

The Financial Case for Fossil Fuel Divestment



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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.

¹ MSCI AXWI Fossil Fuels Index

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 bedeviling balance sheets stem from political conflicts between producer nations, 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 scientific² or moral³ case on climate change, nor does it provide a legal⁴ 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.

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:

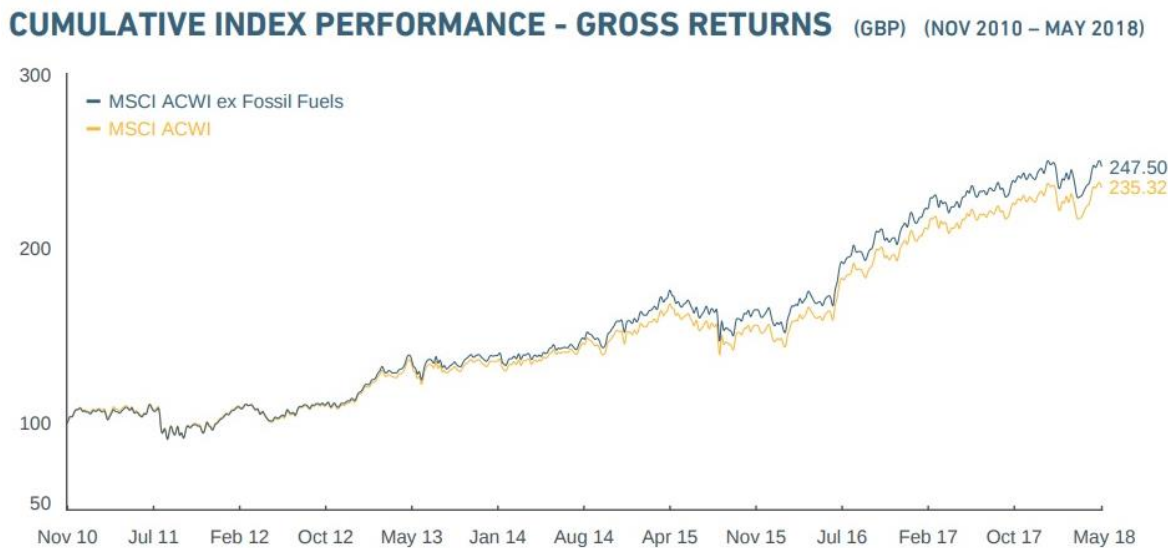
- Today, only one oil company, ExxonMobil—the world's largest private sector oil company, the standard-bearer for the oil and gas industry, and a company that

⁷ MSCI ACWI ex Fossil Fuels Index (GBP). May, 2018.

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.
- 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—

⁸ Yahoo! Finance. [Exxon Mobil Corporation \(XOM\)](#). YSE- Nasdaq Real Time Price.

have lagged far behind broader stock market indexes,⁹ frustrating investors who had hoped that the shale renaissance would ultimately yield robust profits.¹⁰

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.

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.

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 products 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

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 \(National\)](#).

industry employs about the same number of workers today as it did a decade ago when the fracking boom was first taking off.¹⁷

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

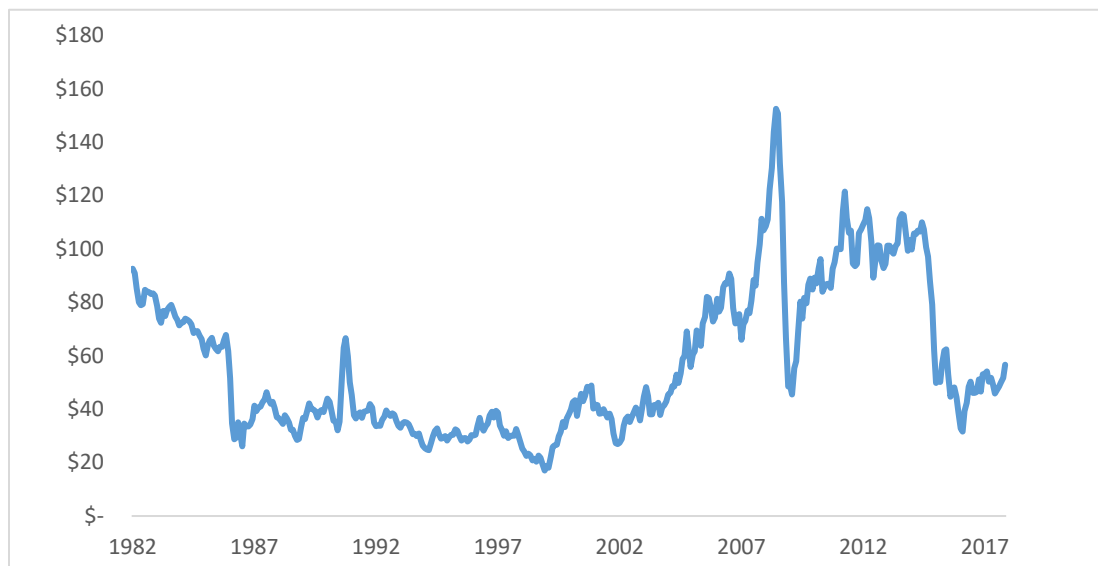
Starting in the early 1980s—when the OPEC-driven oil shocks of the 1970s were still fresh memory—global oil prices entered a period of decline and relative stability. Adjusted for inflation, oil prices generally trended downward for nearly two decades, falling near all-time, inflation-adjusted lows in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

¹⁷ Ibid.

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 Japan²⁰ 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. 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

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 mid-sized 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.

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

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

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 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 boom²⁸ 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

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.

while, frackers themselves will chase the thinnest of profit margins as the globe's de facto swing producers.³⁰

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 pressure³² 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 Ford³⁹ 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.

³⁰ *Forbes*. [OPEC Can Cut Production But Fracking Controls The Oil Price Now](#). May 29, 2017.

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.

The risks to fossil fuels from electric vehicles have grown relatively slowly, and so market share capture has been easily dismissed by the fossil fuel industry⁴¹. Bloomberg New Energy Finance has presented the chart below⁴² 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

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 profitability in a transitioning energy future. The industry, led by the U.S.-based oil majors, has

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.

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

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.

- The company also acknowledged a mistake⁵⁶ 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.
- 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 2018⁵⁹—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.

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.](#)

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

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.

strongly-worded rebukes to students and other activists.⁶¹ Only a corporate or investment board with a special interest in climate issues⁶² (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.

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

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](#).

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 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 sign⁶⁸ 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

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.

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.

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.**

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.

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 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

⁷⁰ Daniel Fischel, Christopher Fiore & Todd Kendall. *Fossil Fuel Divestment and Public Pension Funds*. June, 2017.

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

⁷⁴ Hendrik Bessembinder. [Frictional Costs of Fossil Fuel Divestment](#). May 11, 2016.

⁷⁵ Storebrand, *Climate Change: Tomorrow's Solutions*, Q1 2017.

that can 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

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.

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 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

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 Credit Positive for Generators](#)", October 18, 2017 (subscription required)

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 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.

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](#).

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 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.

⁸⁶ DivestmentFacts.com Blog. [New Report Shows Divestment Would Cost New York State Pension Billions.](#) December 26, 2017.

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

Conclusions

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 realms 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

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.*

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. 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 sign⁹⁵ a global agreement on climate change.

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.

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, 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 directive⁹⁶ to their top money managers. The directive should request of the managers an asset

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

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 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

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.

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.

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 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.

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.

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

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.

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

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

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>

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.

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 environment¹⁰⁵ 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.

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.

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 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

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.

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.

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 agreement¹⁰⁹ 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 managements¹¹⁰ 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 India¹¹² 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.

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.

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?

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 models¹¹⁵ 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

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 ¹¹⁹criticizes 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.

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Tom Sanzillo, director of finance for IEEFA, is the author of several studies on coal plants, rate impacts, credit analyses and public and private financial structures for the coal industry. He has testified as an expert witness, taught energy-industry finance training sessions, and is quoted frequently by the media. Sanzillo has 17 years of experience with the City and the State of New York in various senior financial and policy management positions. He is a former first deputy comptroller for the State of New York, where he oversaw the finances of 1,300 units of local government, the annual management of 44,000 government contracts, and where he had oversight of over \$200 billion in state and local municipal bond programs and a \$156 billion pension fund.

Kathy Hipple

Kathy Hipple, a financial analyst at IEEFA, teaches the finance sequence at Bard's MBA in Sustainability and is the founding partner of Noosphere Marketing. Hipple has written extensively about sustainable, responsible and impact finance and investing. As Vice President at Merrill Lynch for 10 years, she placed fixed income securities with international institutional clients, and advised international life insurance companies and pension funds. She later founded Ambassador Media, a local search firm in New York City, and served as its CEO. She has served on several boards, including the national Local Search Association and Bennington County's Meals on Wheels.

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Clark Williams-Derry, Director of Energy Finance for Sightline Institute, researches U.S. and global energy markets, particularly in the Western US and Canada. Williams-Derry's recent research has covered the finances of the Dakota Access Pipeline and the proposed Trans Mountain pipeline expansion; liquefied natural gas projects in British Columbia; "self-bonding" for coal mine reclamation; West Coast coal export projects; greenhouse gas accounting for coal export projects; coal industry bankruptcies and the interactions between federal coal leasing policy and coal exports.

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