



TO
PARAPHRASE
MARK
TWAIN:

The Cost of Fossil
Fuel Divestment
Has Been Greatly
Exaggerated

NorthStar Asset Management, Inc., based in Boston, is a wealth management company with a focus on socially responsible investing.

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***To Paraphrase Mark Twain: The Cost of Fossil Fuel
Divestment Has Been Greatly Exaggerated***

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Fossil-fuel divestment finds its roots in the early 2000's when the trouble with fossil fuels began coming to the public conscience. Many credit author Bill McKibben, who wrote one of the first books on global warming (*The End of Nature*), as a historical leader in the field. He and his organization, Step it Up, organized over 2,000 creative rallies all over the United States with the end goal of convincing lawmakers and laymen alike of our need to reduce carbon use 80% by the year 2050. The activist organization 350.org was born shortly thereafter, which then created the sister organization Go Fossil Free. Go Fossil Free has become a leader in organizing college-based divestment programs in which students rally to get their college or university endowment to divest from coal, oil, and gas stocks. As the *New York Times* reported in December 2012, "Students who have signed on see it as a conscious imitation of the successful effort in the 1980s to pressure colleges and other institutions to divest themselves of the stocks of companies doing business in South Africa under apartheid."¹ Six U.S. colleges and universities have now committed to going fossil-fuel free. In an interview, Mr. McKibben explained that colleges "need more incentive to make the transition that they must know they need to make, from fossil fuel companies to energy companies."²

In January 2013, Middlebury College in Vermont hosted a panel discussion on the subject of whether or not it should divest its investments from fossil fuel holdings. Bill McKibben was a guest speaker, as was economist Mark Kritzman, an adjunct professor of economics at MIT, who presented a detailed analysis which he claimed would estimate the "cost of socially responsible investing." From there, the so-called "cost" of socially responsible investing has been tumbling down a path of inaccuracy and inappropriate quotation. Perhaps most notably, Swarthmore College's Board Investment Committee Chair Chris Niemczewski publicized his estimations using Timothy Adler and Mark Kritzman's flawed methodology from their 2008 paper, "The Cost of Socially Responsible Investing," that divestment would cost Swarthmore College \$200 million over the next 10 years. In turn, the *Swarthmore Daily Gazette* then illustrated that it would cost each student another \$13,333 in tuition during that same timeframe to make up that loss. Sadly, Swarthmore College's rationale to *not* divest has been based upon inaccurate assumptions put forth in the Adler-Kritzman paper. In this paper, we attempt to clarify this supposed "cost."

DIVESTMENT FROM SOUTH AFRICA—A MODEL FOR CHANGE

Through divestment, shareholders have the opportunity to take responsibility for the fossil fuel companies they own—by rejecting profiteering! More importantly, the South African

¹ http://www.nytimes.com/2012/12/05/business/energy-environment/to-fight-climate-change-college-students-take-aim-at-the-endowment-portfolio.html?pagewanted=all&_r=0

² http://www.nytimes.com/2012/12/05/business/energy-environment/to-fight-climate-change-college-students-take-aim-at-the-endowment-portfolio.html?pagewanted=all&_r=0

divestment movement that pressured the South African government into ending Apartheid offers an important model for investors. For fiduciaries, South African divestment demonstrates clearly that in addition to liquidity, volatility, avoidance of Madoff-like Ponzi schemes, the utility of value, and a host of non-profit-oriented factors including corporate governance—social concerns are valid considerations that can (and must) be taken into account when managing investments.

“The key instrument of [the divestment] campaign was the so-called Sullivan Principles . . . which required that the corporation ensure that all employees are treated equally and in an integrated environment, both in and outside the workplace, and regardless of race, as a condition of doing business. These principles directly conflicted with the mandated racial discrimination and segregation policies of apartheid-era South Africa, thus making it impossible for businesses adopting the Sullivan Principles to continue doing business there.”³

While a 1999 study⁴ concluded that divestment in companies that operated in South Africa had no impact on their valuations, an article in the *Harvard Political Review* noted that “divestment greatly increased public visibility surrounding the injustices of South Africa’s apartheid government.”⁵

SHAREHOLDER ENGAGEMENT WITH FOSSIL FUEL FIRMS?

In the face of “global warming’s terrifying new math,” recently there has been much discussion of the role of fossil fuels and divestment of these investment holdings. Within the socially responsible investment (SRI) community, some SRI investors hold shares in fossil fuel companies in order to propose shareholder resolutions concerning corporate policies in an effort to engage with company management around designing better policies for these firms. The problem is that engaging with companies like Suncor Energy (a CERES member firm) “to responsibly develop petroleum resources” does NOT keep tar sands oil in the ground. As Bill McKibbin has stated, “environmental efforts to tackle global warming have failed.”⁶

A major roadblock to working with companies from within the shareholder framework is that Securities and Exchange Commission (SEC) policy restricts shareholders from

³ http://en.wikipedia.org/wiki/Disinvestment_from_South_Africa

⁴ Hong Teoh, Siew, Ivo Welch, and C. Paul Wazzan. “The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott*.” *Journal of Business*, 1999, vol. 72, no. 1.

⁵ Hende, Eric. “Does Divestment Work?” *Harvard Political Review*. <<http://www.iop.harvard.edu/does-divestment-work>>

⁶ McKibbin, Bill. “Global Warming’s Terrifying New Math” *Rolling Stone*.

<<http://www.rollingstone.com/politics/news/global-warmings-terrifying-new-math-20120719>>

engaging with firms on operational issues. This limits shareholder engagement to requesting information and attempting to engender change in corporate policies on related issues, but does not allow shareholders to modify the business model or to engage with firms directly on the problem of keeping oil reserves in the ground. Shareholder efforts to convince fossil fuel firms to expand into alternative energy businesses have proven ineffectual and, as a result some fossil fuel firms have even stopped trying.⁷

ESTIMATING THE COST OF DIVESTMENT

At NorthStar, our contemplations on these issues led us to a paper by Mark Kritzman and Tim Adler that uses mathematical simulations “to quantify the expected cost of divestment.” Kritzman and Adler reported that in certain circumstances “the financial cost of excluding investments based on criteria other than expected performance can be substantial, potentially amounting to hundreds of millions of dollars.”⁸

So divestment is wildly costly then, right? After a careful review of this figure, we were able to determine that the actual cost of eliminating the energy sector translates to a real cost to the investor of under 0.3%⁹ per year of incremental return. Further, we contend that even this minimal cost of divestment can be mitigated. While Kritzman and Adler’s analysis of the cost of eliminating fossil fuels from the portfolio estimates the annual cost of divestment at what calculated out to be 0.3%, we argue that even this low number is actually a worst case scenario given Kritzman and Adler’s own somewhat haphazard assumptions and that the actual cost of divestment is potentially much lower. This leads to the conclusion that there is, in fact, no substantive reason for investment fiduciaries to not divest their fossil fuel holdings.

Kritzman and Adler’s approach uses mathematical simulations “to quantify the expected cost of divestment” [emphasis added]. In order to make cost estimates, it is necessary for the authors to assume the size of the original investment in equities (\$1 billion), the investment time horizon (20 years), the universe (global equity index), the percentage of equities excluded from the global investable set (20%), the manager’s level of expertise (52%), portfolio construction methodology (replacement of the excluded securities with stocks of lower rank order with some randomization), the number of stocks held in the

⁷ McKibbin explains that “in December [2011], BP finally closed its solar division. Shell shut down its solar and wind efforts in 2009. The five biggest oil companies have made more than \$1 trillion in profits since the millennium – there’s simply too much money to be made on oil and gas and coal to go chasing after zephyrs and sunbeams.”

⁸ Adler, Timothy and Mark Kritzman. *The Cost of Socially Responsible Investing*. The Journal of Portfolio Management. Fall 2008, Vol. 35, No. 1: pp. 52-56

⁹ 0.3% estimate confirmed by Mr. Kritzman in the Boston QWAFEFW Meeting, Tuesday, 30 Apr 2013.

portfolio (250), and, critically, “an average market return of 8 percent.” And as a purely mathematical exercise, the authors disregard many real life considerations.

Rather than thinking about Adler and Kritzman’s forecast of hundreds of millions reduction in profits as a “sunk cost” of divestment, a smart investor would be willing to “invest” a significant sum in additional research and portfolio management fees in order to mitigate the anticipated FUTURE cost! From a financial view, if an investor truly believes these cost estimates (with a high degree of certainty), then s/he should be willing to invest a significant amount in order to defray the forecast loss (the risk-adjusted break-even value); especially if doing so contributes to reducing the “fat tail”¹⁰ risk of devastating long-term economic effects of climate change.¹¹ We recognize that investors and fiduciaries are unused to considering the cause and effect relationships of their own investment decisions and how their decisions might affect potential climate change and the future performance of their own or institutional assets. However even a tiny change in the risk of a very large downside event (measuring in trillions of dollars) can yield a very significant change in a portfolio’s Value at Risk (positively or negatively).

Herein we address the impact of Kritzman and Adler’s assumptions, methodology and disregard for real life considerations in ratcheting up the estimated cost of divestment.

WORST CASE ANALYSIS OVERESTIMATES THE COST

In order to evaluate the authors’ decision to exclude 20% of the global investable set, we looked to the MSCI ACWI (All Country World Index), which covers “approximately 85% of the global investable equity opportunity set.”¹² At 10.26%, the weight of the ACWI’s Energy Sector is about half of the percentage of equities Kritzman and Adler excluded from the stated cost of divestment (20%). For comparison with yet another index, we looked at the S&P 500 Energy Sector whose weight (11.13%¹³) is only slightly greater than that of the ACWI. The quantity of companies in the S&P 500 Energy Sector comprises 8.6% of the 500 constituents in the index. It appears that assuming a percentage of restrictions of 10%

¹⁰ [Tailrisk is a] form of portfolio risk that arises when the possibility that an investment will move more than three standard deviations from the mean is greater than what is shown by a normal distribution.

<<http://www.investopedia.com/terms/t/tailrisk.asp>>

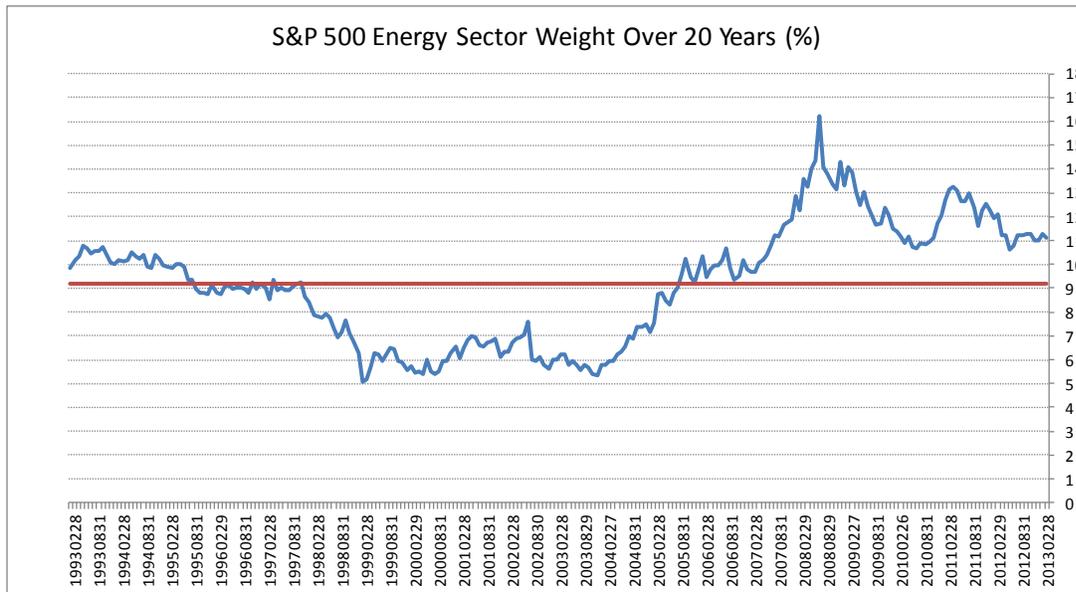
¹¹ Institutional investors currently own over 60 percent of the total outstanding equity of the United States’ largest 1,000 corporations. U.S. pension funds alone have roughly \$6 trillion in assets. Shareholdings are now so broad and diverse that they represent a broad cross-section of the whole economy. As Nell Minow and Robert Monks put it, big institutional investors are now “universal owners.” As a result of their status as universal owners, institutional investors’ financial returns are determined to a large extent by the performance of the economy as a whole. This creates a direct alignment between their economic interests and the long-term interests of society as a whole.

<<http://www.ceres.org/resources/reports/value-at-risk-climate-change-and-the-future-2002>>

¹² Please see: MSCI ACWI. <http://www.msci.com/resources/factsheets/index_fact_sheet/msci-acwi.pdf>

¹³ Average Energy Sector weight of the S&P 500 over the recent 20 year period = 9.20%

instead of 20% would be a more appropriate figure, which would also result in reducing the estimated cost of divestment by half to approximately 0.15% annually. It can be seen from the figure below that while the cost of excluding the entire energy sector would have varied from year to year, at no point in the past 20 years would this strategy have cost as much as Kritzman and Adler’s claim using a 20% figure.



Furthermore, if the list of divested securities is limited to the 200 global firms identified by GoFossilFree.org¹⁴, then the percentage of firms excluded from the S&P 500 index over a 20 year historical period is at most 5% of the weight in the index, which has the effect of reducing Adler and Kritzman’s cost estimates by half again to 0.07% annually—7 cents a year on a \$100 investment! And subsequent to NorthStar’s original publication of this white paper, Paul Ruud points out in his July 3rd, 2013 publication that elimination of Brown University’s Filthy 15 would eliminate a mere 0.5% of the stocks in a universe of 2800 securities (on an equal weighted basis).¹⁵

Not only was Kritzman and Adler’s cost estimate for divestiture based on a high 20% restriction to the investable set, they also chose to report costs for a portfolio with a very large number of stocks (250). A review of their work¹⁶ also shows that the estimated cost for portfolios with a small number of securities (50 or fewer) is much smaller than the

¹⁴ <http://gofossilfree.org/companies/>

¹⁵ Ruud, Paul, “The Inarguable Truth of Mark Kritzman” July 3, 2013
<<https://vspace.vassar.edu/paruud/pub/kritzman/Ruud%20-%20The%20Inarguable%20Truth%20of%20Mark%20Kritzman.pdf>>

¹⁶ Based upon verbal statements and tables presented by Mr. Kritzman in the Boston QWAFEFW Meeting, Tuesday, 30 Apr 2013.

number Kritzman and Adler have chosen to highlight as the potential cost of divestiture. Thus, Adler and Kritzman provide evidence that the actual cost of divestment is dependent on a socially responsible manager’s specific investment strategy, and could be substantially lower than the one the authors chose to stress.

In addition, it’s clear from a review of the paper that Kritzman and Adler’s choice to emphasize the potential cost of divestment using a global equity index also resulted in a substantially higher cost estimate than if they had picked the S&P 500 as the investable set. To put Kritzman and Adler’s cost of divestiture estimate of 0.3% into perspective, we computed annualized returns to the MSCI ACWI, the S&P 500, and the S&P 500 excluding the entire S&P 500 Energy Sector over the prior 20 years through 03/31/2013, as shown in the figure below.



Actual volatility of the S&P 500 ex-energy sector returns (15.16% annualized) was lower than the volatility of the S&P 500 total returns (15.82% annualized), so the *risk-adjusted return was higher* for the S&P 500 ex-energy than that of the S&P 500. In other words, divesting these particular indices from their energy stocks would have been *beneficial* to the overall index, not harmful.

It should be noted that Kritzman and Adler did not report on risk-adjusted return. However, if volatility of stock returns is correlated positively with the total return (locally near the rank cutoff level), then it would be reasonable to assume that a restricted portfolio constructed using their methodology would also have lower volatility than its unrestricted counterpart. This follows from the fact that the Kritzman and Adler methodology replaced divested securities with stocks with a lower return rank. It is also worth noting that a

different portfolio construction process (that is, one that did not replace divested securities, but that computed the simulated risk and return) would have generated different results. In particular, under a simple assumption of non-correlated returns within the energy sector (an assumption which is implicit in the Kritzman and Adler approach), the expected return to the divested portfolio is the same as the expected return to the non-divested portfolio. The expected volatility would differ, because the divested portfolio holds fewer securities (in this alternative approach). However, since the impact of adding more securities to the portfolio has a declining marginal effect on volatility, it is possible that the overall impact on the risk-adjusted return would be quite different than the method Kritzman and Adler use. And the Aperio Group points out that “Investors who want a portfolio free of the Filthy Fifteen can get a tracking error versus the Russell 3000 of only 0.14%, a very minor difference from the benchmark.”¹⁷

The figure above also shows that the choice of investable universe would have had a much greater impact on performance than the decision to divest the entire S&P 500 Energy Sector. This demonstrates the point that there are other portfolio construction factors that affect returns to the portfolio that were ignored in Kritzman and Adler’s approach.

Of note, the S&P 500 Energy Sector had the highest cumulative returns of any S&P sector over the prior 20 years. Going forward, while the energy sector does have a 1 in 10 (sectors) chance of being the top performing sector over the next 20 years, it is unlikely based on random chance (the methodology employed by Kritzman and Adler). Given boom and bust cycles, on a forward-looking basis there is reason to believe that energy companies in general, and fossil fuel firms in particular, will underperform in the coming years due to improved energy use efficiencies, increased discovery and production from projects undertaken by fossil fuel companies, and an increase in both the kind and efficiencies of non-fossil fuel alternatives spurred in the recent energy boom cycle.

In addition, since the authors chose to give the experts a 52% accuracy in stock picking, in the real world, these managers would charge higher active management fees than would be charged for a passive strategy (for example, an easily implementable passive strategy would be to simply exclude the entire energy sector from the S&P 500 index as shown in the figure above where the difference is 0.25% annually). Assuming an average 0.15% fee for the passive strategy and 1.07% for Kritzman’s active management strategy¹⁸, a passive divestment strategy might even result in a higher total equity return after costs and fees. In effect, in the real world, there could be a premium for a socially responsible strategy that

¹⁷ <Aperio AperioGroup building_a_carbon_free_portfolio_0.pdf>

¹⁸ Pratt, Joanna. “Study: Only 24% of Active Mutual Fund Managers Outperform the Market Index” *Nerd Wallet Investing*. 27 March 2013. <<http://www.nerdwallet.com/blog/investing/2013/active-mutual-fund-managers-beat-market-index/>>

divested fossil fuel stocks—not a cost. Based on this analysis, excluding these firms from the index would have increased net returns.

Given that the energy sector had the highest cumulative returns over the past 20 years of any sector in the S&P 500, this analysis suggests that excluding a mere 5% of the universe would have a negligible effect on overall portfolio returns on a forward looking basis.

Even the authors' choice of "an average market return of 8 percent" can be questioned. Assuming a lower than 8% expected return in future years would have the effect of yet further reducing the estimated cost of divestment. It should be noted that since standard market indexes have historically excluded alternative energy companies from their constituents, one strategy socially responsible investors employ is to augment the universe of investable securities by including these alternative energy stocks. In a mathematical simulation, replacing energy sector stocks with alternative energy stocks replenishes the size of the universe. The authors did not account for this possibility in the analysis. If the fossil fuel stocks were replaced with comparable alternative energy stocks in the investable universe such that the opportunity sets were equivalent, then Kritzman and Adler's approach would find no difference in the cost.

COST ESTIMATION CONCLUSIONS

The Actual Cost of Divestment

Even if the entire energy sector in an actively managed global portfolio were divested, the expected cost is only 0.15% annually in a 250 stock portfolio with an average annual expected return of 8%. And, if shareholders limit divestment to the top 200 fossil fuel companies by carbon in proven oil, gas and coal reserves,¹⁹ then the estimated annual cost falls by half again to 0.07% even with no assumption of any other mitigating factors (e.g., fewer holdings, lower expected return, substitution for divested securities, and so on). Using a mathematical derivation of Kritzman and Adler's [K-A] approach, Paul Rudd independently estimates that eliminating Brown University's Filthy Fifteen²⁰ from a universe of 2800 stocks with all other parameters the same as K-A, would create an opportunity cost of a mere \$5 million on a \$1 billion dollar investment over 20 years (where the \$5 million represents 0.006% annualized incremental return, that is, less than

¹⁹ <http://gofossilfree.org/companies/>

²⁰ Swarthmore College references the "sordid sixteen".

1/100th of a percent of incremental annual return is required to offset the cost of divestment); not the hundreds of millions of dollars that Kritzman and Adler claim.²¹

The Cost of Divestment is Highly Dependent on the Manager's Investment Strategy

The world provides a rich opportunity set that is both broad and deep. Removing even a sizable percentage of the investable set has relatively little impact on carefully selected actively managed portfolios. Reducing the quantity of companies in the portfolio, using a U.S. domestic investable universe, assuming a lower long-run expected return to the market (of say, 6 or 7%), or using a less egregious portfolio construction process all have the potential effect of reducing the expected cost of fossil fuel divestment.

WILL DIVESTMENT WORK?

Status Quo is Not Working

In this, the 11th hour, we must get the fossil fuel industry to keep 80% of known reserves and 100% of future finds in the ground. Convincing the oil companies to make radical changes in their very lucrative business models solely through shareholder engagement *is impossible*. A shareholder conversation with management encouraging a company to massively restrict its bottom line for the greater good has historically been profoundly unsuccessful:

“For years, responsible investor groups have called for ExxonMobil to address climate change. The company’s board of directors seems to hardly notice.”²² “The ExxonMobil shareholders had fifteen resolutions to vote on at their annual meeting in May [2013], and only one was indirectly related to global warming . . . This year, ExxonMobil decided to keep global warming resolutions from coming to a vote by shareholders . . . and won.”²³ “[Ignoring shareholder concerns] is particularly true for BP, which had previously employed a ‘silent running’ tactic –(‘whatever you do, don’t mention the tar sands!’) . . . BP can also expect to come under fire for its reliance on an energy demand scenario that assumes no government action on climate change . . . As for Shell, the resolutions prompted detailed disclosures on

²¹ Ruud, Paul, “The Inarguable Truth of Mark Kritzman” July 3, 2013
<<https://vspace.vassar.edu/paruud/pub/kritzman/Ruud%20-%20The%20Inarguable%20Truth%20of%20Mark%20Kritzman.pdf>>

²² Milloy, Steven. “Oil heiress and activist shareholder blames ExxonMobil for Oklahoma tornado.” 28 May 2013.
<<http://junkscience.com/2013/05/28/oil-heiress-and-activist-shareholder-blames-exxonmobil-for-oklahoma-tornado/>>

²³ Wolf, Vicki. “ExxonMobil manages to avoid shareholders vote on global warming.” *CLEAN Business Houston*.
<<http://www.cleanhouston.org/business/features/xom06.htm>>

carbon price, predictions for oil demand, and their Carbon Capture & Storage plans for mining projects. However, they have still failed to say anything to shareholders about how they are managing risks associated with planned tar sands projects which make up the bulk of Shell's tar sands projects, and have higher financial and environmental costs . . . Investors are also keen to understand how pursuing tar sands projects can be reconciled with Shell's stated preference for a managed transition to a stable, lower carbon economy.”²⁴

Increasing Public Awareness

The fossil fuel-free movement is heightening public awareness of the problem—prompting investors to question how their funds are being invested:

The grassroots mobilisation efforts of ShareAction and others prompted over 6,000 people to contact their pension funds and other large BP and Shell investors to express their concerns about tar sands.

People contacted us to say that this had caused them to question where there money was invested (at least one even withdrew their pension from a certain fund as a result). Money managers (some of whom said they'd never seen this level of public interest before) were forced to sit up and take notice of the views of the people on whose behalf they invest billions of pounds. In turn, fund managers were forced to ask questions of BP and Shell and focus their attention on tar sands, often for the first time.²⁵

The Cost of NOT Divesting

Naysayers claim that divestment will have no impact on fossil fuel firm share prices and/or profitability. This belief relies on the assumption that the fossil fuel divestment movement will stay small and contained. However, the equation changes if a broad base of investors divest their shares. If public opinion turns against the fossil fuel firms and the brand image and reputation of these companies becomes tarnished, not only will fossil fuel firms find themselves under increasing pressure to develop real solutions to keep carbon in the ground, but as their share prices fall the remaining shareholders (including the executive management of these firms) will suffer losses in the value of their shares.

²⁴ “Round Up: Tar Sands Shareholder Resolutions.” *Fair Pensions*.
<<http://www.fairpensions.org.uk/tarsands/update>>

²⁵ “Round Up: Tar Sands Shareholder Resolutions.” *Fair Pensions*.
<<http://www.fairpensions.org.uk/tarsands/update>>

Stock price change alone, however, does not adequately capture economic value. “[Profit] is the real economic impact the organization has on its economic environment. . . In the private sector, a commitment to corporate social responsibility (CSR) implies a commitment to some form of triple bottom line (people, planet, profit) reporting.”²⁶

For investors, “all of the terminology boils down to assets being invested with the intention of a financial return, but also a social return.”²⁷ We believe that SRI investors and their fiduciaries also have a responsibility to consider the cost of NOT divesting—on people and the planet, as well as on profit.

BEYOND DIVESTMENT

Forward Looking Solutions for the Future

In NorthStar’s view, fiduciaries’ time is better spent focusing on the opportunities presented by innovative and forward-looking solutions to our very real world problems than looking backward to the fossil fuel driven economy of the last century.

²⁶ http://en.wikipedia.org/wiki/Triple_bottom_line

²⁷ Kozlowski, Lori. “Impact Investing: The Power Of Two Bottom Lines.” *Forbes*. 10 October 2012.

<<http://www.forbes.com/sites/lorikozlowski/2012/10/02/impact-investing-the-power-of-two-bottom-lines/>>