, reserve write-offs, poor stock market performance, numerous bankruptcies and defaults, and a general decline in public and investor confidence. Expectations of a prolonged low-price environment also have forced companies to move aggressively to cut costs and curtail capital spending.

At the other end, high prices could offer a reprieve of sorts for oil and gas companies through higher revenue. But higher prices tend to tamp down overall demand and run the risk of strengthening competing resources. Prices for clean renewable energy resources already are falling fast, and any increase in oil and gas prices simply improves the economic competitiveness of the alternatives. (See Appendix II for a more thorough discussion of the risks the industry faces in both low-price and high-price environments).

In addition to price risk, oil and gas executives now face a confluence of forces— some continuations of past trends and others newly emerging— that will continue to pressure the industry's finances in the years ahead.

As mentioned above, investors once had a clear (if not necessarily accurate) idea of how oil and gas companies would generate profits: prices would steadily rise, and even expensive projects would eventually yield handsome returns. The shale boom, and the accompanying price collapse, has undercut that idea, but no new investment narrative has emerged to take the place of the old one.

[24] *S&P Global*. The challenge facing US shale companies as oil prices recover: Produce more crude or more cash? February 5, 2018.
[25] *Houston Chronicle*. In energy, cash is king. March 6, 2018.

Changes in the size and quality of economic growth are weakening the logic of oil and gas investment.

A broader backdrop is creating both policy and market challenges for the coal, oil, and gas sector. The nature of economic growth is shifting from energy intensive manufacturing and industrial models to more service oriented, higher technology models with lower energy intensity.[26] This is a global phenomenon. Mature economies are growing, most having already made significant investments in lower energy sectors. High growth, emerging markets now have significant incentives and opportunities to reduce energy costs to facilitate growth rates.

ExxonMobil's most recent Energy Outlook estimates that the fastest growing countries by GDP through 2040 will be China and India. They also will be the countries with the most rapid declines in energy intensity. More broadly, non-OECD nations will grow faster than OECD nations and will do so with declining energy intensity. Older economies, like the U.S. and Europe, already have lower energy intensity, which will continue to improve even as their economies grow, albeit at slower rates.[27] The trend toward lower energy costs and more energy innovation tilts away from fossil fuel investment that is largely inflationary, volatile, and disruptive to national economic growth strategies.

The absence of a coherent, industry-wide value thesis that incorporates these broader trends places investors at a true disadvantage. Successful oil and gas investing now requires expertise, judgment, an appetite for risk, and a strong understanding of how individual companies are positioned with respect to their competitors both inside and outside the industry. Passive investors could once choose from a basket of oil and gas industry securities with little reason to fear they would lose money. Today, that is no longer the case, pushing passive investors into other blue-chip stocks with stable returns.

Fracking will continue to disrupt the industry.

The havoc caused by fracking has not yet run its course. Fracking threatens to keep prices low for the foreseeable future, keeping the squeeze on the global oil and gas sector's finances. In the short term, spare production capacity built up during the fracking boom[28] will moderate price spikes. In the long term, the potential for fracking to spread beyond U.S. borders,[29] while certainly disturbing from a climate perspective, could also maintain the low-price environment for decades.

Low prices, in turn, will continue to erode oil and gas industry balance sheets, forcing new write-downs of capital intensive projects and a more cautious outlook on future investments in high cost ventures like tar sands, deepwater drilling, and Arctic exploration. Meanwhile, the shale boom will continue its unpredictable evolution, turning small towns into boomtowns and boomtowns into ghost towns, leaving a trail of stranded or overbuilt capital: oil and gas wells that never yielded a robust profit; pipelines and terminals that now lie underutilized and that could lose customers after existing 10-year contracts expire. All the while, frackers themselves will chase the thinnest of profit margins as the globe's de facto swing producers.[30]

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[26] U.S. Energy Information Administration (EIA). Global energy intensity continues to decline. June 12, 2016; and ExxonMobil. 2018 Outlook for Energy: A View to 2040.
[27] ExxonMobil. 2018 Outlook for Energy: A View to 2040. p. 60.
[28] *Reuters*. OPEC, Russia agree oil cut extension to end of 2018. November 30, 2017.
[29] *Forbes*. Exporting Fracking: 8 Countries Ripe For Tight Oil Drilling Outside The U.S. December 19, 2017.
[30] *Forbes*. OPEC Can Cut Production But Fracking Controls The Oil Price Now. May 29, 2017.

Oil and gas face growing competition from renewable energy and electric vehicles.

Fossil fuel companies depend on rising demand to keep supplies tight and prices rising. In this context, even small losses in market share to renewables or electric vehicles could have outsized impacts on both oil prices and profits. Renewables offer key advantages over coal and gas, including both climate benefits and freedom from energy price fluctuations. A growing renewables sector is poised to steal market share from gas, keeping energy prices in check and diverting capital investments away from fossil fuels.[31] In the U.S., wind and solar already have begun to put downward pressure[32] on natural gas prices and demand in the electricity sector.

Globally, wind and solar energy have grown at levels that far exceed expectations.[33] For example, BP's chief economist recently apologized for a mistaken forecast, underestimating the speed of the energy transition, particularly in India and China.[34] In the U.S., wind and solar energy growth is running about 40 years ahead of the Energy Information Administration's market growth estimates.[35]

The growth of wind and solar is based on its highly competitive pricing structure. Record-low auction prices for solar and wind, as low as 3 cents per kilowatt-hour (kWh), make headlines regularly, and are reported across the globe, from India to Chile. At these prices, solar and wind are lower than generation costs of newly built gas and coal power plants.[36] Based at least partly on competitive prices, new solar PV capacity around the world grew by 50% in 2017, with solar PV additions growing faster than any other fuel. China accounted for almost half of this expansion.[37]

Meanwhile, the auto industry— a key driver of oil demand— increasingly sees its future in electric vehicles. GM, for example, plans to launch up to 20 new all-electric vehicles by 2023, and a top executive stated that the company "believes in an all-electric future."[38] Ford[39] announced a pivot toward becoming a "mobility company"[40] rather than a car company, saying that its future is now in "smart, connected vehicles, including…electric vehicles." Last fall, Volkswagen announced that it would invest $84 billion in electric cars, including massive new battery factories. Nissan, Toyota, Daimler, Tesla— the list of major global car companies that have made big bets on EVs goes on and on. And perhaps most important, electric vehicles have made major inroads in the Chinese market. The growing technological successes of autonomous vehicles also could speed the transition to EVs, further crimping petroleum demand.

The risks to fossil fuels from electric vehicles have grown relatively slowly, and so market

[31] Gerard Wynn, IEEFA. Power-Industry Transition, Here and Now. February, 2018.
[32] *Utility Dive*. Renewables challenge natural gas plants on price in latest Lazard analysis. December 20, 2016.
[33] Gerard Wynn, IEEFA. Power-Industry Transition, Here and Now. February, 2018; Tim Buckley, IEEFA. China's Global Renewable Energy Expansion. January, 2017; and Tim Buckley & Kashish Shah, IEEFA. Solar is Driving a Global Shift in Electricity Markets. May, 2018.
[34] *EURACTIV*. BP confesses 'mistake' in forecasting renewable energy growth. April 25, 2018.
[35] *EcoWatch*. Renewable Energy Growth: 40 Years Ahead of EIA's Forecast. May 30, 2017.
[36] International Energy Agency. Renewables 2017.
[37] Ibid.
[38] General Motors. GM's Path to an All-Electric, Zero Emissions Future. March 7, 2018.
[39] *Reuters*. Ford plans $11 billion investment, 40 electrified vehicles by 2022. January 14, 2018.
[40] *Greentech Media*. Ford Steps Up Its Game on Smart Mobility and Electric Vehicles. January 8, 2016.

share capture has been easily dismissed by the fossil fuel industry[41]. Bloomberg New Energy Finance has presented the chart below[42] showing the quickening rate of market absorption of electric vehicles. The rise of electric vehicles creates significant market share and other business risks for fossil fuel sales.

Figure 5: Electric Vehicle Sales Are Accelerating

Source: Bloomberg New Energy Finance. https://about.bnef.com/future-energy-summit/new-york-videos/

Although the pace of change is quickening, there remains substantial debate within the business community about the rate and trajectory of electric car displacement of fossil fuels.[43] Market indicators during this period of transition produce results that point to growth in the electric vehicle sector and general weaknesses in the fossil fuel sector. The storyline is not a straight or smooth one, as the two industries vie for market share.

- Electric vehicle market growth has had a negligible impact on gasoline sales to date. Market penetration is small globally, though it varies considerably from country to country. Nevertheless, investment in and marketing of electric vehicles continue to grow.[44]
- Auto industry executives are now seeing the need to adapt and move forward with investments in the electric vehicles sector.[45] This disrupts the traditional supportive, symbiotic relationship between auto companies and oil and gas companies.[46] For decades, the largest automobile companies and oil companies shared a similar goal: to keep high-profit, internal combustion engines (ICEs) on the road. These mutual interests are no longer so tightly linked. The most aggressive automaker Tesla, for example, is calling for a political war on fossil fuels.[47]

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[41] *Los Angeles Times*. China is banning traditional auto engines. Its aim: electric car domination. September 12, 2017.
[42] Bloomberg New Energy Finance, "The Future of Energy Global Summit New York" April 9-10, 2018
[43] *The Wall Street Journal*. Will Electric Vehicles Replace Gas-Powered Ones? November 13, 2017.
[44] Green Car Reports. How many billions are going into electric cars, globally? Guess the number... January 24, 2018.
[45] *The Wall Street Journal*. Auto Industry's Cure for Electric Car Blues: Be More Like Tesla. March 9, 2018.
[46] *Financial Times*. Oil groups 'threatened' by electric cars. October 18, 2016.
[47] BGR. Elon Musk wants a war with the fossil fuel industry. May 6, 2016.

- Technological progress in electric vehicles has now spurred many countries to introduce bans on cars with ICEs, with assurances that reliable and affordable EVs will meet the needs of their citizens.[48]
- Electric vehicle growth is forging new business alliances between car companies and utilities.[49] Electric vehicles have become a new market for utilities selling electricity at a time when an array of efficiencies and off-grid forms of electricity production challenge traditional consumption patterns.

Campaigns against fossil fuels are gaining in scope, sophistication and success.

The growing global climate protection movement has emerged as a material financial risk to the oil and gas industry. In addition to traditional lobbying and direct-action campaigns, climate activists have joined with an increasingly diverse set of allies— particularly the indigenous rights movement— to put financial pressure on oil and gas companies through divestment campaigns, corporate accountability efforts, and targeting of banks and financial institutions. These campaigns threaten not only to undercut financing for particular projects, but also to raise financing costs for oil and gas companies across the board.

Although U.S. federal climate policy is in a period of retrenchment, climate and fossil fuel activism continues to score major policy victories around the globe, creating profound and growing policy challenges for the oil and gas industry. Recent victories by activists opposing Kinder Morgan's Trans Mountain pipeline reflect the impact organized opposition can have on projects, even projects that have already incurred expenses of hundreds of millions of shareholder dollars.[50] Despite Kinder Morgan dropping its ownership of the project, and the government of Canada agreeing to purchase it, the controversy is likely to be protracted.[51]

Great Britain, France, Norway, Scotland, and China have all proposed phase-outs of conventional gasoline and diesel vehicles. Jurisdictions as varied as India, California, Germany, and the Netherlands may follow suit. At the same time, many nations and subnational jurisdictions have enacted carbon prices that could dampen demand for carbon intensive fuels.

Litigation risks are mounting.

The fossil fuel industry faces huge litigation risks, including class action suits that seek to quantify investor losses.[52] These lawsuits are the result of company and industry-wide mismanagement of climate change and other social and environmental issues. The current approach being taken by fossil fuel companies does not contribute to the climate problem, nor does it make the issue go away from a narrow company perspective. As the citizen efforts noted above grow, so too will calls for litigation.

Fossil fuel company management has dug in deep when confronted with litigation. The strategy exemplifies management's ultimate recalcitrance to address climate risk and

[48] *Los Angeles Times*. China is banning traditional auto engines. Its aim: electric car domination. September 12, 2017.
[49] *Scientific American*. Utilities Are Giving People Cash for Clean Cars. July 17, 2017.
[50] *The Maritime Executive*. Kinder Morgan Halts Spending on Trans Mountain Pipeline. April 9, 2018.
[51] *Financial Post*. How the Trans Mountain pipeline saga unfolded: The key dates from 1953 to now. May 29, 2018.
[52] Ramirez v. Exxon Mobil, U.S. District Court Northern District of Texas, Civil Action: 3-16-CV-03111-K, July 26, 2017.

profitability in a transitioning energy future. The industry, led by the U.S.-based oil majors, has a contentious relationship with law enforcement as illustrated by its aggressive tactics in responding to lawsuits filed against it. For example, a standard industry defense has been to claim it is a victim of a political vendetta, which should not be settled in court but should be settled through public policy initiatives. Another tactic is to counter-sue opponents. Still another tactic involves denouncing and impugning the motives of public officials, including those who are responsible for issuing municipal bonds.

Litigation efforts span a range of issues that directly relate to climate in some instances, and to broader corporate financial problems that have a more indirect linkage to climate. State attorneys general have focused on oil company disclosures regarding carbon emissions and on how companies value their reserves, and cities are organizing lawsuits to make damage claims against oil companies, similar to those made against the tobacco industry. Class action efforts are looking at investor damages, with others looking at investor suits targeted at the efficacy of any fossil fuel investments. In addition, individual country suits have been filed against oil companies for false claims, and indigenous people's suits asserting tribal rights.[53] (See Appendix III for a sample of specific lawsuits directed at the oil and gas industry.)

Securities regulators have taken note of the disclosure implications of changes in the fossil fuel sector.

The convergence of a down market and rising concerns over climate change risk have caught the eye of securities regulators, who have focused particular attention on ExxonMobil. Following a similar tack as New York state's lawsuit, the Securities and Exchange Commission (SEC) in 2016 began an investigation into whether ExxonMobil appropriately valued its reserves in the wake of oil price declines, and whether the company concealed its climate change research from investors. How the company is addressing the investigations has thus far been a largely unexamined topic of corporate governance.

Unlike other oil majors, Exxon in 2016 had not yet taken any significant write-downs of its assets, despite the sharp drop in oil prices in 2014. Oil companies use an internal number, a so-called "price of carbon" that represents the potential cost of regulations such as a carbon tax or a cap-and-trade system to limit emissions. This price is used to evaluate whether reserves of oil and gas would be economically producible under different scenarios. Exxon, unlike Shell and British Petroleum, which use a price of $40/ton,[54] does not disclose its internal price of carbon. In 2014, Exxon stated that none of its reserves were at risk of being stranded due to potential global responses to climate change. Subsequently, potentially because of the ongoing SEC investigation, Exxon has taken significant impairments, as described below:

- In 2016, ExxonMobil wrote off more than 4 billion barrels of reserves in the Canadian tar sands. This amounted to 19% of the company's worldwide reserves. It is a write down of a full decade of acquisitions in Canada that wrongly assumed ever-increasing oil demand at ever-rising prices.[55]
- The company also acknowledged a mistake[56] in overpaying for the reserves secured in a $6 billion acquisition of XTO's natural gas assets.[57]
- The company has written down other natural gas assets in 2016, and again in 2017.

[53] See Appendix I for more detail on Litigation Risks.
[54] *The Wall Street Journal*. SEC Probes Exxon Over Accounting for Climate Change. September 20, 2016.
[55] *Bloomberg News*. Losing 4.3 Billion Barrels Is Good For Exxon. February 24, 2017.
[56] Breaking Energy. Timing was Off for XTO Deal, says Exxon CEO. May 30, 2013.
[57] *Reuters*. Exxon Mobil to buy XTO Energy in big U.S. gas bet. December 14, 2009.

- The company recently acknowledged it would not be going forward with certain Russian investments in the North Sea.[58]

Capital investment by oil and gas companies has become a conundrum.

Combined capital expenditures (capex) for the oil and gas industry are expected to approach $500 billion in 2018[59]— an increase over the last three years, which featured capex freezes and cutbacks. Some companies are placing caps on these expenditures, even though the levels have increased, while others see rising prices and a reduced production cost environment as reasons to move forward with more acquisitions. This suggests a cautious optimism in word, and a potential new wave of investment in practice. As many companies have expressed the need to improve dividends and payments to shareholders in the current environment, the increase in capex spending may intensify overall pressures on company financial performance.

Looking forward, some companies may very well choose— unwisely— to put more dollars into upstream projects for the oil side of their businesses. Companies will expose themselves to further risk if they pursue such a traditional "oil is growth" scenario. Natural gas investments look more sustainable because of the growth in that market. However, selling natural gas at such low margins decreases industry and company profitability. Many petrochemical companies are searching for some sort of balance in the volatile world of oil and gas prices and the related pressures in the markets for specialized refined products.

[58] *The New York Times*. Exxon Mobil Scraps a Russian Deal, Stymied by Sanctions. February 28, 2018.
[59] Rigzone. CAPEX Among World's Largest O&G Firms to Rise to Just Under $500B in 2018. April 17, 2018.

Divestment Campaigns Influence Corporate Decisions and Reputations

This paper presents financial reasons for why institutional funds should divest from fossil fuels. However, many of the responses from the financial community and from fund trustees require some discussion that goes beyond direct financial arguments.

The arguments we are responding to in this section reflect what we consider to be political statements made by fund advisors and trustees, and not financial arguments.

They can be summarized as three separate oppositional arguments to divestment:

- Arguing for divestment at the boards of trustees of institutional funds is the wrong place to make the argument; boards have fiduciary responsibilities and they do not include making climate change policy.
- Divestment will not have any impact on an individual company's balance sheet or corporate behavior.
- The use of fossil fuels across the world economy is vast. Finding large-scale replacements for is a waste of time and energy. The industry is here to stay.

These arguments miss the broader purpose of the divestment movement, and the even more profound economic changes taking place.

Divestment Campaigns Are About Financial Leadership in a Democracy

For now, the fossil fuel industry is more powerful than the climate movement in traditional governmental settings, whether legislative or regulatory. Industry opposition has prevented the enactment of many legislative and regulatory proposals.[60] including carbon taxes, emission-trading schemes, and restrictions on extraction.

As government institutions have been unable to respond to the size, scope, and magnitude of the climate issue, divestment campaigns have found new avenues. The democratic impulse, like water, finds a way. Divestment campaigns have extended to corporate boardrooms debates that have been frustrated in the legislatures, courts, and administrative tribunals.

Yet these new venues— the boardrooms of corporations and investment trusts of the clients they service (trusts, pensions, and endowments)— can also frustrate divestment campaigners. Fossil fuel corporations and their allies have generally proven to be adept at deflecting outside challenges from shareholders. University investment trustees have issued strongly-worded rebukes to students and other activists.[61] Only a corporate or investment board with a special

[60] In 2010, the Senate rejected climate change legislation. The legislative process leading up to the vote took years. It was the focus of climate change advocacy along with a series of other initiatives at the local, state, federal and international level. The loss of the legislative fight in Washington accelerated interest in other existing strategies and new ones. Divestment campaigns on climate change are part of an evolutionary process of the climate movement.

[61] Hendrik Bessembinder. Fossil Fuel Divestment and Its Potential Impacts On Students, Faculty and Other University and Pension Stakeholders. April, 2017.

interest in climate issues[62] (such as Apple) or those subject to political pressures (like ExxonMobil)[63] adopt climate change initiatives.[64]

Most leaders of corporations and investment trustees express bewilderment at activist campaigns. This is understandable — they have not seen addressing climate policy as part of their job description or as part of an institutional mandate. However, leaders of corporations and investment funds must rise to the needs of changing times and guide their organizations during a moment of special historical importance.

Corporate Reputation Matters

In arguing that divestment campaigns are ineffective, some analysts claim that the campaigns rarely pose a reputational challenge to companies, particularly companies with minimal public brand recognition.

This argument reflects an outdated understanding of reputational challenges. In fact, the reputations of entire industries and individual companies rise and fall not only with big catastrophic events, but also from the steady stream of facts and data that define a cumulative storyline over time. It is very unusual to make or lose a corporate reputation in a single day. Even a single disastrous event, like a major oil spill, must run its course to have an impact on a company's reputation.

Divestment campaigns do not need to produce clear, quick or decisive results to be effective. The reputational harm to a company occurs not only when the brand loses customers (revenues) or investors (access to capital) due to a single definable incident or series of actions. It also occurs in more subtle ways that corporate managers understand and respond to aggressively.

On the micro level of corporate reputation, ask a CEO or board member, not a stock analyst or investment advisor, what matters. Every blip in stock price, quarterly earnings statement, successful or failed capital outlay, executive compensation criticism, shareholder mobilization in opposition to one or more corporate policies, article, editorial, and government action contributes to overall management perception. Corporate boards evaluate and compensate management based on a group of financial and governance metrics. These same measures of operations, profits, dividends, and management of the external environment also form the basis for public perception of the company— and give the divestment community a powerful avenue for influencing corporate behavior.

The reputation of a company brand develops over time. The host of issues that swirl around a company and the way issues surface at the board level is an ongoing concern for management. When issues developed outside the company come to the fore at the board

[62] Although many funds have divested from fossil fuels after conducting enhanced diligence on the issue, the divestment movement still receives considerable opposition from fossil fuel and finance interests.

[63] The May 2017 vote by Exxon Mobil shareholders in favor of more robust climate disclosure by the company should now set off a new round of engagement with the company. The company's track record on shareholder disclosures is under substantial challenge. The New York State Attorney General believes the process of misrepresentation by the company to its shareholders is an ongoing issue

[64] See Apple as an example of a company with a special interest. See Exxon as a company responding to pressure making institutional changes.

level, it matters. Reputations and advancement within the corporation rise and fall based in part on how controversies surface, are managed, and resolved.

Fossil Fuels: Not Too Big to Fail

An additional argument raised against divestment, essentially that the fossil fuel industry is too big to fail, is also badly misguided. The global economy is constantly changing and imputing a degree of invincibility to any sector is unwise at best. Coal accounted for roughly 50 percent of the U.S.' electricity generation as recently as 2008; it had fallen to 30 percent by 2017 and likely will drop below that level this year.

These changes were highlighted back in 2012 by Bernstein Research, Citigroup and other investment houses, which all took note of coal's structural decline. But while coal was floundering, these analysts expected the U.S. and global economies to continue growing, underscoring the risk that fossil fuel companies as a whole pose for investment portfolios. Similarly, the Indian and Chinese economies, once pegged as the future saviors of the coal industry, are undergoing profound change delinking economic growth from fossil fuel use and promising less energy- intensive economic growth.

Divestment campaigns as strategic initiatives of the climate movement represent action by civil society. The action is aimed at institutions of political governance: decision-makers, including legislatures, courts, or corporate boards with specific responsibility for the economy.[65] Already, changes to the economy have been substantial.[66] Just a few years ago, few would have thought the U.S. economy could manage to grow when the amount of coal moving through the economy dramatically shrank.[67] Fewer still would have expected a plan by the Sierra Club and others to fight each individual coal plant at dozens of utility commissions, state regulatory agencies, and public power organizations would result in a wholesale end to new coal plant construction in the U.S. And few would have expected 195 countries to sign[68] a global agreement on climate change.

Investors will not find this analysis in the reams of stock analyst reports. Investors are likely to wake up one day and find quotes like this one from Russ Girling, CEO of TransCanada, in 2011: "There is no way we could have ever predicted that we would become the lightning rod for a debate around fossil fuels and the development of the Canadian oil sands."

Divestment campaigns have a clear mission to drive capital away from a company, industry, or business practice that is detrimental to larger societal well-being. These campaigns take place against broader structural factors in the economy and cycles of growth, maturation, and decline. Whether company stock prices are up, down, or flat, if that company's underlying business activities are a menace to society, this fact will in some way appear in its financial metrics.

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[65] One important paper that covers how investment stakeholders change their opinions in the face of political and market changes: Merrill Jones Barradale, The Logic of Carbon Risk from the Investor's Perspective: The Expectation of the Carbon Payment, USAEE-IAEE WP 09-037, December, 2009.

[66] For a specific discussion of change in markets and public opposition to fossil fuels see: Oil Change International & IEEFA. Material Risks: How Public Accountability is Slowing Tar Sands Development. October, 2014.

[67] IEEFA's research has documented in granular detail how wind and solar energy have replaced significant amounts of coal capacity in the state of Texas, a major fossil fuel center in the United States. Texas is second in the nation in GDP growth.

[68] The United Nations website shows 195 signatory nations and 148 ratifications.

The current shrinkage of the coal, oil, and gas sectors validate the essential argument of divestment campaigns. Stock market analysts' concerns with finance models, spreadsheets, quarterly, and annual returns have their place. But, by focusing on these concerns and ignoring other relevant issues, these analysts are ill-equipped to grasp the larger significance of how a divestment campaign influences markets and society.

Some divestment skeptics say, as historical evidence of past divestment-movement failure, that corporations left South Africa in the 1970s and 1980s out of convenience, rather than divestment pressure. But what they ignore is that divestment was just one way the African National Congress globalized opposition to apartheid. When companies ended subsidiary relations in South Africa, they were weighing political risk and potential nationalization of assets as well as damage to their brand. The corporate withdrawal from South Africa was hardly symbolic. Global corporations would no longer invest in apartheid's moral bankruptcy even when the U.S. government continued its support for the regime. The delegitimization of South Africa's apartheid system and the regime that supported it appeared on no balance sheet.

As a financial factor, the climate and environmental movement is a material risk to the fossil fuel industry. It is supported by a significant segment of the population, particularly younger people. At the local and global level, it is permanent in its presence as an articulate source of moral, political, and policy vision and increasingly of market-based, practical alternatives to fossil fuel use. It is comprised of highly skilled professionals in the environmental, scientific, technological, political, and finance sectors, with resources to align these institutions into an array of sectors and industries that can compete with fossil fuel use. It has proven itself an effective adversary of fossil fuel use and a proponent of new alliances and policies to shape the kind of public and private nexus that leads to large-scale investment in a new economy.

Rebutting the Financial Arguments of Divestment Opponents

Divestment Critiques in the Academic Literature

A series of studies, some published with the support of the fossil fuel industry,[69] take issue with the financial aspects of the case for fossil fuel divestment. These studies are frequently used as expert evidence by those who prepare analyses of individual portfolios for universities, pension funds, and endowments. These studies are largely conducted by academic researchers. Academic research of this type typically relies upon certain bodies of data, some of it derived from official filings of institutional funds and some from external models. The data is run through a series of screens that contain assumptions about investment or market performance. To understand these studies, an examination of their basic assumptions is necessary.

In general, we find that these studies use implausible assumptions that would undermine the fiduciary integrity of the funds involved. As part of their academic examination, they use data and analysis that no money manager or fund administrator would adopt. Substantively, they offer conclusions about potential investment outcomes that are not supported by actual market results, do not discuss market factors that might alter the outcomes of the models they employ, exaggerate costs, and mischaracterize the nature of investor relations with money managers.

One of the most egregious assumptions of divestment critics is that high fees are a consequence of divestment and that they erode returns. None of the letters or studies opposing divestment that IEEFA has reviewed explore what kind of a market already exists for fossil-free products, what kind of returns are being achieved, what kind of fees are being charged, how this is being achieved, or how small and large investors might nurture future market development for fossil-free products. None of the studies evidence an understanding of the customer/client relationship and what can and does go into business negotiations.

In the worst sense of the word, these are academic studies, devoid of the day-to-day workings of actual investment funds. They are all based on models and assumptions uninformed by actual market activity, activity that supports a far more dynamic picture with broader sets of investment options.

We examine six of the principal arguments used by academic opponents of fossil fuel divestment. Those arguments, and our responses, follow:

1. **Based upon a 50-year analysis of past fossil fuel returns, a portfolio that divests from fossil fuels will lose billions of dollars going forward.**

This argument is advanced by Daniel Fischel,[70] who argues that fossil fuel investments showed prodigious investment performance over the last 50 years. He assumes that this performance will continue in the future, and that to divest would require funds to select investments with suboptimum outcomes. *The fundamental fact that fossil fuel investments drove worldwide*

[69] Daniel Fischel, Christopher Fiore & Todd Kendall. Fossil Fuel Divestment and Public Pension Funds. June, 2017, p. 1; and Hendrik Bessembinder. Frictional Costs of Fossil Fuel Divestment. May 11, 2016, p.1.
[70] Daniel Fischel, Christopher Fiore & Todd Kendall. Fossil Fuel Divestment and Public Pension Funds. June, 2017.

investment returns for most of the last 50 years is accurate. Fischel's fact is right, but his conclusion is wrong.

A change in the financial performance has taken place in the last five years that suggests that the future will not be like the past. As noted above, the energy sector has lagged the market over the last five years. In 2017, the energy sector vied for last place performance in the Standard and Poor's 500.

Is the sector's market performance in the past five years an anomaly? Fischel does not attempt to address any risk factors facing the fossil fuel industry in his paper, nor does he note the striking departure of fossil fuel performance from historical norms in the current market. Even aggressively optimistic estimates of future oil and gas demand are showing a considerably lower rate of future growth than the assumptions relied upon by Fischel.[71] Future markets will not be like the past.

More important, those who represent that past performance is an indicator of future results, and then advocate investment policy based on this view, violate SEC Rule 156.[72] The position may be useful for academic analysis, but it is irresponsible for a fiduciary.

SEC Rule 156 Language on Use of Past Performance

(2) Representations about past or future investment performance could be misleading because of statements or omissions made involving a material fact, including situations where:

(i) Portrayals of past income, gain, or growth of assets convey an impression of the net investment results achieved by an actual or hypothetical investment which would not be justified under the circumstances, including portrayals that omit explanations, qualifications, limitations, or other statements necessary or appropriate to make the portrayals not misleading; and

(ii) Representations, whether express or implied, about future investment performance, including:

(A) Representations, as to security of capital, possible future gains or income, or expenses associated with an investment;

(B) ***Representations implying that future gain or income may be inferred from or predicted based on past investment performance; or***

(C) ***Portrayals of past performance, made in a manner which would imply that gains or income realized in the past would be repeated in the future.***[73]

[71] Statista. Projected base oil demand worldwide in 2015, 2020, and 2030 (in 1,000 barrels per day).
[72] The Code of Federal Regulations (CFR). 17 CFR 230.156- Investment company sales literature.
[73] Ibid. (Emphasis added.)

2. Divestment from fossil fuels will weaken returns, particularly for small funds, as the fees to convert a fund and then monitor its operation will be exorbitant.

This argument is advanced most forcefully by Henrik Bessembinder, a professor at Arizona State University.[74] Bessembinder points to the fact that many endowments and funds are commingled or part of mutual funds, and that to unwind the investments would incur not only transaction costs related to fossil fuels, but also costs associated with any rebalancing that must occur to align the portfolio with new investment goals.

First, Bessembinder's argument is based on a largely mechanistic theory of price for money management services. It assumes every time an endowment or fund asks a money manager for a transaction or service it is charged. But fee structures are settled by negotiation, with the final terms and conditions determined by specific businesses responding to the needs of customers and to their own internal business models and strategies. When demand for a new service increases, service companies tend to provide the new service to customers lest they lose the relationship and the revenue that comes with it. As more funds demand the new service, existing service providers adapt to providing cost-effective solutions, and new service providers enter the market providing services at a low cost to secure the business.

Those who diminish divestment actions taken by even the smallest of funds miss the point that even a request by a small fund to a similarly small money manager requires that a response to a customer request take place. Money managers can disparage, complain, refute, or otherwise frustrate the efforts of fiduciaries to consider divestment from fossil fuels. Or, they can develop products to meet their needs.

Bessembinder does not address this basic market dynamic, instead assuming that the cost structure of money managers is non-negotiable. Once trustees of a fund make it known that they wish to construct a fossil-free portfolio or adopt some form of carbon risk mitigation investment strategy, money managers make a choice to continue to compete for that business or not.

Bessembinder's argument has the effect of dissuading trustees from asking questions about a significant risk facing their portfolios (the financial viability of fossil fuel investments) based on a static academic model that does not test scenarios where market responses to divestment demands result in lower transaction costs.

Second, endowments and small funds already pay fees for the services they receive. It is likely that the basket of services can change and the new fee structures that are entered into need not be higher than those that currently exist. Fund trading and rebalancing of portfolios is a matter of usual and customary practice. One company currently in the market is Storebrand, a Norwegian-based fund that provides asset management, insurance, and banking products. All of its $70 billion in assets are in sustainable Investments; fund returns are comparable to the index, and fees are competitive.[75]

Similarly, a recent study by Mercer Associates, with the support of 16 large institutional investors, presents a strong case for divestment and the construction of investment products that can

[74] Hendrik Bessembinder. Frictional Costs of Fossil Fuel Divestment. May 11, 2016.
[75] Storebrand, *Climate Change: Tomorrow's Solutions*, Q1 2017.

achieve investment targets. Trustees and fund advisors in opposed to divestment have largely ignored these studies and the facts upon which they are based.[76]

Finally, Bessembinder ultimately concedes the point that fossil-free indexes can be designed with low fees. Small investment funds would therefore be better off using fossil-free indexes where all of the costs Bessembinder points out are blended into an affordable business model. He includes this possibility after reading some of the more "sophisticated analyses" in the literature. This point is placed in the paper as the last paragraph, on the last page of the final appendix.

Slightly more sophisticated analyses are provided by Impax Asset Management (2013), Geddes (2013), and Geddes, et al. (2015), who demonstrate that it is possible for an investor who holds a particular index (such as the Russell 3000 or the MCSI World Index) to divest from certain fossil fuel stocks, and then reallocate the divested funds in such a way that they can track the index reasonably closely. This demonstrates that divestment costs may be low for investors who are attempting to track one of the indexes these papers consider. However, these studies do not explicitly consider divestment costs for investors who optimize their portfolio to maximize expected returns for a given level of risk.[77]

Bessembinder also concedes the point that reallocation of investment capital in a fossil-free index can take place across a new index that produces results equal to or better than the indexes that include fossil fuels.

Bessembinder then goes on to restate that, for those investors who employ actively managed portfolios with more risk, costs will be higher. That is true for any actively managed fund. Any fund that is involved with actively managed investments is seeking a higher return and weighs that higher return against the overall cost structure of specific funds. The key to divestment in the current context is not greater risk and higher fees, but less risk and lower fees through new indexes. For those seeking more active approaches that might be climate related, or related to fossil fuel volatility management, higher investment costs may be a by-product.

3. Compliance costs to monitor fossil fuel industry changes cannot be sustained by small funds.

Bessembinder identifies a potential cost of divestment that is related to monitoring the market in order to continue to include and exclude companies according to new fossil-free allocation plans. Thus, for example, a fund like the Norwegian Government Pension Fund Global has adopted specific standards whereby a company with 30% or more of its business from coal mining or burning will be divested.[78] This will require the fund to monitor the performance of individual companies and to hear their appeals to either not be delisted or to regain their investment status. Bessembinder argues that small funds cannot sustain such a cost burden.

Bessembinder is correct. This critique, however, supports the point that the stocks are too risky to hold and should be divested for funds, usually smaller ones that cannot manage this type of risk. For small funds, fossil fuel stocks are no longer 'blue chip' stocks with performance results that meet investment criteria for being included in passively managed indexes. They have become more volatile and speculative, and need more careful monitoring to maximize value

[76] Mercer. Climate Change Scenarios- Implications for Strategic Asset Allocation. 2011.
[77] Hendrik Bessembinder. Frictional Costs of Fossil Fuel Divestment. Appendix 2. May 11, 2016.
[78] *The Guardian*. Norway confirms $900bn sovereign wealth fund's major coal divestment. June 5, 2015.

opportunities. To a small investor with a passive orientation, these stocks are more trouble than they are worth.

Larger funds, like Norway's Government Pension Fund Global, see a value proposition during this period of transition, but it is a proposition that is on vastly different terms than in the past. The government of Norway owns large amounts of oil and gas reserves. Statoil (renamed Equinor), Norway's state-owned oil company, routinely explores, drills, trades, and sells in the oil and gas market. Oil and gas revenues are an integral part of the fiscal health of Norway. The Norwegian fund is willing to devote the resources to monitor and invest in a more active manner because it possesses the in-house knowledge and capacity to absorb transactions costs due to the fund's relative size. The trading activity is plainly more akin to active management and, in the case of oil and gas stocks, day trading. The stocks are not bought as long-term buy-and-hold transactions typically used by small and even large institutional investors that do not possess special knowledge of this market.

4. Divestment alone will not lead to lower stock prices and a higher cost of capital for oil and gas companies, and is therefore not worthwhile.

Academic studies typically are useful only if they provide appropriate context for the interpretation of underlying events or quantified findings. In the papers we cite in this study, however, the academic analysis is short on context. Those who watch markets know that a stock price or cost of capital reflects the sum of a company's financial performance and the outlook for the company. It is the cumulative set of assets and risks taken together that set the stock price and cost of capital. Climate advocates are correct to see that the chain of events that characterize a company's deterioration and decline includes a weak response to climate risk. Individual companies usually contend that the specific role of climate change on their balance sheet is debatable. This is also true for the company as it discusses risks associated with divestment. Nevertheless, most companies are now including climate activism and subsequent policy and public opinion movement as unquantified risks for the company.[79]

Market watchdogs are now moving to articulate and implement cost of capital issues related to climate change. We note, for example, that Moody's now characterizes the continued operation of old, inefficient coal plants as credit negative.[80] Moody's also examines plant closings and finds many to be credit positive.[81]

From the perspective of the climate change movement, few see fossil fuel divestment as the only mechanism desired or required to bring about change. The movement uses a host of strategies and tactics to advance society toward a reduction of fossil fuel use around the globe. Those activities include but are not limited to: opposition to coal plants, mines and ports; opposition to drilling, pipelines, and land development; opposition to the financing of these activities by banks and shareholders. It also includes consumer mobilizations to oppose specific fossil fuel projects; to support the use of alternatives like wind, solar, and energy efficiency in the electricity sector, and electric vehicles in the transportation sector; and reducing and reusing consumer products to minimize fossil fuel use. Increasingly, climate

[79] U.S. Government Accountability Office (GAO). Climate-Related Risks: SEC Has Taken Steps to Clarify Disclosure Requirements. February, 2018.

[80] *Utility Dive*. Moody's: Merchant coal plants at risk in global transition to greener economy. December 14, 2017.

[81] See, for example, Moody's Investor Service,"Vistra's Coal Plant Closures are Credity Positive for Generators" , October 18, 2017 (subscription required)

activists are involved in local alternative economic development designed to take advantage of growth opportunities when plants and mines close.

5. Large and small institutional investors will lose money from divesting their fossil fuel holdings, and will underperform their benchmarks or historical performance.

This may once have been true. But, as demonstrated above, it is no longer true. For the past five years, fossil-free indexes performed better than those with fossil fuels. (Indexes are how both large and small funds generally invest in the markets.)

With remarkable frequency, university and pension fund studies in opposition to divestment act as if divestment is a money loser for funds. One study performed by Dartmouth's financial experts recommended against divestment, but included several significant findings:

- A full divestment of Dartmouth from fossil fuels would result in only a minimal investment penalty.[82]
- Transaction costs were negligible.[83]
- The biggest loss of money would not result from loss of investment revenue, but from loss of alumni donations.[84]

The Dartmouth study demonstrates that broad modeling generalizations may serve an academic or advocacy purpose but are not useful as investment documents. The most important analysis is the work done on a specific portfolio with specific directions from fiduciaries.

When fiduciaries ask money managers for their opinion, few managers have opined in favor of divestment.

However, when trustees direct their managers to devise a fossil-free portfolio that can maintain its investment targets, then the answer that comes back from the money manager is quite different.

Another actual divestment example is from Maine's Unity College, which divested in 2014. It considers the move financially agnostic, having no major impact on its fees.[85] Its endowment manager, like the college itself, is small— neither can absorb any substantially negative financial events. Still, Spinnaker Trust of Portland, Maine, was able to work with the college to untangle an existing set of investments over time, and to meet its divestment goals through strategically planning a normal set of transactions.

6. Funds will be reinvested in investments that do not meet the fund's targets.

This argument has been advanced by Global Analytics, a financial services company.[86] The firm conducted a study for Suffolk AME, a public employee association located in Suffolk County, New York. Their study concluded that divesting from fossil fuels would cause the New

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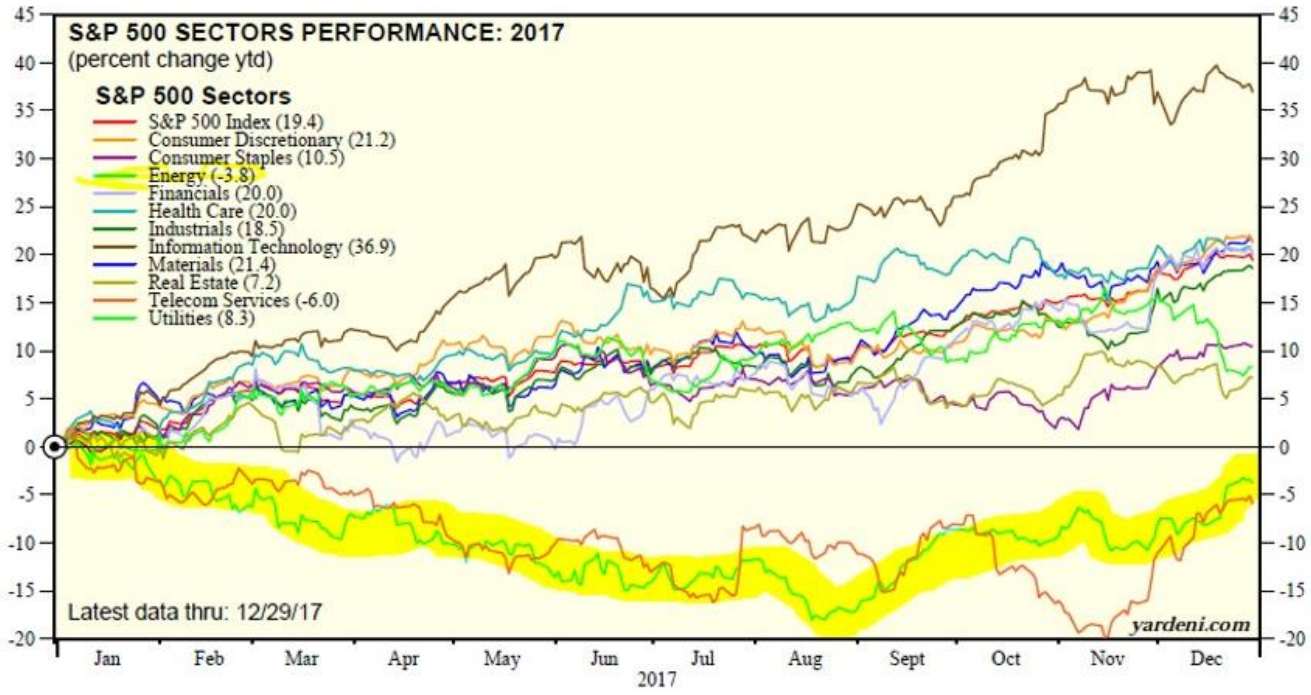
[82] Katie Zhang & Kasidet Trerayapiwat. Report to the President on the Considerations Involved in Divesting the Dartmouth College Endowment from Directly Held Fossil-Fuel Related Assets. p.21. April, 2016.
[83] Ibid.
[84] Ibid., p.10.
[85] Unity College website. Unity College marks 4 years at forefront of divestment.
[86] DivestmentFacts.com Blog. New Report Shows Divestment Would Cost New York State Pension Billions. December 26, 2017.

York's pension fund, the New York State Common Retirement Fund, to lose money. The study purportedly was based on data from the fund's fossil fuel holdings.

To reach that conclusion, however, the company made certain misleading assumptions. In particular, in one scenario it assumed that existing fossil fuel investments yielding 8% would be replaced by investments with 6% returns. A second scenario assumed that existing fossil fuel investments yielding 8% would be replaced by investments with 3% returns.

The rebalancing of the NYS Common Retirement Fund would require investment managers to seek out investments that were likely to achieve the fund's annual investment return target of 7%.[87] The Global Analytics study fails to explain why the NYS CRF would rebalance its portfolio by specifically targeting investments with returns of 3% and 6%, both well below the fund's target of 7%. It also fails to explain how, in the current context, it would be difficult to find stocks that perform better than fossil fuel stocks, since during the last five years the energy sector has lagged the market. The assumption that a money manager would be retained by the fund to find investments below its annual investment target is extraordinary.

Figure 6: S&P 500 Sectors Performance 2017



Source: Standard & Poor's.

[87] New York State and Local Retirement System. 2017 Comprehensive Annual Financial Report. pp. 13-14. March, 2017.

Conclusion

The past financial performance of the fossil fuel industry made for easy decision-making for institutional investors and trustees: Invest, sit back, watch the returns accumulate.

That, as we have shown in this report, is no longer the case— the financial performance of the fossil fuel industry has badly lagged other sectors and the market as a whole for the past five years, and the outlook for future performance is cloudy, at best.

As we have shown also, the blue-chip veneer of the sector has long since eroded, which changes the cost-benefit calculation for all types of investors. For passive investors, those who want to set their portfolio and forget it, the fossil fuel sector is no longer a viable option since its risks have become too pronounced and the returns too uncertain. For active investors, those willing to take on the day-to-day risks, the sector's capital-intensive infrastructure needs undercut the cash returns they expect from such relatively risky investments. Growth in other sectors, both those with less risk and those with higher returns, are now attractive options.

This report has also shown that the arguments, both from financial and non-financial perspectives that prevent institutional investors from creating fossil free investment portfolios are without merit. The financial arguments against divestment have been driven largely by flawed academic research that fails to accurately reflect market realities. The non-financial arguments fail to measure up, too, largely because they hinge on two faulty premises: that the fossil fuel industry is too big to fail and that individual action doesn't matter.

Taken together, these findings show clearly that it is incumbent on investment trustees to ask the following question of their money managers: Why are we in fossil fuels at all?

Appendix I: FAQs on Fossil Fuel Divestment

Impact of Divestment on Investment Returns

Q. Will funds lose money if they divest?

A. No. Opponents of divestment say funds will either fail to meet their investment benchmarks or actually lose money if they divest. In the current environment and looking forward, the opposite is true. The fossil fuel industry does not lead the market anymore; it lags. Energy was the worst performing sector of the S&P 500 last year, and cumulative returns over the past five years have been abysmal.

Fossil fuel investments face a future with volatile revenues, limited growth, and a negative outlook. The quality of fossil fuel equities has deteriorated from the quintessential "blue chip" component of an investment portfolio to one that is speculative and tied to the uncertainty of oil prices.

Q. Is it possible for managers to hit their investment targets without fossil fuels?

A. Yes. Over the past five years, the MSCI-All Country Global Index without fossil fuels has outperformed the Index that includes fossil fuels. A recent study by Mercer Associates with the support of 16 large institutional investors presents both a strong case for divestment and the construction of investment products that can achieve investment targets. Trustees and fund advisors opposed to divestment have largely ignored these studies and the facts upon which they are based.

Q. Have funds that didn't divest "lost" money?

A. Yes. As a case in point, Corporate Knights used back-testing analysis to assess the opportunity cost to a number of pension funds, including the New York State Common Retirement Fund, New York State's pension fund, which is the third largest in the U.S. They concluded the fund "lost" $17.5 billion over 10 years because it failed to divest from fossil fuel companies, including coal-fired utilities.[88]

Q. Are investors likely to be blind-sided if they ignore divestment movements?

A. Yes. Investors will not find analysis of divestment movements in the reams of stock analysts' reports. Investors are likely to wake up one day and find quotes like this one from Russ Girling, CEO of TransCanada in 2011: "There is no way we could have ever predicted that we would become the lightning rod for a debate around fossil fuels and the development of the Canadian oil sands."

Q. Why didn't investment funds divest from coal?

A. Some investment funds stayed with coal through the bankruptcies, even as stock values fell to zero. Analysts and investment managers shrugged the losses off because coal investments were small relative to the overall portfolio size. Investment managers claim that passively managed indexes will self-correct in the face of small losses.

[88] Based on backtiming data, sourced and analyzed by Corporate Knights.

Q. Have investment managers who didn't divest from coal quantified the hypothetical losses?

A. No. Interestingly, while investment managers and their clients who oppose divestment have been quick to quantify hypothetical losses from a divested portfolio,[89] they have been slow to quantify the actual effects of the value destruction caused by coal industry losses. For example, IEEFA demonstrated that the NYS Common Retirement Fund lost $108 million between 2011 and 2014 from its coal investments.[90] To be consistent, money managers and fund trustees should measure these losses in the numbers of reduced and cancelled scholarships, foundation grants reduced in size and number, and taxes that have been increased to pay public sector pension benefits.[91]

Why Divest?

Q. What is the mission of divestment campaigns?

A. Divestment campaigns have a clear mission to drive capital away from a company, industry, or business practice that is detrimental to larger societal well-being. The campaign takes place against broader structural factors in the economy and the cycles of growth, maturation, and decline. Whether a company's stock price is up, down, or flat, if its underlying business activities are a menace to society, this fact will in some way appear in its financial metrics.

Divestment campaigns are also a part of a broader societal movement to advance policies to mitigate the negative impacts of carbon emissions and to combat climate change. The movement uses divestment as one aspect of its public education efforts to secure responsible decision-making from the leaders of government, corporate, and civil institutions. The move away from fossil fuels will require an enormous effort around the world. Divestment is one component.

Q. What can a divestment movement accomplish?

A. Most of the academic papers identified in this report and many of the university statements in opposition dismiss divestment campaigns as ineffective agents of change. This issue is in a narrow sense an ancillary argument to the financial soundness of the divestment decisions contemplated by today's leaders.

All of the papers and analyses, however, also acknowledge the significance of the climate issue and the level of societal commitment it will take to resolve it successfully.

In addition to providing momentum to market forces that spawn new, profitable industries, divestment campaigns are also creating leadership society will need.

Divestment campaigns offer an opportunity to bring youthful voices into the political process in a realistic way— articulating positions and then considering opposition from other philosophical, political, technical, scientific, and economic voices. Divestment campaigns have provided fertile grounds for the creation of leaders for decades.

Divestment campaigns also preserve the essence of a democracy: its civic memory.

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[89] Harvard University. Fossil Fuel Divestment Statement. October 3, 2013; and Swarthmore College Board of Managers. An Open Letter on Divestment. September 11, 2013.

[90] Tom Sanzillo & Cathy Kunkel, IEEFA. NYC and NYS pension funds should divest coal stocks: A shrinking industry, weak upside, and wrong on climate change. May 8, 2014.

[91] Ibid.

For example, Jeffrey Hollander, in his 2004 book, *What Matters Most,* profiles Bob Massie, who led the anti-apartheid divestment movement as an undergraduate at Princeton. Massie went on to graduate from Yale Divinity School, attend Harvard Business School, and serve as executive director of CERES. In 1998, he and Allen White of Tellus Institute launched the Global Reporting Initiative (GRI), a voluntary sustainability reporting framework used by thousands of organizations. Along with 350.org co-founder Bill McKibben, Massie now calls on universities to divest from fossil fuels. McKibben and Tom Sanzillo (co-author of this report) were also shaped by their early experiences in divestment campaigns.

Did Massie and other student activists change history in South Africa, or did their activism change them and lead them in directions unimaginable when they were students? Might today's student activists championing divestment become tomorrow's political, financial, labor, community, and sustainability leaders?

Q. Is climate change the major reason to divest?

A. No. Climate change and the financial issues posed by it are not the only challenges faced by fossil fuel industry leaders. The broader changes that impair balance sheets in the current investment environment stem from political conflicts between producer nations, competition, innovation, political opposition, and attendant cultural change.

Climate change is a critical factor as companies make capex decisions, but it is only a part of the cumulative risks that fossil fuels companies face. Taken together, these risks create an increasingly unwieldy set of choices that undermine the profit potential of fossil fuels.

Q. Is divestment action by civil society?

A. Yes. Divestment campaigns as strategic initiatives of the climate movement represent action by civil society. The action is aimed at institutions of political governance (decision-makers, be they legislatures, courts or corporate boards) with specific responsibility for the economy.[92] The changes to the economy already have been substantial,[93] and often surprising. Few would have imagined the U.S. economy could manage to grow while the amount of coal moving through the economy dramatically shrank.[94] Few would have expected that a plan by the Sierra Club and others to fight each individual coal plant at dozens of utility commissions, state regulatory agencies and public power organizations would result in a wholesale end to new coal plant construction in the U.S. And few would have expected 195 countries to sign[95] a global agreement on climate change.

Q. Should institutional investors divest so they don't misdirect capital?

A. The question is not whether to divest. The question is why institutional investors are placing their bets on the fossil fuel sector. Continued investment in the sector misdirects investment capital, restricting funds that could otherwise be deployed in sectors of the broader economy that are growing— information technology, discretionary consumer, financials, health care, industrials, utilities, and real estate. Within the energy sector,

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[92] Merrill Jones Barradale, The Logic of Carbon Risk from the Investor's Perspective: The Expectation of the Carbon Payment, USAEE-IAEE WP 09-037, December 2009 is one important paper that covers how investment stakeholders change their opinions in the face of political and market changes.

[93] For a specific discussion of change in markets and public opposition to fossil fuels see: http://priceofoil.org/content/uploads/2014/10/IEEFA.OCI_.Material-Risks-FINweb2-1.pdf

[94] IEEFA's research has documented in granular detail how wind and solar energy have replaced significant amounts of coal capacity in the state of Texas, a major fossil fuel center in the United States. Texas is second in the nation in GDP growth.

[95] The U.N. website shows 195 signatory nations and 148 ratifications.

investments concentrated in energy efficiency technologies, renewable fuel sources, and electric vehicles are producing solid returns and offer growth opportunities for portfolios.

Basic Divestment Information

Q. Have any significant investors already divested?

A. Yes. AXA, ING, and the World Bank have announced plans to divest from all fossil fuels—oil, gas, and coal. Norway, a country with significant oil reserves and oil revenue dependency, has been looking at a future of diminishing revenues and considering options for its pension fund, the world's largest at more than $1 trillion in assets. It has already divested from coal, and recently announced plans to divest from oil and gas.

Q. Are there resources available to help guide a divestment strategy?

A. Yes. For example, Coalexit.org is a project of Urgewald, a German non-profit organization that specializes in research and data analysis on fossil fuel holdings in institutional portfolios. Urgewald's work can be tailored to specific institutional funds and designed to provide specific asset allocation choices for fund administrators looking to achieve optimum investment results as they move their portfolios to a low-carbon future.

Q. Are any passive index funds fossil free?

A. Yes. Due to the rising demand for funds that are fossil free, many low-fee mutual funds and ETF funds are available.

Q. Can investors determine if a fund is truly fossil free?

A. Yes. Small investors and investment funds can use a tool, fossilfreefunds.org, created by As You Sow, to determine whether specific funds are fossil free. The site analyzes whether a fund has fossil-fuel holdings such as oil and gas companies or coal-fired utilities and contains lists of fossil-free funds and their various investment strategies.

As we say elsewhere in this paper, larger investment funds should send a directive[96] to their top money managers. The directive should request of the managers an asset allocation plan for the fund that is fossil free and meets the investment target of the fund. Such a plan should include an execution plan of how the fund can move from where it is today to a fossil-free future, including benchmarks and timing. The plan should also show what costs would be associated with such a transition and how the costs proposed by the fund's

[96] Too often fiduciaries ask and end discussion about investment decisions upon receipt of the money manager's opinion. When it comes to divestment and fossil-free portfolios, more is required of fiduciaries. This seemingly responsible approach is actually an abdication of responsibility. Investment managers under contracts to funds are not trustees. Their interests are not aligned with those of the trustees or of the ultimate beneficiaries that the trustees are legally bound to serve. They are contract agents. The investment manager will most often oppose divestment or the adoption of a change like a fossil-free portfolio. If for no other reason, the contract advisor could see it as an implicit admission that their past advice was somehow defective. To a fund manager, the normal investment management agreement does not cover restructuring the portfolio. The concern from the investment manager is that such an exercise would erode the profits they derive from current fee agreements. These reasons have little to do with the fiduciary needs of the client. The client, the fiduciary board, must determine the best course of action for its beneficiaries. Investment managers like those cited elsewhere in this paper could actually design appropriate investment products and offer them to their clients, thus improving their own value during a time of market change. IEEFA advocates that most fiduciaries would benefit from directing advisors to prepare fossil-free portfolios that meet investment targets. Then and only then will the trustees be in a position to decide whether to implement none, some or all of what is needed to protect their beneficiaries in a time of erosion of fossil fuel profitability.

money managers compare to other competitors in the field. Any cost proposal that exceeds the current level of a fund's fees should be accompanied by a statement from the money manager signed by its CEO that this fee structure is the lowest fee structure they can achieve.

Rebuttals to Arguments Opposing Divestment

Q. Is shareholder activism a sufficient strategy to deal with the fossil fuel industry?

A. No. Shareholder activism has proved to be an effective tactic when focused on changing an ancillary piece of a company's business. For example, McDonalds and Dunkin' Donuts both agreed by the end of 2018 to stop using polystyrene cups that are a major contributor to ocean pollution and marine animal death; this means that 2 billion Styrofoam cups will not be produced.[97]

Shareholder engagement, however, has proven— for decades— to be an inadequate tool to persuade a company to change its primary business activity. Many fossil fuel companies pose a particular challenge to the shareholder process as the size and potential market for safe and effective use of fossil fuels is shrinking. Further, many fossil fuel companies have either steadfastly opposed all shareholders' input or provided a series of half measures to mollify concerns. Shareholder engagement tools provide many options and can be used to respond to a recalcitrant company with increasingly serious initiatives that up the ante. The range of options runs a gamut from shareholder meetings with companies to secure commitments on climate change; to letter writing from many shareholders; to the design and publication of climate studies by shareholder and investor organizations; to formal shareholder resolutions and votes; to the review and evaluation of company commitments on climate change; to reporting the results of shareholder efforts to oversight committees of Congress, the Securities and Exchange Commission, and the broader investment community; to calls for company corrective actions regarding political contributions, political lobbying, and cooperation with law enforcement; to collective action by shareholders on selected board members, board committees, and board leadership; to formal organized campaigns to oppose the appointment or reappointment of board members; to the initiation of shareholder derivative or class action suits for damages and ultimately divestment.

In fact, for decades,[98] shareholders have attempted to obtain corporate commitments on climate and other environmental issues related to fossil fuels. Those efforts have been largely rebuffed. The leaders of most shareholder rights organizations and investor allies have moved away from the use of these more strenuous formal tools of inquiry in favor of an ongoing "conversation" with companies related to their carbon footprint.[99] Such approaches weaken the formal channels available to shareholders.[100]

Q. Did divestment pressure cause corporations to leave South Africa?

A. Yes and no. Some divestment skeptics say, as evidence of past movement failure, that corporations left South Africa in the 1970s and 1980s out of convenience, rather than from

[97] Recycling Today. McDonald's promises to eliminate foam packaging by 2019. January 11, 2018.
[98] In the 1990's the New York City pension funds were among the leaders in the call for Exxon to work with shareholders to clean up environmental damage. Exxon opposed these shareholder efforts as well.
[99] Ceres website. Ceres Joins Forces with Investors and Partner Organizations Worldwide to Launch Climate Action 100+. December 12, 2017.
[100] Kathy Hipple & Tom Sanzillo, IEEFA. Shareholders Need Not Be in Denial Like ExxonMobil Is. February 26, 2018.

divestment pressure. But what they ignore is that divestment was just one way the African National Congress globalized opposition to apartheid. When companies ended subsidiary relations in South Africa, they were weighing political risk and potential nationalization of assets, as well as damage to their brand. The corporate withdrawal from South Africa was hardly symbolic. Global corporations would no longer invest in apartheid's moral bankruptcy even when the U.S. government continued its support for the regime. ***The delegitimization of South Africa's apartheid system and the regime that supported it appeared on no balance sheet.***

Q. Is there an example of how to respond to a politically based opposition to divestment?

A. Yes. One of the most honest assessments of why a university fund decided not to divest can be found in the Dartmouth study referenced above. Researchers found that it was not investment losses they needed to guard against, rather it was the potential loss of revenue from wealthy alumni who were supportive of the fossil fuel industry. Those losses could have had a material impact on the university's finances.

The response needs to be more dialogue. The men and women who built the oil, gas, and coal industries in the U.S. made an enormous contribution to the growth of the country and world. Fossil fuels will continue to play a major role in the world economy during this transition, and probably beyond, albeit in a different way. How this change takes place requires the same level of patience and dedication those who built the industry had toward the growth of the fossil fuel sector.

Reputational Issues for Fossil Fuel Companies

Q. Is the reputation of the entire fossil fuel industry at risk?

A. Yes. The reputation of the entire fossil fuel industry, not just individual companies, is at risk. Inherent in divestment campaigns is a concrete economic argument that, even as fossil fuel use declines, other profitable markets can and will evolve and thrive. Divestments challenge not just individual companies, but also point to global market trends to highlight the risk that fossil fuel companies as an industry have on investment portfolios. For example, Bernstein Research, Citigroup, and other investment houses all took note of coal's structural decline in 2012. They also noted that where coal was in decline, economies would continue to grow.[101] As we note above, the fossil fuel sector has been in decline for well over five years, while the world economy has grown with increasing strength.

Q. Does the fossil fuel divestment campaign impact a company's or an industry's reputation?

A. Yes. Individual companies that have adopted a hostile posture toward climate change have attracted negative press scrutiny, enforcement inquiries, and have typically been branded as backward-looking. The industry faces a broader disaffection with young people and is actively working to improve its image as a positive social force and place to work.[102]

As a business proposition, the fossil fuel sector is moving from leader to laggard, and from a blue-chip mainstay to a more uncertain and speculative investment that requires a commodity market trader's outlook, which is short-term and cash-driven.

[101] Building Services News. The end may be in sight for fossil fuels as science makes solar power cheap. June 11, 2014.

[102] *Bloomberg News*. Oil Giants Make a Play for Millennial Hires. July 17, 2017.

Q. Do fossil fuel companies even care about reputational risks?

A. Yes. All companies and industries pay careful attention to public rewards and sanctions and the processes involved with them. Fossil fuel corporate and industry stakeholders often play their reputational politics as a zero-sum game. They take the position that when policies are made to protect the climate, the industry loses. This approach is counterproductive for corporate interests, as it limits the range of successful business responses.

In this zero-sum world, when regulation hurts their bottom line, companies howl and become opponents of the public interest and proponents of dangerous work conditions, along with dirty water and air. When government appropriates money for environmental protection, renewable energy, and energy efficiency, fossil fuel companies are the first to complain that they will lose market share. By definition— their own definition— they lose. But they also weaken their relations with politicians, communities, and citizens who support new investments, innovation, and healthy economic growth. The fossil fuel "loser" now also fails to support new businesses, innovation, and jobs.[103]

Q. Do divestment campaigns pose a reputational challenge for companies with minimal public brand recognition?

A. Yes. On the micro level of corporate reputation, ask a CEO or board member, not a stock analyst or investment advisor, what matters. Every blip in stock price, quarterly earnings statement, successful or failed capital outlay, executive compensation criticism, shareholder mobilization in opposition to one or more corporate policies, article, editorial, and government action contributes to overall management perception. Internal corporate concern with reputation is far more intense than what appears in public. The climate movement is building a perspective about companies that are independent— and increasingly important— signifiers of its behavior and worth. When these issues penetrate the corporate veil and emerge in the boardrooms, it matters. Corporate boards evaluate and compensate management based on a group of financial and governance metrics. These same measures of operations, profits, dividends, and management of the external environment also build a basis for public perception of the company.

Q. Has the understanding of reputational challenges changed?

A. Yes. Some analysts claim that the campaigns rarely pose a reputational challenge to companies, particularly companies with minimal public brand recognition. But the argument does not hold water because it reflects an outdated understanding of reputational challenges. In fact, the reputations of entire industries and individual companies rise and fall not only with big catastrophic events, but also from the steady stream of facts and data that define a cumulative storyline over time: it is unusual to make or lose a corporate reputation in a single day. Even a single disastrous event, like a major oil spill, must run its course to have an impact on a company's reputation.

[103] It is evident that regulation of the fossil fuel industry has also been a source of profits and growth for both coal producers and utilities that burn it. Former CEO of Peabody, Greg Boyce, consistently touted United States standards on air pollution, mine safety and environmental reclamation throughout the world. Peabody Energy has historically complained about the adverse impacts of air pollution, mine safety and environmental reclamation standards on the industry. We also note that utility companies that have adopted pollution control technologies have worked with state public service commissions for years to improve rates and profits for those companies. See: http://www.raponline.org/wp-content/uploads/2016/05/rap-lazarfarnsworth-incorporatingenvironmentalcostsinelectricrates-2011-10.pdf

The climate and environmental movement, as a financial factor, is a material risk to the fossil fuel industry. It is supported by a significant segment of the population, particularly younger people. It is permanent in its presence at the local and global level as an articulate source of moral, political and policy vision and increasingly market based, practical alternatives to fossil fuel use. It is comprised of highly skilled professionals in the environmental, scientific, technological, and political and finance sectors with resources used to align these institutions into an array of sectors and industries to compete with fossil fuel use. It has proven itself as an effective adversary of fossil fuel use and a proponent of new alliances and policies to shape the kind of public and private nexus that leads to large-scale investment in a new economy.

Appendix II: High- and Low-Price Environments

The direction of oil prices, and the specific ways those prices affect revenues and profits, often determine how investors evaluate oil and gas companies. In the past, investors have seen high prices as the key to prosperity. But in today's rapidly changing energy landscape it is clear that both high- and low-price environments present serious financial risks to the oil and gas industry.

The specifics will be discussed below, but the key change today is that in both price environments, the declining prices and technological advances in renewable energy and electric vehicles now present a major challenge to the market share of oil and gas.

What defines prevailing prices as either "high" or "low" has varied over time, because oil and gas markets have always been volatile, and it is important to know whether a particular price benchmark is viewed as part of a rising or declining cycle at any given time.[104] For the purposes of this discussion, a low-price environment[105] will be defined as below $70 per barrel and a high oil price environment as more than $100 per barrel.[106]

Risks in a Low-Price Environment

A low-price environment— such as the one that has persisted over the past several years— can lead to significant losses in revenue; decreases in stock value; increases in bankruptcies, defaults and write-offs of reserves; and a more general weakening of public and investor confidence. The recent prolonged low-price environment has caused many oil and gas companies to adopt aggressive cost-cutting practices and to curtail capital spending. The industry also now sees its long-term outlook as clouded by low prices and the growing complexity (and likely necessity) of altering its business models and investment patterns to manage climate change risk.[107] The current OPEC supply agreement is a major initiative by the cartel and supporting countries to force prices upward. The supply agreement is needed because, left to its own impulses, the market, in its collective form, would continue to overproduce and drive prices down to unsustainable levels.

The combined pressures of downward pricing, competition, and a negative investment outlook have diminished the character of fossil fuel investments in the stock market. The industry's declining stock market performance strengthens the chances of success for opposition to any individual fossil fuel projects, as well as demands for market and environmental reforms. It also adds weight to the financial case for divestment from oil and gas companies.

In the lower price environment that has prevailed since the 2014 price collapse, costs have become a crucial determinant of financial success. Still, company efforts at cost discipline

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[104] The Harvard Business Review in the middle of 2016 carried $50 per barrel as a low price. In early 2016 the price of oil was $27 per barrel and was on the rise.

[105] Current market opinion sees prices higher than $70 per barrel as part of an upward surge that could carry prices still further.

[106] *The New York Times*. Oil Price Briefly Reaches $70 as Buoyant Global Economy Bolsters Demand. January 16, 2018.

[107] *Financial Times*. Oil investors face dilemma as demand is likely to fall. December 14, 2017.

have not been sufficient to improve the sector's financial outlook, which remains challenged by the size, pace, and duration of the price decline.

Producers can be expected to face continued financial challenges as low prices put pressure on profitability margins, capital access becomes more difficult, and bankruptcies and write-offs increase. A low price, volatile environment makes it more difficult for the industry to continue to justify capital expenditures for drilling, pipelines, mining, and other infrastructure, especially as they are still writing off prior failures. Weak quarterly earnings reports raise questions about company management and decision-making.

The recent low oil price period has taken place during an overall economic period of low interest rates, low inflation, and growing interest by institutional investors in new opportunities for stable returns. Economic growth and profitability are occurring based upon a new alignment of industry powerhouses in sectors other than energy. The leaders of the stock market are now information technology, materials, financials, health care and consumer products; while real estate, utilities,[108] and industrials have provided steady, stable but more modest contributions. The energy sector has lagged these other areas.

Fossil Fuels Are Losing Share to Renewables, Even in a Low-Price Environment

Despite the current low-price environment, particularly for coal, renewable and alternative energy sources have been gaining market share.

Coal was the principal source of electricity in the U.S. for most of the last several decades, and was considered the least cost option for many years. However, even though prices for coal have remained low and essentially flat since the 2008 recession, due to technological advancements, natural gas and renewable energy are both now cheaper alternatives, and the combination of cheap gas and growth in renewables has led to a 37.5% decline in U.S. consumption of coal over the last decade.

Fossil fuel extraction is expensive— and the oil sector's last growth cycle was based on being able to attract investors for long-term high cost, high priced extractions from expensive reserves. But things are different now.

The new cycle of technological innovation that is sweeping through the energy sector has pushed down the cost of energy. Natural gas costs have been pushed down significantly due to major advances in fracking. The renewable energy sector also advanced further and faster than anticipated as major commercial efficiencies took hold in wind and solar. Over the longer term, competition between wind and solar and natural gas favors the renewable sector.

As renewable energy— particularly wind and solar— have come down in price, the concept of lower cost or no cost energy has taken root as those two resources have no fuel costs. The electric vehicle sector is also improving its price competitiveness as major auto companies take larger positions. Cheaper energy sources have become investible and politically accepted, creating a material risk to the financial rationale for oil investments.

[108] The utility sector is an energy intensive area with a long history of partnership with the fossil fuel sector. New energy generation decisions by this sector have turned away from coal-favoring renewables, efficiency and natural gas.

During this period, public policy and public opinion also have shifted, favoring corporations and other entities that 'go green.' And consumer spending and investment decisions are also shifting in that direction.

Oil and gas company claims that they can compete in a lower price environment have not been demonstrated over a sufficient time period to determine their veracity. And in any case, the nature of the economic transition to a low-carbon environment at this stage supports the thesis that green energy is cheaper, and that the costs involved with producing and using energy are becoming less burdensome on the environment and planet.

In the energy sector the oil and gas industry's historic claims to market superiority are giving way to new industries (solar, wind, and energy efficiency) and companies with solid, investible business propositions, growing balance sheets, and positive stock and credit evaluations.

Table 2: Benefits and Costs to Oil and Gas Industry in a Low-Price Environment

Benefits	Costs
Focus on Core Missions- Ridding Non-Core Assets	Shrinking Revenue
Weak Competitors Eliminated	Pressure to Reduce Costs
Potential for Cheap Acquisitions	Lower Capex
Potentially Increased Demand	Diminished Stock Prices
Improved Competitiveness of Petrochemical Sales	Downward Pressure on Dividends
Lowers Risk to Investors in Alternatives	Less Institutional Investor Interest/Concerns
	Bankruptcy/Investor Losses
	Failing Industry- Incentive for Alternatives
	Troubled Outlook
	Weakening Economic Chain
	Squeezes Margins in Petrochemicals, Conventional and NG

Source: IEEFA analysis

Risks in a High-Price Environment

In the past, the oil industry has been able to count on rising prices, and particularly on periodic and lengthy periods of price spikes, to generate the revenues needed to reward investors and to finance capital expenditures. But even if prices return to higher levels, competition between oil and gas producers, increased competition from other forms of energy, geological challenges, and other economic factors mean that the spikes will be lower and of shorter duration than they have been in the past. This spells serious trouble for the oil and gas industry, even in an upmarket.

The increasing reliance of the market on political options to prop up prices or to check market forces only demonstrates weak fundamentals. This "wild card" approach to market organization is likely to increase with political alignments coming together and falling apart. There is the ever-present risk of unilateral action by one nation disrupting several well-settled market arrangements and the potential for trade wars and military conflict.

Prices have more than doubled since falling below $30 per barrel in early 2016, reflecting a working resolution of tensions between OPEC members and certain non-OPEC countries,

particularly Russia, over production cuts. Reduced output resulting from a December 2016 agreement[109] and subsequent extensions have constrained global supplies, and U.S. shale producers have not moved quickly to oversupply the markets and drive prices down again. Oil prices already have recently climbed to more than $70 per barrel based on geopolitical tensions and the longer-term impacts of OPEC's supply reductions. Again, volatility is the order of the day.

Higher Prices Are No Longer Bullish for the Industry

Historically, investors and oil company managements[110] have tended to view steadily rising oil prices in a positive light— as a signal of a strong economy with robust demand, and a harbinger of strong performance both for oil companies and the market as a whole. Higher oil prices foretold rising dividends, robust investment, and more revenue for state and local governments.[111] And although price spikes could give consumers short-term pain at the pump, many economists believed that stronger income and employment growth for the economy as a whole would quickly offset the pain.

But today, rising oil prices may be seen in a more bearish light for the industry: as a risk to economic growth, as an incentive for investors to shift their resources to lower-cost energy alternatives, and as a potential spur for long-term loss in oil and gas market share.

Rising prices contain the seeds of their own destruction. As prices rise, so do the incentives for each individual country to increase production and secretly violate the OPEC agreements. At the same time, rising prices also give incentives for U.S. oil producers to add new capacity, boosting supplies and driving down prices again.

On the political end, prices have not risen high enough for long enough to cause public discontent in the U.S., or to cause significant harm to the economies of major consuming nations. But major oil importing nations monitor prices closely. Both India[112] and Japan,[113] for example, already have identified rising oil prices as a growing risk for economic growth, citing concerns about trade balances, currency values, fiscal stability, and inflation caused by high, and stable, oil prices.

A New Ballgame: Renewable Energy and New Technologies Have Become Competitive

Recent price increases are taking place against a wave of technological change brought on by the growth of renewable energy and electric vehicles. The question now is straightforward: Have these newer technologies and markets evolved to a point that creates a cap on the size and duration of oil price spikes?

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[109] OPEC Press Release.
[110] *The Wall Street Journal*. Are Low Oil Prices Good for the Economy? November 13, 2016.
[111] Daniel Yergin, *The Quest*, New York, Penguin Books, pp. 236-237
[112] Moneycontrol News. Rising oil prices may deliver a 'crude' shock; here are 3 factors to be cautious about. April 19, 2018.
[113] *Reuters*. Japan's manufacturers' mood sours as yen, oil prices rise. April 19, 2018.

From a financial perspective, the energy battle for market share between fossil fuels, renewable energy, and electric vehicles is a rough proxy for the progress of the climate movement. In the past, rising prices have led to a variety of defensive economic adjustments by consumers and governments, including lower consumption, which saves businesses, households, and governments money; lower fuel taxes, which protects consumers but endangers public budgets; and reliance on short term fiscal deficits to afford the higher prices. Today, however, a new dynamic is at play: renewable energy and electric vehicles are having an impact on the fossil fuel monopoly. Because lower-price energy alternatives are available, high energy prices likely will curtail demand for fossil fuels and accelerate the shift of toward renewables, likely for the long term.

The battle has largely been fought in the arenas of capital investment, technological innovation, tariffs, employment opportunities, public policies, and public opinion. Overt governmental repression in many areas of the world is ever present for climate activists, but state sanctioned violence against citizens directly related to climate issues has been rare but a powerful reminder when it has occurred. For example, a demonstrator was shot to death by police in Bangladesh during a demonstration against a new coal plant.[114]

Key questions that arise as these changes take place include:

- Is renewable energy— and the financing structure needed to support it— mature, resilient, reliable, and affordable enough to displace fossil fuels permanently?
- Under what terms, at what level, and by what measure do we gauge the trajectory?
- How will the new industries (solar, wind, electric vehicles, and their associated economic supply chains) push their way into the investment, political, and public imagination to displace fossil fuel interests?

These questions will be tackled by advocates and analysts in a variety of arenas: financial policy debates; competing scenarios in arcane statistical models[115] used by companies and national and international energy agencies; and local, state, and regional examinations of specific fossil fuel projects.

114 The Guardian, "Bangladesh coal plant protests continue after demonstrators killed," April 6, 2016

[115] Oil Change International Press Release. EIA: Once again projecting a future that will not come. February 6, 2018; and Carbon Tracker. Expect the Unexpected: The Disruptive Power of Low-carbon Technology. February 1, 2017.

Table 3: Benefits and Costs to Oil and Gas Industry in a High Price Environment

Benefits	Costs
Improved Company Balance Sheets- More Cash	Financial Incentive to Oversupply
Maintain and/or Increase Dividends to Investors	Decreased Demand Due to Higher Prices
Improved Stock Performance	Higher Prices for Oil Consuming Businesses
Longer Term Potential for New Investments	Higher Consumer Costs- Inflation
Improved Fiscal Condition-Oil Producing U.S. States	Currency/Trade Pressures-Oil Consuming Countries
Improved Fiscal Condition-Oil Producing Countries	Long Term Incentives for Alternatives
Validation of Prior Public Policy Support and Opportunity for New Ones	Decreased Efforts to Diversify in Emerging Oil-Dependent States
Greater Political Cooperation Among Nation States	New Pressure to Curtail Price Increases
Growth in Institutional Investor Interest	Demands on Profit Distribution: Dividend, Debt, Research, M&A
Positive Outlook	Decreases Competitiveness of Petrochemical Sales
Strengthening of Economic Chain	
Bolstering Local Economies	
More Drilling/Higher Short-Term Revenues	

Source: IEEFA analysis

Appendix III: Litigation Risks

Litigation is likely to play an increasingly important role in the effort to change oil and gas corporate behavior concerning climate change. These efforts are likely to be lengthy and may not immediately be successful, but they are another key avenue for influencing public opinion and pushing for corporate change.

i. State Attorneys General Sue ExxonMobil for Misleading Investors, Public about Climate Change

The New York and Massachusetts attorneys general have sued ExxonMobil, alleging the oil major misled investors and the public about the risks of climate change. These lawsuits cite decades-old research by oil majors such as Exxon, which indicated the companies knew about the risk of climate change, the contribution of carbon emissions to climate change, and the potential risk to their business. *Inside Climate News*, along with the *Los Angeles Times*, reported that Exxon had conducted extensive analysis on the potential for fossil fuels to disrupt climate nearly four decades ago, but had subsequently denied climate change in public statements. *Inside Climate News* was awarded a Pulitzer Prize for its reportage, which was used as a basis for the state lawsuits.

ExxonMobil is also under investigation by the SEC concerning how it values its assets and disclosures related to climate change. How the company is addressing the investigations has thus far been a largely unexamined topic of corporate governance.

Exxon's response to the attorneys general legal action followed a pattern familiar to those who have followed the company's history: a bare-knuckle strategy backed by big dollars,[116] that included hiring attorney Ted Wells, who became famous in his defense of Philip Morris against government charges that the tobacco firm hid health dangers of smoking.

The attorney generals' case has been moved out of Texas, and recently, a federal judge in New York, Valerie Caproni, rejected Exxon's motion for an injunction to halt the investigations, using unusually harsh language, claiming the oil giant was "running roughshod over the adage that the best defense is a good offense."[117]

ii. Cities Sue Oil Majors to Recover Infrastructure Costs, Citing Public Nuisance Laws

When New York City Mayor Bill de Blasio announced plans for the city's pension plans to divest from its fossil fuel holdings in January 2018, he also announced a lawsuit against the five biggest oil companies alleging infrastructure damage caused by climate change. The city is, in effect, suing for reparations to pay for resiliency efforts needed after damages from the 2012 storm that killed 53 people and caused an estimated $19 billion in damages.

Other communities around the country are looking at these suits. The damage claims are similar to those brought against the tobacco industry. Those suits originally were unsuccessful, but ultimately resulted in a settlement that cost the industry $206 billion.[118]

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[116] *Inside Climate News*. With Bare Knuckles and Big Dollars, Exxon Fights Climate Probe to a Legal Stalemate. June 5, 2017.
[117] *Associated Press*. Judge dismisses Exxon lawsuit against climate change probe. March 29, 2018.
[118] See the Tobacco Master Settlement Agreement.

iii. Greater Pennsylvania Carpenters Pension Fund Sues ExxonMobil, Alleging Value of Reserves Were Misstated

The suit filed in November 2016 by the Greater Pennsylvania Carpenters Pension Fund against ExxonMobil, Ramirez v Exxon Mobil, takes a slightly different legal angle, alleging the company violated securities laws by misrepresenting the value of its oil and gas reserves. The suit claims Exxon recognized the environmental risks caused by global warming and climate change, which would prevent it from extracting reserves, and would leave a material amount of the reserves stranded, and that the company had used an inaccurate "price of carbon"— the cost of regulations such as a carbon tax or a cap-and-trade system to push down emissions— to keep the value of its reserves materially overstated.

iv. Potential Dutch NGO Suit against Shell Calls for Phase Out of Oil & Gas Production by 2050

A potential new legal tactic was suggested in a letter a Dutch NGO, Friends of the Earth, sent to Shell in April 2018, threatening a climate change lawsuit if the oil giant fails to change its business operations, notably, to end all its oil and gas production activities by 2050. The letter [119]criticizes Shell's plan to commit $2 billion to renewables, which represents only 5% of its annual capital expenditures, calling on the company to rapidly shift its capital spending to its New Energy division. If filed, this would be the first lawsuit that seeks to shift an oil company's business operations.[120]

v. Virgin Islands Issues Subpoena to Exxon, Citing Violation of Anti-Racketeering Law

In 2016, the Virgin Islands, a U.S. territory in the Caribbean, charged that Exxon violated its anti-racketeering law by defrauding the government and consumers with misleading statements about climate change. The oil company demonstrated its aggressive tactics by countersuing both the Virgin Islands and its attorney general, Claude Walker, suggesting their campaign was a pretext to litigate climate policy. The Virgin Islands withdrew its subpoena when Exxon agreed to drop its countersuit.

vi. Class Action Lawsuit on Behalf of Ecuadorians Against Chevron

The legal battles between Ecuadorian human rights groups and Chevron, which ended in 2017, illuminated how far an oil major would go to defend itself and how costly and lengthy such a legal battle might be. Though it ended with an apparent victory for Chevron, the oil giant's brand was tarnished,[121] and it opened new fronts— the rights of indigenous peoples and the destruction of the Amazon— for legal scholars and climate activists.

[119] Friends of the Earth, letter to Royal Dutch Shell, April 4, 2018
[120] *Seeking Alpha*. Shell's Climate Liability Threat Goes Global. April 16, 2018.
[121] *NPR*. A 'Crude' Awakening: Chevron Vs. The Documentarian. June 4, 2010.

IEEFA

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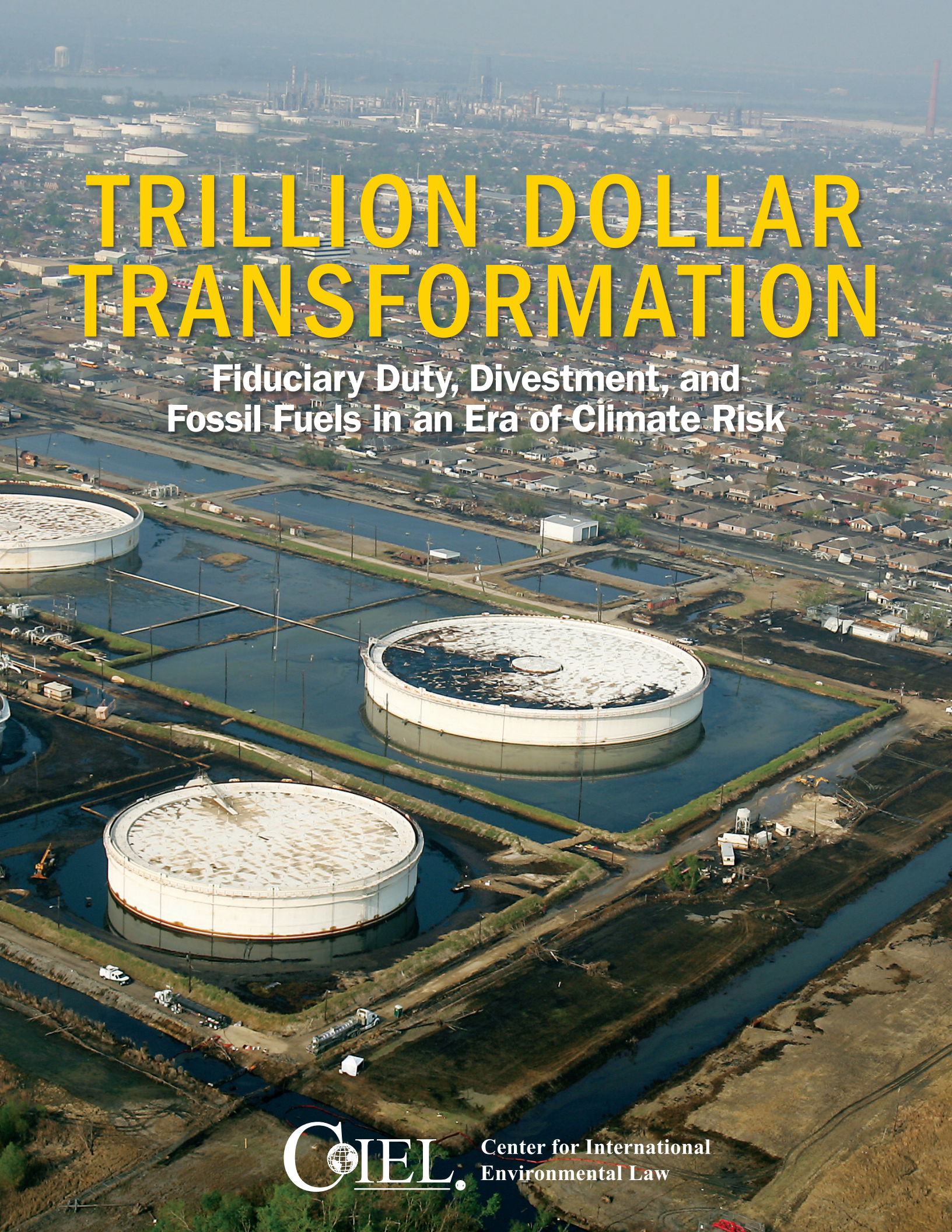

TRILLION DOLLAR TRANSFORMATION

Fiduciary Duty, Divestment, and Fossil Fuels in an Era of Climate Risk

CIEL. Center for International Environmental Law

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Center for International Environmental Law

About CIEL

Founded in 1989, the Center for International Environmental Law (CIEL) uses the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. CIEL is dedicated to advocacy in the global public interest through legal counsel, policy research, analysis, education, training, and capacity building.

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Executive Summary

Just as it poses unparalleled social and environmental challenges for humanity and the biosphere, climate change also presents a unique set of financial challenges and opportunities to investors. The early entry into force of the Paris Agreement in November 2016 signals that the era of a fossil-fuel based economy must and will end in the coming decades. As the global community enacts and implements policies to achieve the Paris Vision of a world well below 2 degrees of warming and as markets respond to that action, carbon assets and carbon intensive industries face a fundamental change of economic circumstances that will affect not only their long-term valuation but also, in some cases, their inherent viability. The question now is not *whether* this economic transformation will take place, but how quickly and at what scale. While substantial uncertainties remain with respect to both questions, it is increasingly clear that climate change and climate risk are already reshaping the investment landscape, and that these effects will grow dramatically in the years ahead.

This report, together with a companion financial analysis prepared by Mercer Investments, addresses the implications of this changing landscape for pension funds and pension fund fiduciaries.

Public pension fund fiduciaries have the obligation to act prudently and in the interest of all beneficiaries, including current retirees and future beneficiaries. This standard of prudence requires a fiduciary to act with reasonable care, skill, and caution when making investment and allocation decisions on behalf of their fund. This obligation manifests as a number of distinct fiduciary duties, including the (1) duty to diversify; (2) duty of loyalty; (3) duty of impartiality; (4) duty of inquiry; (5) duty to monitor; and (6) duty to act in accordance with the plan documents.

In the companion report, Mercer Investments provides an overview of climate change investment risk for US public pension trustees and provides quantitative and governance frameworks through which trustees can address that risk. Mercer's analysis demonstrates that, regardless of the route humanity chooses, climate change is poised to have dramatic impacts on pension fund portfolios—and the broader economy—over the coming three decades. Building on Mercer's findings, the present analysis considers the legal implications of those impacts for pension fund fiduciaries in light of long-standing principles of fiduciary duty and ongoing rapid developments in the field.

The potential financial cost of physical impacts due to climate change, the inability to generate revenue from fossil fuel reserves already held or in development, the costs of transitioning to a low-carbon economy, and legal liabilities related to climate change must be taken seriously by investors.

The potential financial cost of physical impacts due to climate change, the inability to generate revenue from fossil fuel reserves already held or in development, the costs of transitioning to a low-carbon economy, and legal liabilities related to climate change must be taken seriously by investors. For these and other reasons, climate change should be considered an independent risk variable when making investment decisions, and it will trigger the obligations of pension fund fiduciaries.

Pension fund fiduciaries are required to safeguard the value of their funds, and climate change poses a direct challenge to that objective. As such, climate

change and climate-related risks trigger fiduciaries' duties:

- to inquire, requiring fiduciaries to consider the prudence of their investment decisions;
- to monitor, requiring reevaluation of investments already held in the context of new changes in regulations, international mitigation efforts, and market trends;
- to diversify, ensuring that a given portfolio is amply protected against the known idiosyncratic risks inherent in certain investment types, including investments in fossil fuel assets;
- to act impartially with respect to all beneficiaries, protecting fund principal over the long-term and prioritizing preservation of trust capital alongside maximizing fund growth;
- of loyalty, requiring the trustees to act solely in the interests of their funds' beneficiaries, without acting to further personal or ideological interests; and
- to act in accordance with plan documents.

There are several courses of action pension fund fiduciaries can take in order to ensure they act with reasonable care, skill, and caution in the context of climate change. This can include educating themselves on climate-related investment risks and opportunities; modifying the principles guiding investment decisions; engaging as active shareholders in owned companies subject to climate vulnerabilities; avoiding some climate-vulnerable assets altogether; and affirmatively investing in clean energy opportunities.

If pension fund fiduciaries do not take the financial risks posed by climate change seriously, they may be subject to liability. A failure to properly consider climate change as a risk factor could result in lawsuits under various theories of liability for breaches of fiduciary duties.

Climate change presents an environmental, social, and economic challenge on a scale humanity has not previously faced. Trustees, fund managers, and their beneficiaries are not exempt from those challenges. Indeed, in the years ahead they will be confronted with unique questions that will at once reshape our understanding of fiduciary duty and simultaneously demand strict adherence to the foundational principles that define that duty. The transition to a low-carbon economy will have significant, material financial consequences which cannot be ignored. Pension fund fiduciaries should consider their portfolios' exposure to climate-related risk and whether or not they are investing in a manner consistent with the best interests of their beneficiaries.

PART 1
Introduction

Pension fund fiduciaries, including trustees, investment officers, and their internal and external investment managers and advisors, have a responsibility to the beneficiaries of the funds they manage.[1] They are obliged to act solely in the interest of plan beneficiaries, and must exercise reasonable care, skill, and caution when making portfolio investment and management decisions.[2] These fiduciaries have to balance the interests of current beneficiaries with future retirees and benefit recipients, and must ensure stability while pursuing growth.

These responsibilities are expressed as various duties imposed on pension fund fiduciaries. These include the (1) duty to diversify; (2) duty of loyalty; (3) duty of impartiality; (4) duty of inquiry; (5) duty to monitor; and (6) duty to act in accordance with the plan documents.

Climate change, and our global efforts to confront it (together "climate-related risk"), presents financial challenges to pension funds that may trigger trustees' fiduciary duties. Major financial institutions are acknowledging that likely global enactment of policies to reduce carbon emissions will reduce asset values in the near-term, not merely over a timescale of decades.[3] Accordingly, climate-related risk should, at a minimum, be considered a material, independent risk variable along with other modeling and forecasting inputs when making investment decisions.

Addressing the materiality of climate-related risk implicates and triggers several of the duties pension fund fiduciaries owe to their beneficiaries. As with any other financial risk, fiduciaries should weigh climate-related risk when making decisions about risk management strategies, asset allocation (what to invest in, what to avoid or divest from, how to allocate resources), and how to plan for the future. Indeed, in the face of climate-related risks, and in the same way that fiduciaries may not pursue agendas unrelated to achieving adequate risk-adjusted returns, they must balance investment decisions based on short-term horizons with long-term return and liability considerations, and cannot make such decisions based on personal economic assumptions, beliefs, or political preferences.

Moreover, because climate-related risks will likely affect what funds are available for future beneficiaries more than current beneficiaries, a lack of consideration of longer term climate-related risks to the plan's portfolio could be seen as an unreasonable bias favoring short-term gain at the expense of long-term sustainability; favoring older (current) over younger (future) beneficiaries.[4] A failure to consider climate-related risks generally, a failure to take prudent steps to manage and mitigate these risks, and a failure to act to reduce long-term, climate-related portfolio drag on fund investment could constitute violations of the fiduciary's duty to conduct factual inquiry on material investment issues, to act solely in the financial interests of beneficiaries, and to act with impartiality between current fund participant generations.

Failure to act with reasonable care, skill, caution, loyalty, impartiality, and fact-based inquiry in the face of climate-related risks could expose fiduciaries and their attorneys and advisors to legal liability. As the impacts of climate change continue to grow, the science of climate change attribution grows ever more precise, and the trend towards more climate litigation continues, there are a number of claims that could be brought against pension fund fiduciaries for breaching their duties to consider and protect their portfolio from climate-related risks. These breaches may be viewed as particularly serious when viewed in light of the considerable known risks and the corresponding opportunities for improving risk-adjusted returns available to fiduciaries who do consider climate change as they perform the duties entrusted to them.

PART 2

Fiduciary Duties in Public Pension Fund Administration

Pension fund fiduciaries must abide by the duties imposed upon them by trust documents, statute, state constitutions, and common law. For private pension funds, the primary governing law is the Employee Retirement Income Security Act of 1974, as amended (ERISA). Public pension funds are exempt from ERISA and are governed by state law. State law, however, is often very similar to ERISA as the majority of states have adopted an ERISA-like statute, the 1994 Uniform Prudent Investor Act (UPIA). Whether embodied in a state's local adoption of the UPIA, state common, statutory and constitutional law, or ERISA, the law establishes a widely recognized standard of care applicable to all pension fund fiduciaries. Each and every pension fund fiduciary must discharge his or her fiduciary obligations "with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims."[5]

In exercising "reasonable care, skill, and caution" in the context of climate-related risk,[6] the duties that a prudent trustee must fulfill include: (1) duty to diversify; (2) duty of loyalty; (3) duty of impartiality; (4) duty of inquiry; (5) duty to monitor; and (6) duty to act in accordance with the plan documents. Each of the above duties is relevant to assessing whether and how fully a trustee has complied with his or her overarching duty of prudence.

PART 3

Climate Change As a Material (Financial) Risk

Although climate change is often described as a global problem with purely global impacts, in reality climate impacts are, and will continue to be, experienced by individual companies, sectors, and communities around the world, including the financial sector. These impacts, coupled with the effects of public efforts to reduce emissions, will have material impacts on markets, industries, and individual firms. As such, climate-related risk must be recognized as an independent, material market risk for investors. This is especially true for those managing pension fund assets who must consider the long-term interests of future beneficiaries, for whom the effects of climate change will be most severe.

Climate Change Presents Multiple Financial Risks

Climate change poses four distinct but interrelated categories of risk to the value of fund assets: physical impact risk, carbon asset risk, transition risk, and litigation risk. These four risks can result in direct financial losses, reduce the values of various asset classes, and even threaten the viability of some common business models. Accordingly, these risks must be seriously evaluated in any long-term investment strategy.

Impact risk is the risk of loss due to destructive physical effects of climate change. As the planet warms, sea levels are rising, storms are becoming more violent, and extreme weather events such as droughts, wildfires, and heat waves are increasing in intensity and severity.[7] In addition to their profound impacts on human life, human well-being, and biological diversity, the direct impacts of climate change will result in significant destruction of physical wealth, as well as the disruption of economic activity across wide regions and various sectors.

Impact risk is not allocated evenly among asset classes. Coastal property is especially vulnerable to storm surges and flooding. Critical infrastructure—from fossil fuel assets like oil rigs and pipelines, to municipal drainage, water treatment, and underground transit systems—will be affected by increased flooding from the combined effects of sea level rises and more intense storms. Changes in wind, rainfall, and temperature may lead to short-term crop failures or long-term shifts in agricultural economies. Increased wildfire risk will affect forest, timberlands, and real estate. Finally, droughts, heat waves, floods, stronger storms, and other extreme weather events may simply disrupt the flow of commerce in particular areas.

Climate change poses four distinct but interrelated categories of risk to the value of fund assets: physical impact risk, carbon asset risk, transition risk, and litigation risk. These four risks can result in direct financial losses, reduce the values of various asset classes, and even threaten the viability of some common business models.

Carbon asset risk is the risk that in an increasingly carbon-constrained world, fossil fuel companies cannot fully develop and use the massive carbon reserves they hold, resulting in billions of dollars in "stranded assets." In order to hold atmospheric warming to "well below two degrees Celsius" as envisioned in the Paris Agreement[8]—or within the more ambitious 1.5 degree Celsius supported by many countries and much of the scientific commu-

nity—we must strictly limit how much additional carbon dioxide is added to our atmosphere. This total remaining "carbon budget" is only a fraction of the carbon emissions embedded in proven oil, gas, and coal reserves owned by fossil fuel companies, to say nothing of the fact that many of these companies are continuing to explore and develop costly new sources of fossil fuel.

Given this mismatch, and the necessity and eventual certainty of increasingly stringent greenhouse gas emission regulations, the majority of fossil fuel reserves owned by fossil fuel companies must ultimately remain undeveloped and unsold. These companies will have to pay for the debt incurred in exploring and developing their reserves but will not be able to profit from them, saddling them with a massive financial burden. Presently, most fossil fuel companies are behaving in a "business as usual" manner, not acknowledging the "stranded asset" risk, and creating a substantial risk that many of the investments they make in finding and developing new reserves will result in significant long-term losses.

Transition risk is the risk that a given business or asset will be negatively affected by the global transition to a low-carbon economy, driven by policy, technology, and market changes. As the global community shifts away from fossil fuel use, business models may be negatively affected by new regulatory schemes, changing social attitudes towards carbon use, and—perhaps most quickly and abruptly—by evolving market conditions.

Technology evolution, including falling renewable energy costs, improving energy efficiency of buildings and industrial operations, electric vehicles, and a variety of evolving "clean technologies" will erode demand for fossil fuels.

Transition risk includes immediate risks as well as risks that accrue over time. In the near-term, new taxes or regulations that increase the price of carbon may strain individual businesses or entire industries by virtue of their economic effect. Technology evolution, including falling renewable energy costs,

improving energy efficiency of buildings and industrial operations, electric vehicles, and a variety of evolving "clean technologies" will erode demand for fossil fuels. Moreover, as public opinion towards fossil fuel use changes and systems of energy distribution change, business models that appear strong today may be obsolete in the future. These shifts—and their attendant risk—are increasingly evident in the financial sector itself, which is undergoing a rapid evolution in the recognition of and response to climate-related risks.

The most direct example of transition risk is the risk posed to fossil fuel companies. If we are to transition away from fossil fuel use, business models based on the extraction, refining, and sale of fossil fuels will become increasingly unviable. However, transition risk affects other sectors as well. For example, electric utilities will have to adapt to a world of renewable, low-marginal cost energy and distributed generation owned by customers. Automobile manufacturers may need to produce cars that run on electricity, fuel cells, or biofuels. Construction companies and developers may have to comply with new regulations regarding energy use or emergency preparedness. These are just a few of the myriad examples of how the transition to a low-carbon world will affect different sectors, markets, and asset classes, and must be viewed as a material consideration when making investment decisions.

Finally, **litigation risk** is the possibility that a company may be sued as a result of its contribution to climate change, potentially resulting in significant litigation costs and financial losses for both the corporation and its investors. Climate litigation risk may take an array of forms, ranging from suits for direct damages to suits for misrepresenting the known risks of carbon emissions. As discussed below,[9] this type of litigation is not speculative—climate change-related cases in the United States and around the world, brought by governments and private citizens, are proceeding and in many instances succeeding on several different theories of liability. As such, the risk of possible litigation against major players in the fossil fuel and related industries is increasingly significant in both its likelihood and its scale.

BOX 1
A Rapidly Changing Space

It can be hard to see a major market shift while it's happening, but the financial circumstances of the fossil fuel industry are changing rapidly. Over just a few years the American coal industry collapsed, with several of the largest coal companies declaring bankruptcy.[i] The divestment movement has accelerated faster than even its proponents expected, accumulating $3.4 trillion assets under management,[ii] including a US bank (Amalgamated Bank).[iii] BlackRock, the largest asset manager in the world, issued a warning that "all investors should incorporate climate change awareness into their investment processes."[iv] In Europe, France's largest insurer AXA divested from coal equities,[v] and Mark Carney, Governor of the Bank of England, warned in a speech to Lloyd's of London of the looming dangers of climate change.[vi] As this report goes to press, the Securities and Exchange Commission and the Attorney General of New York are actively investigating ExxonMobil, the largest investor-owned petroleum company, for potential securities violations and fraudulent misrepresentation in its accounting and disclosures related to climate risk.[vii] These developments are not isolated, and reflect a growing understanding that the 20th century business models of the fossil fuel industry are no longer compatible with a low-carbon future. Although many investors acknowledge this fact, it remains common to consider climate risk a problem of the remote future. In truth, the future is now. Circumstances are changing quickly, and efforts to game the market and get out in time may end up saddling investors with heavy losses.

The Risks Presented By Climate Change Are Significant and Imminent

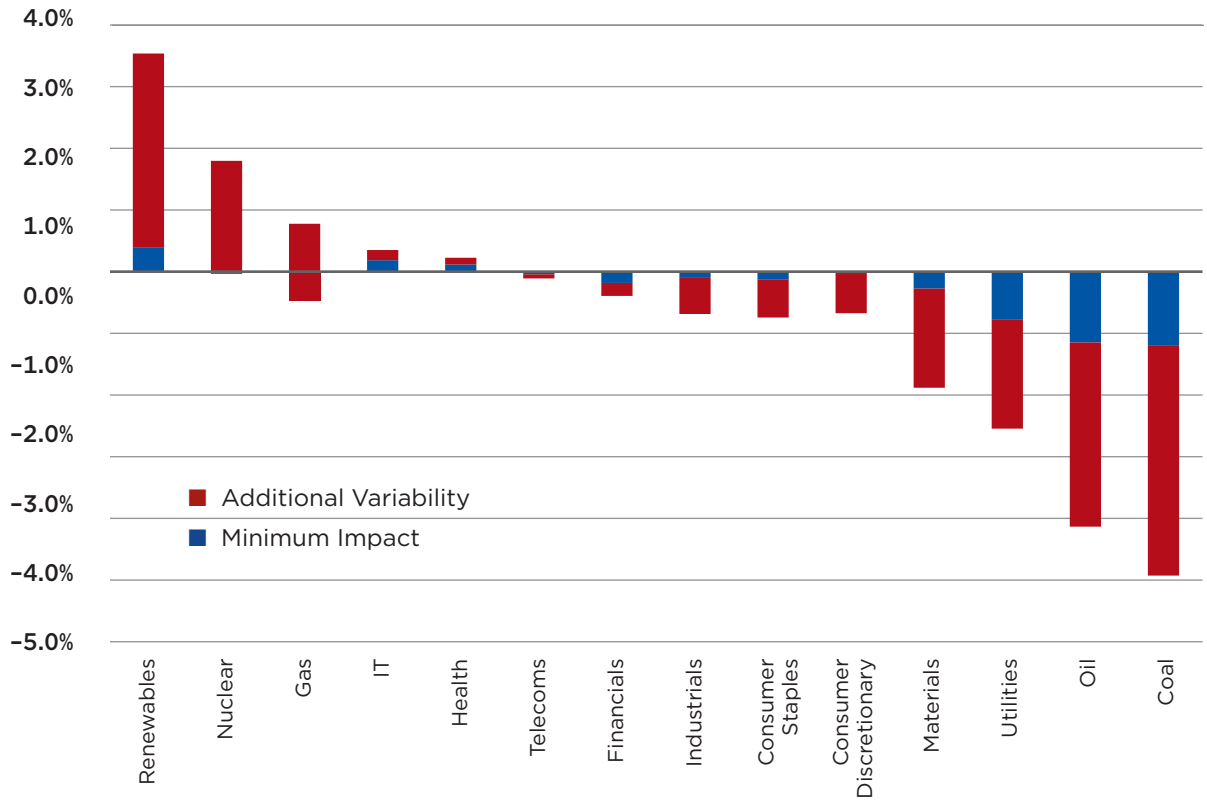
Climate change poses both systemic risks to the financial system as a whole, as well as specific risks to particular investments. The impacts of climate change will impose increasing costs on the global financial system, affecting the demand, pricing, and profitability of fuel stocks and energy sources, increasing insurance costs, and causing damage to infrastructure, among other impacts. These impacts, in turn, may negatively impact the economy at global, regional, and national scales, and across multiple interconnected sectors, thus presenting a systemic risk. As discussed above, well-diversified funds can't

fully avoid systemic risk, although they can take steps to manage and mitigate the risk characteristics of their individual investments. This is the context in which climate change and climate-related risk should be of serious concern to investors.

In the companion report to the present analysis, Mercer Investments concludes that, over a 35-year time horizon, returns for a conventionally-allocated public sector pension fund will be impacted by climate-related risk.[10] This impact will be most pronounced in the Transformation (2 degree) scenario,[11] which is projected to experience a net 6% loss over 35 years when compared to a growth future without climate-related risk. It is important to note that this is only true for projections into the middle of the century, after which accelerating climate impacts severely affect returns under 3 and 4 degree scenarios. As Mercer observed, "Extending modelled trends beyond 2050—the end point for this analysis—we would expect the Fragmentation scenarios to have increasingly large negative impacts on returns at the total portfolio level. A Transformation scenario is expected to better protect long-term returns beyond this timeframe."[12] As described above, these projections reflect return scenarios for traditionally-allocated funds which have not adjusted their holdings, either in terms of sector and industry exposure or asset class allocation, to address the new challenges presented by climate change. However, the financial impacts of climate-related risk as described above will not apply equally to all sectors or asset classes. Specifically, fossil fuels

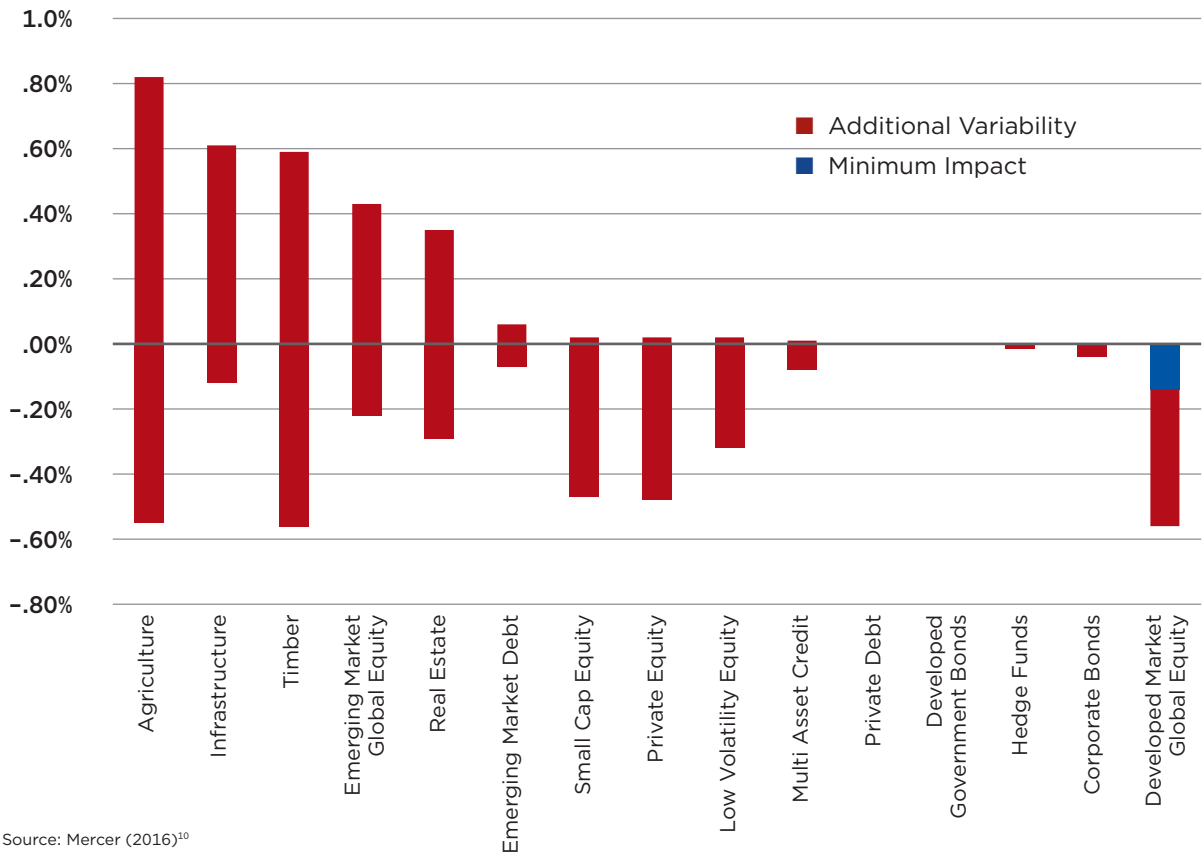
Fossil fuels like oil and coal, as well as utilities, are uniquely vulnerable to climate risk, especially in more aggressive emission-reduction scenarios. Alternatively, low-carbon energy options like renewables are likely to benefit most from a Transformation scenario.

FIGURE 1
Median Additional Annual Returns by Sector Across Scenarios (over the next 35 years)



Source: Mercer (2016)[10]

FIGURE 2
Median Additional Annual Returns by Asset Class Across Scenarios (over the next 35 years)



Source: Mercer (2016)[10]

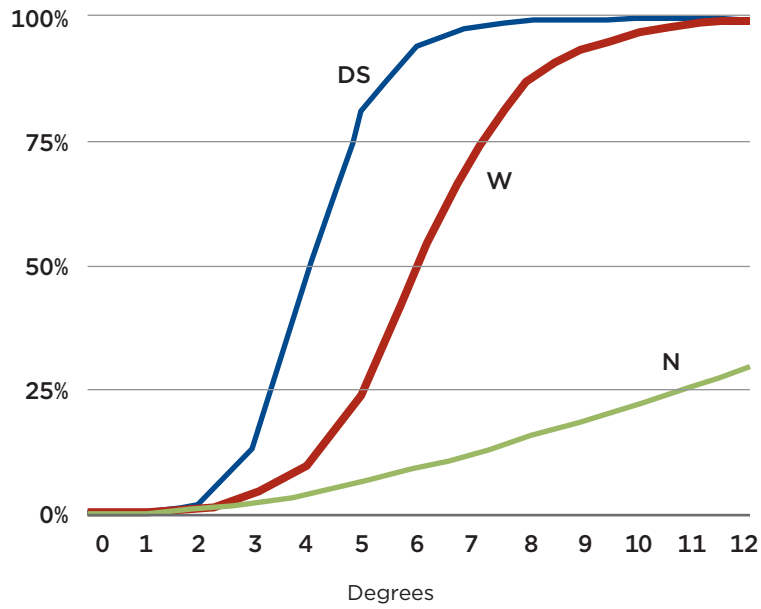
like oil and coal, as well as utilities, are uniquely vulnerable to climate risk, especially in more aggressive emission-reduction scenarios.[13] Alternatively, low-carbon energy options like renewables are likely to benefit most from a Transformation scenario.[14]

That the most prominent examples of such climate-vulnerable investments are in the fossil fuel industry is unsurprising. Fossil fuel companies that have rigs and rely on extensive infrastructure face physical impact risks; the effort to reduce carbon emissions may strand significant fossil fuel assets; changing demand for carbon-intensive fuels, the emergence of new technologies, and evolving regulations will subject fossil fuel companies to transition risk; and the impacts of climate change on property and human populations may present significant litigation risk. Over the next 35 years, the coal industry can expect to see annual returns reduced by 26% to 82%.[15] The oil and utility industries may also see returns diminish, "with expected median returns potentially falling by 38% and 60% respectively" over the same timeframe.[16] Renewables, however, can expect average annual returns to increase as much as 53%.[17]

It is true that, regardless of the scenario, climate change will impose return drag on traditionally-allocated portfolios, and that return drag is most pronounced in a Transformation scenario. However, the most significant sector-level effects are expected in the Transformation scenario as well, as a result of more aggressive action by governments, corporations, and citizens in response to climate change. As a result, not only are expected market returns lower in a Transformation scenario, but the ability to adjust to those risks is highest, because the financial impacts will be most concentrated in specific sectors and asset classes.

These risks have not gone unnoticed. Citigroup, in anticipation of the 2015 Paris Agreement, noted that up to $100 trillion in fossil fuel assets may have

FIGURE 3
Climate Damage Functions



Source: Covington and Thamotheram (2015)

"Investors can no longer ignore climate change. . . . We believe all investors should incorporate climate change awareness into their investment processes." — BlackRock

already been economically stranded.[18] Deutsche Bank claimed that fossil fuel assets were already subject to permanent impairment and value loss, with low oil prices consistent with a low-demand future that may represent the new normal.[19] HSBC declared, "[w]ith lower oil prices, producers have a choice: continue to operate and take losses in the hope that prices will recover, or cut losses and shut down facilities."[20] Finally, in the wake of the Paris Agreement, Barclays concluded that the fossil fuel industry is facing revenue losses of $34 trillion over the next 25 years.[21]

Fossil fuels are not the only sector subject to climate-related risk,[22] although they are likely to be the hardest hit. In 2010, the Securities and Exchange Commission released interpretive guidance regarding disclosures relating to climate change.[23] It served to "remind companies of their obligations under existing federal securities laws and regulations to consider climate change and its consequences,"[24] and it noted that financial disclosure under those requirements is appropriate, even for many companies indirectly affected by climate change. As the SEC observed, "Companies that may not be directly affected by such developments could nonetheless be indirectly affected by changing prices for goods or services provided by companies that are directly affected and that seek to reflect some or all of their changes in costs of goods in the prices they charge."[25] In December 2015, the Financial Stability Board established a Task Force on Climate-Related Financial Disclosures to develop recommendations for a set of voluntary disclosures relating to climate change for broad use by firms across industries and countries.[26] In 2016, Moody's announced that it was incorporating a greenhouse gas reduction scenario consistent with the Paris Agreement into its analyses, noting 13 industries that were exposed to a high degree of transition risk.[27] Finally, acknowledging the transformative nature of the challenges presented, the Sustainability Accounting Standards Board released sustainability accounting standards for 79 different industries, demonstrating the variety of relationships between industries and their exposures to climate risk.[28]

The degree of risk presented by climate change, including the risk of enormous losses in the fossil fuel and other industries, should put all investors on notice. As BlackRock warns in a recent report, "Investors can no longer ignore climate change. . . . We believe all investors should incorporate climate change awareness into their investment processes."[29] This is especially true for pension fund trustees, whose time horizon extends well past that of a typical investor or market participant. Climate risk poses a material threat to the value of what might formerly have been considered a well-diversified portfolio and should be considered as an independent risk variable when making investment decisions.

PART 4

Climate Change Triggers Trustee Duties

The financial risks presented by climate change implicate many of the fiduciary duties that pension fund trustees owe to their beneficiaries. Because they must act impartially in the interest of all current and future beneficiaries, trustees are required to safeguard fund assets in both the near term and over longer time horizons. In what follows, the first section outlines how climate change and climate-related risk implicate trustees' duty of inquiry, duty to monitor, duty to diversify, long-term duty to protect principal, and duty of impartiality. The next section then discusses how trustees acting with reasonable care, skill, and caution in the context of climate change can act to protect their funds and avoid liability. It describes four categories of action trustees can pursue, including modifications of investment principles, active shareholder engagement, avoidance of climate-vulnerable investments, and proactive investment in clean energy opportunities.

Trustees Must Act Solely and Impartially in the Interest of All Beneficiaries

Pension fund fiduciaries must act solely and impartially in the interest of all beneficiaries. This requirement applies in the near term, requiring fiduciaries to protect fund assets from unacceptable risk and devaluation, as well as over the long term, requiring fiduciaries to balance the interests of current and future beneficiaries and ensure investment strategies mitigate long-term risks and pursue long-term growth and value creation. These obligations, as applied to the challenges of climate change, trigger the fiduciary duties to inquire, to monitor, to diversify, and of impartiality.

Safeguarding Fund Assets in the Near and Medium Term

Pension funds must be able to provide consistent payments to beneficiaries while protecting the value of the fund overall. For this reason, pension fund fiduciaries must safeguard the value of fund assets over the near term to ensure the fund remains able to make current payments without impairing its overall value. The Paris Agreement, which entered into force on November 4, 2016, sets preliminary emissions targets that must be reached no later than 2020.[30] Global efforts to confront climate change, including new regulations and other schemes to curb emissions, will have impacts on financial markets in real time, not just in the decades over which they take effect. Climate-related risk therefore presents near-term challenges to that value preservation that must be acknowledged and addressed by pension fund fiduciaries. These challenges trigger fiduciaries' duties to inquire, to monitor, and to diversify.

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DUTY TO INQUIRE

Pension fund fiduciaries have a duty to investigate and consider the prudence of their investment and management decisions. A trustee must inquire "into the relevant facts and circumstances surrounding the investment decision."[31] Fiduciaries are required to give "appropriate consideration" to the merits of investments.[32] One way in which trustees may appropriately consider investments is by evaluating how an investment, as part of the portfolio, presents "the risk of loss and the opportunity for gain (or other return) associated with the investment or investment course of action[.]"[33] Routine or cursory reviews may not satisfy a trustee's duty to inquire as a prudent investor would.[34] To determine a fiduciary's level of prudence at the time of investment, a court must conduct a fact-based inquiry as to "whether the individual trustees, at the time they engaged in the challenged transactions, employed the appropriate methods to investigate the merits of the investment and to structure the investment."[35]

Because of the financial threat posed by climate change, and the inevitable, if still uncertain, market disruptions that will accompany global emission reduction efforts, fiduciaries should consider climate-related risk as an independent risk variable when making investment decisions. Although some of the effects of climate change will play out over medium- to long-term timescales, government action and new regulation can have immediate impacts on asset prices. For example, in its June 2016 analysis, Moody's Investors Service identified 13 industries in its corporate and infrastructure portfolios that were highly exposed to carbon transition risk. "For three sectors—coal, coal infrastructure and unregulated power utilities—material credit impacts and rating adjustments are already being felt. For the others, Moody's expects that they will be affected over the next three to five years."[36]

In the context of climate-related risk, this consideration can include investigating the financial impacts of new regulations, the indirect consequences of regulations and business trends, the effects of technological change, and the physical impacts of climate change, among others.[37]

The duty to inquire is an obligation that must be demonstrated through process, not outcomes.[38] The important question regarding the duty of inquiry is not whether an individual investment was successful, but whether the fiduciary making the investment decision engaged in an appropriate investigation of the merits of the investment.

DUTY TO MONITOR

In addition to the duty of inquiry, which requires trustees to adequately consider their investment decisions, the duty to monitor requires those same fiduciaries to continually review their positions and monitor their portfolios. A fiduciary has a "continuing duty . . . separate and apart from the duty to exercise prudence in selecting investments at the outset . . .

to monitor investments and remove imprudent ones."[39] This duty means that a fiduciary must "systematic[ally] conside[r] all the investments of the trust at regular intervals," and if an investment is determined to be imprudent, the fiduciary "must dispose of it within a reasonable time."[40] In the same way that buying or selling assets constitutes an investment decision that warrants investigation, choosing not to change positions when circumstances change is also a decision that must be made prudently and with care.

In the context of climate change, the duty to monitor is critical because changes in market conditions, domestic regulations, and international agreements can have drastic and long-lasting effects on climate-vulnerable investments. The duty to monitor is usually a periodic responsibility, and review as infrequently as annually is often considered adequate.[41] However, the duty to monitor is also triggered if and when fiduciaries receive negative information about an investment. Events such as major swings in commodity prices or the adoption or implementation of international agreements may require pension fund fiduciaries to review and reconsider their climate-vulnerable investments. For example, after the signing of the Paris Agreement itself, renewable energy stocks saw an increase in value while coal stocks saw sharp declines.[42]

DUTY TO DIVERSIFY

Pension fund fiduciaries have a duty to diversify their holdings so as to minimize risk. The objective for the diversification duty is to minimize loss and maximize rate of return.[43] The diversification duty both encourages a fiduciary's caution while "express[ing] a warning to trustees, predicated on the duty to exercise care and skill, against taking bad risks—ones in which there is unwarranted danger of loss, or volatility that is not compensated by commensurate opportunities for gain."[44]

To accomplish loss minimization, fiduciaries often rely on Modern Portfolio Theory (MPT), a dominant theory of trust law since the 1970s.[45] MPT emphasizes that the prudence of the investment should be judged based on the risk-reward characteristics of the portfolio as a whole, rather than on the risks and returns of individual investments. Individual investments can have a higher risk profile than the portfolio as a whole, because investing in diverse, uncorrelated assets reduces the negative impacts of individual assets and spreads the risk. The duty to diversify therefore does not require pension funds to be riskless; it merely requires that the fund fiduciaries don't take on *uncompensated* risk. Investments with different degrees of risk are acceptable if they produce returns commensurate with their level of risk. Factors to consider in determining whether a

fiduciary has satisfied the duty to diversify include: (1) the purposes of the plan; (2) the amount of the plan assets; (3) the financial and industrial conditions; (4) the type of investment; (5) distribution as to geographical location; (6) distribution as to industries; (7) dates of maturity; and (8) the time horizon over which the plan will be required to pay out benefits.[46]

Climate change may trigger the duty to diversify by challenging the prudence of investing in climate-vulnerable assets—which include an added element of risk—when they are not outperforming non-climate-vulnerable alternatives. Climate change presents a systemic risk to the global financial system, which cannot be easily protected against. But because it also presents a magnified risk to specific industries and asset classes, trustees who include significant fossil fuel, utility, or other climate-vulnerable holdings in their portfolios will be exposing their funds to risk that is otherwise not present for other investment vehicles.

This risk persists even if a fund chooses to invest broadly in the market. As of July 1, 2016, 48 companies in the S&P 500 index are either oil and gas companies or electric utilities. Moreover, even companies ostensibly outside these sectors may be so closely linked to fossil fuel industries as to be effectively economically coupled with them. For example, the collapse of demand for US coal affected not only the value of the coal companies themselves, but also the companies that manufactured rail cars for coal; similarly, plummeting crude oil prices affected not only oil and gas producers, but also shipping firms focused on oil and gas transport. As a result, even investment strategies focused on diversified assets may conceal clusters of concentrated assets that share a common exposure to fossil fuel intensive industries. Because of the large presence of fossil fuel and energy companies in the financial system, merely investing in the market via broad market indexes may not be enough to adequately avoid dampening portfolio returns as a result of climate-related risk.

Finally, this risk/return analysis must be evaluated in the context of the time horizon over which the fund will be required to issue payments.[47] Because public pension funds have virtually indefinite time horizons, the financial pressure of needing to make consistent payments amplifies the need to protect against downside risk. The possibility of adverse financial outcomes as a result of climate-related risk is therefore more of a threat to those beneficiaries who will rely on payments in the moderate to distant future, and should be a key concern to fiduciaries administering public pension funds.

Investing In Climate-Vulnerable Assets May Prejudice Current Generations Against Future Generations

The previous section discussed how the financial risks posed by climate change may trigger a trustee's fiduciary duties to inquire, monitor, and diversify. Those arguments focus on the clear and present risk posed by climate change in the present and near-term. Even if such climate-vulnerable investments produce acceptable returns in the near-term, it is still possible that they will present undue risks that trigger trustee duties as they relate to future generations.

Because climate change threatens the long-term value of high emitting and energy intensive companies—and some entire industries—pension fund fiduciaries should consider the long-term implications of their climate-vulnerable investments. The possibility of expansive new regulations and major changes in market conditions reveals the incompatibility of certain business models with a low-carbon future. These incongruences present the possibility of large, rapid, unpredictable asset devaluations for investments including, for example, oil and gas industry stocks and bonds, certain commodities, and oceanfront real estate. Continued investments in these industries and assets may not represent a pursuit of long-term value creation, but rather an attempt to time the market and exit at its peak. This kind of investment behavior may implicate pension fund trustees' obligations to future generations by prioritizing short-term returns over long-term value creation, triggering the duty to protect long-term principal and duty of impartiality.

DUTY OF IMPARTIALITY

The duty of impartiality requires the trustee to be "impartial with respect to the various beneficiaries of the trust" and a "duty to so invest and administer the trust, or to so account for principal and income, that the trust estate will produce income that is reasonably appropriate to the purposes of the trust and to the diverse *present and future interests* of its beneficiaries."[48] A trustee's duty to future beneficiaries requires that trustees guard against inadvertently focusing on the present and, most importantly, not strive to "provide higher-than-appropriate yield for the current income beneficiary" by taking undue short-term risks.[49] Indeed, trustees must "administer the system to create and maintain long-term stability and viability in the system[.]"[50]

This duty may also be expressed as a long-term duty to protect fund principal. Pension fund fiduciaries have a long-term duty to protect the principal of their funds, and should prioritize doing so even if it dampens short-term returns for current beneficiaries.[51] Protection of the fund value is a coequal obligation alongside maximizing growth, and investment decisions must be made taking into consideration both obligations.[52]

Because climate change threatens the long-term value of high emitting and energy intensive companies—and some entire industries—pension fund fiduciaries should consider the long-term implications of their climate-vulnerable investments.

Because climate-vulnerable investments may devalue rapidly, they present a looming danger to the value of a pension fund irrespective of their current rates of return. Even if such investments are performing adequately, there is a constant risk of new regulations, major technological disruptions, or other market changes that can quickly and sharply reduce the value of those investments. For example, following the unveiling of President Obama's Clean Power Plan, the financial website *Motley Fool* cited the plan's adoption as a factor in Peabody Energy Corporation's plummeting share prices and abrupt bankruptcy.[53] Exposure to such intensely climate-vulnerable assets in a period of rapid regulatory and technological change may threaten a pension's long-term stability, as major downturns in asset values could permanently impair overall fund value.

The previous section explained that climate-vulnerable assets which yield market-rate returns may be considered too risky because of their greater downside risk. However, because pension fund fiduciaries must consider the interests of future beneficiaries, even assets that provide a *higher* rate of

return than the market may be deemed imprudent if they threaten the core of the fund's value. Pension fund trustees should therefore take special care when considering their climate-vulnerable investments, as they may threaten the long-term value of the fund despite producing acceptable returns in the present.

Because climate-vulnerable investments may devalue rapidly, they present a looming danger to the value of a pension fund irrespective of their current rates of return.

THE DUTY OF LOYALTY

A trustee's duty of loyalty is the duty to act solely in the interests of the pension fund beneficiaries.[54] ERISA and similar statutes (and the common law of trusts) require trustees to discharge their "duties with respect to a plan solely in the interest of the participants and beneficiaries and for the exclusive purpose of: (i) providing benefits to participants and their beneficiaries; and (ii) defraying reasonable expenses of administering the plan[.]"[55] In administering the fund, a trustee is "not to be influenced by the interest of any third person or by motives other than the accomplishment of the purposes of the trust."[56] "It is, of course, obvious that a fiduciary cannot allow personal motives to interfere with the discharge of its fiduciary duties."[57]

While discussion of the sole purpose rule within the duty of loyalty often focuses on the stringent requirements of trustees to avoid self-dealing and conflicts of interests, the undivided duty of loyalty extends beyond those two transgressions and fundamentally requires fiduciaries to weigh carefully and decide what is the best course of action for all beneficiaries of the fund.[58] Moreover, trustees "have a duty to protect plan participants from misleading information. Thus, if a fiduciary is aware that participants have been misinformed about facts that implicate the stability of their retirement assets, he or she must take action to protect the participants."[59]

This duty can be violated by a number of behaviors, but this section discusses two in particular. First, compensation structures that reward short-term gains may incentivize investment managers to take risks that are otherwise inappropriate for the fund. Second, a failure to consider climate change as a risk factor due to social or political pressure may constitute a violation of the duty of loyalty, exposing the fund to risks it otherwise could avoid.

INCENTIVE STRUCTURES MAY PROMOTE VIOLATIONS OF THE DUTY OF LOYALTY

Pension fund fiduciaries, especially third-party investment managers and officers, may be compensated based on the performance of their fund. These performance incentives may misalign with what is best for the fund, especially when weighing short-term risk against long-term stability in the climate context. Thus, short-term profits from fossil fuel or other investments may benefit a fiduciary personally, but expose the fund itself to an inappropriate level of risk. This is a greater risk when there are no downside disincentives—i.e., a fiduciary benefits when a fund performs well but does not suffer compensation loss when the fund loses value.

This possibility of a breach of the duty of loyalty is inherent in the issues related to climate change and climate-related risks. If a fiduciary invests in fossil fuel or climate-vulnerable assets to seek higher returns in the near-term then they may be exposing their fund to a higher degree of risk than is appropriate for a pension with long-term liabilities. Subjugating the needs of the fund (and, therefore, the beneficiaries of the fund) for personal gain in this way would be a breach of the fiduciary duty of loyalty.

POLITICAL OR SOCIAL PRESSURE MAY LEAD FIDUCIARIES TO VIOLATE THE DUTY OF LOYALTY

Fossil fuels are a large part of many peoples' lives, and the oil, gas, and coal industries employ many thousands of workers. It is to be expected, especially in parts of the country where oil, gas, or coal production are major components of the local economies, that pension fund trustees may have friends, relatives, or other relationships with individuals in industries contributing to climate change. In the United States, this situation is further made difficult by the position of climate change as a contentious issue in domestic politics.

Publicly acknowledging the problems inherent in, and caused by, fossil fuels may be challenging from a social or political perspective for some pension fund trustees. It might have real consequences for peoples' personal lives or political prospects. This is not, however, a valid reason for fiduciaries to ignore the realities of climate risk as it affects a pension fund's portfolio. As detailed more fully in the Mercer analysis, climate change poses both investment risks and opportunities that make it a material factor to be considered in shepherding fund assets responsibly.

A failure to acknowledge the climate risks inherent in fossil fuel and other climate-vulnerable assets for social or political reasons would constitute a breach of a trustee's duty of loyalty, as it subjugates the interests of fund beneficiaries to the trustee's personal preferences.

Acting with Reasonable Care, Skill, and Caution in the Context of Climate Change

The financial risks posed by climate change may trigger trustees' fiduciary duties, requiring them to take action to protect their funds from harm. This section discusses four ways in which pension fund trustees can act to prevent or reduce harm to the funds they administer and shield themselves from liability. These methods include modifying the fund's investment principles (beliefs or policies), avoiding the most climate-vulnerable investments, actively engaging with the companies whose stock the fund owns, and investing in clean energy opportunities.

It is increasingly recognized that investment strategies that incorporate environmental, social, and governance (ESG) factors where the social benefits are collateral to the investments themselves are appropriate within the framework of a trustee's fiduciary duty.[60] The Department of Labor has affirmatively approved this investment strategy in multiple interpretive bulletins.[61] In these cases, the assets invested in have a commensurate risk-return profile as other alternatives, and the fact that they have social benefits is merely a tie-breaker.

More importantly, a growing body of analysis from both the United States and the international sphere recognizes that ESG factors often represent an underappreciated and frequently unaddressed source of financial risk. In a widely cited legal analysis on fiduciary responsibility prepared for the United Nations Environment Programme's (UNEP) Finance Initiative, the globally recognized law firm Freshfields concluded:

> We believe that through the integration of ESG issues into investment policymaking and decisionmaking, institutional investors—and the

BOX 2

Considering the Full Cost of Climate Change to Beneficiaries

Pension fund trustees must consider the interests of future beneficiaries, and it is reasonable for trustees to consider the human interests and quality of life of those future beneficiaries and their families as well. Investments in clean energy can help move the needle toward a future where catastrophic climate change is avoided and societal climate goals are achieved. Current employees who have yet to retire, as well as future beneficiaries who haven't yet been born, have a genuine interest in a viable world with vibrant ecology, ample resources, and a stable environment, as well as a sustainable economy that will support their families.

Future generations can be expected to want a livable planet, and that interest is real, legitimate, and substantial. Keith Ambachtsheer, a leading thinker on pension fund governance, has recommended that when considering investment strategies, duties to future beneficiaries may mandate that trustees try to accelerate the shift away from fossil fuels and to pursue low-carbon, clean energy investments to help mitigate the future adverse effects of climate change.[viii] Citing the Urgenda case in the Netherlands, he notes "collaboration efforts toward achieving the transformation outcome have a potentially large payoff.[ix] Arguably, the study findings suggest such efforts amount to the required exercise of fiduciary duty."

A failure to acknowledge the climate risks inherent in fossil fuel and other climate-vulnerable assets for social or political reasons would constitute a breach of a trustee's duty of loyalty.

> companies that they invest in—will be able to sustain their wealth creation role and play their fundamental role in the creation of a more sustainable global economy that invests in real and inclusive long-term growth, genuine prosperity and job creation[.][62]

More recently, the UNEP Finance Initiative and the Principles for Responsible Investment declared that "fiduciary duty requires investors to take account of ESG issues in their investment processes, in their active ownership activities, and in their public policy engagement."[63]

The investment approach suggested by this paper includes ESG factors as material economic considerations to be considered in investment decisions. This approach is explicitly supported by the Department of Labor's interpretive bulletin 2015-1, which states, "ESG issues may have a direct relationship to the economic value of the plan's investment. In these instances, such issues are not merely collateral considerations or tie-breakers, but rather are proper components of the fiduciary's primary analysis of the economic merits of competing investment choices."[64]

BOX 3
CalPERS Sustainability Guidelines

The California Public Employees' Retirement System (CalPERS), the largest public pension fund in the United States, has incorporated sustainability concerns into its Global Governance Principles. These principles guide CalPERS trustees and employees in making decisions about how to engage as a shareholder and what to consider when making investment decisions.[x] CalPERS recommends that "[t]o ensure sustainable long-term returns, companies should provide accurate and timely disclosure of environmental risks and opportunities through adoption of policies or objectives, such as those associated with climate change."[xi] Moreover, CalPERS explicitly promotes the Global Framework for Climate Risk Disclosure as the guidelines that owned companies should adhere to when making such disclosures.[xii] Though CalPERS principles do not explicitly call for divestment, it does outline a model of engagement and states unequivocally that climate change is a material risk that should be addressed by owned companies.

Modification of Investment Principles

The most fundamental thing a pension fund can do to protect itself from climate-related risk is to modify its investment beliefs and policies to acknowledge and incorporate that risk. Several of the largest public pension funds—including the largest, CalPERS—have already incorporated investment beliefs to address climate vulnerabilities. These modifications include explicitly recommending adoption of the Global Framework for Climate Risk Disclosure[65] and promotion of the 14-point Ceres Climate Change Governance Checklist[66] as tools to assist in that disclosure.

For those pension fund trustees who are uncertain of the best course of action to take regarding climate-related risk as it pertains to their fund's portfolio, a modification of investment principles can serve as a guidepost for dealing with unexpected developments in the future. Climate change will affect markets, although impacts will vary depending on when and how we respond to it. The major differences in financial outcomes will be the result of new legal regimes, market trends, and the effects of changes in climate and weather patterns. Even were trustees to conclude that no investment changes are appropriate when they make their evaluation, installing guidelines for how to respond to changes in the global effort to confront climate change can help a fund, and the investment officers to whom it delegates, navigate what might otherwise be a more difficult situation. This is especially important when considering the large time scale over which these decisions will be made and the new generations of trustees that will succeed current fiduciaries, and who may need to rely on embedded best practices and institutional knowledge.

Modification of Investment Principles Alone Is Not Sufficient

Although modification of investment beliefs or policies to incorporate climate-related risks and opportunities is a good initial step, it may not be enough to protect a fund from climate-related risk. If the change in principles is not followed by action, then pension fund trustees may find themselves in breach of the duty to act in accordance with plan documents. Moreover, whereas changes in investment principles

may offer new insight about how climate-related risk may affect investments, pension fund trustees already have a mandate to protect the long-term value of the fund and provide income to current and future beneficiaries. Pension fund trustees should adopt specific strategies to protect against climate-related risk, including avoidance of carbon-intensive and climate-vulnerable investments, engagement with owned companies, and proactive investing in clean energy opportunities.

DUTY TO ACT IN ACCORDANCE WITH PLAN DOCUMENTS

In addition to the several duties discussed above, pension fund trustees have a duty to act in accordance with plan documents.[67] Plan documents may include current investment policies and procedures. Because the duty to act in accordance with a plan documents is an affirmative duty, "a trustee may commit a breach of trust by improperly failing to act, as well by improperly exercising the powers of the trusteeship."[68]

This duty applies not only to the creation of the plan's documents, but also when the terms of a trust—in this case a public pension fund—are reformed.[69] If pension fund investment policies are modified to address climate change and related ESG risks and opportunities, trustees and other fiduciaries will be held accountable for fully adhering to those changes. A failure to follow up on new commitments or to implement new procedures would be a breach of the duty to act in accordance with plan documents. Modification of fund beliefs or policies should therefore be thought of as one component of a fiduciary's prudent management of fund assets, not as an end in itself.

It is worth reiterating that, even if pension fund fiduciaries do not make adjustments to their funds' investment principles, it is likely that existing provisions in the plan documents will contain mandates that require consideration of climate-related risk insofar as it is a material financial concern. The following three sections describe methods by which pension fund trustees can manage the climate-related risk in their portfolios and ensure they are tackling these challenges head-on.

BOX 4

Amalgamated Bank Becomes First US Bank to Divest

On September 19, 2016, Amalgamated Bank announced that it was divesting from fossil fuels.[xiii] This announcement makes Amalgamated Bank the first US bank to begin the process of divestment. Though this decision only affects assets owned by the bank (not managed for its clients), Amalgamated also announced it is developing new low-carbon financial tools for its clients to use in managing their assets. "We are committed to managing our clients' assets in accordance with our fiduciary obligations," the bank explained in its Climate Risk Policy.[xiv] "Therefore, we commit to working with clients seeking to divest from carbon risks, and instead invest in positive impact investments, which include climate solutions and the just transition to a low carbon economy."[xv]

Even if pension fund fiduciaries do not make adjustments to their funds' investment principles, it is likely that existing provisions in the plan documents will contain mandates that require consideration of climate-related risk insofar as it is a material financial concern.

AVOIDANCE

The cleanest and simplest way to avoid climate vulnerability in a portfolio is to divest or, at minimum, dramatically reduce exposure to fossil fuel and other highly climate-vulnerable holdings. There is no legal obstacle to risk-based negative screening—or selling or avoiding high-risk investments generally—as long as the rest of the portfolio is performing adequately.[70] Doing so may be preferable for risk-averse trustees who do not have confidence that the companies in which their fund is invested will adapt to the challenges posed by climate change or respond to shareholder engagement. Divestment or minimizing exposure may also be the best option for trustees at funds which lack the resources or capacity for sustained, active monitoring of fossil fuel investment

risks. Amidst this changing landscape, it is increasingly likely that some asset categories (e.g., coal mining companies) would be deemed de facto imprudent to own already, or will be made so by the continuing evolution of society's response to climate change.

Given both the global commitments to climate action and the clear necessity of additional regulatory action to reduce emissions, many fossil fuel and other highly climate-vulnerable companies will at some point be subject to devaluation.

The Paris Agreement aims to hold "the increase in global average temperature to well below 2°C above pre-industrial levels and pursu[ed] efforts to limit the temperature increase to 1.5°C above pre-industrial levels" and make "finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development." As of October 5, 2016, more than 55 parties representing more than 55% of greenhouse gas emissions have ratified the Agreement, which is the threshold established in Article 21 of the Agreement. The Agreement therefore entered into force on November 4, 2016.[71]

As the recent announcement that the SEC is actively investigating ExxonMobil for its climate accounting practices demonstrates, the timeline over which value losses will be disclosed remains highly uncertain. In light of these realities, a trustee who continues to invest in such assets is implicitly hoping to profit off of the "greater fool" theory of investing, not from the generation of long-term value. Namely, the trustee is hoping they can time the market well enough to sell off assets before they lose value. Although many pension fund trustees have not affirmatively acted to reduce the climate risk in their portfolios, such industry-standard behavior is not a shield to claims of liability. Regardless of its prevalence, this form of investing may be imprudent. As explained by Judge Learned Hand, "there are precautions so imperative that even their universal disregard will not excuse their omission."[72] Moreover, as highlighted in a forthcoming report by the 2 Degrees Investing Initiative, the tendency of current investment analyses to assess risks on a short-term basis, even for long-term investments, creates substantial blind spots for risks that may materialize more than three to five years in the future.[73] In the climate context, the potential for unpleasant surprises is dramatically increased. The mere fact that some or even a majority of trustees have yet to take action to minimize exposures to climate-vulnerable assets does not prove that status quo management is prudent—only that it remains the status quo despite rapidly changing circumstances. For those most-vulnerable assets, avoidance may be the only appropriate action.

ENGAGEMENT

If pension fund trustees believe it is still appropriate to retain their fossil fuel or climate-vulnerable investments, they should undertake "asset stewardship" or "active ownership" and actively engage with company boards and management as a shareholder to ensure the companies in which they invest are prepared for climate change.

Specifically, for carbon intensive enterprises whose business models are particularly vulnerable to the impending climate change transition (e.g. coal, oil, gas, carbon-based electric power), those companies have an urgent need to address how their businesses intend to adapt to changes in policy, market dynamics, and consumer values. These adjustments can include scenario analysis (e.g., 2 degree policies), disclosures about carbon inventories and business plans consistent with internationally agreed upon (Paris Agreement) carbon budgets, greenhouse gas reduction targets, changes in executive compensation to disincentive further spending on high risk exploration and development, investing in diversified, clean energy businesses, and modifying dividend or share repurchase policies to align with long-term value creation, not short-term share price support. As a recent analysis of eight major fossil fuel producers by the Union of Concerned Scientists documents, however, few if any of the most climate-vulnerable companies have put such plans in place.[74] Prudent shareholder engagement could promote these and other actions by owned companies through, for example, filing shareholder resolutions, voting to replace unresponsive board members, or voting to change company bylaws.

Efforts to obtain disclosures are especially salient in the climate context. Pension fund trustees have a duty to inquire as to the prudence of an investment. If companies owned by their funds do not disclose

relevant information as described above, engagement can be a way to obtain some certainty as to the prudence of an investment.

INVESTING IN CLEAN ENERGY OPPORTUNITIES

Whether or not a fund reduces its exposure to fossil fuel and other climate-vulnerable investments, investing in clean energy assets may act as a form of diversification or hedging against climate risks. Mercer's "Investing in a Time of Climate Change" indicates that the Transformation scenario, wherein society achieves the 2 degree threshold, has materially positive investment implications relative to the Fragmentation scenario, wherein the planet warms 4 degrees or more.[75] To avoid the direst impacts of climate change, it is in the interest of nations and investors to pursue the Transformation, or 2 degree, scenario. This suggests both that there will be massive growth in the clean energy sector and that pension funds have an additional incentive to support that transformation.

If the 4 degree Fragmentation scenario occurs, then the physical impacts of climate change will affect the market broadly and will be difficult to hedge against. In that scenario, climate change is a truly systemic risk. Alternatively, an accelerated transition to a low-carbon economy will have more predictable winners and losers that will be easier to anticipate. As discussed above, over a 35 year period the coal, oil, and utility industries may be facing significant losses, whereas annual returns for renewables may increase up to 53%.[76] Moreover, the difference in returns by sector will amplify over time. As explained in a recent report from BlackRock, while long-term investors, like pension funds, are vulnerable to climate-related risk, they are also "better positioned to invest in new technologies that take time to bear fruit."[77] By actively investing in a Transformation scenario, and seeking to benefit from the clean energy transition, a prudent pension fund can potentially achieve higher returns by avoiding those industries and corporations negatively affected by the transformation (e.g. fossil fuels) and investing in industries and corporations which will thrive because of it (e.g. clean energy).

PART 5

Potential Liability

The variety of harms caused by climate change mirrors the variety of climate-related litigation that is already underway. Climate litigation is increasing as climate impacts intensify, attribution science better apportions liability, and evidence mounts that ExxonMobil and other major fossil fuel producers actively promoted climate misinformation efforts that contradicted their own internal understanding of the climate science. Cases range from investigations into potential corporate fraud and misrepresentation, to tort cases for compensation due to impacts, to cases anchored in human rights law. The variety of claims illustrates the numerous ways in which courts have determined climate impact cases as validly justiciable. Considering the emergence and rapid growth of climate litigation, pension fund fiduciaries should take an active role to avoid claims in the current litigation context.

Climate Litigation

Both private and public entities have been sued under various constitutional, statutory, and private tort claims for injury caused by climate change. For example, public trust law could implicate the federal government for climate-induced harm while acting as a trustee of public lands.[78] The organization Our Children's Trust brought one such case against the government, representing 21 youth as well as future generations.[79] It alleges that the federal government failed to mitigate carbon pollution despite knowing that its effects on climate change would harm public lands, over which the government is a trustee.[80] This case is particularly significant because a federal court denied the federal government's motion to dismiss for each of the plaintiff's allegations, determining that factual allegations based upon harm from climate change could plausibly result in a court finding against the federal government for "enable[ing] continued exploitation, production, and combustion of fossil fuels."[81] Notably, industry groups representing fossil fuel interests have intervened as defendants in the case.

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Even more saliently, government entities are now actively investigating major fossil fuel companies under an array of climate related claims. These investigations have arisen in the wake of mounting public evidence that ExxonMobil and other major fossil fuel companies were on notice of the potential for carbon-based fuels to contribute to climate change earlier than widely recognized.[82] This evidence of industry awareness of climate risks casts a new and more legally significant light on the long-standing evidence that ExxonMobil and other companies actively funded climate misinformation campaigns targeted at the public and/or the investment community.[83] Both the Massachusetts and New York Attorneys General have issued subpoenas to ExxonMobil demanding records for pending investigations related to potentially deceptive statements to consumers or

investors.[84] New York's Attorney General has already secured a settlement with Peabody Energy that requires it to end its misleading statements with regards to climate change and to begin disclosing its risks.[85] The Attorneys General of California and Maryland may also follow this trend.[86] In September 2016, after several other oil companies had taken write-down losses on their fossil fuel assets, the Securities and Exchange Commission opened an investigation into ExxonMobil, examining the company's accounting practices and determining if it had overvalued its fossil fuel holdings.[87] By October 2016, the company announced that it would write down billions of barrels of reserves based on the drop of global oil prices, leading to the launch of a class action suit on behalf of investors.[88] The rapid change in the value of ExxonMobil's fossil fuel holdings serves to demonstrate how quickly devaluations may occur in the fossil fuel sector given the multiple threats of regulation (transition risk) and changing economics (carbon asset risk).

All of this does not guarantee that charges will be brought or penalties levied, however, these investigations demonstrate that the federal and state governments are examining the evidence in earnest, and may produce more documents, more charges, and more defendants.

Private individuals are filing suit against fossil fuel companies for potential harms caused by climate impact. The Conservation Law Foundation (CLF) recently filed a complaint against ExxonMobil for failing to include known climate change factors into its Storm Water Pollution Prevention Plan (SWPPP) for a facility based in flood prone coastlands on the Mystic River.[89] In its complaint, the Conservation Law Foundation (CLF) alleges that ExxonMobil should have prepared an SWPPP that took into account what it knew about climate change, how it would cause rising sea levels and increased frequency of storm surges, and failed to disclose and accommodate for these specific hazards.[90]

International plaintiffs are also suing fossil fuel producers in tort for money damages. Saul Luciano Lliuya, a Peruvian farmer, is suing German energy company RWE for its contribution to climate change.[91] His village lies below a glacial lake that has increased in volume more than 30 times as a direct result of glacial melt, putting both Liuya and a city of 100,000 people at risk of catastrophic flooding when the dam holding back the lake succumbs to rising waters.[92]

Mr. Lliuya has sued RWE on the grounds that its production of fossil fuels has contributed to melting caused by global warming; accordingly, he seeks a financial contribution from the company in support of Peru's efforts to lower the water level behind the dam and install a warning system to warn villagers of impending floods.[93] Notably, Mr. Lliuya is only asking RWE for 0.47% of the total cost of such an installation, equivalent to the pro-rata emissions contribution RWE is responsible for based on the amount of fossil fuel it has extracted and sold.[94] This legal challenge is emblematic of an emerging trend toward suits against climate impacting companies for contributing to damages caused by climate change.

Across the world, climate litigation has accelerated under theories of international human rights. In June 2015, environmental group Urgenda won its case against the Netherlands, whereby the court ordered the government to regulate climate-impacting companies to reduce the country's greenhouse gas emissions by 25% by the year 2020.[95] In the case, Urgenda argued that failing to limit greenhouse gas emissions constituted a human rights violation in the low-lying nation, whose population is vulnerable to several climate-related impacts.[96] Significantly, the count in Urgenda held that, even though not directly enforceable by the plaintiffs, the international commitments undertaken by the Netherlands under the UN Framework Convention on Climate Change and international human rights agreements, informed the Dutch government's duty to its own citizens—including future generations of citizens—under domestic law. The court held, moreover, that the government's efforts to reduce the near-term economic costs of climate action by shifting climate risk to those future generations violated the Netherlands' duty of care to those future citizens.

Other human rights based strategies involve suing fossil fuel producers directly. Victims of the impacts of climate change in the Philippines recently filed a petition with the Commission on Human Rights of the Philippines.[97] This petition requested that the Commission investigate the human rights violations resulting from climate change in the Philippines and hold the corporate actors (specifically 50 investor-owned fossil fuel companies, including ExxonMobil, Chevron, and Shell) accountable for the harms suffered by Filipino people and communities.[98] The Commission formally accepted the petition and agreed to launch an investigation into the climate harms associated with the historic emissions traceable to the largest investor-owned fossil fuel companies.[99]

Taken together, this body of litigation demonstrates that, although still in its early stages, climate change litigation is real, and climate change is a justiciable issue. Cases are proceeding in several courts, casting renewed light on governmental and corporate obligations to individuals, the international community, and future generations.

Potential Basis for and Risks of Climate Litigation for Pension Fund Trustees

Pension fund beneficiaries have rights that can be enforced against pension fund fiduciaries. These rights and the obligations of trustees may give rise to a number of causes of action, including private common law and statutory causes of action, as well as federal and state enforcement. Potential private common law claims include breach of fiduciary duties, negligence, gross negligence, negligent supervision, breach of contract, unjust enrichment, voluntary assumption of a legal duty, common law fraud, and negligent misrepresentation. Of these, one of the most troubling for fiduciaries in the climate context may be negligent supervision because when pension fund fiduciaries delegate their oversight duties to investment advisors, those advisors may not focus on or seriously consider climate-related risk.

In addition to a negligent supervision claim, traditional claims against pension fund fiduciaries may arise in the climate context. Indeed, a common law breach of fiduciary duty claim for a fiduciary's breach of his/her duties of impartiality, loyalty, and/or prudence may arise under ERISA or common law. While ERISA only regulates private pension funds, non-ERISA pension funds are likely subject to ERISA standards. This is because Congress intended ERISA to simply be a codification of the common law governing all pension fund management law. To state a cause of action for breach of any fiduciary duty, the plaintiff must allege (1) the existence of a fiduciary duty, (2) a breach of that duty, and (3) damages proximately caused by the breach. Damages can also be found in various ways, which may open up pension fund fiduciaries to expansive types of remedies.

Who Is A Fiduciary?

In any breach of fiduciary duty claim, the plaintiff must establish the existence of a fiduciary duty. A person is a fiduciary if they are named as a fiduciary or functionally fulfill fiduciary duties.[100] According to ERISA, a person is a fiduciary if he or she performs functions to the extent that:

> "(i) he exercises any discretionary authority or discretionary control respecting management of such plan or exercises any authority or control respecting management or disposition of its assets, (ii) he renders investment advice for a fee or other compensation, direct or indirect, with respect to any moneys or other property of such plan, or has any authority or responsibility to do so, or (iii) he has any discretionary authority or discretionary responsibility in the administration of such plan."[101]

BOX 5

9 Questions Pension Fund Fiduciaries Should Ask Their Lawyer

1. Do the fiduciary duties of loyalty and impartiality require that I consider and manage climate-related risks irrespective of my personal beliefs regarding climate change?
2. Given the long time horizon over which climate impacts are expected to occur and the relative unpredictability of those impacts, could climate change trigger my fiduciary duties more or differently than traditional risk/return variables?
3. With respect to climate change, what new factors should I consider when making investment decisions to satisfy my duty of inquiry?
4. As an asset owner with exposure to all sectors and several asset classes, do I need to consider and manage the impacts that certain investments are likely to have on my portfolio as a whole?
5. Would it be prudent to modify plan documents, including investment mandates, to consider and manage climate-related risks?
6. Does the duty to diversify prevent negative screening or divestment from investments whose returns may not justify their risks?
7. Could incentive structures that favor short-term returns present conflict of interest issues?
8. With the uncertainty and dynamism of the climate change trajectories, how do I fulfill my fiduciary duties? Do climate-related risks require particular attention to the duty to monitor?
9. Could I be sued for breach of fiduciary duties if I don't consider and manage climate-related risks and the fund underperforms the market? On the other hand, what if I do thoughtfully consider climate-related risks and act to manage those risks, and the fund underperforms the market?

Thus, a fiduciary duty does not attach to a person, but rather to the particular duties an individual conducts within the pension fund.[102] Case law has indicated that this definition is expansive.[103] Individuals have been held liable as fiduciaries even when the precise extent of their fiduciary status was uncertain.[104] Therefore, actors beyond merely pension fund trustees have a fiduciary duty to pay attention, and take action,to mitigate climate-related risks in the portfolios by which they are employed. This may encompass investment advisors, chief investment officers, and others beyond those who are named fiduciaries in a pension fund's plan documents.[105]

Although investment managers may shield pension fund trustees from liability,[106] these investment managers must meet certain requirements.[107] The Department of Labor has also recognized that trustees who formally appoint these managers have a fiduciary duty to prudently select investment managers and continually evaluate their performance. If pension fund trustees find that such investment managers are not prudently considering climate risk in their portfolio when they should be, trustees may be liable for failing to adequately monitor these investment managers.[108]

Negligent Supervision

Beneficiaries might also bring a claim of negligent supervision against a public pension fund fiduciary for failing to supervise a fund or its employees despite having an affirmative duty to do so.[109] To be successful, a negligent supervision claim requires finding that a principal negligently selected, trained, retained, supervised, or otherwise controlled the agent.[110]

Pension fund trustees are particularly vulnerable to claims of negligent supervision even if trustees formally appoint an investment manager. Specifically, case law indicates that trustees who rely on independent advisors must "exercise reasonable judgment in relying on the advice of independent advisors."[111] Exercising reasonable judgment in the climate context means that trustees must monitor their investment advisors and ensure that the advisors' information is up to date and complete.[112] Specifically, trustees should engage with their investment advisors to ensure that they are adequately considering the rapidly evolving risks and opportunities related to climate change. Trustees cannot simply place blind faith in trusted individuals or institutions.[113] If pension fund trustees do not withdraw their capital when they know or should know that the investment is no longer proper for that pension plan, then they may be liable.[114] If trustees hire investment managers who do not consider these financial impacts flowing from climate-related risks, then trustees may be liable for having placed blind faith in investment managers. In sum, trustees who fail to engage with their investment advisors regarding the investment impacts of climate change may be liable for losses due to negligent supervision.

Trustees should engage with their investment advisors to ensure that they are adequately considering the rapidly evolving risks and opportunities related to climate change. Trustees cannot simply place blind faith in trusted individuals or institutions.

Breach of the Fiduciary Duty of Loyalty

The fiduciary duty of loyalty requires pension fund fiduciaries to conduct their duties with an "eye single" to the interests of their beneficiaries. If fiduciaries are found to be incorporating personal biases or political beliefs into fiduciary tasks, they may be liable. Courts have used two avenues to determine whether a fiduciary has violated the duty of loyalty: (1) determining whether there are substantial potential conflicts of interest between fiduciaries and beneficiaries, and (2) a broad inquiry into the fiduciaries' actions where they may have substantial interests.[115] Fiduciaries may be subject to suit if acting, affirmatively or negatively, upon a personal or political belief that climate change does not exist. Further, any ties to organizations that advocate against climate change may implicate a potential conflict of interest with beneficiaries.

Breach of the Fiduciary Duty of Impartiality

Pension fund trustees who fail to maintain the viability of the plan in the long term may be liable for

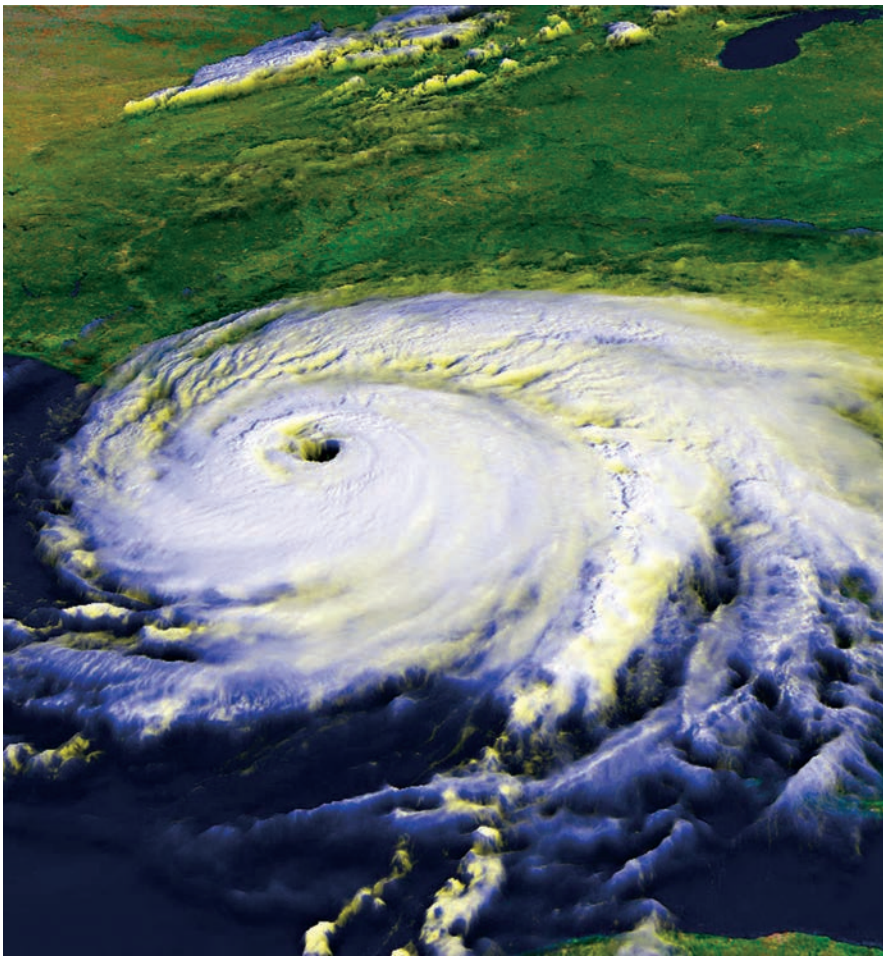
breaching their fiduciary duty of impartiality to long-term beneficiaries. Indeed, if climate-related risk causes significantly reduced portfolio returns (especially for funds that are already subject to a high percentage of unfunded liabilities), these funds may be unable to satisfy their obligations to future beneficiaries. In this case, a court could find the trustees had not acted in the best interests of all beneficiaries, including future ones.[116] Courts can find that current trustee action is to the detriment of future beneficiaries and liability can attach. A duty to preserve the corpus of the trust in the long-term is found in Bogert's Treatise on Trusts (cited by the US Supreme Court),[117] which reads, "[t]he trustee has a duty to protect the trust property against damage or destruction. He is obligated to the beneficiary to do all acts necessary for the preservation of the trust res which would be performed by a reasonably prudent man employing his own like property for purposes similar to those of the trust."[118]

Breach of the Fiduciary Duty of Prudence

While courts hesitate to second-guess a trustee's application of business judgment or exercise of fiduciary discretion, claims for breach of the fiduciary duty of prudence for pension fund trustees are conceivable. The Supreme Court's recent case makes it clear that pension fund trustees have the duty to monitor existing investments and can be held liable when they fail to remove imprudent investments.[119] Climate-vulnerable assets could be considered imprudent when their risk level is compared to their returns. And while a trustee's prudence is generally considered on the portfolio level, trustees have been held liable even in well-diversified trust funds for making investments that were too risky.[120] Because some climate-vulnerable investments may not provide the composite returns demanded by their risk level, a trustee may potentially be held liable for a failure to account for that risk.

Damages and Remedies

Finally, to bring a successful claim, beneficiaries must be able to show that the breach in fiduciary duty can be remedied.[121] The breach must be "fairly traceable" to an injury.[122] However, the fiduciary does not have to have personally committed the act that



causes injury to establish standing.[123] Even when no actual loss was found, trustees have had to pay damages in the difference between what the pension plan would have earned had the assets been prudently invested and what the pension plan had earned due to the actual imprudent investment.[124] Indeed, "an ERISA plan need not demonstrate that it suffered a loss in order to obtain a disgorgement remedy."[125]

When beneficiaries successfully show damages, judges have prescribed equitable remedies, such as injunctions, against any and every responsible fiduciary.[126] Fiduciaries are personally liable for any breach of fiduciary duty,[127] as are co-fiduciaries who participate in, knowingly conceal, or fail to remedy a known breach of fiduciary duty,[128] so any person conducting fiduciary duties will be subject to remedies when damages are found. Such a remedy must be paid to the plan as a whole, even if an individual brought suit.[129]

PART 6

Conclusion

Climate change is already affecting human lives throughout the United States and across the planet. The financial sector is not immune to these effects. Climate change, and governmental, societal, and market responses to it, will have financial consequences for decades to come. Challenges including loss due to physical impacts, emission regulation, carbon asset stranding, transition costs, and litigation will all have material financial impacts on the market as a whole, various sectors and asset classes, and individual companies. Pension fund fiduciaries should be considering and acting to mitigate the growing climate-related risk in their portfolios. The types of financial consequences, including rapid devaluation and systemic shocks, as well as the likely impacts over the time scale over which pension funds must operate and concern themselves, make these forms of investment organizations specifically vulnerable to climate risk.

The fiduciary duties owed by pension fund fiduciaries—the duty to inquire, duty to monitor, duty to diversify, duty of loyalty, duty of impartiality, and duty to act in accordance with plan documents—serve to guide how fiduciaries should manage the portfolios they are responsible for in the context of climate change and other sources of material financial risk and opportunity. All of these duties are triggered by the reality of climate change and how it will impact our financial markets, our society, and our global economy. Actively engaging with these financial challenges and opportunities can shield a fund from unnecessary risk and loss while allowing it to achieve prudent, safe growth. A failure to acknowledge and act to address these risks may lead to financial loss, litigation, and liability.

Endnotes

1 *See* Restatement (Third) of Trusts § 77 (2007).

2 *See id.*

3 *See, e.g.*, Moody's Investor Service, *Moody's to use greenhouse gas emission reduction scenario consistent with Paris Agreement to analyze carbon transition risk* (June 28, 2016) https://www.moodys.com/research/Moodys-to-use-greenhouse-gas-emission-reduction-scenario-consistent-with--PR_351269 ("Moody's has identified 13 industries in its corporate and infrastructure portfolio as most exposed to carbon transition risk. For three sectors—coal, coal infrastructure and unregulated power utilities—material credit impacts and rating adjustments are already being felt. For the others, Moody's expects that they will be affected over the next three to five years.").

4 Several prominent economists have already projected that investing in carbon-intensive assets are likely to result in poor returns over a 20–30 year time horizon. *See* Letter to Sir Mervyn King, Chairman, Financial Policy Committee, Bank of England (Jan. 19, 2012), *available at* http://www.carbontracker.org/wp-content/uploads/2014/09/Letter-to-Bank-of-England-Financial-Policy-Committee-19th-January-2012-Final.pdf ("As policy and technology work consistently over time to reduce returns in high carbon areas while supporting low carbon ones, investing in high carbon sectors, say as an institutional investor looking to generate good returns over a 20 to 30 year period to successfully cover future pension liabilities, could result in stranded assets and poor returns.").

5 Employee Retirement Income Security Act of 1974, Pub. L. No. 93-406, 29 CFR §2550.404(a)(1)(B) (1974).

6 *See* Restatement (Third) of Trusts § 77 (2007); *see generally* Bevis Longstreth, Modern Investment Management and the Prudent Man Rule (1986).

7 *See generally* Intergovernmental Panel on Climate Change, Fifth Assessment Report (Christopher B. Field et al. eds., 2014).

8 *See* Paris Agreement art. 2, Dec. 12, 2015 ("Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change").

9 *See* discussion *infra* Part V.

10 *See* Mercer, Climate Change Investment Risk Management: A Guide for US Public Defined Benefit Plan Trustees 14 (2016). Under Mercer's analysis, annualized expected returns over 35 years are 7.48% under the base case (no incorporation of climate-related risk factors), 7.29% under a Transformation (2-degree) scenario, 7.45% under a Coordination (3-degree) scenario, 7.46% under a Fragmentation (4-degree) scenario with low damages, and 7.39% under a Fragmentation scenario with high damages. *Id.* In all cases, returns are lower than in the base case.

11 *See* Mercer, Investing in a Time of Climate Change 17 (2015).

12 *See* Mercer, *supra* note 10, at 14 ("While the return difference between the Trans-formation and base case scenarios narrows to 19 [basis points] across a 35 year period the cumulative impact doubles to nearly 6% which on the same $1 [billion] in-vested today would equate to nearly $740 [million] in foregone returns.").

13 *See* id, at 12

14 *Id.*

15 *Id. at 11.*

16 *Id.*

17 *Id.*

18 *See* Citi Global Perspectives & Solutions, *Energy Darwinism II: Why a Low Carbon Future Doesn't Have to Cost the Earth,* at 8, (Oct. 1. 2015) *available at* https://www.citivelocity.com/citigps/ReportSeries.action ("We examine the issue of unburnable carbon and stranded assets, in particular in which countries, industries and companies they are located, and find that at current prices, around $100 trillion of assets could be 'carbon stranded', if not already economically so.").

19 Rineesh Bansal & Stuart Kirk, *Peak Carbon Before Peak Oil*, in Deutsche Bank Research Haus, Konzept 19, 24 (2015), *available at* https://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000349119/Konzept_Issue_02.PDF (noting that "OPEC's refusal to cut production . . . seems perfectly rational. . . . [M] aximising production before the peak carbon deadline is what matters.").

20 HSBC Bank Global Research, *Stranded assets: what next? How investors can manage increasing fossil fuel risks,* 1 (Apr. 16, 2015), *available at* http://www.businessgreen.com/digital_assets/8779/hsbc_Stranded_assets_what_next.pdf.

21 *See* Barclays, Climate Change: Warming up for COP-21 8

(2015) ("In a carbon-constrained world consistent with a 2°C outcome, we estimate that the fossil-fuel industry would stand to lose $34trn (in constant 2014 $) of gross revenues over the next two-and-a-half decades relative to the current trajectory.").

22 *See* MERCER, *supra* note 10, at 12.

23 *See* Commission Guidance Regarding Disclosure Relating to Climate Change, 75 Fed. Reg. 6,289 (Feb. 8, 2010) (to be codified at 17 C.F.R. 211, 231, 241).

24 *Id.* at 27.

25 *Id.* at 6.

26 Task Force on Climate-Related Financial Disclosures, https://www.fsb-tcfd.org/about/# (last visited Sept. 14, 2016).

27 Moody's Investor Service, *Moody's to use greenhouse gas emission reduction scenario consistent with Paris Agreement to analyze carbon transition risk* (June 28, 2016), https://www.moodys.com/research/Moodys-to-use-greenhouse-gas-emission-reduction-scenario-consistent-with--PR_351269.

28 Sustainability Accounting Standards Board, Key Dates and Status, http://www.sasb.org/standards/status-standards.

29 BLACKROCK, ADAPTING PORTFOLIOS TO CLIMATE CHANGE 2 (2016), *available at* https://www.blackrock.com/investing/literature/whitepaper/bii-climate-change-2016-us.pdf.

30 *See* Paris Agreement, *supra* note 8, at art. 4; *Paris Agreement —Status of Ratification*, UNFCCC, http://unfccc.int/paris_agreement/items/9444.php (last visited Oct. 5, 2016).

31 FRESHFIELDS BRUCKHAUS DERINGER, A LEGAL FRAMEWORK FOR THE INTEGRATION OF ENVIRONMENTAL, SOCIAL, AND GOVERNANCE ISSUES INTO INSTITUTIONAL INVESTMENT 114 (2005), (citing Employee Retirement Income Security Act of 1974, Pub. L. No. 93-406, 29 CFR §2550.404a-1(b) (1974)). *See also Donovan v. Cunningham*, 716 F.2d 1455, 1467 (5th Cir. 1983) ("Under ERISA, as well as at common law, courts have focused the inquiry under the "prudent man" rule on a review of the fiduciary's independent investigation of the merits of a particular investment, rather than on an evaluation of the merits alone.").

32 29 CFR §2550.404a-1(b); *see also GIW Industries, Inc. v. Trevor, Stewart, Burton & Jacobsen, Inc.*, 895 F.2d. 729, 732 (11th Cir. 1990).

33 29 CFR §2550.404a-1(b).

34 *In re Estate of Rowe,* 712 N.Y.S.2d 662, 665-66 N.Y. App. Div. (2000) (finding imprudence in failure to diversify, states: "[A] trustee can be found to have been imprudent for losses resulting from negligent inattentiveness … [and failure] to conduct more than routine reviews of the IBM stock … [with] particular con-sideration to the unique needs of this particular trust."). In another case, the court found that even though the investment manager investigated market conditions before making its investment decisions, the investment manager breached its fiduciary duty by failing to investigate the particular cash flow requirements of the fund, thereby failing to adequately diversity the fund's assets. *See GIW Industries, Inc.*, 895 F.2d. at 732-33.

35 *Glennie v. Abitibi-Price Corp*., 912 F. Supp. 993, 1001 (W.D. Mich. 1996).

36 *See* Moody's Investor Service, *supra* note 3.

37 Bevis Longstreth, *Outline of Possible Interpretive Release by States' Attorneys General Under the Uniform Prudent Management of Institutional Funds Act*, INSIDECLIMATE NEWS, Jan 24, 2016, at 4–5, http://insideclimatenews.org/sites/default/files/documents/UPMIFAInterpretationBevis LongstrethPDF.pdf. Although this analysis applies to fiduciaries under the Uniform Prudent Management of Institutional Funds Act, which would not apply to public sector pension funds—which are subject to the Uniform Prudent Investor Act—the fundamental fiduciary obligations and concepts of prudence apply across regimes. *See id.* at 2 ("The language in Section 3 of UPMIFA derives from the Revised Model Not-for-profit Corporation Act and from the prudent investor rule of the Uniform Prudent Investor Act. . . . Of high importance to understanding the Act is the fact that the phase "care, skill and caution,". . . is said by the Drafting Committee to be "implicit in the term 'care' as used in the RMNCA", and therefore, equally implicit in that term as used in UPMIFA.").

38 *See Harris v. Amgen*, 788 F.3d 916, 935 (9th Cir. 2015) ("A court's task in evaluating a fiduciary's compliance with this [prudence] standard is to inquire whether the individual trustees, at the time they engaged in the challenged transactions, employed the appropriate methods to investigate the merits of the investment and to structure the investment.").

39 *Tibble v. Edison Int'l*, 135 S. Ct. 1823, 1828-29 (2015).

40 *Tibble*, 135 S. Ct. at 1828 (citing Bogert, et. al., Law of Trusts and Trustees §684-85 (3d ed. 2009)).

41 *See Glennie*, 912 F. Supp. at 1004 (reconsidering an investment "approximately annually would be sufficient," although the fiduciary has to take action if and when they receive negative information about a specific investment).

42 *See, e.g.*, Sudip Kar-Gupta, Annabella Nielsen & Swetha Gopinath, *Paris Climate Pact Sinks Coal Stocks, Lifts Renewable Energy*, REUTERS (DEC. 14, 2015, 3:42 PM), http://www.reuters.com/article/us-climatechange-summit-stocks-idUSKBN0TX22A20151214.

43 *See, e.g.,* Cal. Const. art. XVI, § 17(d) (Section 17(d) of Article XVI imposes a direct obligation on board members to "diversify the investments of the system so as to minimize the risk of loss and to maximize the rate of return unless under the circumstances it is clearly not prudent to do so."); *see also Brock v. Citizens Bank of Clovis*, 1985 WL 71535 (D.N.M. 1985), aff'd 841 F.2d 344, 346 (10th Cir. 1988) (holding that investing over 65% of the plan's assets in commercial real estate concentrated in one geographic area exposed the plan to a singular economic downturn, which was "precisely the risk" diversification seeks to minimize).

44 Restatement (Third) of Trusts § 90 cmt. *g. See also Donahue v. Donahue*, G040259 (Cal. Ct. App. Feb. 11, 2010).

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46 *Metzler v. Graham,* 112 F.3d 207, 209 (5th Cir. 1997).

47 *See Metzler,* 112 F.3d at 209.

48 Restatement (Third) of Trusts § 79 (2007) (emphasis added).

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50 *White v. Pub. Emps. Ret. Bd.,* 268 P.3d 600, 607 (Or. 2011).

51 *See White,* 268 P.3d at 605.

52 *See The Woodward School for Girls, Inc. v. City of Quincy,* 13 N.E. 3d 579, 591-92 (Mass. 2014).

53 *See e.g.,* Justin Louiseau*, Did Obama's Clean power Plan Just Kill Coal Stocks?,* The Motley Fool (Aug. 10, 2015), http://www.fool.com/investing/general/2015/ 08/10/did-obamas-clean-power-plan-just-kill-coal-stocks.aspx ("In the wake of Obama's announcement, a corpor-ation that enjoyed a nearly $900 million market capitalization one year ago officially filed for Chapter 11 bankruptcy as it 'weathers a historically challenged coal market.' Even Peabody Energy Corporation, one of the largest coal corporations with mines in the U.S. and Australia and a 25-country market, saw share prices plummet following the unveiling.").

54 *See Cent. States, Se. & Sw. Areas Pension Fund v. Cent. Transp., Inc.,* 472 U.S. 559, 571–72 (1985) (noting that the duty of loyalty is "derived from the com-mon law of trusts. . . . Under the [duty of loyalty], a plan fiduciary 'shall discharge his duties with respect to a plan solely in the interest of the participants and beneficiaries and . . . for the exclusive purpose of providing benefits to participants and their beneficiaries; and . . . defraying reasonable expenses of administering the plan.'" (citing 29 U.S.C. § 1104(a)(1)(A))).

55 ERISA § 404(a); 29 U.S.C. § 1104(a).

56 Restatement (Third) of Trusts § 78 Duty of Loyalty cmt. (f).

57 *Rippey v. Denver U.S. Nat. Bank*, 273 F. Supp. 718, 738 (D. Colo. 1967).

58 *See Bd. of Trs. v. Mayor & City Council of Balt. City,* 562 A.2d 720, 738 (Md. Ct. Spec. App. 1989) ("It is clear that the trustee's duty of loyalty extends beyond a prohibition against self-dealing and conflict of interest, two wrongs that are not present in this case. Even if the trustee has no personal stake in a transaction, the duty of loyalty bars him from acting in the interest of third parties at the expense of the beneficiaries."); *see also Donovan v. Bierwith,* 680 F.2d 263, 271 (2d Cir. 1982).

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60 *See, e.g., Board of Trustees v. City of Baltimore,* 562 A. 2d 720 (Ct. App. Md. 1989) ("Nevertheless, we do not believe that a trustee necessarily violates the duty of loyalty by considering the social consequences of investment decisions. If, as in this case, the costs of considering such consequences are *de minimis,* the trustee ordinarily will not have transgressed that duty.").

61 *See* Interpretive Bulletin 94-1, 29 C.F.R. § 2509.94-1, 59 Fed. Reg. 32,606 (1994); 29 C.F.R. § 2509.08-1, 73 Fed. Reg. 61,734 (2008); 29 C.F.R. § 2509.2015-01, 80 Fed. Reg. 65,135 (Oct. 26, 2015).

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66 *See id.* at Appendix H.

67 *See* Restatement (Third) of Trusts § 76(1) (2007) ("The trustee has a duty to administer the trust, diligently and in good faith, in accordance with the terms of the trust and applicable law.").

68 Restatement (Third) of Trusts § 76 cmt. b (2007).

69 Restatement (Third) of Trusts § 76 cmt. b(1) (2007).

70 *Bd. of Trs.* 562 A.2d at 737 ("Thus, if . . . social investment yields economically competitive returns at a comparable level of risk, the investment should not be deemed imprudent.").

71 *See* Paris Agreement, supra note 8 at art. 21; *Paris Agreement – Status of Ratification*, UNFCCC, http://unfccc.int/paris_agreement/items/9444.php (last visited Oct. 5, 2016).

72 *The T.J. Hooper v. N. Barge Corp.,* 60 F.2d 737, 740 (2d Cir. 1932).

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76 *See* Mercer, *supra* note 10, at 11.

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78 Judgment on Motion to Dismiss, *Juliana v. United States*, No. 6:15–cv–1517–TC (D. Or. Apr. 8, 2016).

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81 Judgment on Motion to Dismiss at 23, *Juliana,* No. 6:15–cv–1517–TC (D. Or. Apr. 8, 2016).

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95 *See* Press Release, Urgenda, Urgenda wins the case for better Dutch climate policies (June 24, 2015).

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98 *Id*. at 30–31.

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100 *See In Re Enron Corp. Sec., Derivative & ERISA Litig.*, 284 F. Supp. 2d 511 (S.D. Tex. 2003).

101 ERISA § 3(21)(a).

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103 *See Credit Managers Assoc. v. Kennesaw Life & Accident Insurance,* 809 F.2d 617, 625-26 (9th Cir. 1987).

104 *See Yeseta v. Baima.,* 837 F.2d 380 (9th Cir. 1989).

105 *See* Employee Benefits Sec. Admin., Dep't of Lab., *Meeting Your Fiduciary Responsibilities* (May 2004), *available at* https://www.dol.gov/ebsa/publications/fiduciaryresponsibility.html.

106 29 U.S.C. 1102(a).

107 19 U.S.C. 1002(38).

108 *See* Preamble to Department of Labor Regulation § 2550, 404c-1 at 57; Fed. Reg. 46922 (Oct. 13, 1992). 29 C.F.R. § 2550 *et. seq.*

109 Note, however, that ERISA preempts negligent supervision claims against fiduciaries of private funds. *See* Craig C. Martin et. al., ERISA LITIGATION HANDBOOK 193 (Jenner & Block 2010), *available at* https://jenner.com/system/assets/assets/6849/original/ERISA_20Litigation_20Handbook_205th_20Ed_20FINAL.pdf

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111 *Scardelletti v. Bobo*, 897 F. Supp. 913, 919 (D. Md. 1995) (citing as examples *Roth v. Sawyer-Cleator Lumber Co.,* 16 F.3d 915 (8th Cir.1994); *Donovan v. Cunningham*, 716 F.2d 1455, 1474 (5th Cir.1983)).

112 *Scardelletti,* 897 F. Supp. 913 at 919.

113 *Whitfield v. Cohen*, 682 F. Supp. 188, 196 (S.D.N.Y. 1989) ("If a fiduciary is negligent in selecting, instructing, or supervising an agent, he will be held liable to the trust beneficiary for any resulting loss.").

114 *Whitfield,* 682 F. Supp. at 196.

115 *Leigh v. Engle,* 727 F.2d 113, 125-26 (citing *Donovan v. Bierwirth,* 538 F. Supp. 463, 470 (E.D.N.Y. 1981)).

116 In *Woolsey v. Marion Labs, Inc.*, 934 F.2d 1452, 1458 (10th Cir. 1991), in determining whether an administrator's decision to deny a former employee's request to receive half of his pension benefits in employer's stock rather than in cash was proper on the basis that it may have a detrimental effect on the value of the stock, the Court noted that "ERISA requires that the Plan be administered with an eye solely to the best interests of *all* beneficiaries." *Woolsley*, 934 F.2d at 1458 (emphasis added). It was therefore held that the administrators' consideration of "the effect payment of his benefits in stock would have on . . . the remaining beneficiaries, and their determination that such payment would be to the detriment of future beneficiaries," was allowable. *Id.*

117 *See Cent. States, Se. & Sw. Areas Pension Fund,* 472 U.S. at 572 ("One of the fundamental common-law duties of a trustee is to preserve and maintain trust assets.") (citing GEORGE G. BOGERT, ET AL, THE LAW OF TRUSTS AND TRUSTEES, § 582 (rev. 2d ed. 1980)).

118 GEORGE G. BOGERT, ET AL, THE LAW OF TRUSTS AND TRUSTEES, § 582 (rev. 2d ed. 1980).

119 *See Tibble,* 135 S. Ct. 1193 (2015).

120 *See First Ala. Bank v. Martin,* 425 So. 2d 415 (Ala. 1982) (determining the trustee was held liable for the management of a well-diversified common trust fund because the fund included the bonds of several real-estate investment trusts and some publicly traded stocks that the court concluded, on a security-by-security basis, were too risky).

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123 *Id. (citing Soc'y of Holy Transfiguration Monastery v. Gregory,* 689 F.3d 29, 57 (1st Cir. 2012)).

124 *See Pepper,* 663 F.3d at 221. *Plasterers' Local Union No 96. Pension Plan v. Pepper*, 663 F.3d 210, 221 (4th Cir. 2011).

125 *See Trs. Of the Upstate N.Y. Eng'rs Pension Fund v. Ivy Asset Mgmt.,* 131 F. Supp. 3d 103, 128 (S.D.N.Y. 2015).

126 29 U.S.C. § 1132(a)(3).

127 29 U.S.C. § 1109.

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129 *See Mass. Mut. Life Ins. Co. v. Russell,* 473 U.S. 134, 148 (1985).

Box Endnotes

i. Suzanne Goldenberg, *The Death of US coal: industry on a steep decline as cheap natural gas rises,* THE GUARDIAN, Apr. 8, 2016, https://www.theguardian.com/environment/2016/apr/08/us-coal-industry-decline-natural-gas.

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XII *Id.* AT 27.

xiii Amalgamated Bank, *Amalgamated Bank Announces Series of Environmental Initiatives; Takes Historic Steps to Actively Address Climate Risk,* https://www.amalgamatedbank.com/article/2016-09-19/amalgamated-bank-announces-series-environmental-initiatives-takes-historic-steps.

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XV. *Id.*

TRILLION DOLLAR TRANSFORMATION

Fiduciary Duty, Divestment, and Fossil Fuels in an Era of Climate Risk

By not adequately accounting for climate risks, public pension fund fiduciaries may be ignoring responsibilities they owe to the beneficiaries of the funds they manage. Current patterns of investment and risk management are not adequate to protect against climate risks, and pension funds should adopt new strategies to adapt to the changing legal, financial, and social environment. A failure to do so may result in significant financial losses for the funds and legal liability for trustees and other fiduciaries.

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STRANDED ASSETS

PROGRAMME

Smith School of Enterprise and the Environment

UNIVERSITY OF OXFORD

Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?

October 2013

Authors Atif Ansar | Ben Caldecott | James Tilbury

About the Stranded Asset Programme

There are a wide range of current and emerging risks that could result in 'stranded assets', where environmentally unsustainable assets suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities. These risks are poorly understood and are regularly mispriced, which has resulted in a significant over-exposure to environmentally unsustainable assets throughout our financial and economic systems.

Some of these risk factors include:

- Environmental challenges (e.g. climate change, water constraints)
- Changing resource landscapes (e.g. shale gas, phosphate)
- New government regulations (e.g. carbon pricing, air pollution regulation)
- Falling clean technology costs (e.g. solar PV, onshore wind)
- Evolving social norms (e.g. fossil fuel divestment) and consumer behaviour (e.g. certification schemes)
- Litigation and changing statutory interpretations (e.g. changes in the application of existing laws and legislation)

The Stranded Assets Programme at the University of Oxford's Smith School of Enterprise and the Environment was established in 2012 to understand these risks in different sectors and systemically. We analyse the materiality of stranded asset risks over different time horizons and research the potential impacts of stranded assets on investors, businesses, regulators and policy makers. We also work with partners to develop strategies to manage the consequences of stranded assets.

The Programme is currently being supported through donations provided generously from The Ashden Trust, Aviva Investors, Bunge Ltd, HSBC Holdings plc, The Rothschild Foundation and WWF-UK. Our non-financial partners currently include Standard & Poor's, Trucost, Carbon Tracker Initiative, Asset Owners Disclosure Project and RISKERGY.

The Programme is led by Ben Caldecott and its work is guided by a high-level Consultative Panel chaired by Professor Gordon Clark, Director of the Smith School. Members of the Consultative Panel currently include:

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Prof Charles Godfray	Director, Oxford Martin Programme on the Future of Food
Ben Goldsmith	Founding Partner, WHEB
Catherine Howarth	CEO, ShareAction
Michael Jacobs	The Children's Investment Fund Foundation
Roland Kupers	Chairman, LEAD International
Bernice Lee	Research Director, Environment, Energy and Resource Governance, Chatham House
Jeremy Leggett	Chairman, Carbon Tracker Initiative
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Paul Simpson	CEO, Carbon Disclosure Project
James Stacey	Partner, Earth Capital Partners LLP
Simon Upton	Director, Environment Directorate, OECD
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The authors would like to gratefully acknowledge the financial support of WWF-UK for this project. Valuable assistance was also provided by participants in a roundtable discussion on the fossil fuel divestment campaign, held under Chatham House rules at Generation Investment Management on 19th June, 2013. We would also like to thank the reviewers of the report, who provided valuable feedback on early drafts.

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Executive Summary

'Stranded assets', where assets suffer from unanticipated or premature write-offs, downward revaluations or are converted to liabilities, can be caused by a range of environment-related risks. This report investigates the fossil fuel divestment campaign, an extant social phenomenon that could be one such risk. We test whether the divestment campaign could affect fossil fuel assets and if so, how, to what extent, and over which time horizons.

Divestment is a socially motivated activity of private wealth owners, either individuals or groups, such as university endowments, public pension funds, or their appointed asset managers.[1] Owners can decide to withhold their capital—for example, by selling stock market-listed shares, private equities or debt—firms seen to be engaged in a reprehensible activity. Tobacco, munitions, corporations in apartheid South Africa, provision of adult services, and gaming have all been subject to divestment campaigns in the 20th century.

Building on recent empirical efforts, we complete two tasks in this report. First, we articulate a theoretical framework that can evaluate and predict, albeit imperfectly, the direct and indirect impacts of a divestment campaign.

Second, we explore the case of the recently launched fossil fuel divestment campaign. We have documented the fossil fuel divestment movement and its evolution, and traced the direct and indirect impacts it might generate. In order to forecast the potential impact of the fossil fuel campaign, we have investigated previous divestment campaigns such as tobacco and South African apartheid.

Aims of the fossil fuel divestment campaign

The aims of the fossil fuel divestment campaign are threefold: (i) 'force the hand' of the fossil fuel companies and pressure government—e.g. via legislation—to leave the fossil fuels (oil, gas, coal) 'down there'[2]; (ii) pressure fossil fuel companies to undergo 'transformative change' that can cause a drastic reduction in carbon emissions—e.g. by switching to less carbon-intensive forms of energy supply; (iii) pressure governments to enact legislation such as a ban on further drilling or a carbon tax. Inspiration for the fossil fuel divestment idea leans heavily on the perceived success of the 1980s South Africa divestment campaign to put pressure on the South African government to end apartheid.

Footnotes:

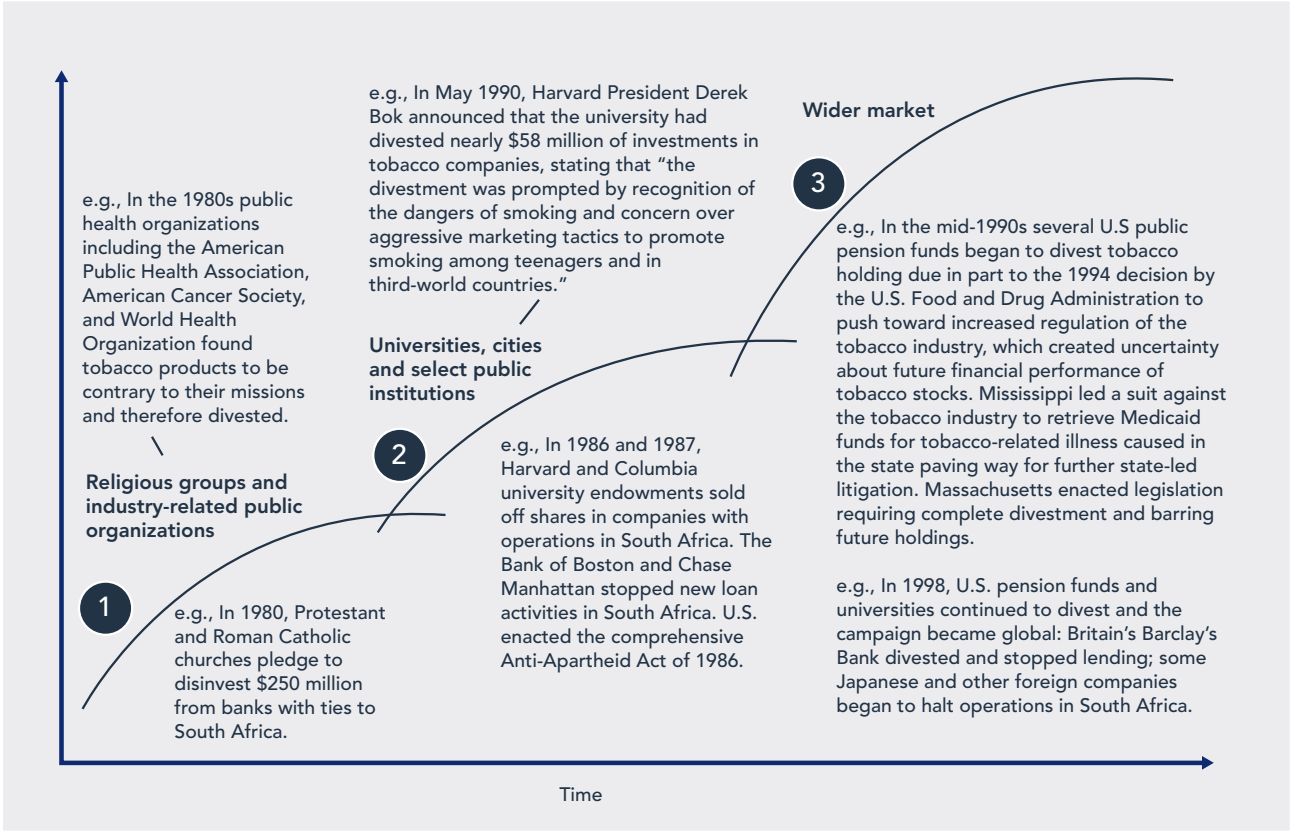
[1] Kaempfer, Lehman, and Lowenberg, 'Divestment, Investment Sanctions, and Disinvestment.'

[2] The Economist, 'Unburnable Fuel.'

Evolution of divestment campaigns

Divestment campaigns typically evolve over three waves, with examples drawn from the tobacco and South African experiences included in the figure below.

The three waves of a divestment campaign



The first wave begins with a core group of investors divesting from the target industry. All previous divestment campaigns have found their origin in the United States and in the first phase focus on US-based investors and international multilateral institutions. The amounts divested in the first phase tend to be very small but create wide public awareness about the issues.

Both in the case of tobacco and South Africa the campaigns took some years to gather pace during the first wave until universities such as Harvard, Johns Hopkins and Columbia announced divestment in the second phase. Previous research typically credits divestment by these prominent American universities as heralding a tipping point[3] that paved the way for other universities, in the US and abroad, and select public institutions such as cities to also divest.

Footnotes:

[3] Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott.'

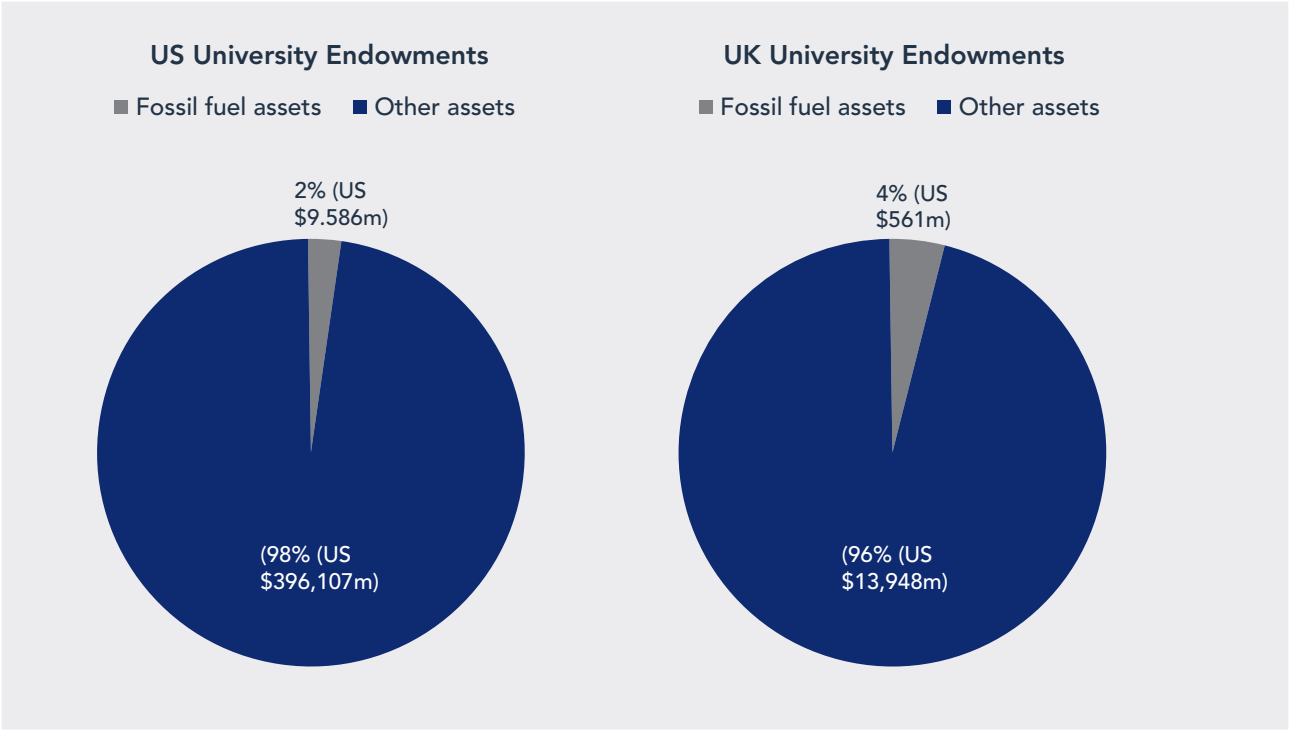
In the third wave, the divestment campaign goes global and begins to target very large pension funds and market norms, such as through the establishment of social responsibility investment (SRI) funds.

Like all previous divestment campaigns, the fossil fuel divestment campaign has started in the US and in the short term focused on US-based investors. In recent months, the campaign has attempted to build global momentum by targeting other universities with large endowments such as the universities of Oxford and Cambridge in the United Kingdom. Despite its relatively short history, the fossil fuel campaign can be said to entering the second wave of divestment.

Exposure of university endowments and public pension funds to fossil fuel assets

Fossil fuel equity exposure is a ratio of the broader equity market exposure for each fund. Thus, on average, university endowments in the US have 2-3% of their assets committed to investable fossil fuel public equities. The proportion in the UK is higher with an average of 5% largely because the FTSE has a greater proportion of fossil fuel companies.

Equity exposure to fossil fuel stocks is relatively limited[4]



Public pension funds, likewise, have 2-5% of their assets invested in fossil fuel related public equities.

Footnotes:

[4] NACUBO-Commonfund, *Study of Endowments*; The Economist, 'Unburnable Fuel'; World Federation of Exchanges, 'Statistics'; *Acharya, Endowment Asset Management: Investment Strategies in Oxford and Cambridge.*

University endowments and public pension funds also invest in bonds. In summary, of the $12 trillion assets under management among university endowments and public pension funds — the likely universe of divestment candidates — the plausible upper limit of possible equity divestment for oil & gas companies is in the range of $240-$600 billion (2-5%) and about another half that for debt.

Direct impact of divestment

In this report we find that the direct impacts of fossil fuel divestment on equity or debt are likely to be limited. The maximum possible capital that might be divested by university endowments and public pension funds from the fossil fuel companies represents a relatively small pool of funds. Even if the maximum possible capital was divested from fossil fuel companies, their shares prices are unlikely to suffer precipitous declines.

the direct impacts of fossil fuel divestment on equity or debt are likely to be limited.

Divested holdings are likely to find their way quickly to neutral investors. Some investors may even welcome the opportunity to increase their holding of fossil fuel companies, particularly if the stocks entail a short-term discount.

We find that there are likely to be greater direct effects on coal valuations. Coal companies represent a small fraction of the market capitalisation of fossil fuel companies. Coal stocks are also less liquid. Divestment announcements are thus more likely to impact coal stock prices since alternative investors cannot be as easily matched as in the oil & gas sector.

Looking back to earlier divestment campaigns also suggests that only a very small proportion of the total divestable funds are actually withdrawn. For example, despite the huge interest in the media and a three-decade evolution only about 80 organisations and funds (out of a likely universe of over 1,000) have ever substantially divested from tobacco equity and even fewer from tobacco debt.

We find that there are likely to be greater direct effects on coal valuations.

As a result, if divestment outflows are to have any direct impact on the valuations of fossil fuel companies, they would have to emerge from (i) changes in market norms, or (ii) constrained debt markets.

Changes in market norms

Even when divestment outflows are small or short term and do not directly effect future cash flows, if they trigger a change in market norms that closes off channels of previously available money, then a downward pressure on the stock price of a targeted firm is possible.

The potential trajectory of a divestment campaign might entail small outflows from 'lead investors' in a trickle-like fashion in early phases of a campaign, followed by a more drastic deluge once a certain tipping point has been reached.

Debt financing

The withdrawal of debt finance from fossil fuel companies by some banks or an increase in discount rate is unlikely to pose serious debt financing problems (either in terms of short-term liquidity or Capex) for fossil fuel companies. Our analysis, however, suggests two caveats. First, change in market norms are more relevant in relatively poorly functioning markets. In particular, borrowers in countries with low financial depth will experience a restricted pool of debt financing if any banks pre-eminent in the local financial network withdraw. Second, while an increase in discount rate is unlikely to have an effect on overall corporate finance of major fossil fuel companies, their ability to undertake large Capex projects in difficult technical or political environments will be diminished due to a higher hurdle rate and lower availability of debt financing.

A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.

While markets for crude oil and many oil products are very liquid, markets for coal are more fragmented and less liquid, with markets for natural gas in-between. A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.

Indirect impact of divestment

Even if the direct impacts of divestment outflows are meagre in the short term, a campaign can create long-term impact on the enterprise value of a target firm if the divestment campaign causes neutral equity and/or debt investors to lower the subjective probability of target firm's net cash flows. The outcome of the stigmatisation process, which the fossil fuel divestment campaign has now triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain. Any direct impacts pale in comparison.

The outcome of the stigmatisation process, which the fossil fuel divestment campaign has now triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain.

Stigmatisation outcomes

As with individuals, a stigma can produce negative consequences for an organisation. For example, firms heavily criticised in the media suffer from a bad image that scares away suppliers, subcontractors, potential employees, and customers.[5] Governments and politicians prefer to engage with 'clean' firms[6] to prevent adverse spill-overs that could taint their reputation or jeopardise their re-election. Shareholders can demand changes in management or the composition of the board of directors of stigmatised companies. Stigmatised firms may be barred from competing for public tenders, acquiring licences or property rights for business expansion, or be weakened in negotiations with suppliers. Negative consequences of stigma also include cancellation of multibillion-dollar contracts or mergers/acquisitions.[7] Stigma attached to merely one small area of a large company may threaten sales across the board.

In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation affecting stigmatised firms.

Restrictive legislation

One of the most important ways in which stigmatisation could impact fossil fuel companies is through new legislation. In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation affecting stigmatised firms.

If during the stigmatisation process, campaigners are able to create the expectation that the government might legislate to levy a carbon tax, which would have the effect of depressing demand, then they will materially increase the uncertainty surrounding the future cash flows of fossil fuel companies. This will indirectly influence all investors—those considering divestment due to moral outrage and those who are neutral—to go underweight on fossil fuel stocks and debt in their portfolios.

a handful of fossil fuel companies are likely to become scapegoats.

Multiples compression

Stigmatisation can lead to a permanent compression in the trading multiples, e.g. the share price to earnings (P/E) ratio, of a target company. For example, Rosneft (RNFTF) produces 2.3 million barrels of oil of day, slightly more than ExxonMobil (XOM). Rosneft was, however, valued at $88 billion versus $407 billion for ExxonMobil as of June 2013. Rosneft suffers from the stigma of weak corporate governance. Investors thus place a lower probability on its reserves being converted into positive cash flows. If ExxonMobil (and similar publicly traded fossil fuel firms) was to become stigmatised due to the divestment campaign, its enterprise value per 2P reserves ratio might also slide towards that of Rosneft permanently lowering the value of the stock.

Footnotes:

[5] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[6] Javers and Kopecki.

[7] Ibid.

Stigma dilution

While the above negative consequences are economically relevant, stigma does not necessarily drive whole industries out of business such that a particular activity stops altogether. Target firms, particularly when a whole industry is being stigmatised, take steps to counteract it. For example, in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification.

in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification.

Fossil fuel companies will attempt to dilute stigma and while stigmatisation will slow fossil fuel companies down, its outcomes are unlikely to threaten their survival. The outcomes of stigmatisation will be more severe for companies seen to be engaged in willful negligence and 'insincere' rhetoric[8] saying one thing and doing another.[9] Moreover, a handful of fossil fuel companies are likely to become scapegoats. From this perspective, coal companies appear more vulnerable than oil & gas.

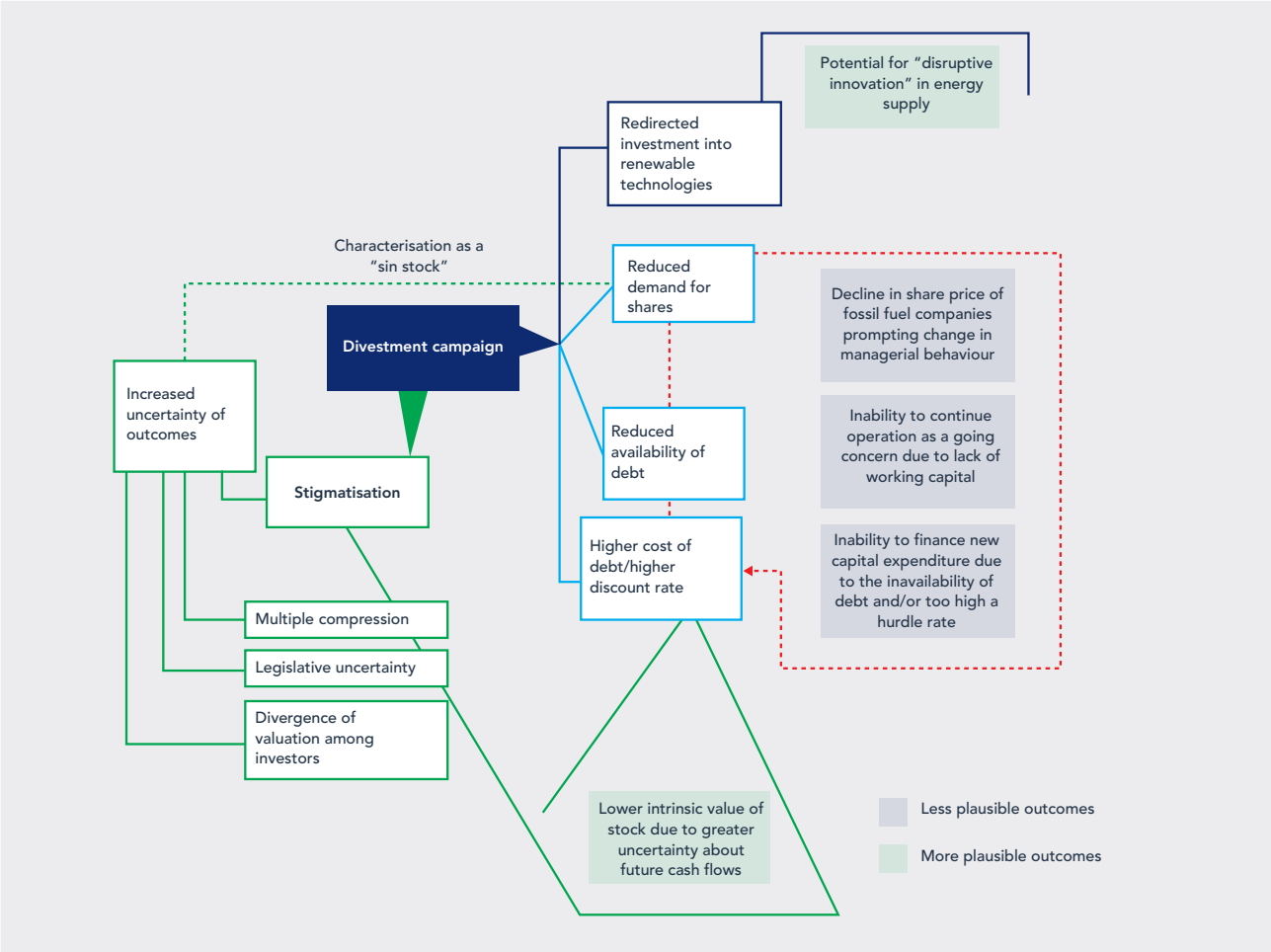
Due to the phased nature of the process of stigmatisation, investors seeking to reduce their fossil fuel exposure in general are thus likely to begin by liquidating coal stocks. Storebrand—a Scandinavian asset manager with $74 billion under management—has taken precisely such as step.

Footnotes:

[8] Yoon, Gürhan-Canli, and Schwarz, 'The Effect of Corporate Social Responsibility (CSR) Activities on Companies With Bad Reputations.'

[9] Sæverud and Skjærseth, 'Oil Companies and Climate Change: Inconsistencies Between Strategy Formulation and Implementation? '

Potential direct and indirect impacts of a fossil fuel divestment campaign



Recommendations for investors, companies and campaigners

Investors

As fiduciaries, managing long-term savings on behalf of their beneficiaries, endowments, pension funds and similar institutional investors have a duty to understand and respond to challenges posed by the fossil fuel divestment campaign—whether considering fossil fuel divestment or not. To this end our recommendations can be divided into the following:

1. Closely monitor fossil fuel exposure. Fossil fuel and related industries comprise a surprisingly large variety of sectors from coal mining to shipping to the manufacture of premium steel. Conduct an audit of the carbon intensity (and pollution in the case of coal) of portfolio constituents. There are a wide range of current and emerging environmental risks that could result in stranded assets. These risks are poorly understood and are regularly mispriced, which may result in a significant over-exposure to environmentally unsustainable assets throughout portfolios.

2. Stress test portfolios for potential environment-related risks that could impact fossil fuel companies. Companies unable to withstand the internalisation of environmental costs or competition from more efficient rivals should be more closely monitored.
3. Be explicit about strategy on fossil fuel investment and consult with beneficiaries. Holding a passive view is also a strategy.
4. For institutions considering divestment, engage with the management of target firms. Are they paying lip-service to concerns or are they serious about tackling them? Divestment is perhaps the final, and most drastic, instrument in an investor's corporate engagement toolkit. Considerable communication with management of the target firm can be undertaken to influence behaviour before using up the trump card of divestment.

Divestment, our research shows, creates far more indirect impact by raising public awareness, stigmatising target companies and influencing government officials.

5. Understand the costs of divestment. Liquidating holdings entails transaction costs.
6. For institutions considering divestment, engage with peers and market participants. Large investors can shape market norms. Use banks and consultants that can advise altering practices.
7. Those that commit to divestment should engage with the media. Divestment, our research shows, creates far more indirect impact by raising public awareness, stigmatising target companies and influencing government officials.
8. Those that commit to divestment should consider re-directing investment to renewable energy alternatives that can trigger 'disruptive innovation' and substitute fossil fuels as a primary source of energy supply.

Fossil Fuel Companies

The divestment campaign could pose considerable reputational risk to fossil fuel companies even if its immediate direct effects are likely to be limited. Previous instances of divestment campaigns suggest that investors sympathetic to the campaign's cause are likely to table strongly worded resolutions during annual meetings, and even if voted down stir debate with which management needs to be prepared to engage. Investors, more than ever, are also keenly aware of whether managers do what they say when it comes to addressing the social responsibilities of a company.

Indirectly, by triggering a process of stigmatisation, the divestment campaign is likely to make the operating and legislative environment more challenging. Greater uncertainty over future cash flows can permanently depress the valuation of fossil fuel companies, e.g. by compressing the price/earnings multiples.

How could fossil fuel companies tackle these challenges? Our recommendations are as follows:

1. Fossil fuel companies have to decide whether to play 'hardball' or to engage with the campaigners. Evidence suggests that hardball strategies intensify stigmatiation, focusing attention on companies that are unrepentant about violating social norms. When an entire industry is in the process of being stigmatised the effect on constituent companies is uneven.

2. While some firms successfully manage to escape disapproval by diluting association with stigmatised categories, a handful in the industry are used as scapegoats. The scapegoats are often not the largest companies,[10] but the ones that fail to reinvent.

3. Fossil fuel companies, particularly in the coal industry, should view their near-term cash flows as an opportunity to transition or diversify away from the assets and activities most at risk. They should develop strategies to do so.

Campaigners

At the heart of the fossil fuel divestment campaign is concern for the climate change that burning fossil fuel reserves is likely to hasten. From this perspective, the divestment campaign is merely an intermediate objective to achieve far-reaching changes in the energy sector. For the campaigners, our recommendations are:

1. With respect to the divestment campaign, understand that the direct impacts are likely to be minimal. Instead the campaign might be most effective in stigmatising the fossil fuel industry, with the coal industry being most vulnerable, and particular companies within the industry.

2. With regards to maximising the direct impacts, the potential target area where campaigners can hope to achieve some measure of success is fossil fuel debt. The analogy we present here is that money flows like mercury—i.e. money has a tendency to form pools that move together through common channels driven by market norms. From this perspective, debt markets—particularly market for banks loans—are 'clumpier' than the more decentralised equity markets. Our research suggests that it might be easier to block off channels of debt finance than equity. Campaigners can thus target large lending banks and pressure them to commit to a set of principles—equivalent to the anti-apartheid Sullivan Principles—that create obstacles for the debt financing of marginal fossil fuel projects. Closing off debt channels will not threaten survival, but it will make marginal projects harder to undertaking reducing fossil fuel Capex.

3. Divestment is the most drastic instrument in an investor's corporate engagement toolkit. Communication with management of the target firm might be more effective in influencing corporate behaviour than divestment. Encourage investors to engage with fossil fuel companies to change corporate decision-making.

4. Divested holdings are likely to find their way quickly to neutral investors. These investors might have less developed corporate engagement toolkits and might be less willing to pressure fossil fuel companies on issues of environmental sustainability. This could have unintended consequences and should be considered when developing advocacy strategies.

Footnotes:

[10] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

Introduction

Worried about the impact of climate change, civic group 350.org launched a campaign in 2012 encouraging 'institutions to immediately freeze any new investment in fossil fuel companies, and divest from direct ownership and any commingled funds that include fossil fuel public equities and corporate bonds within 5 years'.[11] 350.org is a not-for-profit organisation that aims to address climate change through online campaigns, grassroots organisation and mass public actions. The number 350 refers to the concentration of carbon dioxide in parts per million that the atmosphere can safely absorb according to climate scientists.[12] In July 2012 Bill McKibben, the founder of 350.org, published an article in Rolling Stone calling for divestment from fossil fuel companies to 'spark a transformative challenge to fossil fuel…[by] moral outrage'.[13] 350.org has led the divestment campaign through a separate platform called Fossil Free.

Divestment campaigns are a poorly understood phenomenon. There is an important but relatively small literature related to divestment campaigns particularly South African apartheid and tobacco.[14] More broad-based attempts at understanding the phenomenon have been made in recent years in the literature on financial economics,[15] business ethics,[16] corporate social responsibility (CSR)[17] and socially responsible investing (SRI)[18] —see Table 4 (Page 43). Despite these developments, theoretical frameworks that can predict direct and indirect impacts of a divestment campaign on the target firms are in short supply.

Figure 1 summarises the most commonly suggested model of the effects of a divestment campaign (Kaempfer et al[19]). We argue in this paper that such a one-dimensional (1D) model and its variants that incorporate some elements of political pressure are inaccurate depictions of reality.

Footnotes:

[11] Fossil Free, 'About the Fossil Free Campaign.'

[12] 350.org, 'About 350.'

[13] McKibben, 'Global Warming's Terrifying New Math.'

[14] Kobrin, 'Foreign Enterprise and Forced Divestment in LDCs'; Kaempfer, Lehman, and Lowenberg, 'Divestment, Investment Sanctions, and Disinvestment'; Meznar, Nigh, and Kwok, 'Announcements of Withdrawal From South Africa Revisited'; Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott.'

[15] Hong and Kacperczyk, 'The Price of Sin: The Effects of Social Norms on Markets.'

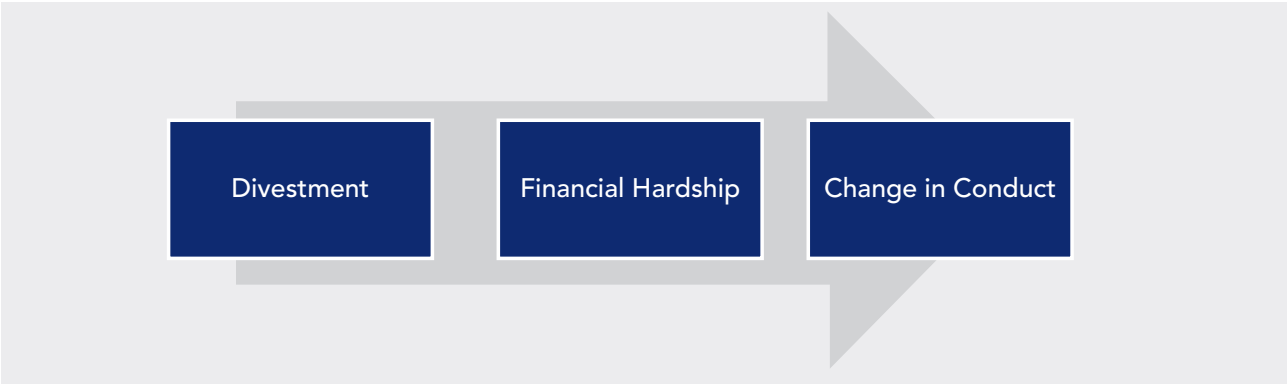
[16] Hummels and Timmer, 'Investors in Need of Social, Ethical, and Environmental Information'; Wander and Malone, 'Making Big Tobacco Give in: You Lose, They Win'; Wander and Malone, 'Keeping Public Institutions Invested in Tobacco'; Cogan, *Tobacco Divestment and Fiduciary Responsibility: a Legal and Financial Analysis;* Yach, 'Healthy Investments in Investing in Health.'

[17] Mackey, Mackey, and Barney, 'Corporate Social Responsibility and Firm Performance: Investor Preferences and Corporate Strategies.'

[18] Clark and Knight, 'Implications of the UK Companies Act 2006 for Institutional Investors and the Corporate Social Responsibility Movement'; Clark and Hebb, 'Why Should They Care? The Role of Institutional Investors in the Market for Corporate Global Responsibility'; Clark and Hebb, 'Pension Fund Corporate Engagement: The Fifth Stage of Capitalism.'

[19] Kaempfer, Lehman, and Lowenberg, 'Divestment, Investment Sanctions, and Disinvestment.'

Figure 1: A typical and erroneous model of divestment effects



Building on recent empirical efforts, our aims in this report are twofold. Our first aim is to articulate an alternative theoretical framework that can evaluate and predict, albeit imperfectly, the direct and indirect impacts of a divestment campaign. To this end we build on theories of weak-form efficient markets to understand the direct and indirect mechanisms by which divestment by one segment of the market, either in the equity or debt markets, might impact the enterprise value and financial viability of target firms. Specifically, we articulate a three-dimensional (3D) temporal model of firm valuation that not only focuses on the size of outcomes and choice of discount rate over time (the typical concern in literature and debates among practitioners), but also on the change in probabilities of outcomes over long temporal horizons. We then build on insights from the literature on market norms in financial markets[20] and burgeoning interest in corporate stigma[21] to assess how a divestment campaign might impact probabilities of outcomes and its corollary impact on target firms' valuations and their conduct.

Our second, and empirical, aim is to explore the case of the recently launched fossil fuel divestment campaign. We begin by documenting the fossil fuel divestment movement and its evolution. Using the theoretical lens we develop, we then trace the potential trajectories of direct and indirect impacts the fossil fuel divestment might generate. We recognise that potential trajectories follow non-linear paths and it is not possible to generate overly precise predictions. Thus in the interest of being broadly right rather than precisely wrong we focus on a qualitative discussion rather than regression analysis. In order to forecast the potential impact of the fossil fuel campaign, we also draw on evidence from previous divestment campaigns targeting tobacco and South African apartheid. In looking back to earlier campaigns to forecast outcomes of the fossil fuel divestment campaign, our methodology is motivated by the 'outside view' proposed by the Noble Prize-winning economist and psychologist, Daniel Kahneman.

Footnotes:

[20] Hong and Kacperczyk, 'The Price of Sin: The Effects of Social Norms on Markets.'

[21] Devers, Dewett, and Belsito, 'Falling Out of Favor: Illegitimacy, Social Control, and the Process of Organisational Stigmatization'; Devers et al. 'A General Theory of Organisational Stigma'; Mishina and Devers, 'On Being Bad: Why Stigma Is Not the Same as a Bad Reputation.'

Theoretical framework building blocks

Before developing the theoretical framework, it is helpful to outline its key constructs and specify its central assumptions.

Divestment

Divestment is a socially motivated activity of private wealth owners, either individuals or groups such as university endowments, public pension funds, or their appointed asset managers.[22] Owners can decide to withhold their capital—for example, by selling stock market listed shares, private equities, or debt—from firms engaged in a reprehensible activity. Tobacco, munitions and corporations in apartheid South Africa, provision of adult services, or gaming have all been subject to divestment campaign in the 20th century. The term divestment, as used in this paper, should not be confused with an economically motivated choice by investors or creditors to forgo or liquidate investments in a firm, for example due to poor financial performance.

Divestment ought to also be distinguished from disinvestment. Disinvestment is the process of eliminating private individuals' or corporations' ownership of physical assets in an industry or jurisdiction.[23] Sometimes disinvestment can take the form of the forced sale of existing physical assets, for example due to legislative action requiring such disinvestment. In contrast, divestment is about withdrawing or withholding financial capital. This study focuses solely on divestment. The divestment/disinvestment distinction is particularly relevant to the case of South African apartheid discussed below.

Firm Value and Firm Performance

Many definitions of firm value and firm performance have been proposed in the literature.[24] With reference to firm value, our primary concerns relate to the following three questions; does investor divestment affect: shareholder wealth of a target firm, the ability of a target firm to undertake business expansion, or the ability of a firm to continue as a going concern? In the framework developed here, we differentiate a market definition of firm value from an economic (or intrinsic definition) of firm value. All else being equal, we assume higher market value to be a measure of better firm performance.

– Market value is defined as the price of a firm's equity multiplied by the number of its shares outstanding or its market capitalisation. Thus, first, our framework addresses the following question: assuming no change in the supply of shares outstanding of a target firm, does investor divestment cause a decline in the price of a firm's equity and hence its market capitalisation?

Footnotes:

[22] Kaempfer, Lehman, and Lowenberg, 'Divestment, Investment Sanctions, and Disinvestment.'

[23] Ibid., 459.

[24] Barney, Gaining and Sustaining Competitive Advantage; Mackey, Mackey, and Barney, 'Corporate Social Responsibility and Firm Performance: Investor Preferences and Corporate Strategies.'

– Economic (or intrinsic) value is defined as the present value of the target firm's cash flows. Second, our framework addresses the following question: assuming managers seek to maximise the market value of their firm in their decision-making,[25] will investor divestment reduce the present value of the target firm's cash flows?

– We acknowledge that the enterprise value of a firm is made up of its market cap plus debt, minority interest and preferred shares, minus total cash and cash equivalents. Thus, third, our framework addresses the following question: will investor divestment reduce the availability of debt (short-term working capital and long-dated securities) or drive up cost of debt sufficiently to thwart future business expansion or possibly even force a firm into bankruptcy?

Weak-Form Efficient Markets and Boundedly-Rational Expectations

The framework presented here builds on the theory that capital markets are weak-form efficient (as opposed to strong form or semi-strong form). Table 1, albeit a simplification, illustrates the differences among weak, semi-strong, and strong forms of market efficiency based on Eugene Fama's pioneering research.[26] Market efficiency concerns the extent to which market prices incorporate available information.

If market prices do not fully incorporate information, then opportunities may exist to make a profit from the gathering and processing of information. An efficient market is one in which asset prices quickly reflect available information; market transactions are the mechanism by which information is incorporated in price. If there are considerable time lags or spatial differences among prices, traders can easily earn profits by arbitrage. The market in such a case is considered relatively inefficient.

Weak-form efficient markets are those in which publicly available information about the perceived value of a firm's assets is, on average, reflected in the market price of the assets in question. In contrast in strong-form markets asset prices reflect both public and privately held (insider) information.

In weak-form efficient markets the market value of an asset or financial security (e.g. a share in a listed company) reflects the estimates of the discounted future cash flows under a probability distribution subjectively assigned by an investor. Market values can deviate from intrinsic value for considerable periods of time in weakly efficient markets but ultimately correct as investors are drawn to buy/short undervalued/overvalued assets. In contrast, in strong-form markets discrepancies between market and intrinsic value of an asset are very quickly adjusted.

Footnotes:

[25] Copeland et al; Friedman; cf Jensen and Meckling.

[26] Fama.

Table 1: Forms of market efficiency

	MARKET PRICES REFLECT:			FACTORS AFFECTING MARKET EFFICIENCY:		
Forms of market efficiency	Past market data	Public information	Private information	Time lag in price adjustment	Does market value reflect intrinsic value	Information acquisition costs
Weak form	x	Imperfectly		Potentially high	Maybe	High/medium
Semi-strong form	x	x		Medium	Likely yes	Medium
Strong form	x	x	x	Low/instantaneous	Yes	Low

We acknowledge the behavioural finance critique of (even the weak-form) efficient market hypothesis.[27] There is broad-based evidence that investors are prone to over-optimism, systematic biases and 'timid choices and bold forecasts'.[28] Descriptively, individual investor choices and aggregate market behaviour may thus deviate from efficient market behaviour, particularly semi-strong and strong-form (Mandlebrot[29]). To address this critique, we incorporate a second assumption of boundedly-rational expectations. This means that investors face non-trivial costs in accessing information; investors are likely to face computational limitations in processing the information even when they have gathered it; and investors are prone to systematic biases about judgements made under uncertainty. Such biases can arise from the individual or organisational-level heuristics investors use in decision-making or from market-level norms and routines that deviate from rational choice.[30]

In simpler terms, the bounded-rationality assumption suggests that investors will face difficulty in both assigning the appropriate discount rate and the probability distribution to the future cash flows. Moreover, the forecasting errors between investors' estimates of the stock price (the discounted cash flows) and the actual stock price will systematically have a mean different from zero. Given subjective differences in estimates of the present value of a firm's cash flows, the market as a whole will have divergent views on the stock price despite similar publicly accessible information available to all investors. Stock price and market value will be subject to considerable volatility particularly as new information—that causes investors to revaluate their discounted cash flow model—is revealed.

Bringing the discussion on market versus intrinsic value, weak efficient markets, and boundedly-rational expectations concepts together we suggest the following. Due to investor cognitive biases (bounded-rationality), considerable deviation between the market value and the intrinsic value of firms can exist at any given cross-section of time. However, since weakly efficient markets eventually adjust (i.e. new information is incorporated into the price of the asset), egregious under-valuation of a stock cannot last for too long since profit-motivated investors will spot the opportunity and buy the under-valued stock.

Footnotes:

[27] Schiller, *The Irrational Exuberance*; Thaler, *Advances in Behavioral Finance*.

[28] Kahaneman and Lovallo; Kahneman, *Thinking, Fast and Slow.*

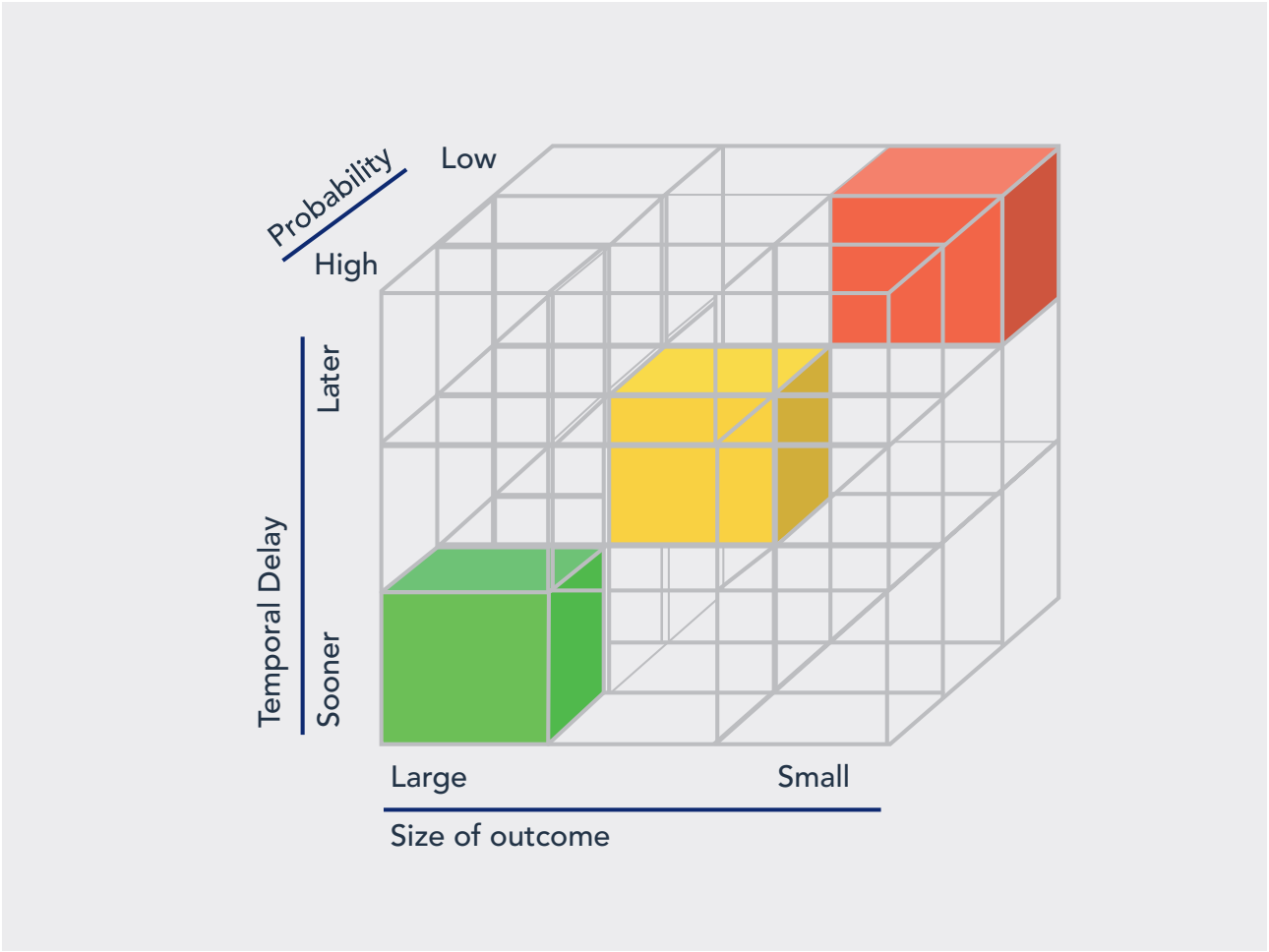
[29] Mandlebrot.

[30] Durand, 'Predicting a Firm's Forecasting Ability: The Roles of Organisational Illusion of Control and Organisational Attention.'

A 3D model of investment valuation

In valuing and allocating scarce capital to alternative investments, investors face trade-offs across three dimensions: size, temporal delay and probability of outcomes, as illustrated in Figure 2.[31] Choices between alternatives that differ along only one dimension (1D) are straightforward. All other things being equal, investors tend to prefer larger to smaller gains; earlier to later gains; more certain to less certain gains.[32] More effort is required when choices differ across two dimensions (2D) holding the third constant. In this 2D representation of the world, investors face three salient trade-offs. Ought investors to prefer larger but less certain gains to smaller, more certain gains today (varying size/probability, holding delay constant)? Conversely, ought investors prefer larger but later rewards to smaller, earlier ones (varying size/delay, holding probability constant)? Finally, ought investors prefer more certain but delayed gains to less certain but earlier gains of the same size (varying delay/probability, holding size constant)?

Figure 2: A 3D model of investment choice



Footnotes:

[31] Ansar et al.; Prelec and Loewenstein; Loewenstein and Thaler; Green and Myerson.

[32] Green and Myerson.

Discount Rate

With respect to 2D trade-offs of inter-temporal choice, capital budgeting theory in financial economics[33] advocates a net present value (NPV) based decision rule.[34] Barring resource constraints, investors are advised to invest in all ventures that generate discounted cash flows greater than the amount invested—i.e. a positive NPV. With respect to mutually exclusive alternatives, the one yielding the higher NPV ought to be selected.[35]

Applying an appropriate discount rate is essential to computing the intrinsic value of a firm. For a company sure to generate net cash flows of $1 billion each year between 2013 and 2050 the intrinsic value is $10.7 billion at a 10% discount rate obtained by the following formula standard in corporate finance textbooks and illustrated in Figure 3.

$$\mathrm{NPV}(i, N) = \sum_{t=0}^{N} \frac{R_t}{(1+i)^t}$$

Where:

t - the time of the cash flow

i - the discount rate

R_t - the net cash flow i.e. cash inflow-cash outflow, at time t

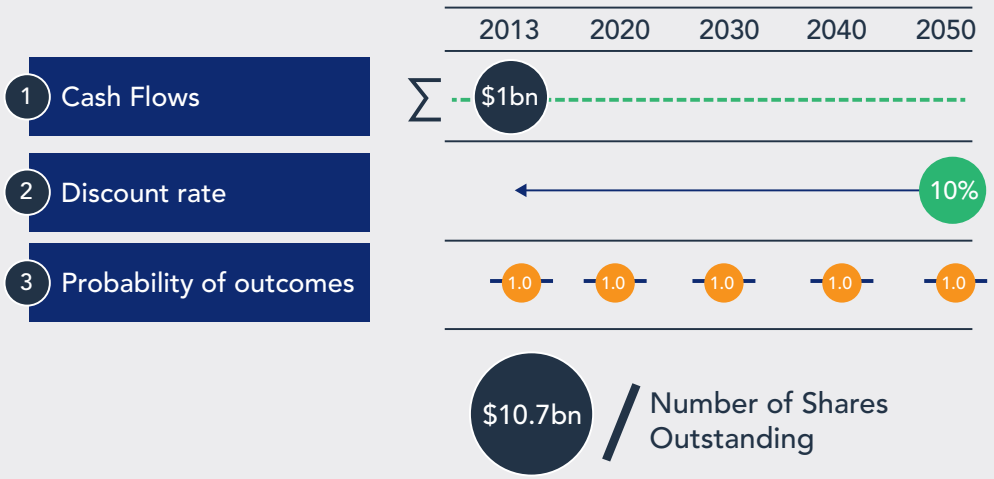
Footnotes:

[33] von Neumann and Morgenstern; Savage; Koopmans; Samuelson.

[34] Mizruchi and Stearns.

[35] Brealey and Myers.

Figure 3: Intrinsic value of stock



Since the discount rate is compounded, even large net cash flows occurring far in the future may not be as valuable as small net cash flows in the present. Figure 4 illustrates the effect of different compound discount rates on a $1,000 net cash flow. For example, at the low 5% discount rate, a $1,000 net cash flow contributes positively to the NPV of an investment for over 200 years. This time horizon shrinks to approximately 40 years at a 20% discount rate.

Figure 4: Present value of $1,000 with different discount rates

Due to the sensitivity of NPV to discount rate, debates in literature tend to anchor on determining the appropriate discount rate. Proponents of the economic short-termism hypothesis, for example, suggest that investors are prone to using the 'hyperbolic discounting model', valuing rewards more than the distant future risks thereby unduly overvaluing risky ventures that generate high cash flows today but might run into problems over longer temporal horizons.[36]

Probability of outcomes

Despite an extensive literature on choice and application of discount rates, theory and practice tend to overlook the significance of probability of outcomes—the third dimension of our 3D model. Probabilities range strictly between 0.0 and 1.0. An outcome with a probability of 0.0 or 1.0 signifies absolute certainty. In contrast a probability 0.5—the same as a toss of a coin—is a useful approximation of random outcomes.

Footnotes:

[36] Laverty, 1996; Laverty, 2004.

Notwithstanding the sensitivity of temporally distant outcomes to changes in the discount rate, the effect of changes in the probability of outcomes tends to be even stronger. Consider for example the following example: a sure gain (probability of 1.0) of $1,100 one year from today at a 10% discount rate has a present value of $1,000 ($1,100$_{t=1}$/(1.1)$^{t=1}$). However, if the probability of the sure gain were to fall to 0.7 the present value falls commensurately to $700. The effect of the probability of outcomes lowering from a sure gain to a 70% change of a gain on the present value is equivalent to the discount rate jumping from 10% to 57%!

Unlike games of chance on which typical economics models are based, real world decisions rarely present themselves with well-defined probabilities of monetary gains or losses.[37] Research in psychology suggests that in inter-temporal choice, graver problems arise when a decision requires investors to think probabilistically[38] (see also Rottenstreich and Kivetz[39] for an extensive review of literatures in management and psychology). Evidence in these studies finds that investors are insensitive to estimating the probabilities of possible outcomes.

Determining the Stock Price: Plausibility of Direct Impact of a Divestment Campaign on Firm Equity

Now we turn to extending our 3D investment model to evaluate the potential impacts of a divestment campaign on a target firm. Determining the market price of the stock of a firm—i.e. the market value—depends on establishing the supply of and demand for the stock in the market. Demand can be thought of as the total amount of money controlled by different kinds of investors in the market. The most obvious way that a divestment campaign could impact a company is simply by lowering the demand for its shares and therefore lowering its share or stock price as shown in Figure 5.

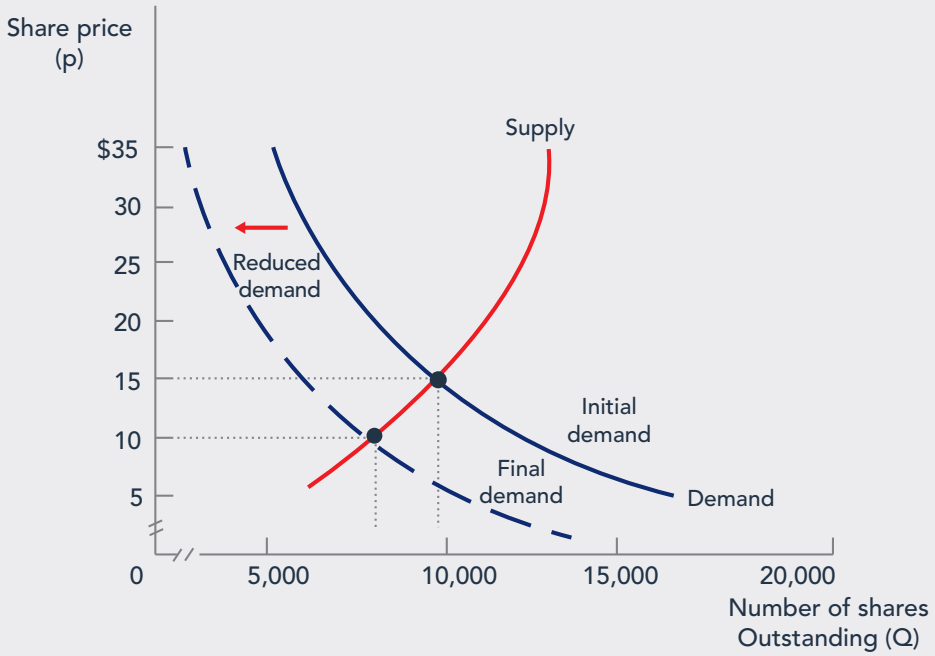
Footnotes:

[37] Hastie; Rettinger and Hastie.

[38] March and Shapira; McGraw, Shafir, and Todorov; Shapira.

[39] Rottenstreich and Kivetz.

Figure 5: Effect of reduced demand for shares on a firm's stock price



The plausibility of a direct impact of a divestment campaign on the stock price of a target firm rests on the current market cap of a target firm relative to the size of divestment outflows. If divestment outflows are large and the firm's market cap small then the target firm will face a precipitous decline in share price, at least in the short term. Conversely, if market cap is large and the amount of funds divested small than the effect on stock price will be minimal in the short term.

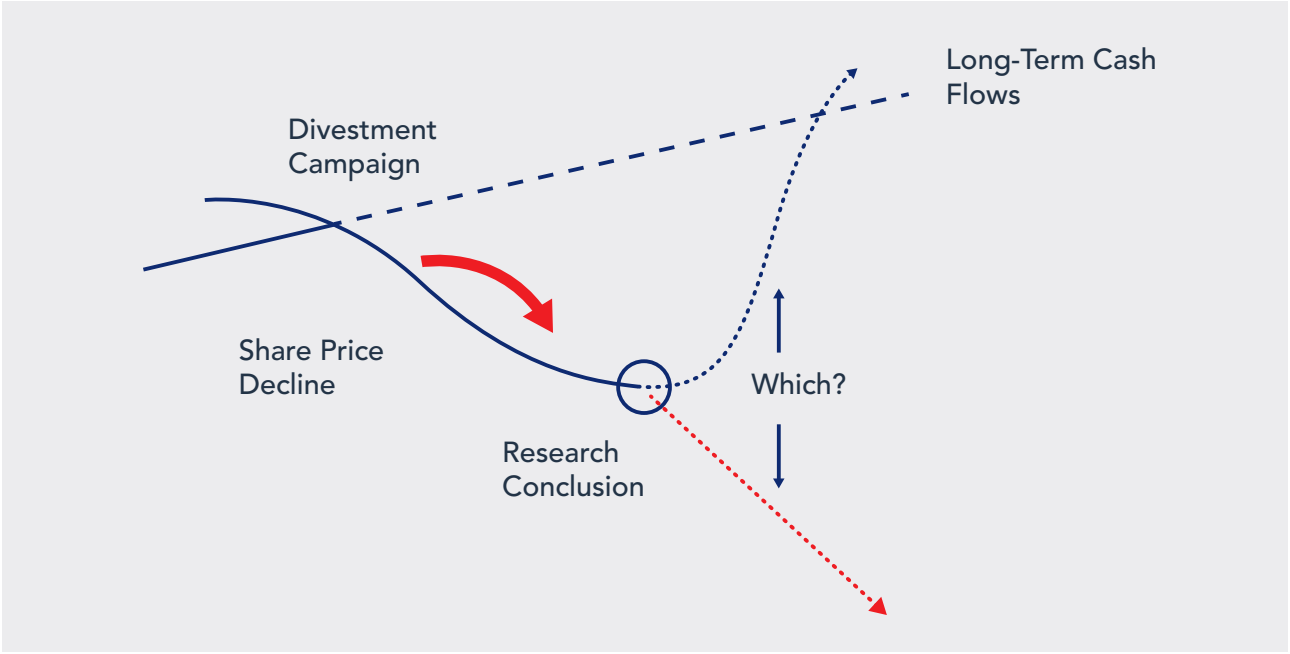
We will shortly return to changes in market norms as an outcome of a process of organisational stigmatisation. For now it is sufficient to arrive at the following:

Proposition 1: The direct impact on the stock price of a firm targeted by a divestment campaign depends on the size of the divestment outflows and the market capitalisation of the target firm. If its market cap is large, the effect of a divestment campaign's outflows, unless commensurately large, on the stock price of the target firm will be minimal.

Divestment Campaigns and Future Cash Flows

Thinking back to the distinction between the market value and intrinsic value of a firm, there is little reason to assume that a short-term decrease in stock price due to a divestment campaign is likely to be permanent. Irrespective of whether motivated by economic or social objectives, a decrease in the short-term market value of a company does not typically affect operational cash flows. Even if a divestment campaign depresses the stock price of a target firm in the short term, neutral investors — those not participating in the divestment campaign—have a chance to research whether or not the long-term cash flows of the target firm will alter. If neutral investors do not have cause to revise the discount rate upwards or the probability of future net cash flows downwards, a short-term fall in the demand for a company's share does not signal any change in the intrinsic value of a company. In such an instance, the depressed share price will revert up towards its intrinsic value over medium to longer time horizons as illustrated in Figure 6.

Figure 6: Longer-term direct impacts of a divestment campaign on stock price likely to be mute



In formal terms;

Proposition 2: Even if the divestment outflows are large, the long-term direct impact on the stock price of a firm targeted by a divestment campaign will be minimal if the net present value of the target firm's cash flows is not meaningfully affected.

Impact of Change in Market Norms

Recent literature, such as Hong and Kacperczyk[40] , has begun to suggest that divestment outflows, even when relatively meagre in the first wave of divestment, can significantly and permanently depress stock price of a target firm if they trigger a change in market norms. Norms are germane to financial markets on two, somewhat contradictory, levels.

First, large pools of capital tend to be governed by homogenised routines and market conventions. The process of collection and allocation of money takes place within well-defined networks. These routines are established to 'foster stability in investment decisions', use of consistent criteria in decision-making and decrease uncertainty surrounding decision outcomes.[41] For example, the top management team of a lending institution may want to ensure that all its lending offices are issuing mortgages to creditworthy homeowners using a standardised set of criteria to avoid excessive risk-taking. Similarly, in order to undertake a successful initial public offering (IPO), a company is obliged to hire a set of advisers such as accountants, lawyers and underwriting investment banks. A company that tries to bypass these intermediaries to file an IPO on its own is often shunned by investors even if the company's prospectus is clearly drawn up and presents a compelling investment thesis. Conversely, if a company is able to package its investment story convincingly—the right 'look and feel'[42]—with the aid of the right advisers it can access large pools of capital even when the investment thesis is weak, as in the recent case of Groupon's IPO or a range of doomed technology IPOs in the late 1990s.[43]

Second, market norms and routines, as 'preprogrammed sequences of behavior…[can] short-circuit individuals' autonomous judgments' and lead organisations and markets—as collectives of individuals—to behave irrationally.[44] For example, norms that made lending to subprime borrowers acceptable became routinised in the mortgage markets in the late 1990s and early 2000s. Even reputedly conservative HSBC felt compelled to follow this 'market stampede', even though influential voices within the bank were sceptical whether the underlying economics of the burgeoning subprime market were sound.[45] There is further broad-based evidence that herding in markets does exit.[46] Cases of bank runs or collapse of a firm's share price due to unfounded market panics are well documented.[47]

In order to conceptualise the double-edged importance of market norms, Clark[48] proposes the analogy that 'money flows like mercury'—the liquid metal. 'Mercury tends to (1) run together at speed, (2) form in pools, (3) re-form in pools if disturbed, (4) follows the rivulets and channels of any surface however smooth it may appear to be, (5) is poisonous in small and large doses if poorly managed.' In other words, money has a tendency to herd in puddles that move in tandem—at time based on rational and other times 'irrational' grounds.[49]

Footnotes:

[40] Hong and Kacperczyk, 'The Price of Sin: The Effects of Social Norms on Markets.'
[41] Sutcliffe and McNamara, 'Controlling Decision-Making Practice in Organisations.'
[42] Personal communication, anonymised investment banking executive.
[43] Kam, 'No Pain, No Gain: Rethinking the Telecoms Crash.'
[44] Durand, 'Predicting a Firm's Forecasting Ability: The Roles of Organisational Illusion of Control and Organisational Attention,' 821.
[45] Personal communication with anonymised HSBC executive.
[46] Thaler, *Advances in Behavioral Finance.*
[47] Offer
[48] Clark, 105.
[49] Schiller, R. J. (2000). *The Irrational Exuberance.* Wiley Online Library

The implication the discussion on market norms carries for a divestment campaign is that even a small divestment campaign event has the potential to snowball since revision of market norms can begin to close off the previous channels through which money may have flown to target firms. From this perspective, a potential trajectory of a divestment campaign might entail small outflows from lead investors in a trickle-like fashion in early phases of a campaign followed by a more drastic deluge once a certain tipping point has been reached.

As a qualifier to Propositions 1 and 2, thus:

> *Proposition 3: Even when divestment outflows are small or short term and do not directly affect future cash flows, if they trigger a change in market norms that closes off channels of previously available money, then a downward pressure on the stock price of a targeted firm will be large and permanent.*

Impact on Debt and Discount Rate

We have thus far considered the direct impacts of a divestment campaign on firm value only from the perspective of equity and the stock market. A divestment campaign can, however, restrict the availability of debt and lead investors to revise upwards the discount rate applied to the future cash flows of the target firm. This would have the effect of increasing the Weighted Average Cost of Capital (WACC)—i.e. an increase in the cost of the debt and an increase in the return demanded by equity investors.

Debt easily constitutes the largest source of external financing for large firms. Despite the global financial crisis, large firms raise large amounts of debt with medium and long-term maturities via syndicated bank loans or corporate bond markets. From the perspective of market norms and 'money flows like mercury', market for banks loans—but not corporate bonds—is 'clumpier' than the more decentralised equity markets. For example, five banks—J.P. Morgan, Bank of America Merrill Lynch, Citi, Wells Fargo, Mizuho—have a 40% market share of the global syndicated lending.[50] Thus, if a divestment campaign were able to influence these large banks then debt financing for fossil fuel companies may be restricted.

In formal terms,

> *Proposition 4: Even when equity divestment outflows are small, if they influence large banks, they can close off channels of debt finance to fossil fuel companies.*

Footnotes:

[50] Thomson Reuters, *Global Syndicated Loans Review* – Full Year 2012.

Even if a divestment campaign were successful in influencing large banks in withdrawing further debt finance, would it effect fossil fuel companies' survival? Theory in mainstream finance suggests that fossil fuel companies will simply to be able to substitute existing banks, if they were to stop lending, with other sources of finance—such as corporate bonds or neutral banks. There are strong mechanisms which support the logic of the mainstream theory: debt like equity is ultimately a claim on the future cash flows of a company. Since a divestment campaign has little hope of directly impacting the future cash flows of fossil fuel companies, other lenders would spot the opportunity—effectively the spread between the bank's own borrowing costs and what it can charge fossil fuel companies given their cash flows. Neutral lenders would thus swiftly replace any lenders withdrawing finance. Theory in geography of finance, however, adds an important refinement to mainstream finance theory.[51] The depth of financial markets and the shape of financing networks differ by country. Whereas financial depth—typically measured as the percentage proportion of private credit to gross domestic product (GDP) of a country[52] is very high in the US or the UK[53], it is very low in burgeoning fossil fuel markets of Angola, Nigeria and Mexico.

Similarly, while the market for corporate bonds in India is merely 1% of the country's GDP, it is 111.8% of US GDP and 42.4% in Japan.[54] In terms of the shape of financing networks, deeper markets present dense networks with many hubs and spokes linking with each other. Even if a few hubs go dark for fossil fuel companies, the overall network remains active. In contrast in emerging markets a handful of organisations, including multilateral institutions such as the World Bank, International Finance Corporation (IFC), European Investment Bank (EIB), or state-owned banks such as State Bank of India, Brazil's BNDES or Russia's Sberbank acquire pre-eminence in securing financing. If any of these hubs go dark for fossil fuel companies in emerging markets, the overall functioning of the financing network is considerably diminished.

Fossil fuel companies borrowing in countries such as the US, UK, or Japan have little reason to fear a few banks withdrawing finance. Whereas in developing countries, where debt finance is much harder to come by, even one or two banks withdrawing can have substantial direct implications for borrowers. Thus;

> *Proposition 5: Withdrawal of debt finance from fossil fuel companies by some banks will be quickly substituted by alternative sources of debt finance. The survival of fossil fuel companies will not be directly threatened. The exception, however, is borrowers in countries with low financial depth; they will experience a restricted pool of debt financing if any banks pre-eminent in the local financial network withdraw.*

Finally, with respect to direct impacts, is the question of cost of debt. It has been argued that firms perceived to be socially less responsible are regarded as riskier and may have higher risk premiums than more socially responsible companies and vice versa.[55] Creditors could thus play a seminal role in the transmission of social norms to the valuation of debt instruments by increasing the cost of debt. Figure 7 illustrates that even if creditors were to increase the discount rate, the overall effect on firm valuation is relatively mute. As previously shown in Figure 4, page 27, the discount rate has to increase very substantially to have a meaningful impact on the present value of an investment with rich net cash flows as is typical in oil and gas companies. However increased discount rates, by also increasing the investment hurdle rate, may affect marginal projects in more difficult technical or political environments. For example, fossil fuel companies may forgo investments in complex deep offshore projects or coalmines in challenging geographies.

Footnotes:

[51] Clark and Wójcik, *The Geography of Finance: Corporate Governance in the Global Marketplace.*

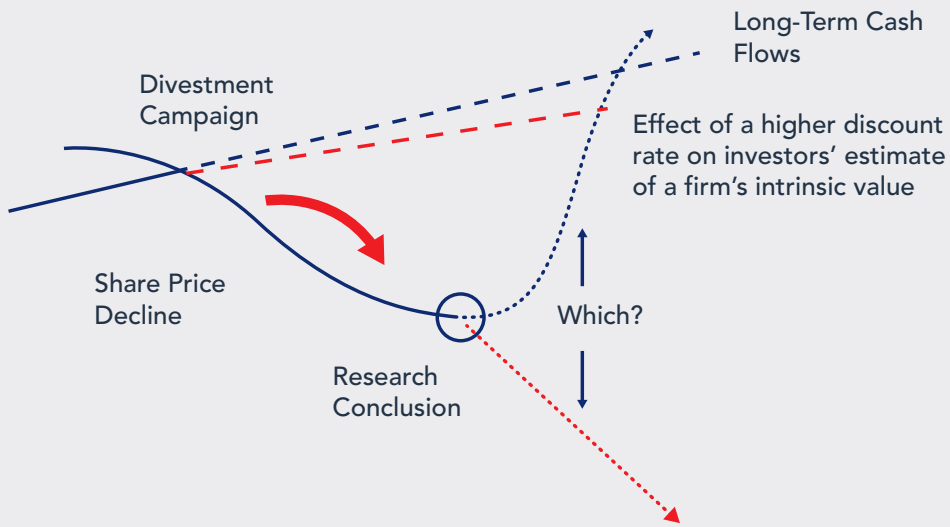
[52] World Bank, 'Key Terms Explained.'

[53] Private credit to GDP is 194% and 179% respectively for the US and the UK--i.e. the nominal value of private credit is roughly twice the size of the economy. See http://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS

[54] Ansar. *Project Finance in Emerging Markets.*

[55] See Menz for a discussion.

Figure 7: Mute effect of a change in the discount rate



Proposition 6: An increase in the discount rate will have a minor effect in lowering the intrinsic value of fossil fuel companies. Due to the higher discount rate, fossil fuel companies will likely forgo the undertaking of marginal projects in difficult technical or political geographies.

Indirect Impacts of Divestment Campaigns and Change in Probabilities of Future Outcomes

As discussed earlier, inter-temporal investment not only requires forming judgements about the discount rate but also the level of certainty associated with expected outcomes. An event or new information that causes investors to reassess the probabilities associated with a stream of future cash flows leads to a revision of investors' estimates of the intrinsic value of a firm. For example, OGX, Brazil's largest private sector petroleum company, owns over 30 exploratory blocks in Brazil and Colombia with an estimated ten billion barrels of petroleum reserves. In recent months, however, OGX is facing a threat to its survival after its few producing wells were deemed flops and further production from them unviable. Either operationally or in terms of assets or management there has not been any change in the company. However, investors' expectations of the probability of future cash flows has plummeted causing a downward revision of the intrinsic value of OGX. In turn, this has also triggered a sell-off of OGX shares.

The probabilities investors assign to a stream of future cash flows hinge on their subjective perception of a variety of technical, operational, political-economic, legal, regulatory and psychological factors (Harrison and Kreps[56]). A change, material or perceptual, in any number of these factors triggers a reassessment of the prospects of a firm. Experimental evidence suggests that people do not typically follow the principles of probability theory in judging the likelihood of uncertain events.[57] Any process of reassessment of a firm's prospects is likely to be heterogeneous and uneven across time.

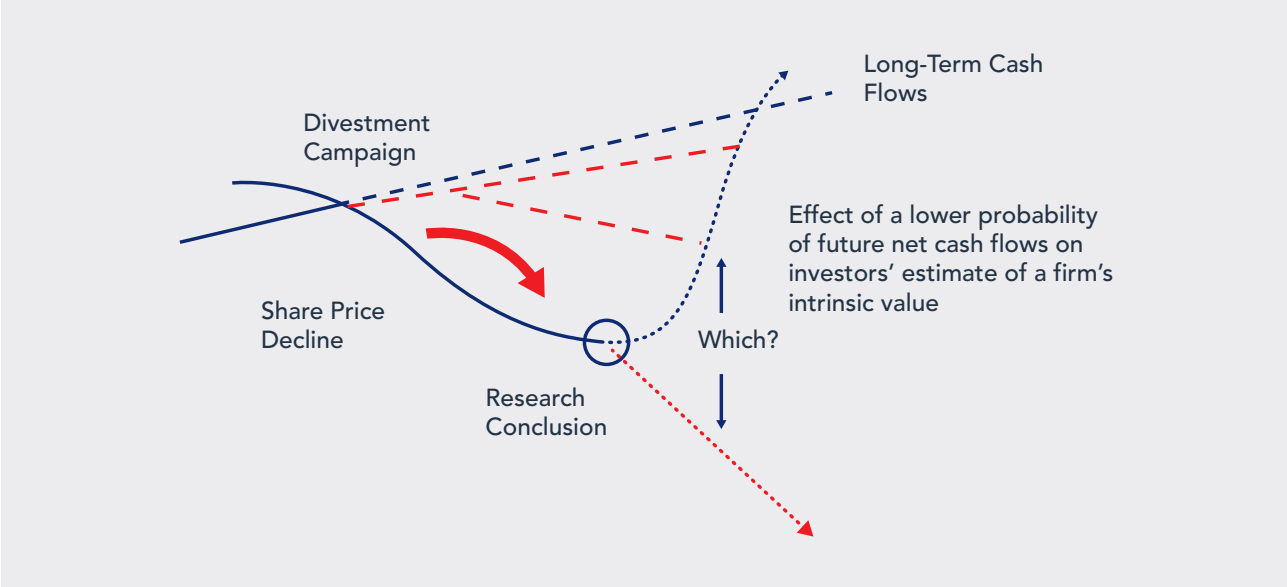
Footnotes:

[56] Harrison and Kreps.

[57] Kahneman and Tverksy.

The heterogeneous process by which investors form judgements about the probabilities of future cash flows, and hence the intrinsic value of a firm, is salient to a divestment campaign. A divestment campaign, by even a very small number of investors, may create perceptual uncertainty about factors such as availability of suppliers, human resources, legislation, financing or licences that impact the certainty by which future cash flows will accrue. This may, in turn, lead a far larger number of investors to revise downwards their subjective probability of future net cash flows as shown in Figure 8.

Figure 8: Effect of lower probability of future net cash flows



In formal terms;

> *Proposition 7: Even if the initial divestment outflows are small, the long-term impact on the enterprise value of a target firm will be large if the divestment campaign causes neutral equity and/or debt investors to lower the subjective probability of a target firm's net cash flows.*

While it is plausible that a divestment campaign will increase uncertainty about the future cash flows on a target firm, the precise mechanism by which this may come about has not been explained before. The most frequently cited mechanisms rely on some kind of interest group pressure, which 'forces the hand'[58] of lawmakers to make legislation more restrictive.[59] Why lawmakers—or other market participants such as banks, suppliers or potential employees—would cave in to the pressure of the divestment campaigners is rarely clarified. To fill this gap we next turn to literature on organisational stigma. The stigmatisation process presents valuable clues as to why socially motivated divestment campaigns, particularly those that prompt lawmakers to enact restrictive legislation, may succeed in creating indirect impacts across the marketplace that affect the certainty of future cash flows of target firms.

Footnotes:

[58] McKibben, 'Global Warming's Terrifying New Math.'

[59] Kaempfer, et al, 459.

Organisation Stigma – Plausibility of Indirect Impacts of a Divestment Campaign

In recent years research has begun to study organisational stigma both theoretically[60] and empirically.[61] These efforts have sought to address questions such as: what is an organisational stigma? What types of events or issues lead to it? How does the process of stigmatisation evolve over time? What roles do broader market participants and audience play in this process? What are the outcomes for the stigmatised organisations?[62]

An organisational stigma is a label that evokes a collective perception from a social audience that a target organisation 'possesses a fundamental, deep-seated flaw that deindividuates and discredits the organisation'.[63] An organisational stigma is thus based on a negative social evaluation that expresses disapproval, even 'disgust' (e.g. Goffman[64]), at an organisation's activities, values or behaviour. Devers et al[65] suggest that, despite their interrelatedness, organisational stigma differs from other organisational-level constructs of reputation, status, celebrity and legitimacy on a variety of dimensions, which are summarised in Table 2.

Table 2: Comparison of different social evaluation constructs[66]

	REPUTATION	STATUS	CELEBRITY	LEGITIMACY	STIGMA
Definition	Signal of quality and behaviour	Agreed-upon social rank	Combination of prominence and under-conformance or over-conformance to norms	Perceptions of appropriateness	A label that evokes a collective perception that the organisation is deeply flawed and discredited
Individuating?	Individuating	Individuating	Individuating	Non-individuating	De-individuating
Foundation literature	Signalling theory	Network theory	Sociology of media	Neo-institutional theory	Labelling theory
Social basis	Performance and quality signals	Pattern of affiliations and centrality	Media stories	Normative fit	Labelling and social control
Requires affective response	No	No	Yes Positive affect	No	Yes Negative affect
Outcomes	Performance, attractiveness as a partner	Preferential interpretation of statements and actions	Access to resources and opportunities	Access to resources	Dis-identification and social and economic sanctions

Footnotes:

[60] e.g. Devers et al. 'A General Theory of Organisational Stigma'; Hudson, 'Against All Odds: A Consideration of Core-stigmatized Organisations'; Devers, Dewett, and Belsito, 'Falling Out of Favor: Illegitimacy, Social Control, and the Process of Organisational Stigmatization.'

[61] e.g. Hudson and Okhuysen, 'Not with a Ten-Foot Pole: Core Stigma, Stigma Transfer, and Improbable Persistence of Men's Bathhouses'; Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007'; Armantier et al. 'Stigma in Financial Markets: Evidence from Liquidity Auctions and Discount Window Borrowing During the Crisis.'

[62] Devers, Dewett, and Belsito, 'Falling Out of Favor: Illegitimacy, Social Control, and the Process of Organisational Stigmatization.'

[63] Devers et al. 'A General Theory of Organisational Stigma,' 157.

[64] Goffman.

[65] Devers et al. 'A General Theory of Organisational Stigma,' 155.

[66] Ibid.

The events or issues that lead to organisational stigma generally trace their origin to internal misconduct within an organisation based on the specific actions and choices of organisational members. For example, in recent years Starbucks and Google have actively avoided paying tax in the United Kingdom which has led to public disapproval. Such disapproval overrides previous expectations about an organisation by publicly recasting its operations as a violation of broader social norms.[67] Thus, despite positive evaluation of Google's search services, customers and politicians in the UK now expect it to be more likely to avoid tax than its peers.[68] Even local instances of stigma can be globally harmful for companies. For example, Google's brand equity is in part built on its informal motto of 'don't be evil'. News of Google's conduct in the UK can dilute its brand equity in other geographies as customers elsewhere begin to reassess whether Google's motto squares with reality.[69]

Conduct stigmas can also be rooted in external changes in social norms. For example, while from an operational perspective McDonald's is still one of the world's most admired companies, in light of the recent anti-obesity campaigns its fast-food business model has been publicly 'vilified'.[70] Similarly, increased public concerns about climate change can stigmatise fossil-fuel companies even if their internal corporate conduct continues to meet the highest business ethics.

Devers, Dewett and Belsito[71] propose that the process of stigmatisation or 'falling out of favor' follows six stages. These six stages are summarised in Figure 9 adapted from Devers et al.[72] The stigmatisation process model can best be characterised as an action-reaction model in which dynamic interactions between a social audience and a target organisation either lead to stigmatisation or a discontinuation of the stigmatisation process or in some cases even 'stigma dilution'.[73]

The first stage starts with either an internal or external legitimacy threatening issue encountered jointly by a target organisation or even an industry and its audiences. This issue arises when a group—whom we call the campaigners—within the external audiences attributes responsibility to the organisation/industry for its involvement in an event or controversy that violates social norms. In turn, this violation calls the legitimacy of the organisation/industry into question across all external audiences—those sympathetic to the cause of the campaigners, those antagonistic to it and those who are neutral. The stakeholders of the target organisation cut across all audiences. The presence of this issue leads to divergent accounts expressed by the campaigners, sympathisers, antagonists, neutral audiences and the organisation/industry in its defence. A process of sense-making, the unfolding of which follows ambiguous trajectories, may result in the target organisation/industry, or merely one organisational scapegoat within an industry, becoming stigmatised. If the campaigners are successful in projecting deviant, undesirable and irrational characteristics onto the organisation/industry, all audiences—even the antagonists—come to project a single illegitimating image that assumes master status over all other labels and stigmatises the target's reputation.[74]

Footnotes:

[67] Deephouse and Suchman.

[68] House of Commons, *Tax avoidance-Google: Ninth Report of Session 2013-14, Report, Together with Formal Minutes, Oral and Written Evidence.*

[69] Petrie, 'Is Google Evil?'.

[70] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[71] Devers, Dewett, and Belsito, 'Falling Out of Favor: Illegitimacy, Social Control, and the Process of Organisational Stigmatization.'

[72] Devers et al., 3–4.

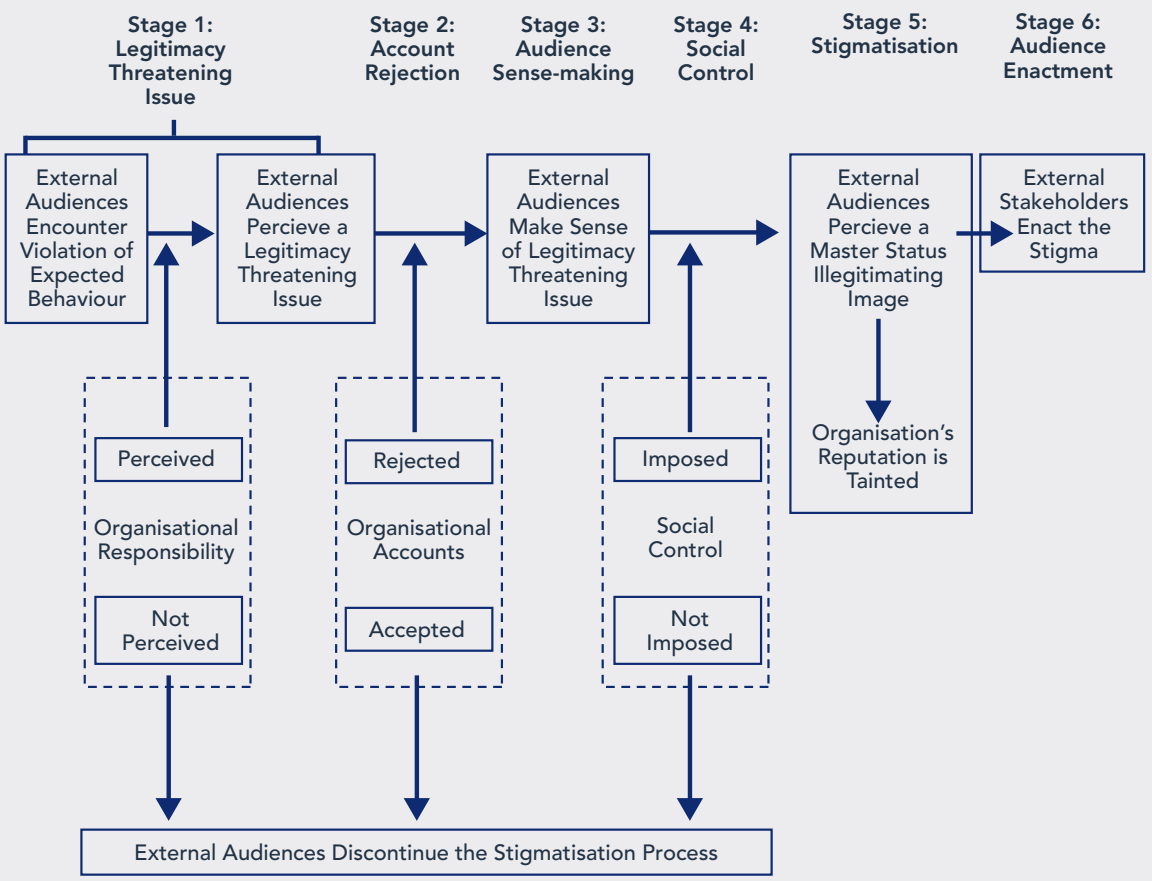
[73] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[74] Devers et al (2009).

In the final stage, the repulsion resulting from the master status illegitimating image leads external audiences, and target stakeholders in particular, to change previously enacted relationships with the stigmatised target with adverse outcomes for it.[75] Empirical evidence at the individual level demonstrates that, due to its collectively-held nature, a stigma is harmful and in some cases leads to devastating adverse social and economic outcomes that can threaten survival.[76] For example, Tiger Woods' stigmatisation triggered by media revelations of his extra-marital affairs led several sponsors to revoke lucrative deals. As with individuals, a stigma can produce negative consequences for a target organisation or industry.

Proposition 8: If a divestment campaign is successful in stigmatising a target organisation or industry, the target will experience negative social and economic outcomes.

Figure 9: The process of organisational stigmatisation[77]



Footnotes:

[75] Sutton and Callahan (1987).

[76] Link and Phelan (2001)

[77] Devers, Dewett, and Belsito, 'Falling Out of Favor: Illegitimacy, Social Control, and the Process of Organisational Stigmatization,' 3–4.

Methods

While the future is unknowable, uncertain outcomes of movements such as the fossil fuel divestment campaign can still be empirically investigated using the 'outside view' methods pioneered by the Nobel Prize-winning research of psychologists Daniel Kahneman and Amos Tversky.

The 'Outside View'

To take an outside view on the outcome of an action (or event) is to compare it with the outcomes of comparable, already concluded, actions (or events). The outside view involves three steps:

i) Identify a reference class.

ii) Establish an empirical distribution for the selected reference class of the parameter that is being forecast.

iii) Compare the specific case with the reference class distribution.

Following such a comparative method has two advantages: it is evidence-based and requires no restrictive assumptions; it allows prediction of the uncertain outcomes of a planned action by comparing it with the distributional information of the relevant reference class.

The methods we use in assessing the potential trajectories of the fossil-fuel divestment campaign are motivated by the 'outside view'. To this end we surveyed all available instances, to our knowledge, of previous divestment campaigns listed in Table 3.

Table 3: Previous divestment campaigns

	TIME SPAN OF THE DIVESTMENT CAMPAIGN	NUMBER OF INVESTABLE STOCKS IN THE INDUSTRY[78]	CURRENT TOTAL MARKET CAP OF TARGET FIRMS[79]	CUMULATIVE CAMPAIGN LIFETIME OUTFLOWS
Alcohol	1970s-present[80]	109[81]	$190 billion (top ten)	NA
Arms / munitions / land mines	1970s-present[82]	18[83]	$210 billion (top ten)	NA
Biotech (tissue engineering, GM, animal testing)	1980s-present[84]	15	$60 billion-plus (complete data NA)	NA
Darfur, Sudan (oil exploration divestment)	Early 2000s-2011[85]	4[86]	$300 billion	$3.5 billion divested or frozen
Gambling/gaming	1970s-present[87]	94[88]	$125 billion[89]	NA
Nuclear power electric utilities	1980s-present	<10	$120 billion-plus (top ten)	NA
Pornography/ adult services	1970s-present[90]	13	NA	NA
Tobacco	1980s-present[91]	18	$500 billion (top ten)	$5.0 billion
South African apartheid	1978-1990[92]	Country-level	NA	Net capital outflow from South Africa of 2.3 billion rand between 1985 and 1989[93]
Fossil fuel (oil & gas)	2010-	200	$4,000 billion	Five colleges and universities divested to date and 32 committed
Fossil fuel (coal extraction, diversified miners and trading houses)	Mid 2000s-	Approx 30[94]	< $60 billion (top ten)[95]	NA

Footnotes:

[78] Fabozzi et al. (2008: 87) define a stock as non-investable if it has as an average price less than a US$ 5 equivalent during the first month after its initial public offering or if its average daily trading volume for the previous month was at least 30,000 shares or US$ 150,000 in trading value.

[79] Approximate estimates as of 31 August, 2013 from Google Finance unless otherwise stated.

[80] Fabozzi et al. 2008

[81] Ibid. (pp. 87-88)

[82] Ibid.

[83] Ibid.

[84] Ibid.

[85] Parwada, 2012

[86] Ibid.

[87] Ibid.

[88] Fabozzi et al. 2008

[89] http://finance.yahoo.com/news/analyzing-global-casinos-gambling-industry-201700889.html

[90] Fabozzi et al. 2008

[91] Wander and Malone, 'Selling Off or Selling Out? Medical Schools and Ethical Leadership in Tobacco Stock Divestment.'

[92] Kaempfer et al. (1987)

[93] Knight.

[94] http://etfdb.com/etf/KOL/holdings/

[95] Authors' estimate.

Learning from the past has the advantage of drawing out the parallels and plausible trajectories the fossil-fuel campaign might take based on the evolution and outcomes observed in comparable previous campaigns. By observing the mechanisms and direct and indirect impacts of previous campaigns on target firms, we can form evidence-based judgements about the more likely paths and outcomes of the fossil fuel divestment campaign.

We enrich our outside view analysis by complementing it with widely-known research methods[96]: literature survey of peer-reviewed and published empirical studies on previous divestment outflows (Table 4, page 43); case study analysis of outcomes of previous divestment campaigns (Table 5 and the next two sections); survey techniques; and interviews with a wide variety of industry experts, asset-management professionals and fossil fuel industry executives.

There are two important limitations of our approach which should be kept in mind in interpreting our results. First, the sample size of previous divestment campaigns (n=9) is small and the data available for some of the campaigns limited, as seen in Table 3. The outside view is typically applied to larger sample sizes (Flyvbjerg[97]). The fossil fuel divestment campaign may have non-linear trajectories, not previously observed in the relatively small sample, that we cannot plausibly predict.

Second, there are several differences among divestment campaigns that can limit comparability. For example, a majority of the outflows related to the South African apartheid campaign are best characterised as *disinvestment* as opposed to divestment since they were linked to private corporate disinvestment of physical assets held in South African.[98] The fossil fuel campaign, in contrast, is unlikely to trigger voluntary corporate disinvestment. Further, whereas the market capitalisation of coal companies is, with one or two exceptions, on the lower end of the spectrum (Table 3), the number and market capitalisation of oil and gas companies affected by the divestment campaign are considerably higher than seen in all previous comparable campaigns.

While important, these limitations are not grave. First, despite the small size and limited data availability on some of the campaigns (e.g. alcohol and biotech/animal testing divestment), others such as tobacco are more widely documented. Moreover, several of the divestment categories of stock are collectively called 'sin stocks' (Table 3). Knowledge about outflows in one sin industry such as tobacco allows for more general inference of patterns about other sin stocks since investors who divest alcohol or defence stocks generally also divest tobacco and gaming. Second, the fact that previous divestment campaigns cover a wide range of industries and market capitalisation and have followed different evolutionary paths allows the observation of a broader distribution of case studies than is possible with the given small sample (n=9). To this end, we do not exclude any divestment campaign from the population in an attempt to incorporate all available information, even where limited, into our analysis.

Footnotes:

[96] Pryke, Rose et al.

[97] Flyvbjerg, 2006; Flyvbjerg, 2008.

[98] Kaempfer, Lehman, and Lowenberg, 'Divestment, Investment Sanctions, and Disinvestment.'

Data Sources

Data were collated and cross-checked from a number of sources.

With regards to previous divestment campaigns to enable the outside view, we conducted a review of previous peer-reviewed empirical studies with the results summarised in Table 4.

- We emphasise that valid, reliable and complete data on actual outflows for several of the divestment campaigns—such as alcohol, gaming, or even tobacco—are not readily available even among top journal publications. We interpret this paucity of data as an indication of their relatively meagre outflows.
- With regards to sizing of the fund market, we focused on the US, UK, Canada, Australia and the European Union—roughly in that order—because they represent the likely target areas of the fossil fuel divestment campaign. Data was obtained from the financial statements of university endowments, public pension funds and sovereign wealth management funds. Where available, reports from membership organisations such as the National Association of College and University Business Officers were also consulted. If discrepancies were found between two data sources then the authors were contacted for more information. For example, the UK Higher Education Statistics Agency (HESA) stated that its data on university endowments included college endowments, which upon further investigation turned out not to be the case. Therefore data on Oxford and Cambridge colleges were found separately and added to the HESA totals. Data on Oxford colleges were available from the central university administration. No such collated source could be found for Cambridge colleges so annual reports from individual college websites were used. Endowment information could only be found for 75% of colleges, resulting in an underestimation of Cambridge endowments.
- Data on market capitalisation of fossil fuel companies were collected from Capital IQ or Google Finance for the latest date available. Reputable media outlets such as Bloomberg, the Economist, and Thomson Reuters were also used.

All data sources are recorded in footnotes to relevant figures and tables. All reasonable data queries can be addressed to the authors.

Review of Previous Empirical Studies

Table 4 summarises our review of previous empirical studies related to divestment campaigns. The review was conducted using a snowball sampling approach, expanding out from the keywords divestment, disinvestment and divestiture. We broadened the scope to include selected studies on sin stocks, socially responsible investing, corporate social responsibility, and organisational and industry level stigmatisation.

Table 4: Summary of previous empirical studies

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
Armantier, Ghysels, Sarkar and Shrader (2010)	25	Stigma in banks borrowing from the US Fed Discount Window	Regression analysis	The sample consists of the 178 banks that participated in at least one of the 21 fully subscribed Term Auction Facility auctions for 28-day funds conducted between 17 December, 2007 and 22 September, 2008.	Not relevant (nr)	Yes	The authors 'provide empirical evidence for the existence... of stigma associated with banks borrowing from the Federal Reserve's discount window facility', specifically finding that 'during the... financial crisis, banks were willing to pay an average premium of at least 37 basis points... to borrow from the Term Auction Facility rather than from the discount window.' The authors also 'find that discount window stigma is economically relevant since it increased banks' borrowing costs during the crisis.'
Arnold and Hammond (1994)	96	South African apartheid corporate disinvestment and institutional investor divestment	Case method	1	nr	Yes	The authors find that 'While the Sullivan Principles no longer garner credibility, they have had a lasting influence' and 'Several codes have been developed following the Sullivan model'. They argue that 'social accounting and monitoring systems are not neutral technical tools' and that accounting can 'serve an ideological function by legitimating the actions of capital'.
Chen, Noronha and Singal (2004)	262	Addition or deletion from S&P (relevant to market norms)	Regression analysis	The final sample, free of any survivorship bias but with adequate return and volume data, consists of 279 additions and 145 deletions for October 1962 to August 1976, 263 additions and 28 deletions for September 1976 to September 1989 and 218 additions and 62 deletions for October 1989 to December 2000, making a total of 760 additions and 235 deletions.	No	nr	The authors find that 'There is a permanent increase in the price of added firms [to the S&P500 index] but no permanent decline for deleted firms.' These results 'support the thesis that changes in investor awareness contribute to the asymmetric price effects of S&P 500 index additions and deletions.'
Derwall, Koedijk and Ter Horst (2011)	45	Social Responsibility Investing (SRI)	Regression analysis	We follow earlier studies on the formation of the portfolios, using social responsibility information on publicly listed US companies from the annually updated KLD STATS database. The definition of shunned stocks is stocks of companies that KLD's lists mention as controversial businesses. These businesses mainly revolve around tobacco, alcohol, gaming, nuclear operations and firearms.	No	Some	The socially responsible investment movement can be divided into two segments: a values driven segment that applies negative screens and a profit-driven segment that applies positive screens. The authors find that 'although the profit-driven segment earns abnormal returns in the short run, these profit-generating opportunities do not persist in the long run for SRI stocks.'

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
Doh, Howton, Howton and Siegel (2010)	51	Corporate Social Responsibility (CSR)	Event study, analysis of differences, and regression analysis	Used Lexis Nexis to identify all announcements of changes in the Calvert social index and the reasons for these changes over a six-year period: 1 January , 2000 to 31 December, 2005. Found announcements of 56 additions and 69 deletions over the sample period.	nr	Yes	The authors explain that 'many stakeholders rely on institutional assessments of a firm's social practices to inform their own judgements about that company's CSR reputation' and find these intermediaries 'influence market assessments of a firm's social responsibility'. This highlights 'the importance of the legitimacy-conferring function of expert bodies in understanding the relationship between social and financial performance.'
Durand, Koh and Limkriangkrai (2013)	2	Saints versus Sinners (tobacco, alcohol and gaming) stocks	Regression analysis	58,294 observations. Saints are the constituents of the MSCI KLD400 Social Index, which includes 400 US companies with high environmental, social and governance ratings relative to their sector peers. Stocks with SIC codes that fall under Fama and French (1997) industry classification group 4 (beer, alcohol) and group 5 (smoke, tobacco) and gaming stocks that bear NAICS codes: 7132, 71312, 713210, 71329, 731290, 72112 and 721120 are classified as Sinners.	Yes	Yes	Social norms constrain investors from investing in 'sin stocks', affecting the returns and corporate financial policies of such firms (Hong and Kacperczyk, 2009). This paper finds that 'Saints' are influenced by social norms. In almost all instances, where an effect on 'Sinners' is positive (negative), we find that the effect for 'Saints' is negative (positive). Hong and Kacperczyk provide evidence that social norms prevent 'evil' outcomes. This paper finds that social norms exert positive pressure on both investors and firms in the US equity market.
Fabozzi, Ma, and Oliphant (2008)	38	Adult Services, alcohol, weapons, gaming, biotech, tobacco	Statistical analysis– authors do not fit regression models to the data or control for confounding variables	267 investable sin stocks (out of 308 considered) across 21 countries for the period January 1970 to June 2007	No	Yes, cost to investors in divesting	The 'authors find that a sin portfolio produced an annual return of 19% over the study period, unambiguously outperforming common benchmarks in terms of both magnitude and frequency'.
Ghoul et al. (2011)	88	Tobacco and nuclear power	Regression analysis	Sample of 12,915 firm-year observations 1992-2007	Yes	Yes	The authors find that 'firms with better CSR scores exhibit cheaper equity financing. In particular, [their] findings suggest that investment in improving responsible employee relations, environmental policies, and product strategies contribute substantially to reducing firms' cost of equity. [Their] results also show that participation in two 'sin' industries, namely, tobacco and nuclear power, increases firms' cost of equity. '

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
Goss and Roberts (2011)	62	Cost of debt for CSR	Regression analysis	3,996 loans to US firms	Yes, firms with SRI pay *more* for debt finance	nr	The authors find that 'firms with social responsibility concerns pay between 7 and 18 basis points more than firms that are more responsible. ... Low-quality borrowers that engage in discretionary CSR spending face higher loan spreads and shorter maturities, but lenders are indifferent to CSR investments by high-quality borrowers.'
Hong and Kacperczyk (2009)	262	Sin stocks comprising tobacco, alcohol, and gaming	Regression analysis	Panel of 193 stocks from 1926-2006	Yes	nr	The authors find that 'sin stocks are less held by norm-constrained institutions such as pension plans as compared to mutual or hedge funds that are natural arbitrageurs, and they receive less coverage from analysts than do stocks of otherwise comparable characteristics.' They also find that sin stocks 'have higher expected returns than otherwise comparable stocks, consistent with them being neglected by norm-constrained investors and facing greater litigation risk heightened by social norms.'
Hudson and Okhuysen (2009)	16	How organisations that suffer core stigma — disapproval for their core attributes — survive	Observational, archival, and interview data across different institutional environments	25 site visits; archival data; interviews; regulators	nr	Yes but companies effectively shield themselves	The authors 'examine how organisations that suffer core stigma-disapproval for their core attributes survive' by exploring how 'men's bathhouses avoid negative attention and minimise the transfer of stigma to their network partners, including customers, suppliers and regulators, through careful management of their business activities.' The paper finds that 'men's bathhouses use a variety of strategies to shield their partners depending, in part, on the level of hostility that they face in their environment.'
Kaempfer, Lehman and Lowenberg (1987)	27	South African apartheid disinvestment and divestment	Literature survey; secondary data analysis	nr	No	Yes 'unpredictable and perverse'	'Pressure for divestment and mandatory disinvestment sanctions directed against South Africa are an instance of domestic interest groups in one country seeking policy change in another. The link from shareholder divestment to disinvestment by firms is tenuous, however ... and legislated sanctions are likely to have unpredictable and sometimes perverse effects on the extent of apartheid practices.'

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
Kobrin (1980)	190	Forced divestment	Data analysis; author did not fit regression models or attempt to control for confounding variables	Data on 511 acts of forced divestment involving over 1,500 firms in 76 less developed countries 1960-76 are analysed	Yes, but selective and function of industry and firm specific characteristics	Same	In a study of '511 acts of forced divestment involving over 1,500 firms' the authors find that 'divestment is selective' with the probability of divestment a 'function of three interrelated characteristics of foreign investment: industrial sector, ownership structure and level, and maturity of technology.'
Lansing and Kuruvilla (1988)	13	South African apartheid corporate disinvestment and institutional investor divestment	Qualitative	1	nr	Yes	The authors argue that 'the Sullivan Principles, although deemed to be ineffective in dismantling apartheid, did have some positive impact on the economic and social status of Blacks. Total withdrawal, on the other hand, has had a disastrous impact on the Blacks, in terms of reductions in Black employment, and social welfare programs in the areas of education, welfare, health and training.'
Menz (2010)	33	Cost of debt of CSR companies	Panel econometric methods/ regression analysis	Panel data consisting of 498 bonds with observed values over 38 months. After the elimination of outliers and the deduction of missing values, a total of 16,957 observations remained for the analysis.	Yes, risk of firms with CSR, ceteris paribus, *higher*	nr	The authors 'investigated the relationship between the valuation of Euro corporate bonds and the standards of CSR of mainly European companies' and found that 'CSR has apparently not yet been incorporated into the pricing of corporate bonds.'
Meznar, Nigh and Kwok (1994)	96	South Africa corporate disinvestment	Event study	39 out of 207 US corporations that ceased operating (either incidentally or due to disinvestment) in South Africa during from the early 1970s to January 1991	No but timing matters	nr	The authors find 'that a negative association existed between South African withdrawal announcements and the value of a firm's stock.' and that 'the stock of firms announcing withdrawal from South Africa early in the issue's life cycle suffered the greatest losses in value.'
Meznar, Nigh and Kwok (1998)	34	South Africa corporate disinvestment/ event studies	Event study re-deriving results from Meznaer et al (1994)	Meznar et al (1994)	No but timing matters	nr	The authors found 'that the timing of withdrawal announcements is critical to understanding their impact'.
Michelson et al (2004)	94	Ethical investing	Literature survey	nr	nr	nr	'This paper highlights the key themes in the field and identifies some of the major theoretical and practical challenges facing both scholars and practitioners.' The author argues that 'there are benefits associated with examining ethical investment as a process.'

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
McWilliams and Siegel (1997)	924	Review of event studies in CSR literature	Replication of Meznar, Nigh, and Kwok (1994) and Wright, Ferris, Hiller, and Kroll (1995) event studies	Same as studies replicated	Evidence does not support any association. Empirical results typically not robust	nr	The authors 'examined the use of event studies in management research and found that there was inadequate attention paid to theoretical and research design issues. This lack of attention may lead to false inferences regarding the significance of the events and the validity of the theories being tested....To guide authors and reviewers, [they] outline procedures for appropriate use of the event study method.'
Parwada (2012)	0	Sudan, Darfur oil exploration and production divestment	Regression analysis	4	Yes ownership structure changes but US investors (such as hedge funds) increase ownership in the aftermath of institutional investor divestment	nr	The author finds 'some evidence of a positive relationship between the intensity of the [Sudan divestment] campaign and shifts in the ownership breadth of the stocks. However, selling by institutional investors is far from universal. Overall, there is an increase (decrease) in shareholdings of US (non-US) investors.'
Statman (2000)	474	Socially responsible mutual funds	Data analysis	31 Distinct socially responsible mutual funds	Perhaps yes, but results not statistically significant	nr	The author attempts to 'separate facts from beliefs' in reference to socially responsible investment and finds that 'the Domini Social Index, an index of socially responsible stocks, did better than the S&P 500 Index and that socially responsible mutual funds did better than conventional mutual funds over the 1990–98 period but the differences between their risk-adjusted returns are not statistically significant.'
Teoh, Welch and Wazzan (1999)	196	South Africa corporate disinvestment and bank loans	Event-study	South African operations of 46 American firms. Data are also reported on loans by American banks in 1986, 1987 and 1989	No	Yes weak evidence	This paper finds that 'the announcement of legislative/ shareholder pressure on voluntary divestment from South Africa had little discernible effect either on the valuation of banks and corporations with South African operations or on the South African financial markets. There is weak evidence that institutional shareholdings increased when corporations divested.'
Vergne (2012)	0	Arms industry	Qualitative (field research interviews via snowball sampling) and quantitative methods (regression analysis)	Data about products, customers, contracts, performance and corporate activity from 1996 to 2007 for the 210 largest global weapon systems providers (experts estimate that more than 90 percent of all final weapon systems producers are included). 40	nr	No	The author finds that 'Association with a stigmatised category does not automatically result in disapproval, because straddling multiple categories dilutes stakeholder attention to the stigma' and that 'category straddling results in more neutral social evaluations for firms, making positive evaluations less positive, and negative ones less negative.'

AUTHOR(S)	CITATIONS	FOCUS OF STUDY	METHODOLOGY	SAMPLE	DIRECT EFFECT	INDIRECT EFFECT	MAIN FINDINGS - EXCERPTS FROM ABSTRACTS AND DISCUSSION SECTIONS
Wander and Malone (2006)	11	Tobacco and Philip Morris stigma management	Case method and analysis of archival data	1	No	Yes (but pros and cons)	The authors use 'tobacco industry documents to show how PM [Philip Morris] sought to frame both the rhetorical contents and the legal contexts of the divestment debate' and find that 'Divestment as a delegitimisation tool could have both advantages and disadvantages as a tobacco control strategy in other countries.'
Westermann-Behaylo (2010)	4	Sudan divestment and South Africa corporate disinvestment	Case method	2	nr	Yes increased engagement	This article discusses the role of divestment activist groups in changing institutional norms among MNCs operating in conflict situations. Institutional norms shift from firms conducting 'business as usual' without heed to conflict impact, to engagement policies promoting more responsible business practices, to divestment from conflict zones when circumstances are seen to preclude ethical business conduct. Engagement and divestment are explored as tools for discouraging unethical and promoting ethical business activity, considering conflict situations in South Africa and Sudan as case examples.
Wright and Ferris (1997)	279	South Africa	Event study	31 firms over the period 1 January, 1984 to 31 December, 1990, from a total of 116 corporate disinvestments. Firms identified through a search of the list compiled by the Investor Responsibility Research Center Institute for corporations departing from South Africa.	Yes	nr	The authors 'found a significant, negative association between withdrawal announcements and stock returns on the day of an announcement (day 0). They concluded that withdrawal announcements reduced the value of the firms in their sample.'

Empirical Setting: Fossil Fuel Divestment Campaign

Waves of Divestment and the Fossil Fuel Divestment Campaign

On 19 July, 2012 Rolling Stone magazine published an article by Bill McKibben titled 'Global Warming's Terrifying New Math'.[99] In this article McKibben explains that in order to have an 80% chance of keeping global warming below 2°C (the target agreed to by the 167 countries that signed the Copenhagen Accord in 2009) we can only emit 565 gigatons of carbon dioxide ($GtCO_2$) between 2010 and 2050. By contrast, burning all the currently proven oil, gas and coal reserves of fossil fuel companies would release 2,795$GtCO_2$ into the atmosphere. This is almost five times the 'carbon budget' of 565$GtCO_2$.

In order to help prevent this from happening McKibben called for a fossil fuel divestment campaign. The aims of the campaign can be described as threefold: (i) 'Force the hand' of the fossil fuel companies and pressure government—e.g. via legislation—to leave the fossil fuels (oil, gas, coal) 'down there'[100]; (ii) pressure fossil fuel companies to undergo 'transformative change' that can cause a drastic reduction in carbon emissions—e.g. by switching to less carbon-intensive forms of energy supply; (iii) pressure governments to enact legislation such as a ban on further drilling or a carbon tax. Inspiration for the fossil fuel divestment idea leans heavily on the perceived success of the South Africa divestment campaign in the 1980s in putting pressure on the South African government to end apartheid.

In November 2012 Bill McKibben and 350.org started a road trip to build the fossil fuel divestment movement. Although the campaign is supportive of individuals divesting their own money, the focus is decidedly on public funds, and in particular university endowment funds and pension funds. While Bill McKibben's article in *Rolling Stone* and 350.org's road trip have dramatically raised awareness of the issue, the fossil fuel divestment campaign started two years earlier. In 2010 Swarthmore College in the US called on the college endowment fund to sell all shares in fossil fuel companies.[101]

Divestment campaigns evolve over three waves, as shown in Figure 10 with examples drawn from the tobacco and South African experiences. The first wave begins with a core group of investors that attach particular moral opprobrium to the target industry. All previous divestment campaigns have originated in the United States and in the first phase focus on US-based investors and international multilateral institutions. The amounts divested in the first phase tend to be very small but create wide public awareness about the issues. In the case of tobacco, public health and medical organisations—the American Public Health Association, American Cancer Society and World Health Organisation—were the first to divest, in the 1980s, since they saw the consequences of smoking to be contrary to their mission to promote public health. Similarly, religious groups and African-American investor groups led the divestment from South Africa related companies.[102]

Both in the case of tobacco and South Africa the campaign took some years to gather pace during the first wave until universities such as Harvard, Johns Hopkins and Columbia announced divestment in the second phase. Previous research credits divestment by these prominent American universities as heralding a tipping point (Teoh et al[103]) that paved the way for other universities, in the US and abroad, and select public institutions such as cities also to divest.

Footnotes:

[99] McKibben, 'Global Warming's Terrifying New Math.'

[100] *The Economist*, 'Unburnable Fuel.'

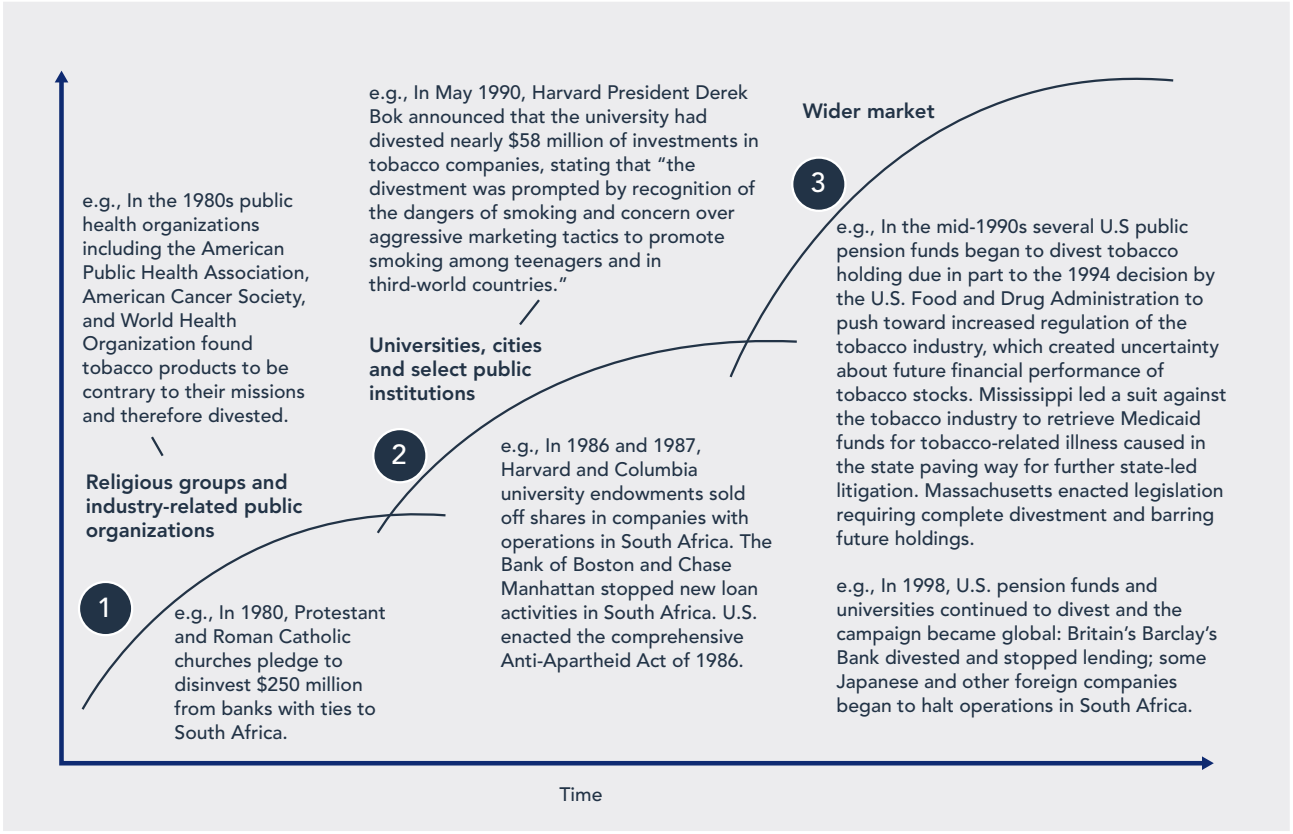
[101] Begos and Loviglio, 'College Fossil-fuel Divestment Movement Builds.'

[102] See Arnold and Hammond (1998); Lansing and Kuruvilla (1998)

[103] Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott.'

In the third wave, the divestment campaign goes global and begins to target very large pension funds and market norms, such as the establishment of social responsibility investment funds. In the case of tobacco, in the third wave beginning in the mid-1990s, large US public pension funds such as the Kentucky Teachers and Massachusetts state pension funds divested their holdings. Similarly, in the case of South Africa, the initially US-centric campaign attracted global firms in Europe and Japan to enhance domestic pressure.

Figure 10: The three waves of a divestment campaign



Like all previous divestment campaigns, the fossil fuel divestment campaign started in the US and in the short-term focused on US-based investors. From the perspective of the three waves of divestment the fossil fuel campaign has achieved a lot in the relatively short time since its inception in 2010: six colleges and universities have committed to divest, along with 17 cities, two counties, 11 religious institutions, three foundations and two other institutions[104], as illustrated in Figure 11.

Footnotes:

[104] Fossil Free, 'Commitments - Fossil Free.'

Figure 11: Institutions already committed to divesting from fossil-fuel companies[105]

In recent months, the fossil fuel divestment campaign has attempted to build global momentum by targeting other universities with large endowments such as the Universities of Oxford and Cambridge in the United Kingdom. Despite its relatively short history, the fossil fuel campaign can be said to entering the second wave of divestment.

Building on our theoretical framework, we now turn to how the accumulating momentum of the fossil fuel divestment campaign might carry direct and indirect impacts for fossil fuel companies.

Footnotes:

[105] Ibid.

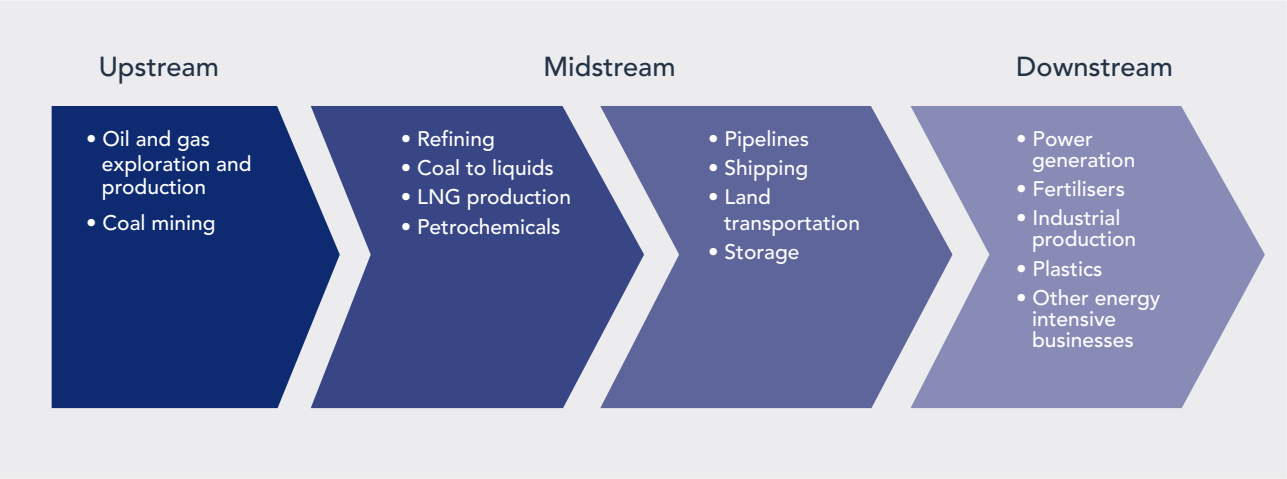
Direct Impacts of the Fossil Fuel Divestment Campaign

Fossil fuel companies' market capitalisation

Recall that Proposition 1 suggested that the direct impact of a divestment campaign depends on the size of the divestment outflows and the market capitalisation of the target firms. If the target firm's market cap is large, the effect of a divestment campaign's outflows, unless commensurately large, on the stock price of the target firm will be minimal.

Whether Proposition 1 applies can be tested for the fossil fuel industry. Figure 12 illustrates that the universe of fossil fuel companies covers a long value chain of processes and customers: upstream exploration and production; midstream refining, storage, and transportation; downstream petroleum and diesel distribution; power generation; and manufactured goods such as plastics. While the fossil fuel divestment campaign has not made its primary target firms within this diverse value-chain explicit, it is commonly assumed that they are upstream exploration and production oil & gas companies and coal mining companies. It is conceivable, however, that the campaign might expand its scope.

Figure 12: An illustration of the whole fossil fuel industry

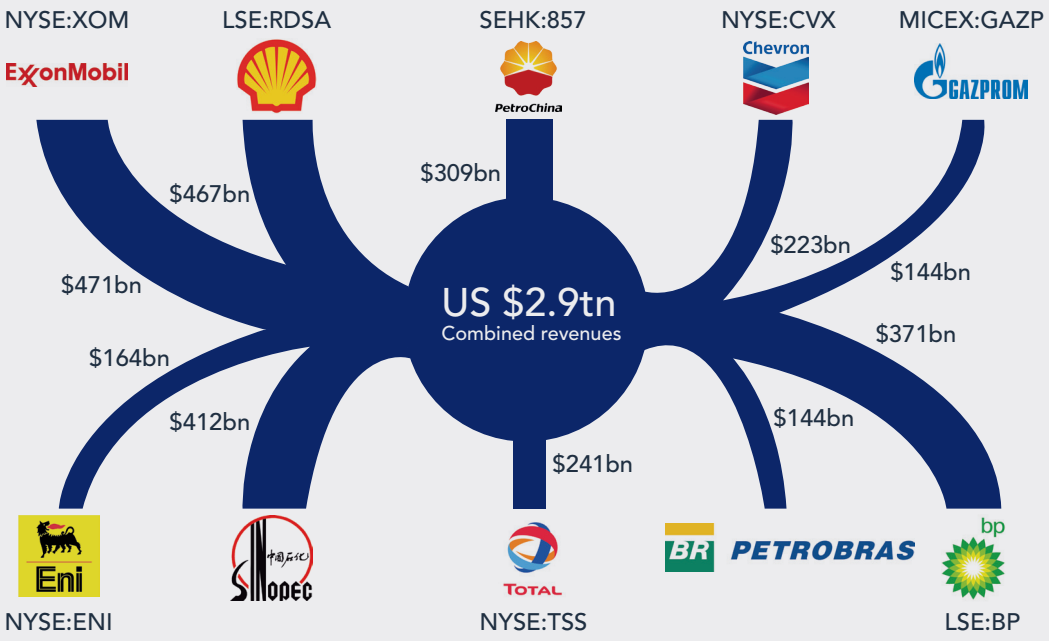


According to the *Economist*[106] the 200 largest oil & gas listed companies, primarily engaged in upstream and midstream activities, had a market capitalisation of $4,000 billion at the end of 2012. ExxonMobil, Shell, Sinopec, and BP are among the ten largest listed fossil fuel companies with combined revenues of about $2.9 trillion as shown in Figure 13. Even larger fossil fuel companies such as Saudi Aramco are not listed on global stock exchanges.

Footnotes:

[106] The *Economist*, 'Unburnable Fuel.'

Figure 13: Combined revenues of world's largest listed stock exchanges[107]

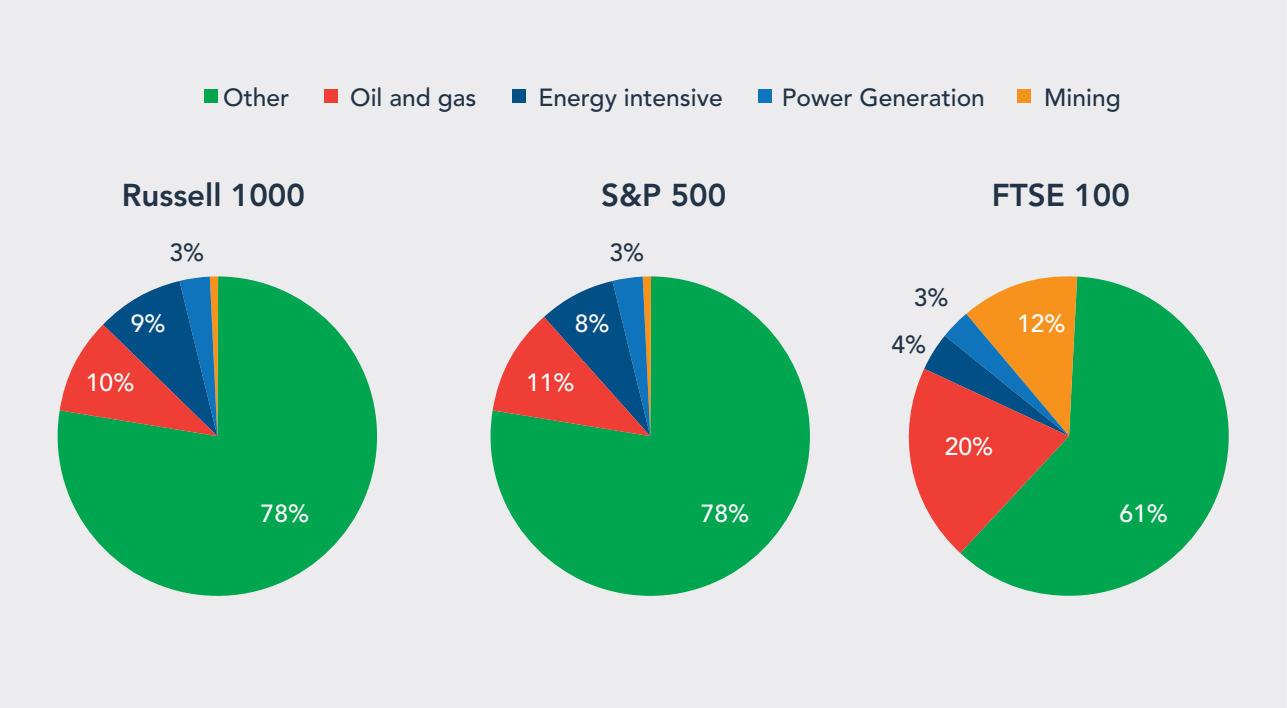


Owing to their size, oil & gas companies make up a large share of global equity markets. Figure 14 illustrates this presence. Thus, oil & gas companies account for about 11% of S&P 500—the broad index for US equities—but 20% of the FTSE 100, signalling London's importance as a global financial centre across commodity markets. Companies connected to fossil fuels, such as power utilities or energy intensive mining and steel production, also account for large segments of global equity markets. Important features of publicly listed oil & gas public equities are their broad shareholding and very high liquidity.

Footnotes:

[107] Forbes, 'The World's Biggest Public Companies.'

Figure 14: Oil & gas majors' indelible presence on the global equity markets[108]



In contrast with oil and gas companies, coal mining is a much smaller and fragmented industry. The largest global player in upstream coal mining is Coal India with a 2010 production of 431 million tons according to the World Energy Outlook (2010)—double its closest unlisted rival, China's Shenhua Group. Coal India's market cap in August 2013 was approximately $27 billion. Peabody Energy—the largest coal producer listed on a Western stock exchange—produced 198 million tons of coal in 2010 and has a market cap of $4.9 billion—nearly 80 times smaller than ExxonMobil, the largest oil & gas firm listed on the New York Stock Exchange. Companies such as BHP Billiton and Anglo American, while very large diversified mining corporations, produced about 100 million tons of coal each in 2010. If their coal divisions were spun off as separate companies, the market cap of the new coal spin-offs would, in line with their production volume, be about half that of Peabody Energy.

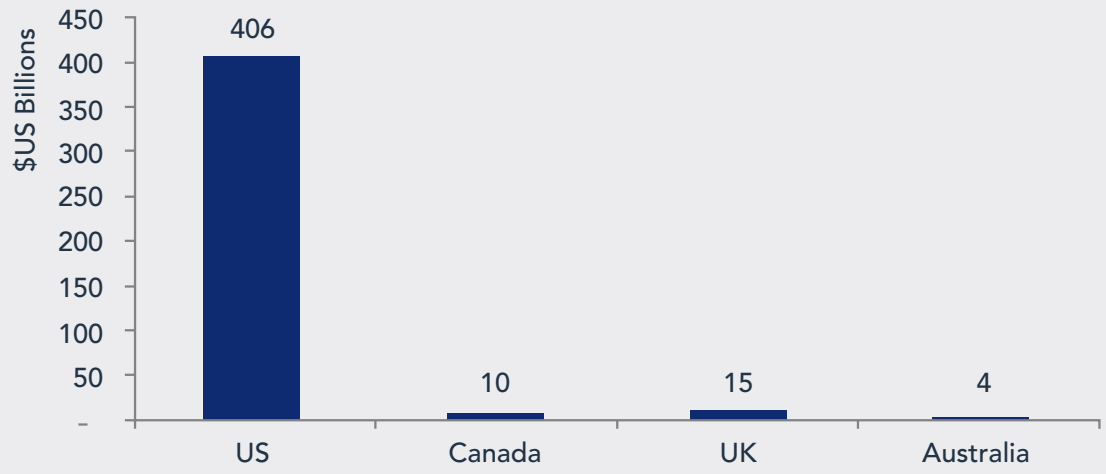
Sizing the divestment market and direct impacts on equity

The global financial stock, comprising equity market capitalisation and outstanding bonds and loans, is a staggering $212 trillion according to McKinsey Global Institute's 2011 map of global capital markets. In contrast, Figure 15 shows that global university endowments represent just under $450 billion of assets under management.

Footnotes:

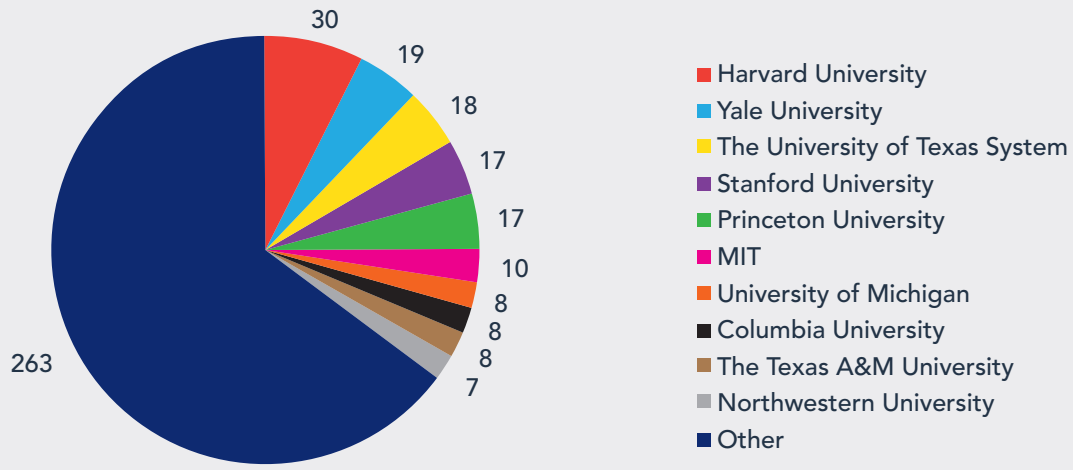
[108] Capital IQ, 'S&P Capital IQ.'

Figure 15: University endowment sizes[109]



There are, however, several university endowment funds of significant size in the US as shown in Figure 16 and the UK as shown in Figure 17.

Figure 16: US university endowments (US$billion)[110]

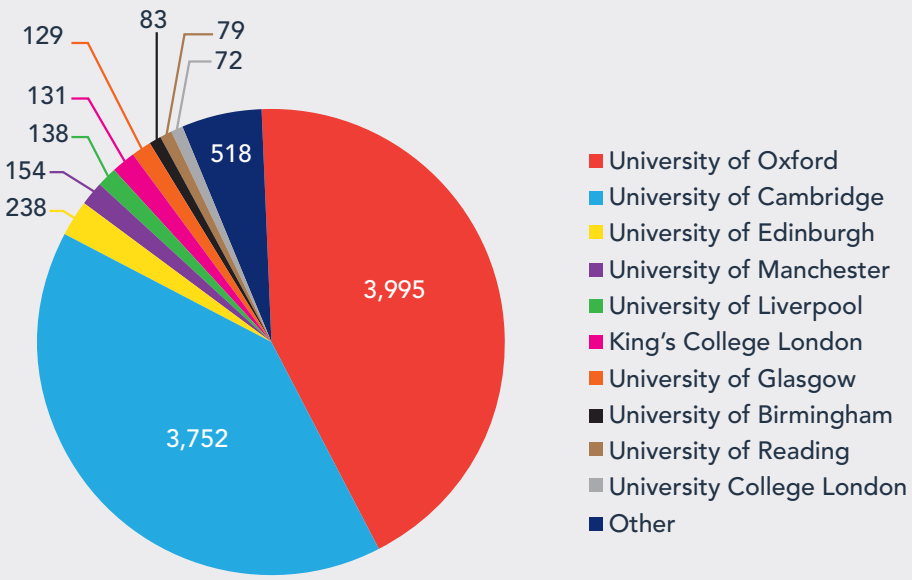


Footnotes:

[109] NACUBO, 'Public NCSE Tables'; CAUBO, 'Financial Information of Universities and Colleges'; HESA, 'Finances of Higher Education Institutions'; Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 'Finance Reports'; University of Oxford, 'Financial Statements of the Oxford Colleges.'

[110] NACUBO, 'Public NCSE Tables.'

Figure 17: UK university endowments (£million)[111]



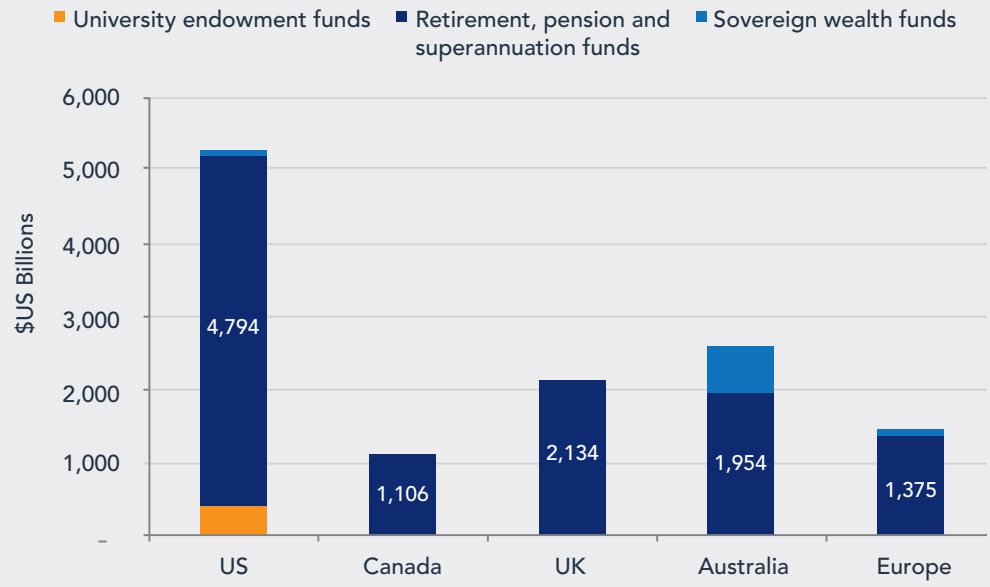
Note: The Cambridge total above does not include the following colleges because data were not available: Christ's, Corpus Christi, Gonville & Caius, Homerton, Hughes Hall, Peterhouse, St Catharine's and Wolfson.

The immediate observation about university endowments, including fabled names such as Harvard, Yale, Oxford and Cambridge, is that their combined size is a very small fraction of the global financial market stocks. Unsurprisingly, the fossil fuel divestment campaign has not restricted itself to university endowment funds, with retirement funds and sovereign wealth funds also being targeted as the second wave of divestment gathers pace. As can be seen in Figure 18, this presents a much larger pool of funds totalling nearly $11.4 trillion in assets under management.

Footnotes:

[111] HESA, 'Finances of Higher Education Institutions'; Acharya, *Endowment Asset Management: Investment Strategies in Oxford and Cambridge.*; University of Oxford, 'Financial Statements'; Cambridge University, 'Cambridge University Endowment Fund – Investment Performance'; University of Edinburgh, *Reports and Financial Statements for the Year to 31 July 2012*; University of Manchester, *Financial Statements for the Year Ended 31 July 2012*; University of Liverpool, *Financial Statements 2011-12*; King's College London, *Financial Statements for the Year to 31 July 2012*; UCL, *Annual Report and Financial Statements for the Year Ended 31 July 2012*; University of Reading, *Financial Statements For the Year Ended 31 July 2012*; University of Birmingham, *Annual Report and Accounts*; University of Surrey, *Financial Statements 2011/12.*

Figure 18: Public fund sizes in select countries[112]

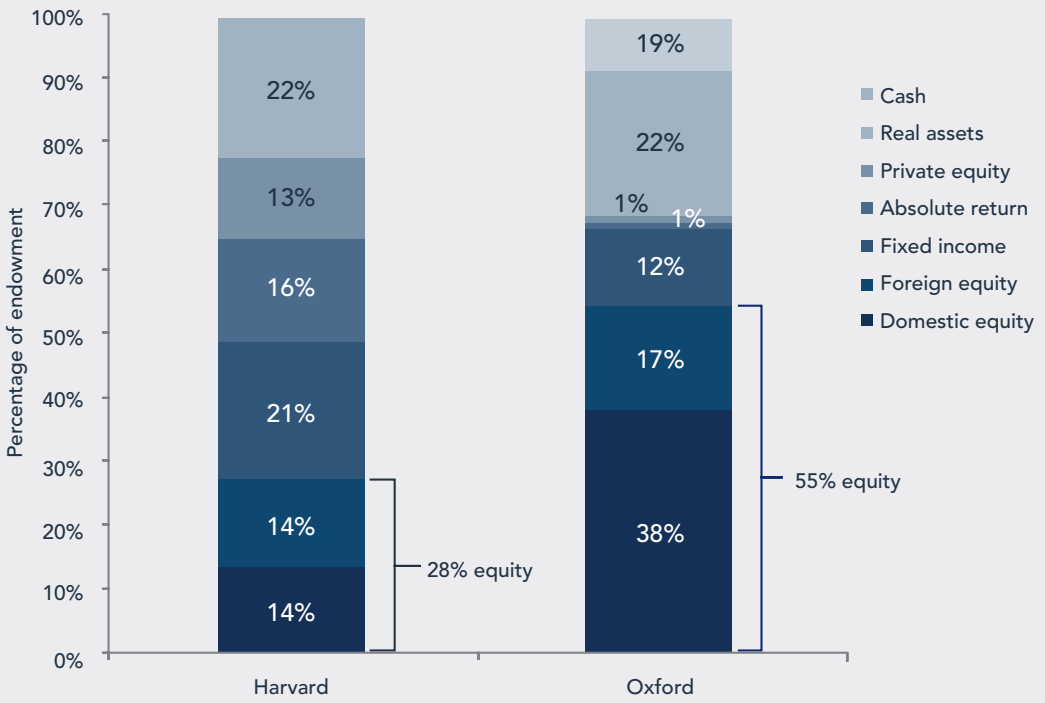


The combined—university endowments and public funds—target divestment pool of about $12 trillion presents a far more sizeable chunk of global financial market stocks than the university endowments alone. From a fossil fuel divestment perspective, these $12 trillion assets are invested in very diversified portfolios that span a variety of asset classes and industries. Figure 19, for example, shows the asset-class mix for two university endowment funds. Whereas Harvard, with much longer experience in alternative asset classes, has a relatively low exposure of 28% to equity markets, over half of Oxford's endowment is invested in equities.

Footnotes:

[112] NACUBO, 'Public NCSE Tables'; CAUBO, 'Financial Information of Universities and Colleges'; HESA, 'Finances of Higher Education Institutions'; Australian Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education, 'Finance Reports'; University of Oxford, 'Financial Statements of the Oxford Colleges'; Investment Company Institute, 'Quarterly Retirement Market Data'; OECD, 'Global Pension Statistics'; ABS, 'Managed Funds, Australia'; Sovereign Wealth Fund Institute, *Asset Allocation Report*.

Figure 19: Proportion of funds invested across asset classes[113]

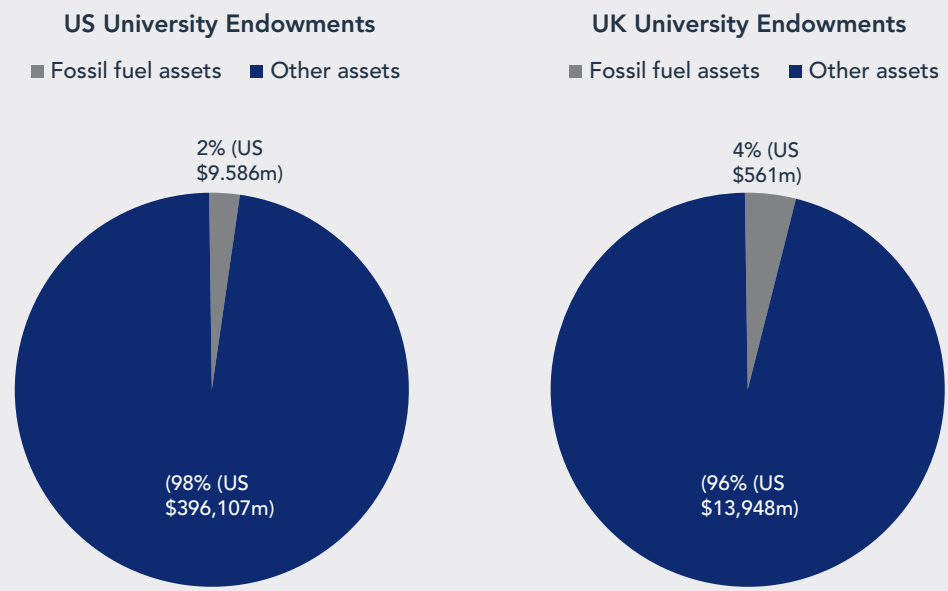


Fossil fuel equity exposure is a ratio of the broader equity market exposure for each fund. Thus, on average, university endowments in the US have 2-3% of their assets committed to investable fossil fuel public equities. The proportion in the UK is higher with an average of 5% largely because the FTSE has a greater proportion of fossil fuel companies.

Footnotes:

[113] Acharya, *Endowment Asset Management: Investment Strategies in Oxford and Cambridge.*

Figure 20: Equity exposure to fossil fuel stocks is relatively limited[114]



Public pension funds, likewise, have 2-5% of their assets invested in fossil fuel related public equities. For example, according to its 2012 annual report, the California Public Employees' Retirement System (CalPERS) invests about 48.4% of its assets under management ($237 billion as of 30 June, 2012) in domestic and international publicly traded equities. Of that, CalPERS invests about 10.7%—i.e. equivalent to 5.2% (48.4% * 10.7%) of its total portfolio—in fossil fuel companies.

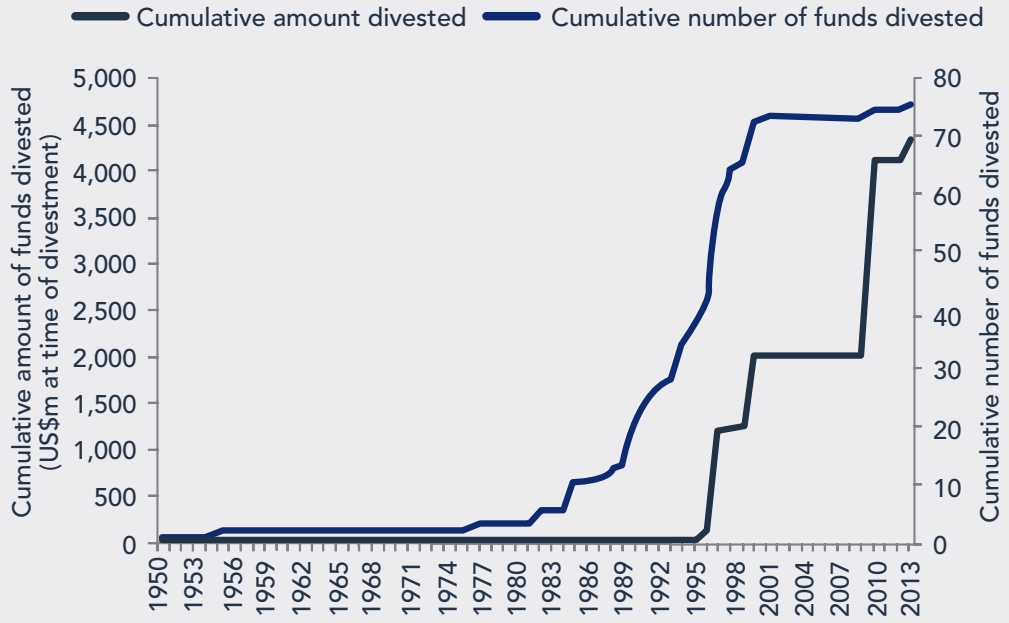
We ought to add a caveat here, however. University endowments and public pension funds also invest in bonds. For example, CalPERS' exposure to domestic and international bonds is about 21.4% of its assets under management. Like its equity investments, CalPERS invests about 10% of the funds committed to bonds in energy-related fixed income. Hence in addition to its 5.2% fossil fuel equity exposure, CalPERS has an additional 2.1% exposure to fossil fuel bonds totalling 7.3% (equity plus debt) exposure to fossil fuel companies. In summary, of the $12 trillion assets under management among university endowments and public pension funds—the likely universe of divestment candidates—the plausible upper limit of possible equity divestment for oil and gas companies is in the range of $240-600 billion (2-5%) plus about half that amount for debt.

Footnotes:

[114] NACUBO-Commonfund, *Study of Endowments*; The *Economist*, 'Unburnable Fuel'; World Federation of Exchanges, 'Statistics'; Acharya, *Endowment Asset Management: Investment Strategies in Oxford and Cambridge.*

Past divestment campaigns suggest, however, that only a very small proportion of the total divestable funds are actually withdrawn. For example, despite the huge interest in the media and a three-decade evolution only about 80 organisations and funds—including religious organisations, public health organisations, universities, and public pension funds—from a universe approaching 1,000 such global funds, university endowments and organisations have ever substantially divested from tobacco equity and even fewer from tobacco debt. According to Social Funds the tobacco divestment outflows total only about $5 billion as shown in Figure 21. Contrast this with the $500 billion market capitalisation of big tobacco companies in 2013, which has been growing at a compound annual growth rate of nearly 15% since 1995. This is despite the 1994 watershed when Mississippi, eventually joined by 40 states, led three years of litigation against tobacco companies in the US resulting in an out-of-court settlement. Tobacco companies agreed to pay damages totalling $365 billion[115]—then roughly quadruple the market capitalisation of the 'big three' tobacco corporations in the US: Philip Morris (Altria), Reynolds American (RJR) and Lorillard.

Figure 21: Overview of the tobacco divestment movement[116]



Moreover, the tobacco divestment campaign also largely failed to directly stymie the future net cash flows of cigarettes companies—of which Ebitda (Earnings before interest, taxes, depreciation and amortisation) is a suitable gauge—as shown in Figure 22. While cigarette consumption in terms of number of sticks has been declining in mature markets, expansion into new product markets such as smokeless electric cigarettes; geographical markets such as emerging markets; and increasing prices—even after adjusting for taxes[117]—has kept the net cash flows of tobacco companies booming.

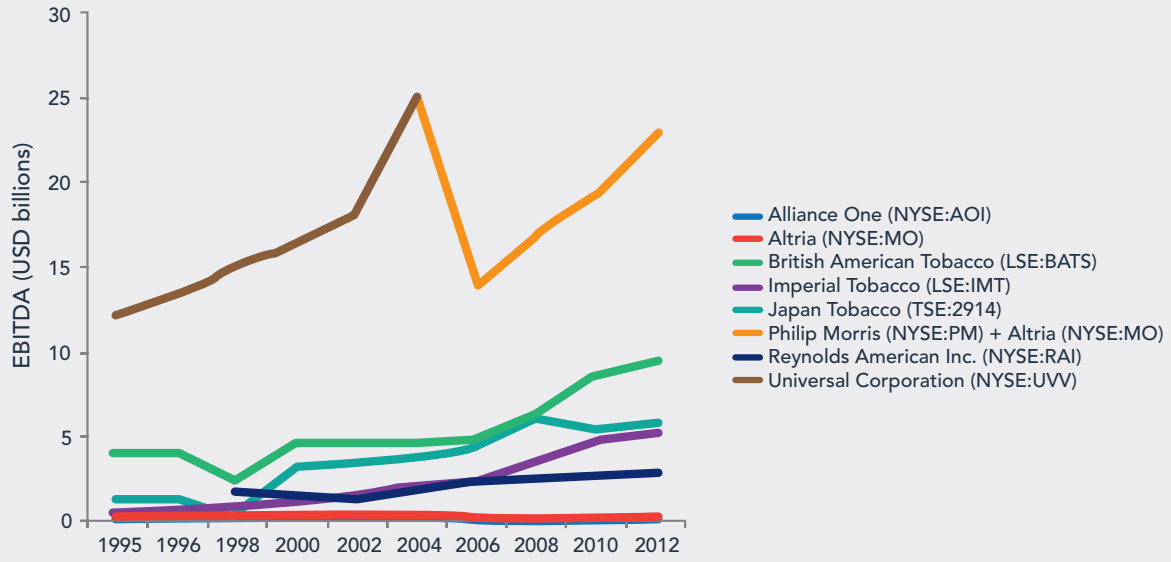
Footnotes:

[115] Sucher and McGee (2013).

[116] Social Funds, 'Tobacco Divestment.'

[117] Robinson, 'Cigarette Price Rises in UK Due to Companies as Much as Tax.'

Figure 22: Booming tobacco cash flows[118]



Unsurprisingly, in light of this evidence, previous literature also suggests very limited direct impacts on equity of divestment campaigns, as summarised in Table 5 (Page 64). Based on the outside view we suggest that the divestment outflows will have a negligible direct impact on the equity valuations of fossil fuel companies. However, we discuss potential direct impacts on the enterprise value of fossil fuel companies that may emerge from change in market norms and impact on debt financing.

Direct impacts from change in market norms

Deliberate closure of financing channels due to socially motivated divestment is a long-term process and previous attempts to understand the phenomenon are grounded in literature on 'sin stocks' (Table 4, page 43). Proposition 3 suggested that even when divestment outflows are small or short term and do not directly affect future cash flows, if they trigger a change in market norms that close off channels of previously available money, then a downward pressure on the stock price of a targeted firm may be large and permanent.

Footnotes:

[118] We use Ebitda (Earnings before interest, taxes, depreciation and amortisation) as a proxy for net cash flows. Note that Philip Morris (NYSE:PM) and Altria (NYSE:MO) are two of the largest players by market capitalisation in the US tobacco industry. Altria spun-off Philip Morris, which is reflected in the Ebitda of two combined companies in Figure 22.

From the perspective of equity valuation, an important channel through which money flows into equity markets today is exchange traded funds (ETFs). These have steadily grown in popularity reaching roughly 12-15% of the total equity markets in most mature markets such as the US and the UK.[119] If due to even small outflows from a set of 'lead divesting investors' indexed ETFs were to become unavailable to fossil fuel firms, the effect on stock price could be substantial.

The outside view suggests that market norms do change as a consequence of divestment campaigns. Even when investing passively, many institutional investors have adopted negative screens that exclude sin stocks. Similarly, positive screens that prefer saint stocks have also become more prevalent. In the maturing third wave of divestment, institutional investors may not even make major media announcements in applying such negative screens.

Evidence in the existing literature is inconclusive on whether or not such negative screens directly cause any permanent damage to target firm valuations (Table 4, page 43). Chen, Noronha and Singal[120] provide perhaps one of the more empirically convincing accounts. They find that while there is a permanent increase in the price of a firm added to a passive index, the firm's subsequent deletion does not create a permanent decline. Their finding—that there is an asymmetric price response to additions and deletions—is at odds with the expectation that addition or deletion ought to have a uniform effect. They argue that the explanation for asymmetric price effects results from changes in investor awareness. Thus, once investors in the broader market have become aware of the cash flow profile of a company, deletion from an index does not scare away familiar investors. Neutral investors substitute institutional investors applying a negative screen. As far as equity is concerned, change in market norms is unlikely to yield a substantial direct effect. The situation with debt is, however, more nuanced.

Direct impacts on debt financing

Propositions 4-6 suggested that the withdrawal of debt finance from fossil fuel companies by some banks or an increase in discount rate is unlikely to pose serious debt financing problems (either in terms of short-term liquidity or Capex) for fossil fuel companies. Our framework, however, suggests two caveats. First, change in market norms is more relevant in relatively poorly functioning markets. In particular borrowers in countries with low financial depth will experience a restricted pool of debt financing if any banks pre-eminent in the local financial network withdraw. Second, while an increase in discount rate is unlikely to have an effect on the overall corporate finance of major fossil fuel companies, their ability to undertake large Capex projects in difficult technical or political environments will be diminished due to a higher hurdle rate and reduced availability of debt financing.

Footnotes:

[119] IMA, 'Summary of Tracker and Ethical Fund Statistics, Multiple Years.'

[120] Chen, Noronha, & Singal (2004)

This carries considerable implications when the entire value range of fossil fuel companies is considered as in Figure 12, page 52. While markets for crude oil and many of the oil products are very liquid, markets for coal are fragmented and illiquid and markets for natural gas straddle in-between. Realising revenue from production of crude oil and to a lesser extent gas is much easier than from the production of coal, which is often a localised market restricted to the country of origin or its regional vicinity due to transportation costs and limited versatility in final use. A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.

A diminishing pool of debt finance and a higher hurdle rate will thus have the greatest effect on companies and marginal projects related to coal and the least effect on those related to crude oil.

The outside view suggests that debt markets may indeed undergo changes in terms of market norms and their direct impacts on debt financing in markets with low financial depth. Unlike equity markets, the South African disinvestment campaign presents noteworthy, although inconclusive, evidence with regards to debt.

Richard Knight argues[121] (in an edited volume not published in a blind peer-review journal and hence not reviewed in Table 4, page 43) that South Africa's foreign debt extended by US banks reached $4.7 billion or approximately 20% of South Africa's foreign debt by 1984 before the divestment campaign intensified. With increasing pressure from campaigners, 'an increasing number of US banks modified their lending policies, some prohibiting loans to the South African government, others stopping all loans to South Africa'.[122] By the end of 1985, according to Knight, US bank lending in South Africa had already fallen to $3.2 billion. Knight's data is challenged by Teoh et al. (Table 4) who write: 'Loans to South Africa by the US banks in our sample were approximately $1.3 billion in 1985. This represented about 5.7% of South Africa's $23 billion external debt.' Despite the controversy about the numbers, it is accepted that US banks—either due to social pressure or worries about uncertainty in the South African economy due to the apartheid regime's stigmatisation—began denying loans. As a result the structure of South African debt suffered: 'Debt with a maturity of less than one year jumped from 56% in 1982 to 68% in 1985 to 82% in 1986.'[123]

Given South Africa's lack of financial depth at the time, it was unable to substitute US bank loans with alternative sources of debt finance. The apartheid government was forced to introduce measures such as exchange controls, debt negotiations with over 300 international banks and draconian restrictions on capital movement. The 1980s were also a time of sovereign debt crises including Angola, Brazil, Nigeria, Mexico, Panama, Turkey and Uruguay.[124] The evidence remains inconclusive as to whether the South African debt crisis was part of a broader global phenomenon or unique to the apartheid regime due to the ongoing campaign. Irrespective, the prediction that debt may become scarce and put marginal projects at risk in less liquid fossil fuel industries such as coal or peripheral geographies remains plausible.

Given South Africa's lack of financial depth at the time, it was unable to substitute US bank loans with alternative sources of debt finance.

Footnotes:

[121] Knight (1990).

[122] Ibid. Knight continues: 'In December 1984, Seafirst adopted a policy of no new loans to South Africa, followed by the Bank of Boston in March 1985 and First Bank System, also in 1985. Even more significantly, in July 1985, North Carolina National Bank Corp., the regional bank with the largest lending to South Africa and the only regional bank to have an office in South Africa, ended all new loans. It appears that many other banks, while not acting publicly, limited their loans in this period…The rapid rise in US bank loans to South Africa came to an abrupt halt in mid-1985. Between March and September 1985, US bank loans to South Africa declined by $757 million. In August 1985, Chase Manhattan quietly told its customers in South Africa it would not roll over loans. Most US banks which had not already ended new loans to South Africa quickly followed Chase's action.

[123] Ibid.

[124] Reinhart and Rogoff (2009)

Table 5: Outcomes of previous divestment campaigns

	CAMPAIGN OUTCOMES	
CAMPAIGN	DIRECT IMPACT	INDIRECT IMPACT
1. Alcohol	There is controversy on whether divestment depresses stock prices (Table 4). On balance evidence suggests little to no effect.	Stigmatisation (i.e. alcohol companies are categorised as sin stocks). High taxes to depress demand.
2. Arms/munitions /land mines	Limited[125]	Uneven by firm but most firms escape disapproval
3. Biotech (tissue engineering; GM; animal testing)	NA	NA
4. Darfur, Sudan (oil exploration divestment)	'Campaign leads to variability in institutional trading that results in lower expected returns… This is contrary to the…hypothesis that the campaign leads to neglect of the targeted stocks by an important enough segment of investors…and that this is followed by diminished stock prices' 'Thanks to China and a trio of Asian national oil companies, oil still flows in Sudan. The [divestment] campaign's activities have failed to reconcile Sudan's wider international political and economic relations into its strategy.'[126]	Sudan Accountability and Divestment Act passed in the US on 31 December, 2007 '...businesses were encouraged to drop the separation thesis that suggests that "business is business" and that there is no appropriate role for firms to engage in resolving humanitarian crises or conflicts. In both of these cases [Sudan and South Africa], the predominate norm for non-involvement was de-institutionalised over time, and in many cases was replaced by business practices designed to improve human rights, to build communities, to engage in conflict resolution, and generally to develop a more ethical and responsible business model'[127]
5. Gambling/ gaming	See above re: alcohol.	NA
6. Nuclear power electric utilities	NA	NA
7. Pornography/ adult services	See above re: alcohol.	NA
8. Tobacco	See above re: alcohol.	See above re: alcohol.
9. South African apartheid	'... corporate involvement with South Africa was so small that the announcement of legislative/shareholder pressure or voluntary corporate divestment from South Africa had little discernible effect either on the valuation of banks and corporations with South African operations or on the South African financial markets. There is weak evidence that institutional shareholdings increased when corporations divested. In sum, despite the publicity of the boycott and the multitude of divesting companies, political pressure had little visible effect on the financial markets.'[128] '...the imposition of economic sanctions and disinvestment has, if anything, only strengthened the economic power of the Whites, and perhaps increased their determination to keep apartheid. In view of this, it would seem that any change in apartheid must come from within South Africa itself.'[129]	Sullivan principles--aimed at fostering racially neutral policies for corporations operating in South Africa. Major anti–South Africa legislation in the US: the Comprehensive Anti-Apartheid Act of 1986 restricted exports and loans to South Africa. 'cultural and sporting boycotts, and the anti-apartheid movement received direct infusions of capital from foreign sources'[130] Global public awareness; deeply undermined the diplomatic standing of the apartheid regime.

Footnotes:

[125] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[126] Patey, 'Against the Asian Tide: The Sudan Divestment Campaign,' 551.

[127] Westermann-Behaylo, 'Institutionalizing Peace through Commerce: Engagement or Divestment in South African and Sudan,' 431.

[128] Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott,' 35.

[129] Lansing and Kuruvilla, 'Business Divestment in South Africa: In Who's Best Interest?'.

[130] Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott,' 39.

Indirect Impacts of the Fossil Fuel Divestment Campaign: Change in Probabilities of Future Outcomes via Stigmatisation

In the aftermath of the widely followed tobacco litigation in the 1990s, and corporate scandals (e.g. Enron, Arthur Andersen) and bankruptcies (e.g. WorldCom) in the early 2000s the concept of organisational stigma began to be more widely studied.[131]

Proposition 7 suggests that even if the direct impacts of divestment outflows are meagre in the short term, a campaign can impact on the enterprise value of a target firm in the long term if the divestment campaign causes neutral equity and/or debt investors to lower their expectations of the target firm's net cash flows. We developed this further in Proposition 8 by submitting that stigmatisation adds to the uncertainty surrounding the future of a target company or industry. The outcome of the stigmatisation process, which the fossil fuel divestment campaign has triggered, poses the most far-reaching threat to fossil fuel companies and the vast energy value chain. Any direct impacts pale in comparison.

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We first review the more general negative social and economic outcomes that may emerge from the stigmatisation process for fossil fuel companies. We briefly highlight two critical mechanisms—legislative uncertainty and multiples' compression—that are likely to affect fossil fuel companies particularly those in the coal industry. Finally, we analyse 'stigma dilution' strategies fossil fuel companies are likely to deploy in response to the threats posed by the stigmatisation process.

Stigmatisation outcomes

As with individuals, a stigma can produce undesirable consequences for an organisation. Firms that are heavily criticised in the media suffer from a bad image that scares away suppliers, subcontractors, potential employees and customers.[132] Governments and politicians prefer to engage with 'clean' firms[133] to prevent adverse spillovers that could taint their reputation or jeopardise their re-election. Shareholders can demand changes in management or the composition of the board of directors of stigmatised companies. In the aftermath of the Valdez oil spill in May 1989, shareholders forced the Exxon management to appoint an environmentalist to its board.[134] This paved the way for far-reaching changes in Exxon's corporate social responsibility policy which the management had previously resisted.[135] Stigmatised firms may be barred from competing for public tenders, acquiring licences or property rights for business expansion, or be weakened in negotiations with suppliers. The consequences of stigma also include cancellation of multibillion-dollar contracts or mergers/acquisitions.[136] Stigma attached to merely one small area of a large company may threaten sales across the board. For example, Motorola—the phone maker—felt compelled to disinvest from its defence business owing to the bad press it received in authoritative media outlets.[137] Similarly, Revlon's decision to disinvest its South African operation was due to credible threats by customer groups to boycott Revlon products.[138]

Footnotes:

[131] Semadeni et al; Wiesenfeld et al.

[132] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[133] Javers and Kopecki.

[134] Teoh, Welch, and Wazzan, 'The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott.'

[135] Skjærseth, ExxonMobil: *Tiger or Turtle on Social Responsibility?*.

[136] Ibid.

[137] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

[138] Meznar, Nigh, and Kwok, 'Effect of Announcements of Withdrawal from South Africa on Stockholder Wealth.'

Restrictive legislation

One of the most important ways in which stigmatisation will affect fossil fuel companies is through new legislation. In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation. For example, increasing awareness about the health risks of smoking and the stigmatisation of the tobacco industry led to several rounds of restrictive legislation beginning with the 1969 Public Health Cigarette Smoking Act[139] and progressing to state-led litigation.

One of the most important ways in which stigmatisation will affect fossil fuel companies is through new legislation. In almost every divestment campaign we reviewed from adult services to Darfur, from tobacco to South Africa, divestment campaigns were successful in lobbying for restrictive legislation.

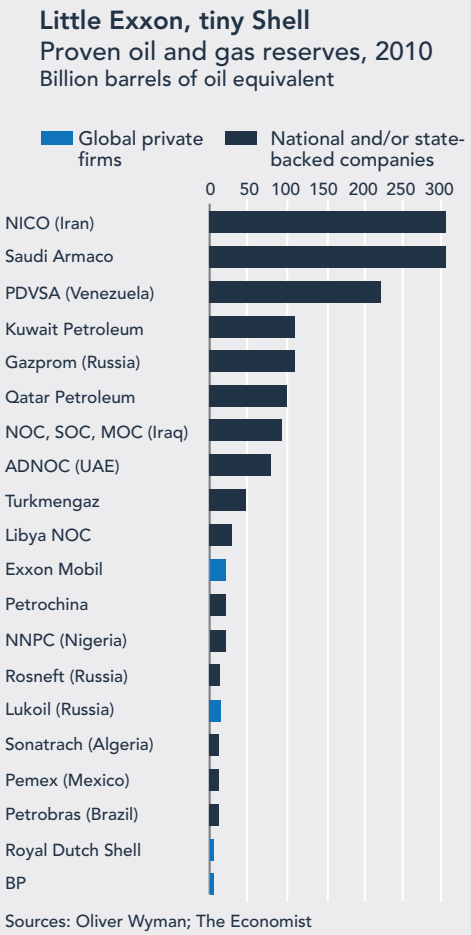
In fact, the political lobbying aspect of the stigmatisation process is often thought to the most effective way of achieving results. Meir Statman[140] and Kinder and Domini[141] (1997), prominent voices in the socially responsible investing movement concur. Kinder and Domini[142] write: 'No one involved in SRI would argue that it has as its objective increasing a company's cost of capital. Even if this objective were attainable, few social investors would consider it as effective as the political action or lobbying that screening entails. Social screening and SRI generally reach an audience far beyond capital markets.' Statman writes: 'Consider again the tobacco industry. Calls for divestment of tobacco stocks have served as prominent banners… Such banners have rallied the faithful to successful political actions. The political actions of tobacco foes resulted in taxes and settlements in the many billions.'[143]

The fossil fuel divestment campaign's emphasis has been to encourage governments to ban drilling altogether, to leave the fossil fuels (oil, gas, coal) 'down there'.[144] This approach is likely to fail for two reasons. First, a ban on drilling is akin to forcing governments to outlaw the smoking of cigarettes or drinking of alcohol. Despite a near-consensus that tobacco contributes to premature death, no government has seriously considered such a ban. When the manufacture and sale of alcohol was made illegal during Prohibition in 1920s America a vast illicit trade quickly emerged. Second, those fossil fuel companies which the divestment campaign can hope to influence via government lobbying are minor players compared to the national oil companies, such as Saudi Aramco or Iran's NIOC, as shown in Figure 23.

Footnotes:

[139] Diermeter (2006).
[140] Statman (2000)
[141] Kinder and Domini (1997)
[142] Ibid. p. 14.
[143] Statman (2000: 37).
[144] The *Economist* (4 May 2013)

Figure 23: Little Exxon, tiny Shell[145]



Fossil fuel consumption, however, is very high in developed countries such as North America, the EU and Japan where the campaign is likely to be most influential—with the notable exception of China. A carbon tax, which levies on the point of consumption like tobacco and alcohol excise duties, is likely to be the most effective tool. McKibben[146] makes the sound argument: 'Alone among businesses, the fossil-fuel industry is allowed to dump its main waste, carbon dioxide, for free. Nobody else gets that break if you own a restaurant, you have to pay someone to cart away your trash, since piling it in the street would breed rats…Until a quarter-century ago, almost no one knew that CO_2 was dangerous. But now that we understand that carbon is heating the planet and acidifying the oceans, its price becomes the central issue.'

If during the stigmatisation process, campaigners are able to create the expectation that government might legislate to levy a carbon tax, which will have the effect of depressing demand, then the campaigners will increase the uncertainty surrounding the future cash flows of fossil fuel companies. This, as previously laid out in out framework, will indirectly influence all investors—those considering divestment due to moral outrage and those neutral—to go underweight in fossil fuel stocks and debt in their portfolios.

Footnotes:

[145] Proven oil and gas reserves as of 29/10/11, The *Economist*

[146] McKibben, 'Global Warming's Terrifying New Math.'

Multiples' compression

Stigmatisation can lead to a permanent compression in the trading multiples, e.g. the share price to earnings (P/E) ratio, of a target company. For example, Rosneft (RNFTF) produces 2.3 million barrels of oil a day, slightly more than ExxonMobil (XOM). Rosneft was, however, valued at $88 billion versus $407 billion for ExxonMobil as of June 2013. With proven and probable (2P) hydrocarbon reserves of 35 billion barrels of oil equivalent, Rosneft has an enterprise value per 2P reserves (EV/2P) of $2.5 (i.e. S87.8/35 billion). ExxonMobil, in contrast, enjoys an EV/2P ratio of $6. Rosneft suffers from the stigma of weak corporate governance. Investors thus place a lower probability on whether its reserves will be converted into positive cash flows and exhibit far greater confidence in ExxonMobil. If ExxonMobil (and similar publicly traded fossil fuel firms) was to become stigmatised due to the divestment campaign its enterprise value per 2P reserves ratio may also slide towards that of Rosneft, permanently lowering the value of the stock.

in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification...

Stigma dilution

While these negative consequences are economically relevant, stigma does not necessarily drive whole industries out of business such that a particular activity stops altogether. A simple linear relationship between a target firm's association with a stigmatised category and disapproval of the firm suffers from limitations. Target firms, particularly when a whole industry is being stigmatised, take steps to counteract it. For example, in stigmatised industries, such as arms or tobacco, some players are able to avoid disapproval, while others face intense public vilification. Philip Morris, for instance, once received most of the disapproval aimed at cigarette producers. Yet Hudson[147] suggests that, after the tobacco firm diversified into the food industry, its disapproval level decreased, owing to 'stigma dilution' in its corporate portfolio. At the same time, the company went through rebranding—by creating Altria and then splitting the company again to maximise shareholder value—and diversifying into new product markets such as smokeless electronic cigarettes, hand-rolled cigars and beverages, and into new geographical areas such as emerging markets. Interestingly, disapproval of Philip Morris decreased despite the firm reinforcing its position as the world's leading cigarette producer.

Similar attempts will be made by fossil fuel companies to dilute the stigma. The fossil fuel divestment campaign is in effect a culmination of a near three-decade movement that started with pressure from environmental groups for fossil fuel companies to clean up. In response BP rebranded its image to Beyond Petroleum symbolised by a green and yellow sunflower. BP was also the first to withdraw from the Global Climate Coalition, a powerful lobby that opposed any climate change related policymaking. Unlike its competitors then, BP went on to support the Kyoto Protocol and acknowledged climate change as a pressing global problem as early as 2000.[148] All these efforts paid off for BP and in 2001 it was recognised in *Businessweek's* debut report on 'The 100 Top Brands' as the most valuable brand among fossil fuel companies ahead of Shell, ExxonMobil, and other competitors. BP's CEO John Browne was credited with making the 'once-stodgy BP into a top oil brand'.

Similar attempts will be made by fossil fuel companies to dilute the stigma.

Footnotes:

[147] Hudson, 'Against All Odds: A Consideration of Core-stigmatized Organisations.'

[148] Sæverud and Skjærseth, 'Oil Companies and Climate Change: Inconsistencies Between Strategy Formulation and Implementation?'.

BP, likewise, has been proactive in diluting stigma from its recent Macondo oil spill in the Gulf of Mexico. While it has slipped out of the 100 Top Brands rankings for the last two years, it has been running a 'slick ad campaign in which the company trumpets its success in producing lower carbon fuels from "energy grasses" '.[149] Similarly, despite strongly-worded language from government officials in the immediate aftermath of the oil spill, the company was granted approval in October 2011 to begin a new 2,000m drilling operation in the Gulf of Mexico.[150]

In summary, while stigmatisation will slow fossil fuel companies down, its outcomes are unlikely to threaten survival. They will be more severe on companies seen to be engaged in willful negligence and 'insincere' rhetoric[151] saying one thing and doing another.[152] Moreover, one or a handful of fossil fuel companies are likely to become industry's scapegoats. From this perspective, coal companies appear more vulnerable than oil and gas. Coal not only contributes to climate change but also releases harmful pollutants with short-term, and visible, health and environmental consequences. Even the Beijing authorities felt compelled to shut coal-burning power plants and boilers to clear the air before the 2008 Olympics. Due to the staged nature of the process of stigmatisation, investors seeking to reduce their fossil fuel exposure in general are thus likely to begin by liquidating coal stocks. Storebrand—a Scandinavian asset manager with $74 billion under management—has taken precisely such as step according to Bloomberg BRIEF (August 2013).

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Footnotes:

[149] Ritson (2011).

[150] Ibid.

[151] Yoon, Gürhan-Canli, and Schwarz, 'The Effect of Corporate Social Responsibility (CSR) Activities on Companies With Bad Reputations.'

[152] Sæverud and Skjærseth, 'Oil Companies and Climate Change: Inconsistencies Between Strategy Formulation and Implementation?'.

Conclusions and recommendations

In this report we have sought to accomplish two objectives. First, we developed a framework to forecast the potential trajectories of a fossil fuel divestment campaign. We stressed the importance of indirect effects on fossil fuel companies arising from increased uncertainty and the process of stigmatisation. In contrast, we suggested that direct impacts are likely to be more limited. Second, we applied this framework to the fossil fuel divestment campaign using the outside view method grounded in evidence from previous divestment and disinvestment campaigns, such as those of tobacco or South Africa.

Our salient findings and conclusions are as follows:

1. Direct impacts on equity or debt are likely to be limited. The maximum possible capital that might be divested from the fossil fuel companies represents a relatively small pool of funds. In contrast, the market capitalisation of fossil fuel companies, particularly integrated oil and gas players, is several times higher. Even if the maximum possible capital was divested from fossil fuel companies, their shares prices are unlikely to suffer precipitous declines over any length of time. Financial markets are volatile. Daily swings as high as ±5% are not uncommon even for large stocks such as ExxonMobil. Sizeable withdrawals are likely to escape the attention of fossil fuel management since oil and gas stocks are some of the world's most liquid public equities.

Divestment announcements are thus more likely to impact coal stock prices.

2. Moreover, we noted that the global financial stock is tremendously large. Unlike economically motivated investors, socially motivated divesting investors do not take into account future cash flows. Any divested holdings are thus likely to find their way quickly to neutral investors. Larger fossil fuel funded sovereign wealth funds such as Norway or Abu Dhabi may even welcome the opportunity to increase their holding of fossil fuel companies—businesses they understand very well—particularly if the stocks entail a short-term discount.

3. We acknowledge that direct effects on coal valuations are likely to be more substantial. Coal companies represent a small fraction of market capitalisation of fossil fuel companies and coal stocks are also less liquid. Divestment announcements are thus more likely to impact coal stock prices since alternative investors cannot be as easily found as in the oil and gas sector.

4. The divestment campaign is likely to lead to a change in market norms. For example, negative screens or passive funds that exclude fossil fuel companies will quickly emerge. Some banks, particularly multilateral institutions such as the World Bank, may stop lending to fossil fuel companies, particularly coal.

The divestment campaign is likely to lead to a change in market norms.

5. Changes in market norms and debt financing are likely to have rather limited direct impact on the enterprise value of fossil fuel companies. Debt like equity is ultimately a claim on the future cash flows of a company. Since a divestment campaign has little hope of directly impacting the future cash flows of fossil fuel companies, neutral debt or equity investors have little cause to shun to fossil fuel companies.

6. Divestment campaigns will probably be at their most effective in triggering a process of stigmatisation of fossil fuel companies. We find that even if the direct impacts of divestment outflows are limited in the short term, the campaigns will cause neutral equity and/or debt investors to lower their expectations of fossil fuel companies' net cash flows in the long term. The process by which uncertainty surrounding the future of fossil fuel industry will increase is through stigmatisation. In particular, the fossil fuel divestment campaign will increase legislative uncertainty and potentially also lead to multiples' compression causing more permanent damage to the companies' enterprise values.

the fossil fuel divestment campaign will increase legislative uncertainty and potentially also lead to multiples' compression causing more permanent damage to the companies' enterprise values.

7. Finally, we find that stigmatisation, while likely to cost fossil fuel companies billions, is unlikely to threaten their survival. Coal companies will probably be the hardest hit segment of the market.

Flux in the global energy markets and the fossil fuel divestment campaign carries important implications for various market participants. We now make some key recommendations for investors, campaigners and fossil fuel firms.

Recommendations for investors, companies and campaigners

Investors

As fiduciaries, managing long-term savings on behalf of their beneficiaries, endowments, pension funds and similar institutional investors have a duty to understand and respond to challenges posed by the fossil fuel divestment campaign—whether considering fossil fuel divestment or not. To this end our recommendations can be divided into the following:

stigmatisation, while likely to cost fossil fuel companies billions, is unlikely to threaten their survival...

1. Closely monitor fossil fuel exposure. Fossil fuel and related industries comprise a surprisingly large variety of sectors from coal mining to shipping to the manufacture of premium steel. Conduct an audit of the carbon intensity (and pollution in the case of coal) of portfolio constituents. There are a wide range of current and emerging environmental risks that could result in stranded assets. These risks are poorly understood and are regularly mispriced, which may result in a significant over-exposure to environmentally unsustainable assets throughout portfolios.
2. Stress test portfolios for potential environment-related risks that could impact fossil fuel companies. Companies unable to withstand the internalisation of environmental costs or competition from more efficient rivals should be more closely monitored.
3. Be explicit about strategy on fossil fuel investment and consult with beneficiaries. Holding a passive view is also a strategy.

4. For institutions considering divestment, engage with the management of target firms. Are they paying lip-service to concerns or are they serious about tackling them? Divestment is perhaps the final, and most drastic, instrument in an investor's corporate engagement toolkit. Considerable communication with management of the target firm can be undertaken to influence behaviour before using up the trump card of divestment.
5. Understand the costs of divestment. Liquidating holdings entails transaction costs.
6. For institutions considering divestment, engage with peers and market participants. Large investors can shape market norms. Use banks and consultants that can advise altering practices.
7. Those that commit to divestment should engage with the media. Divestment, our research shows, creates far more indirect impact by raising public awareness, stigmatising target companies and influencing government officials.
8. Those that commit to divestment should consider re-directing investment to renewable energy alternatives that can trigger 'disruptive innovation' and substitute fossil fuels as a primary source of energy supply.

Divestment, our research shows, creates far more indirect impact by raising public awareness, stigmatising target companies and influencing government officials.

Fossil Fuel Companies

The divestment campaign could pose considerable reputational risk to fossil fuel companies even if its immediate direct effects are likely to be limited. Previous instances of divestment campaigns suggest that investors sympathetic to the campaign's cause are likely to table strongly worded resolutions during annual meetings, and even if voted down stir debate with which management needs to be prepared to engage. Investors, more than ever, are also keenly aware of whether managers do what they say when it comes to addressing the social responsibilities of a company.

Indirectly, by triggering a process of stigmatisation, the divestment campaign is likely to make the operating and legislative environment more challenging. Greater uncertainty over future cash flows can permanently depress the valuation of fossil fuel companies, e.g. by compressing the price/earnings multiples.

How could fossil fuel companies tackle these challenges? Our recommendations are as follows:

1. Fossil fuel companies have to decide whether to play 'hardball' or to engage with the campaigners. Evidence suggests that hardball strategies intensify stigmatiation, focusing attention on companies that are unrepentant about violating social norms. When an entire industry is in the process of being stigmatised the effect on constituent companies is uneven.
2. While some firms successfully manage to escape disapproval by diluting association with stigmatised categories, a handful in the industry are used as scapegoats. The scapegoats are often not the largest companies,[153] but the ones that fail to reinvent.
3. Fossil fuel companies, particularly in the coal industry, should view their near-term cash flows as an opportunity to transition or diversify away from the assets and activities most at risk. They should develop strategies to do so.

Footnotes:

[153] Vergne, 'Stigmatized Categories and Public Disapproval of Organisations: A Mixed-Methods Study of the Global Arms Industry, 1996–2007.'

Campaigners

At the heart of the fossil fuel divestment campaign is concern for the climate change that burning fossil fuel reserves is likely to hasten. From this perspective, the divestment campaign is merely an intermediate objective to achieve far-reaching changes in the energy sector. For the campaigners, our recommendations are:

1. With respect to the divestment campaign, understand that the direct impacts are likely to be minimal. Instead the campaign might be most effective in stigmatising the fossil fuel industry, with the coal industry being most vulnerable, and particular companies within the industry.
2. With regards to maximising the direct impacts, the potential target area where campaigners can hope to achieve some measure of success is fossil fuel debt. The analogy we present here is that money flows like mercury—i.e. money has a tendency to form pools that move together through common channels driven by market norms. From this perspective, debt markets—market for banks loans—are 'clumpier' than the more decentralised equity markets. Our research suggests that it might be easier to block off channels of debt finance than equity. Campaigners can thus target large lending banks and pressure them to commit to a set of principles—equivalent to the anti-apartheid Sullivan Principles—that create obstacles for the debt financing of marginal fossil fuel projects. Closing off debt channels will not threaten survival, but it will make marginal projects harder to undertaking reducing fossil fuel Capex.
3. Divestment is the most drastic instrument in an investor's corporate engagement toolkit. Communication with management of the target firm might be more effective in influencing corporate behaviour than divestment. Encourage investors to engage with fossil fuel companies to change corporate decision-making.
4. Divested holdings are likely to find their way quickly to neutral investors. These investors might have less developed corporate engagement toolkits and might be less willing to pressure fossil fuel companies on issues of environmental sustainability. This could have unintended consequences and should be considered when developing advocacy strategies.

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STRANDED
ASSETS

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UNIVERSITY OF OXFORD

Draft by Bevis Longstreth – 1/29/16

Outline of Possible Interpretative Release by States' Attorneys General Under The Uniform Prudent Management of Institutional Funds Act

Introduction.

All fifty states have enacted some version of the Uniform Prudent Management of Institutional Funds Act ("UPMIFA"), which governs the management and investment of funds held by not-for-profit corporations and certain other institutions. When managing and investing the funds they are responsible for, fiduciaries subject to UPMIFA must satisfy a standard of prudence, the basic requirements for which are set forth in the Act. The variations in different state versions of the Act probably do not vary at all in respect of prudence and its discussion here. The Attorneys General of our states are charged with interpreting and enforcing the Act as enacted within their respective jurisdictions.

The approach that institutional investors should take towards investing in the fossil fuel industry and in industries affected by climate change is a question of pressing concern. Recent years have revealed a growing understanding and acceptance of the fact that anthropogenic greenhouse gas ("GHG") emissions are causing climate change, and of the urgent global need to phase out fossil fuels. The investment risks associated with climate change, and the bright future prospects for clean energy, are increasingly recognized by financial intermediaries, regulatory bodies, and others.[1]

There is a need for interpretative guidance for fiduciaries subject to the Act as to how the duty of prudence should be exercised with respect to the rapidly growing climate change risks to the coal, oil, gas and other fossil fuel industries as well as to industries significantly dependent on such sources of energy. An interpretative release by a state's Attorney General would, of course reflect only the views of that office. As with other statutes, the interpretation of the Act is ultimately a matter for the courts.

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[1] *See, e.g.*, GOLDMAN SACHS, THE FUTURE OF CLEAN ENERGY, *The Low Carbon Economy*; *Key Takeaways from the Paris Agreement*; and *Financing the Future: Capital Innovation and the Clean Energy Industry* (2015), available at http://www.goldmansachs.com/our-thinking/new-energy-landscape/future-of-clean-energy/index.html; Dec. 29, 2015 Statement by chiefs of five major North American tire makers, available at http://www.tirereview.com/five-tiremakers-urge-firm-action-on-climate-change-threat/.

A. The Prudence Standard.

Section 3 of UPMIFA sets the standard of conduct for fiduciaries managing and investing funds subject to the Act. In subsection (b), the duty of prudence is stated as follows:

> "[E]ach person responsible for managing and investing an institutional fund shall manage and invest the fund in good faith and with the care an ordinarily prudent person in a like position would exercise under similar circumstances."

The language in Section 3 of UPMIFA derives from the Revised Model Not-for-profit Corporation Act and from the prudent investor rule of the Uniform Prudent Investor Act. The Drafting Committee intended, by adopting language from both the RMNCA and the UPIA, to clarify that common standards of prudent investing apply to all charitable institutions, whether in corporate or trust form. Of high importance to understanding the Act is the fact that the phase "care, skill and caution," found in the UPIA (2(a)) as well as the Restatement (Third) of Trusts (337), the Uniform Trust Act (804) and the Restatement (Second) of Trusts (174) is said by the Drafting Committee to be "implicit in the term 'care' as used in the RMNCA", and therefore, equally implicit in that term as used in UPMIFA.

It is the need for fiduciaries subject to UPMIFA to exercise caution that distinguishes the meaning of prudence for such fiduciaries from directors subject to the business judgment standard of corporate law. In the Prefatory Note to UPMIFA, the Drafting Committee notes that "the preservation of the endowment fund" has been added as a prudence factor, making clear the requirement for caution in evaluating risky investments that could pose the threat of impairment.

B. Climate Change Risks to Investment in Fossil Fuel Companies.

1. Risk Disclosures by Public Companies.

The investment risks associated with climate change have previously been recognized by the Securities and Exchange Commission (SEC) in connection with its disclosure requirements. The SEC's Interpretative Release (Nos. 33-9106; 34-61469), titled *Commission Guidance Regarding Disclosure Related to Climate Change,* with an effective date of February 8, 2010, set forth the SEC's views on how its existing disclosure requirements apply to climate change matters. Since that date, the special concerns for issuers affecting and affected by climate change have grown dramatically, as evidenced by the recent Paris Agreement and the underlying findings upon which that Agreement was based.[2]

2. Summary of Principal Terms of Paris Agreement.

[2] Note that the Release requires companies to "consider, and disclose when material, the impact on their business of treaties or international accords relating to climate change." (Part IV, B) The Paris Agreement is clearly an "accord" within the meaning of the Release.

The Paris Agreement, signed by 195 countries on December 12, 2015, provides a long-term temperature goal of "holding the increase in global average temperature to well below 2 degrees C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 degrees C." Article 2. Of all the parties to the Agreement, 188 accepted the requirement to prepare "Intended Nationally Determined Contributions," or pledges of "ambitious efforts" to cut emissions, which are to become progressively more ambitious over time. Article 4. While developed countries "should continue taking the lead by undertaking economy-wide emission reduction targets," Article 4 ¶ 4, the Agreement tasks both developed and developing countries with reducing their dependence on fossil fuels, and investing in renewable energy and the development of clean energy technology.

The Agreement also provides that "in order to achieve the long-term temperature goal … Parties aim to reach global peaking of greenhouse gas emissions as soon as possible and to achieve rapid reductions thereafter in accordance with best available science so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs) in the second half of this century." Article 4 ¶ 1.

The principal terms of the Paris Agreement, and the facts underlying them, evidence new and major risks to the future prospects and valuations of fossil fuel companies, as national, subnational, and international authorities take action against climate change. These risks include:

a) pricing carbon so as to account for the uncompensated damage emitting GHG does to the planet;
b) eliminating the billions of dollars provided annually as subsidies to the exploration, development and sale of fossil fuels;
c) providing increased subsidies for the development and use of renewables; and
d) restricting GHG emissions to an increasing degree until, within the second half of this century, a global balance of net zero GHG emissions is achieved.

3. Need for Guidance in regard to Investments by Fiduciaries.

In its 2010 Release, the SEC addressed the impact of climate change on disclosures required of public companies. In light of the Paris Agreement, it would not be surprising for the SEC to update and augment this release. But in any event, for fiduciaries responsible for other people's money who are subject to the Act, there is no authoritative interpretation of prudence and how it should be exercised in regard to climate change risks. It is to fill this void that the AG has prepared this Interpretative Release.

D. The Prudence Standard Applied to Fossil Fuel Investments.

1. General Comments.

To achieve the Paris Agreement's long-term temperature goal, fossil fuel usage must be phased out, and the phase out must be far swifter than previously imagined. A recent paper in

Nature Climate Change suggests that carbon dioxide from electricity would have to be brought close to zero by 2050, and by then around 25% of energy required for transportation would also need to come from electricity.

It would not be the purpose of an interpretative release to substitute an Attorney General's judgment for that of every fiduciary subject to the Act in answering the question whether securities of fossil fuel companies may continue to be held. Rather, the purpose of such a release would be three-fold:

a) To prescribe, as a minimum, the elements of adequate inquiry that must be observed and recorded to demonstrate that the duty of care in Section 3 of UPMIFA has been exercised with respect to any decision to hold or invest in a fossil fuel security;
b) To discuss some of the special risks that are arising from the circumstances – unique in the history of mankind – created by climate change and the world's response to the threat it poses for the planet; and
c) To note the overriding command of the Act, in regard to managing and investing an institutional fund, to "consider the purposes of the institution and the purposes of the institutional fund."

2. <u>Minimum Elements of Inquiry.</u>

The 2010 SEC Release lists the following four topics as representing some of the ways climate change may trigger disclosure requirements. Similarly, these topics should be considered and assessed by fiduciaries subject to the Act in determining whether an investment meets the prudence requirement:

1) Impact of legislation and regulation
2) International Accords
3) Indirect consequences of regulation or business trends
4) Physical impacts of climate change

Carbon Tracker Initiative's *Engagement Principles for Investors* sets forth seven risk engagement principles for fossil fuel companies to consider. Fiduciaries should in turn inquire as to whether these principles are satisfied. Namely, they should ascertain:

1) Whether there is any divergence between the company's commodity market planning assumptions and demand levels implied by climate and energy policy targets
2) How the board oversees climate risk management
3) How management would incorporate climate policy targets into investment decisions
4) Whether forward-looking projections evaluate potential project portfolios; whether quantitative disclosure aligns with data used by the company for investment decision-making and risk management

5) The company's vulnerability to price risk, as explained through stress-tests or sensitivity analysis
6) The assumptions underpinning financial reporting and impairment analysis
7) If a company's management is unable to provide answers to any of the above, a credible explanation should be given.

Further, the fiduciary should make an explicit judgment that the decision to hold or invest meets the elements of skill, care and caution required by the Act, based upon a thorough and satisfactory inquiry into the matters specified above , as well as a consideration of the special risks of climate change discussed below.

3. <u>Discussion of Special Risks of Climate Change</u>.

The prudence standard of the Act can easily support a decision not to continue to hold or invest in fossil fuel companies. The risks and rewards now offered by such securities are asymmetric, in the sense that the foreseeable rewards are not likely to be equal to the foreseeable risks. The risk that, at some unknown and unknowable, yet highly likely, point in the future, markets will begin to adjust the equity price of fossil fuel company securities downward to reflect the swiftly changing future prospects of those companies, is as serious as it is immense. Moreover, the possibility of that adjustment being a swift one is also a serious risk. A decision to linger in an investment with such an overhanging risk, and expect to time one's exit before the danger is recognized in the market, is a strategy hard to fit within the concept of prudence.

Whether the duties of care, skill and caution today compel a decision not to hold or invest in fossil fuel companies can ultimately only be answered by a court, which always looks back in time, and therefore can be subject to the force of hindsight.

At some point down the road towards the red light of 2 degrees C, however, it is entirely plausible, even predictable, that continuing to hold equities in fossil fuel companies will be ruled negligence. Here a powerful 2d Circuit decision by the famous jurist, Learned Hand, decided in 1932, becomes relevant. In that case, *The T.J. Hooper*, tug boat owners were found liable for loss of cargoes in a nor'easter because they hadn't issued to operators what were then newly developed short-wave receivers. At the time, this new-fangled device was a rarity on tugs. Had the operators possessed them, they surely would have picked up weather reports warning of a storm and sought refuge on the inland waterway.

Here's the crucial finding of this great judge:

> "Indeed in most cases reasonable prudence is in fact common prudence; but strictly it is never its measure; a whole calling may have unduly lagged in the adoption of new and available devices. It never may set its own tests, however persuasive be its usages. Courts must in the end say what is required; <u>there are precautions so imperative that even their universal disregard will not excuse their omission.</u>" [Emphasis supplied.]

Many, if not most, fiduciaries subject to the Act serve charitable purposes enabling them to act as long term investors in the management of institutional funds. As such, they need not worry unduly about short-term results. Anticipatory divestment of fossil fuel company holdings could reasonably be viewed as having unknown short-term consequences for the portfolio, which could involve loss as well as gain. However, in the long run, those short-term results could reasonably be considered unimportant. The risks for fossil fuel companies described above could reasonably support a fiduciary's judgment that fossil fuel companies will prove to be bad investments over the long term and, therefore, with foresight that anticipates this result, should be removed from long-term holdings before the strengthening likelihood of this result becomes commonplace in the market.

4. Duties Owed to Purposes of the Institution.

Section 3(a) of UPMIFA requires fiduciaries, in managing and investing an institutional fund subject to the Act, to "consider the charitable purposes of the institution" to which that fund is dedicated and "the purposes of the institutional fund." Section (e) (1) requires fiduciaries, in managing and investing an institutional fund, to consider, if relevant, "an asset's special relationship or special value, if any, to the charitable purposes of the institution." Paragraph (H).

The Drafting Committee, in its Comment on Section 3, states: "Further, the decision maker must consider the charitable purposes of the institution and the purposes of the institutional fund for which decisions are being made." This requirement is described by the Committee as "a fundamental duty." And, in further elaboration of this so-called "charitable purpose doctrine", the Committee said: "In making decisions about whether to acquire or retain an asset, the institution should consider the institution's mission, its current programs …in addition to factors related more directly to the asset's potential as an investment."

The Act itself, and the interpretation thereof by the Drafting Committee responsible for its language, make it entirely clear that fiduciaries must consider the purposes for which the funds they manage and invest are held. This duty is in addition to, and overrides, the duty of prudence as applied solely to financial considerations.

It would not be the purpose of an interpretative release to apply this standard to any institution subject to the Act or even generally to various categories of institutions subject to the Act. Nor, indeed, could it do so.

The purpose here is merely to call attention to this fundamental duty of fiduciaries subject to the Act, a duty that could surely affect the choice of investments to hold or avoid, based in whole or in part, on the purposes of the institution. Thus, for example, if, in the judgment of its fiduciaries, it would be inconsistent with the purposes of an educational institution to hold, and thereby necessarily seek to profit from, investments in fossil fuel companies, such investments could not be held.

Cornell University Core Values

Among the recommendations set forth in the 2017-18 academic year by both the Presidential Task Force on Campus Climate and the Provost's Task Force to Enhance Faculty Diversity was the creation of a university-wide statement reaffirming our core values. The university leadership team worked closely with stakeholders from across the university to identify the values that embody what Cornell stands for. In fall 2019, the university adopted a set of core values that will serve as the foundation for a more equitable and inclusive atmosphere for all on our campuses.

Purposeful Discovery

We value the process of discovery through learning, teaching, scholarship, and innovation to advance the University's mission, in all cases striving with integrity for excellence and purpose. The search for and the dissemination of knowledge are tightly linked: as A. D. White noted, "The power of discovering truth and the power of imparting it are almost invariably found together."

Free and Open Inquiry and Expression

We are a community whose very purpose is the pursuit of knowledge. We value free and open

inquiry and expression—tenets that underlie academic freedom—even of ideas some may consider wrong or offensive. Inherent in this commitment is the corollary freedom to engage in reasoned opposition to messages to which one objects.

A Community of Belonging

As a university founded to be a place where "...any person can find instruction...," we value diversity and inclusion, and we strive to be a welcoming, caring, and equitable community where students, faculty, and staff with different backgrounds, perspectives, abilities, and experiences can learn, innovate, and work in an environment of respect, and feel empowered to engage in any community conversation.

Exploration across Boundaries

Ezra Cornell embraced a vision that we would be a place to "...find instruction in any study." To that end, we value the importance of all academic disciplines and celebrate the power of connections among them.

Changing Lives through Public Engagement

As the land-grant institution of New York, with our main campus within the ancestral homelands of the Cayuga Nation and a long history of national and international connections, we value engagement in our community, our state, and the broader world, learning about their needs and strengths, and applying the knowledge we create for the benefit of society.

Respect for the Natural Environment

We value our role in advancing solutions for a sustainable future and we recognize the close relationship between people and the Earth, acting in ways to live and work sustainably.

FOSSIL FUEL ITEM AS AMENDED AND APPROVED
BY THE BOARD OF TRUSTEES
January 29, 2016

PROPOSED STANDARD AND PROCESS FOR REVIEW OF DIVESTMENT REQUESTS: Voted, upon recommendation of the Executive Committee, that the Board of Trustees adopt guidelines that will assist the President and the Board in making divestment decisions regarding social responsibility, and campus groups in advancing divestment recommendations. The guidelines are set forth below and are entitled "Standard and Process for Board of Trustees Consideration of Divestment Recommendations."

"Standard and Process for Board of Trustees Consideration of Divestment Recommendations"

The following guidelines are designed to assist the President and the Board in making decisions regarding social responsibility. The standard and process set forth below shall supersede any previously adopted administrative protocols or procedures on this subject.

I. Standard to Guide Divestment Consideration

Divestment should be considered only when a company's actions or inactions are "morally reprehensible" (i.e., deserving of condemnation because of the injurious impact that the actions or inactions of a company are found to have on consumers, employees, or other persons, or which perpetuate social harms to individuals by the deprivation of health, safety, basic freedom, or human rights. Morally reprehensible activities include apartheid, genocide, human trafficking, slavery, and systemic cruelty to children, including violations of child labor laws).

In addition, divestment should only be considered when:

- The divestment will likely have a meaningful impact toward correcting the specified harm, and will not result in disproportionate offsetting negative societal consequences; or
- The company in question contributes to harm so grave that it would be inconsistent with the goals and principles of the University.

❖ **NOTE:** Many activities that cause social harm do not descend to the level of being morally reprehensible; they are legal, often widely practiced, and in most cases pursued by members of the Cornell Community. Moreover, other avenues besides divestiture may be more effective. Universities best serve their educational mission by research, teaching, and outreach on key policy issues, including heightened educational initiatives; and appropriate professional and scholarly consultation by faculty and students with regulatory agencies, corporations, or other bodies.

II. Process for Review of Divestment Recommendations

A. In the event that the Board considers divestment based on social responsibility, irrespective of a constituent governance body resolution, the procedure is as follows:

1. The Executive Committee, with input from the Investment Committee and the President, deliberates on whether the criteria for divestment are met, then makes a recommendation to the full Board of Trustees.
2. The full Board of Trustees considers the resolution, then votes on whether to divest. This decision is final.

B. In the event that a constituent governance group(s) passes a relevant resolution proposing divestment, the recommended procedure is as follows:

1. The resolution is submitted to the President, with statement of position and reasoning. The reasoning must clearly document the nature and magnitude of the policies or practices of the company or companies that are asserted to cause a substantial harm.
2. The process will proceed only:
    a. if the President agrees with the resolution; or
    b. if the resolution is supported and passed by the Employee, Graduate and Professional Student, Undergraduate Student, and University Assemblies, and the Faculty Senate governance groups or their successor bodies (with or without the President's agreement).
3. If the resolution proceeds, it is submitted to the Executive and Investment committees of the Board of Trustees, with statement of position and reasoning. Notice of the submission is given to the full Board.
4. The Executive Committee, with input from the Investment Committee and the President, deliberates on whether the criteria for divestment are met, then makes a recommendation to the full Board of Trustees.
5. The full Board of Trustees considers the resolution, then votes on whether to divest. This decision is final.

RECOMMENDED COURSE OF ACTION IN RESPONSE TO FACULTY, STAFF, AND STUDENT SHARED GOVERNANCE GROUPS' REQUEST THAT THE UNIVERSITY DIVEST FROM FOSSIL FUEL ENERGY INVESTMENTS: Cornell's five shared governance groups recommend that the University divest from the top 100 fossil fuel companies' energy-related investments in its Long Term Investments (LTI). This recommendation reflects the deep wish on the part of many members of the Cornell community that the University exercise prudent environmental stewardship.

Voted, upon recommendation of the Executive Committee, the Board of Trustees adopted the following resolution:

WHEREAS, Cornell University, consistent with its mission, is committed to providing a fair and unbiased forum for scholarship, research and teaching, rather than institutional advocacy; and

WHEREAS, the Board of Trustees declared in its 1971 Investment Policy Statement that "the fundamental objective of Cornell University's investment policy is to strengthen Cornell's financial ability to fulfill its basic function as an educational institution" and that "responsibility for accepting, preserving and managing the funds entrusted to Cornell rests by law with its Board of Trustees"; and

WHEREAS, the Board further stated in its 1971 Investment Policy Statement that it welcomed points of view relating to investment matters from members of the University community which will be given thorough consideration by those charged with the responsibility for financial decisions; and

WHEREAS, there has been only one occasion when the University decided to totally divest certain investments: in 2006, when the University divested from certain companies doing business in Sudan because of that country's illegal and morally reprehensible engagement in genocide; and

WHEREAS, in order to guide the President and the Board in making divestment decisions regarding social responsibility, and campus groups in advancing divestment recommendations, the Board of Trustees adopted at its January 2016 meeting guidelines entitled "Standard and Process for Board of Trustees Consideration of Divestment Recommendations" and

WHEREAS, Cornell's five constituent governance groups have jointly recommended that the University divest from the top 100 fossil fuel companies' energy-related investments in its Long Term Investments pool (LTI), such recommendation reflecting the deep wish on the part of many members of the Cornell community that the University exercise prudent environmental stewardship; and

WHEREAS, Cornell University and every member of the Cornell community has some direct or indirect connection with energy companies, including: gifts from energy companies and from alumni who work for them; enhanced endowment payouts due to investments in energy companies; University units seeking these companies' advice on sustainability, scientists working with them in research, and students seeking jobs with them; and

WHEREAS, Cornell University, recognizing the urgent need for action to protect the environment, has taken a leading role and continues to take proactive steps toward that end, including, among other very noteworthy endeavors: engineering and employing Lake Source Cooling; changing the University's primary fuel source from coal to natural gas; installing a solar farm; raising construction standards resulting in 17 LEED awards; and purchasing power from a wind farm; and

WHEREAS, the Board's Investment Committee has long sought to be mindful of the issues surrounding sustainability and climate involving the LTI, having carefully considered portfolio managers for the LTI who participate in investments related to renewable energy, technological advances in the area of climate change and remediation, and appropriate husbanding of natural resources; and

WHEREAS, in applying the divestment standard of "morally reprehensible" as defined in the "Standard and Process for Board of Trustees Consideration of Divestment Recommendations", energy companies with activities related to oil and natural gas do not meet this divestment standard because: the activities specified in the constituent governance groups' shared resolution are legal, widely practiced, and pursued by members of the Cornell Community, and are practiced by an entire industry, rather than solely a specific company. Moreover, divestiture will not likely have a positive impact toward correcting the perceived harm, and divestiture may have unacceptable negative consequences on the endowment;

NOW, THEREFORE, BE IT RESOLVED that in accordance with the process set forth in the "Standard and Process for Board of Trustees Consideration of

Divestment Recommendations", the Board of Trustees has determined that the University will refrain, at this time, from divestment from any fossil fuel energy investments; and

BE IT FURTHER RESOLVED that the University's Chief Investment Officer is instructed to continue to actively seek investment managers with alternative energy investment strategies that meet the return and risk parameters as defined by the Investment Policy; and

BE IT FINALLY RESOLVED that the Board of Trustees expresses its deep appreciation to the five constituent governance groups for their thoughtful advice on this important environmental issue.

Secondary Navigation

Climate Action: Mayor, Comptroller, Trustees Announce First-In-The-Nation Goal to Divest From Fossil Fuels

January 10, 2018

City also filing suit against five largest fossil fuel companies, seeking damages to help protect city from climate change

NEW YORK—Mayor Bill de Blasio, Comptroller Scott M. Stringer and other trustees of the City's $189 Billion pension funds today announced a goal to divest City funds from fossil fuel reserve owners within five years, which would make New York City the first major US pension plan to do so. In a first-in-the-nation step towards the goal of divestment, the Mayor and Comptroller will submit a joint resolution to pension fund trustees to begin analyzing ways to divest from fossil fuel owners in a responsible way that is fully consistent with fiduciary obligations. In total, the City's five pension funds hold roughly $5 billion in the securities of over 190 fossil fuel companies. The City's move is among the most significant divestment efforts in the world to date.

"New York City is standing up for future generations by becoming the first major US city to divest our pension funds from fossil fuels," said **Mayor de Blasio**. "At the same time, we're bringing the fight against climate change straight to the fossil fuel companies that knew about its effects and intentionally misled the public to protect their profits. As climate change continues to worsen, it's up to the fossil fuel companies whose greed put us in this position to shoulder the cost of making New York safer and more resilient."

"This is a first-in-the-nation step to protect our future and our planet – for this generation and the next. Safeguarding the retirement of our city's police officers, teachers, firefighters and city workers

is our top priority, and we believe that their financial future is linked to the sustainability of the planet. Our announcement sends a message to the world that a brighter economy rests on being green," **Comptroller Stringer said**. "It's complex, it will take time, and there are going to be many steps. But we're breaking new ground, and we are committed to forging a path forward while remaining laser-focused on our role as fiduciaries to the Systems and beneficiaries we serve."

The Mayor also announced that the City has filed a lawsuit against the five largest investor-owned fossil fuel companies as measured by their contributions to global warming. The City will be seeking damages from BP, Chevron, ConocoPhillips, Exxon Mobil, and Royal Dutch Shell for the billions of dollars the City will spend to protect New Yorkers from the effects of climate change. This includes damages to pay for harm that we've already seen and damages that are necessary to address harm we expect to happen over the course of this century.

New York City's lawsuit seeks to recover the billions needed to fund climate change resiliency measures that the City needs to implement to protect the City, its property, and its residents from the ongoing and increasingly severe impacts of climate change. This includes physical infrastructure, like coastal protections, upgraded water and sewer infrastructure, and heat mitigation, but also public health campaigns, for example to help protect residents from the effects of extreme heat. To recover from past harm and prepare for future events, New York City is already executing an over $20 billion resiliency program to protect New Yorkers and build resilience against rising seas, more powerful storms, and hotter temperatures.

Recently uncovered documents make it clear that the fossil fuel industry was well aware of the effects that burning fossil fuels would have on the planet's atmosphere and the expected impacts of climate change as far back as at least the 1980s. Nonetheless, they deliberately engaged in a campaign of deception and denial about global warming and its impacts, even while profiting from the sale of fossil fuels and protecting their own assets from the effects of rising seas and a changing climate. More than half of the greenhouse gas pollution from the fossil fuel industry has occurred since 1988, according to a recent analysis. Sea levels have risen about one foot since 1900 with much of that rise due to climate change, the most powerful storms are becoming more frequent, and flooding is becoming more frequent and intense.

Climate change is perhaps the toughest challenge New York City will face in the coming decades. Sandy taught us how destructive weather events exacerbated by climate change can be. Rising sea levels, increasing temperatures and precipitation, and the likelihood of more frequent and intense flooding threaten our neighborhoods and infrastructure while exacerbating many underlying social inequities. To adapt to these threats, the City is implementing an over $20 billion program to ensure our neighborhoods, economy, and public services will be ready to withstand and emerge stronger from the impacts of climate change. These investments are known to be just the first step in making the City prepared for the impacts of climate change, and more will continue to be needed over the course of the century. The City's resiliency programs and projects are a shift in the way we live now and how we must develop and implement tools that will make our City more resilient against future risks.

The first step is for the trustees at each fund to instruct the Office of the City Comptroller's Bureau of Asset Management (BAM) to commission an analysis of the proposed divestment and advise the

trustees as to the anticipated impact on the risk and return characteristics of the portfolio. The trustees will also seek legal opinion as to whether carrying out the divestment would be consistent with trustees fiduciary duties to beneficiaries. Assuming a positive legal opinion, the trustees would then instruct BAM to carry out the divestment with specified steps and timelines. In the case of this divestment, transactions would likely be carried out in stages in order to reduce transaction and implementation costs.

Henry Garrido, DC37 Executive Director and NYCERS trustee said, “For the sake of future generations, we support the call by the Mayor and the Comptroller for responsible divestment from fossil fuels. It is no longer a question of if, but rather how and when. The five year goal is sensible. What we’ve learned about the extent to which fossil fuel-producing companies deceived the public about the harm to the environment makes expedient and prudent action necessary.”

Tish James, NYC Public Advocate and NYCERS Trustee: "The effects of human-induced climate change are taking an undeniable toll on our planet. As the largest city in the country, New York has a responsibility to act and to lead, particularly when our federal government is moving backward. I have been proud to stand with advocates and scientists to push for divestment. Today, I thank Mayor de Blasio for his leadership on this critical issue. I look forward to continuing to work with Mayor de Blasio and Comptroller Stringer to ensure that our City's investments reflect our commitment to creating a more sustainable future, while keeping with our fiduciary responsibilities.”

Eric Adams, Brooklyn Borough President and NYCERS Trustee said, "As a NYCERS trustee, I am responsible for investing in the future of our city and the long-term stability of hard-working New Yorkers' pensions. Divesting from fossil fuels is a reflection of our municipal commitment to combat climate change. The green in our wallets can and should go toward greener policies which lead to a greener planet."

UFT President Michael Mulgrew said, “Two years ago the UFT began looking at ways to mitigate the risk posed by climate change to the Teachers Retirement System portfolio. I’m happy to stand here today with Mayor de Blasio, Comptroller Stringer and representatives of the other city pension funds to announce our shared goal of divesting from fossil fuels within the next five years.”

“Climate change is fact, climate change is real and it is having a devastating impact on our environment. The over 40,000 members of the New York State Nurses Association joined this profession to help people and make this world a better place- that’s why we applaud the Mayor, the Comptroller and the pension trustees for making these bold moves. It’s the right thing to do for the environment and for our children,” said **Jill Furillo, RN, Executive Director, New York State Nurses Association (NYSNA).**

“The burning of fossil fuels is the single largest contributor to human-caused climate change. Unfortunately, those most responsible for the damage done to our planet have denied and buried this fact despite knowing it for decades,” said **Daniel Zarrilli, NYC’s Senior Director of Climate Policy and Programs and Chief Resilience Officer**. “Today, after a decades-long pattern of deception and denial by fossil fuel companies, New York City is holding them to account. By seeking damages for the investments necessary to protect New Yorkers from the impacts of climate change, and divesting our pension funds from fossil fuel reserves, we are taking the largest action by any city to confront the growing climate crisis and demonstrate the leadership necessary to win this fight

against fossil fuels and the damages they've caused."

"The Mayor's announcement today illustrates the power of local government to assert our progressive values and create change that will ensure we better protect all New Yorkers from the impacts of climate change," **said Mark Chambers, Director of the Mayor's Office of Sustainability.**

"In NYC we've been working with increased urgency to reduce our contributions to climate change," **said Jainey Bavishi, Director of the Mayor's Office of Recovery & Resiliency.** "Today's announcement is a powerful demonstration of local government taking action to change the way we live and do business, and create a more fair and more resilient city."

"Internal industry documents demonstrate that the defendants engaged in large-scale, sophisticated public relations campaigns to portray fossil fuels as environmentally responsible and essential to human well-being – even as their own scientists warned them that continued fossil fuel production would contribute, and was contributing, to dangerous global warming and associated accelerated sea level rise that threatened catastrophic consequences for New York and other coastal cities. Our suit seeks to recover the billions of dollars the City has spent or will be required to spend to protect the public from the devastating consequences of the defendants' choice to pursue profit over the public welfare," said **NYC Corporation Counsel Zachary Carter**.

"New York City is as a global leader in combatting climate change, and today's announcement that the City's five pension funds will divest an estimated $5 billion in fossil fuel securities marks yet another step forward. This decision is not only environmentally sound, but also financially prudent," said **Congressman Joseph Crowley**. "Today, New York City is sending an important message – to invest in our financial future, we must also invest in the energy of the future. Climate change poses a very real threat to New York City, and I applaud Mayor de Blasio, Comptroller Stringer, and the other trustees for taking this important step to divest the city from energy sources that exacerbate that threat."

"New York City has long been a leader when it comes to fighting climate change, and this decision to divest from fossil fuels is further proof of that," said **Congressman Eliot Engel**. "Our energy sector is moving toward cleaner, renewable fuel sources and government should be doing all it can to foster that move. I applaud the City for its decision to divest from the past and invest in the future."

"I am proud that New York is stepping up and taking a firm stand to protect our city from climate change. Climate change is the single greatest threat humanity faces today and it is up to all of us to act, especially in light of this Administration's flagrant disregard for science and the need to combat climate change," said **Congresswoman Carolyn Maloney**.

Rep. Nydia M. Velázquez said, "We have a responsibility to make decisions that preserve our planet for future generations. By ensuring New York's pension funds divest from polluters, our City will be voting with its dollars for a greener, more sustainable future. I applaud the Mayor and the Comptroller for taking this important step."

Assistant Speaker Felix W. Ortiz said, "It's critical for New York to reduce our dependency on fossil

fuels. The city's effort to divest city funds from fossil fuel reserve owners within five years is a step in the right direction. Today's initiative and the new lawsuits complement my efforts in Albany to create a carbon tax on the use of fossil fuels in New York State and to eliminate the investment of public pension funds in large fossil fuel companies."

Senator Liz Krueger said, "Our pension funds are investments in our future, and fossil fuels are best left in the past. Divestment is the only financially responsible course of action in the face of fossil fuel producers' continued failure to acknowledge the reality of climate change and the necessity and inevitability of the clean energy transition. Divestment sends the clear message that it is no longer acceptable to support companies whose fundamental business model puts our entire society at risk. I congratulate Mayor de Blasio, Comptroller Stringer, and all the advocates who worked tirelessly to push this vital issue, and I look forward to continuing to push for divestment at the state level."

State Senator Brad Hoylman said: "Climate change poses an existential threat to our city. Five years from the devastation of superstorm Sandy and one year since the inauguration of our climate-denying president, it's up to cities and states to take the lead in our crusade against climate change. Divestment sends an important message that New York will not profit from activities that directly threaten our planet and our city. I'm grateful to Mayor de Blasio and Comptroller Stringer for moving New York City away from the declining fossil fuel industry and look forward to continuing the fight for divestment at the state level by requiring SUNY and CUNY to divest as well."

"Today marks an enormous victory for my fellow environmentalists. The divesting of billions of dollars from fossil fuel interests will minimize their effects on the Earth's atmosphere," said **Assemblymember Latrice Walker**. "This is just the start of changing the narrative of Climate Change in New York. I applaud Mayor Bill de Blasio and Comptroller Scott M. Stringer for this massive victory regarding the fossil fuel industry and I'm excited to see more joint initiatives from our elected officials to protect our city from the destruction of climate change."

"Climate change is one of the most serious threats we face as a nation and world," said **Assemblymember Linda B. Rosenthal**. "Bold, decisive leadership is needed to tackle this crisis, and New York is putting its money where its mouth is, thanks to New York City Comptroller Scott M. Stringer and Mayor Bill de Blasio. They knows that our financial future is inextricably linked with our environmental health, and this step recognizes that reality and helps preserve the future for the next generation."

"The city's move to divest city pension funds from fossil fuel reserve owners within five years and to sue large investor-owned fossil fuel companies for climate change damages is a brilliantly unique move that hopefully will become a game changer picked up by other municipalities and states across the nation. I wish it much success!" said **Assemblyman Luis Sepulveda**.

With the devastating effects of climate change rapidly increasing, we must do all we can to safeguard our environment and future from further destruction," said **Assemblymember Dan Quart**. "With today's announcement, New York City is tackling climate change by striking fossil fuel companies at the heart of the only thing they seem to care about, their profits. Our city is the first major US pension plan to take this step which will help lead the nation towards a more sustainable energy future, while also protecting the retirement of our city workers."

Council Member Costa Constantinides, Chair of the Council's Environmental Protection Committee, said, "I am proud that our city will no longer invest our pension funds in fossil fuel interests. After years of advocacy, this divestment underscores the benefits of renewable energy. As fossil fuel securities have underperformed recently, divestment is a sound economic decision that will make our city greener while saving money. I am also proud that our city is seeking damages from fossil fuel companies to help make us more resilient and sustainable as the effects of climate change make their impact. Thank you to Mayor de Blasio and Comptroller Stringer for taking these necessary steps for our environment."

"As elected officials, we have a responsibility, not only to divest from an industry that is destroying our collective future, but to reinvest in solutions to prevent further climate change. New York City would benefit in myriad ways from reinvesting in everything from public transportation to green infrastructure projects, spaces which do not put our future in jeopardy and frankly have far have better returns than fossil fuel stocks and bonds. Pension funds are for the future. If we keep investing in fossil fuels, there won't be a future. I applaud Mayor de Blasio and Comptroller Stringer for this critical step forward," said **Council Member Justin Brannan**.

"New York City is again setting a precedent and demonstrating leadership by saying that the center of the economic universe can thrive without the fossil fuels of yesterday. I commend Mayor de Blasio on his leadership and foresight on this issue," said **Council Member Rafael Salamanca, Jr.**

"Since my election to the City Council, climate change activists and I have urged the pension trustees to divest from all fossil fuels, and I am thrilled that this first step is being taken. Divestment is critical to both our city's financial security and our planet's collective future. As the world takes action to address climate change, the value of fossil-fuel companies will steadily decline- which we've already seen with coal. We must align our financial interests with our goal of achieving a cleaner, fossil fuel-free energy system, and I eagerly await findings about the feasibility of directing investment toward enterprises with low carbon emissions. Thank you to the Mayor and the Comptroller for moving this groundbreaking effort forward, and to the environmental advocates who have pushed us to get to this place," said **Council Member Helen Rosenthal**.

Council Member Rafael Espinal said: "As the largest city in the country, New York should always lead and set the bar for how we will combat climate change. Divesting our pensions from fossil fuels is a big step in that direction. I'm looking forward to the lawsuits against oil tycoons and what this will mean for the fight against climate change, as well as, the precedent we are setting for how we want our world to be."

"Climate change is the existential issue of our time," says **Council Member Brad Lander**. "Weaning ourselves and our city off fossil fuels is critical to protect our shared future. Our city's teachers, cops, caseworkers and nurses can't have real retirement security without a safe planet to live on. So I commend Comptroller Stringer and Mayor de Blasio for taking this historic step. The City's divestment from fossil fuels will help us break the addiction that is wreaking havoc on our plant, and open up opportunities to invest in a far more sustainable future."

"Today's decision to divest City funds from fossil fuel reserve owners is a win-win for City employee pensions and for the future of New York City," said **Council Member Donovan Richards**. "For those of us who are still rebuilding after Sandy in the Rockaways, Brooklyn and Staten Island, we see the

toll climate change can and will take without strong, common sense decisions to phase out dirty and inefficient energy resources. I'd like to thank Mayor de Blasio and Comptroller Stringer for their dedication to preserving a future for New York City and coastal cities all over the globe."

"Those who are directly responsible for the damaging effects fossil fuel emissions have on our city must be held accountable for their actions. I am looking forward to these companies paying for the resiliency improvements that will benefit the city's efforts beyond what's already been committed to." said **Council Member Carlina Rivera**. "Combined with a historic divestment, these two important actions cement New York's status as a leader in the fight against climate change."

"I'm proud of New York City for taking this bold step to divest from fossil fuels," said **Council Member Andrew Cohen**. "It's up to us to make the responsible decision for future generations and do everything we can to curb the devastating effects of climate change."

"As someone whose district represents Greenpoint, a neighborhood where one of the worst oil spills in the nation's history occurred under the watch of Exxon Mobil, BP and Chevron, this is a long overdue move that will protect our community from further damage and help combat the detrimental effects of climate change over the next century," said **Council Member Stephen Levin**. "I applaud Mayor De Blasio for this decision and look forward to working with him, and my colleagues in the Council, to pass comprehensive climate legislation over the next four years."

"I applaud Mayor de Blasio and Comptroller Stringer for this landmark initiative that allows the city to reinvest in areas of resiliency so we have a fighting chance against climate change. Today's announcement sends a message that clean investments are a priority and ensures pensions are funded with the best interest of New Yorkers in mind," said **Council Member Keith Powers**.

"Divesting from fossil fuels is a bold step in further aligning our actions with our beliefs around climate change," said **Council Member Ydanis Rodriguez**. "Climate change is undeniable and affects our pockets. The negative economic impacts of warmer summers, colder winters, and increased potential for destruction from weather systems cannot be in the interest of hard-working New Yorkers saving for a stable retirement."

"At a time when the federal government trivializes the threat of climate change to our very existence, individual action to slow the acceleration of global warming is imperative," said **Council Member I. Daneek Miller**. "The City has exhibited its leadership on this issue by taking demonstrative steps to reduce the size of its carbon footprint and reverse the dangerous warming trend of our planet. Today, we acknowledge it must also leverage its wealth to achieve greater sustainability, and hold accountable the companies that willfully acted against the people's interests for the sake of profit. Mayor de Blasio and Comptroller Stringer deserve to be commended for their work in launching this initiative. They would be wise to consider divesting from companies in other industries that have reaped massive gains from human misery, particularly at the expense of people of color."

"Thank you, Mayor de Blasio and Comptroller Stringer, for showing that change is not impossible. Your action today offers national leadership and sends the message that it is not too late to halt the destruction of our beautiful planet. Workers have always been at the heart of the movement for climate justice, and the resolution you have announced today demonstrates how workers' collective financial power can be an essential force in that movement. Working people and the poor are always

hit hardest by the ravages of climate change, so it is especially important New York City's workers now have your support to be part of the solution. Thank you to listening to the members of the PSC and many other unions in the city who see climate justice as a critical labor issue. We are proud to stand with you today," said **Barbara Bowen, President, PSC-CUNY**

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