The Financial Argument

The following section explores the nuanced financial and economic justifications for fossil fuel divestment. It was put together with the help of a licensed investment advisor, Diane Brehmer, and covers the concepts of risk and return, the carbon bubble, fiduciary duty, and the implementation process of divestment.

Risk and Return

Key Messages for this section

- Studies show that divestment has a negligible impact on portfolio performance
- In many cases portfolios screened of fossil fuel companies actually perform better than traditional funds over 10-year time periods.
- More and more fossil free product is being developed as time goes on, which makes it easier for institutions like yours to invest in these funds without incurring expensive fees.
- By doing a simple search on websites like Yahoo Finance or Morningstar we can see plainly that fossil fuel indices are underperforming standard market benchmarks like the S&P 500.
- If funds can divest fossil fuel without reducing their return/risk ratio (after fees and expenses), then divestment is more feasible.

Large institutional investors, like retirement plans and university endowments, care about providing returns that are comparable to market returns. You may hear about "portfolio efficiency" and pursuit of "higher risk commensurate with higher return". The technical language covers up a very simple idea: return/risk. If a Fund can divest fossil fuel without reducing its return/risk ratio (after fees and expenses), then divestment is more feasible.

Three studies that show divestment does not harm returns

- **Aperio Group**: A study by the Aperio Group found that divestment posed a 0.0101% risk for portfolios. That level of risk is deemed negligible, or non *material*.
    - https://www.aperiogroup.com/resource/138/node/download

- **MSCI study**: MSCI is the industry's gauge of global stock activity. They conducted a study on divestment and found that Fossil Free portfolios actually outperform unscreened portfolios.
    - https://www.msci.com/resources/factsheets/MSCI_ESG_Research_FAQ_on_Fossil-Free_Investing.pdf
- **Impax Asset Management**: studied 4 strategies with varying aggressiveness in screening for carbon. All 4 portfolios that were screened for carbon did the same or better than unscreened portfolios
    - http://www.impaxam.com/sites/default/files/20130704%20Impax%20White%20Paper%20fossil%20fuel%20divestment%20FINAL.pdf

Even more evidence that points to positive returns

The graph below shows the S&P 500 index compared to a fossil free index (S&P 500 stripped of the Top 200 companies) over a 10-year period. As you can see, the fossil free index does just as well as the S&P 500 for most of this time, and even outperformed the S&P 500 in recent years. This means that divesting actually would have made you more money.

Fossil Free Indexes US Index and S&P500, 2004 - July 2014
(Source: Fossil Free Indexes, Bloomberg)

The table below shows the same information as above, as annualized returns over various time periods.

Market Performance
Annualized as of May 31, 2015

	Performance					Std Deviation	
Index	1Y	3Y	5Y	10Y	Since 1/90	10Y	Since 1/90
S&P 500 Index	11.80%	19.67%	16.53%	8.12%	9.58%	14.71%	14.58%
S&P 500 Index ex Energy	14.98%	20.83%	17.21%	8.11%	9.57%	14.90%	14.97%
S&P 500 Index ex Fossil Fuels	13.68%	21.23%	17.30%	8.64%	NA	15.09%	NA

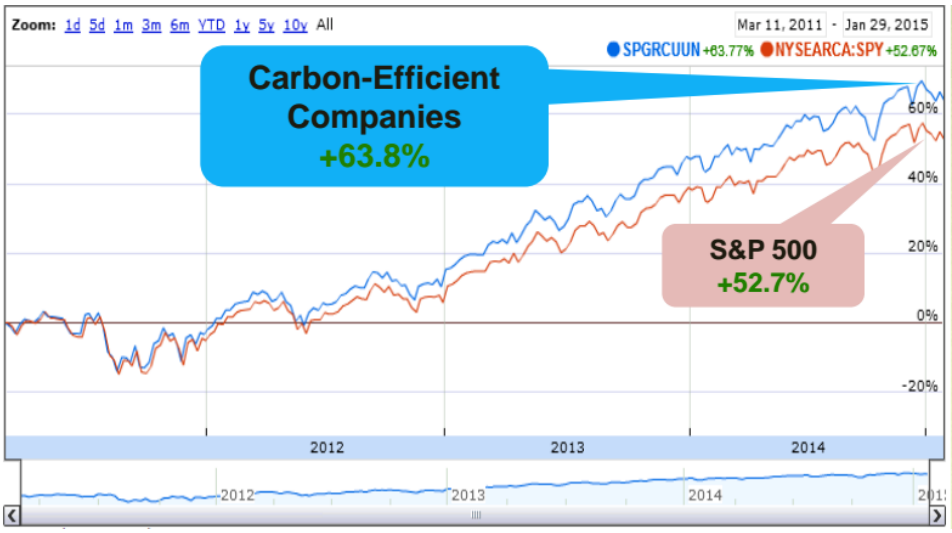
Source: Bloomberg, Fossil Free Indexes, SCERS calculation

The Fossil Free S&P Index provided higher returns than the plain S&P500 over 1-, 3-, 5-, and 10-year periods, and was more "efficient" over the past 10 years. These are important metrics.

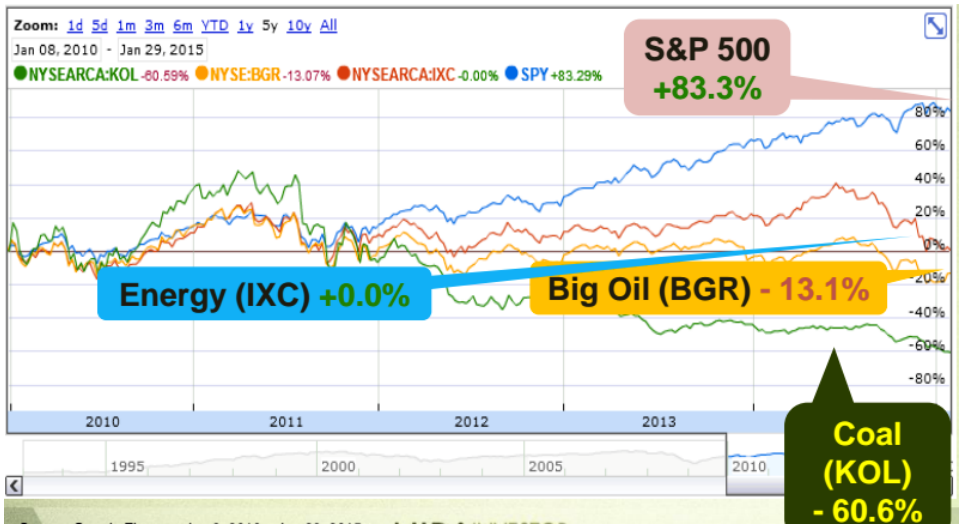
This return difference is significant: the table shows that, since 2012, the year the divestment movement began, the ex-Fossil Fuel Index outperformed the plain S&P500 Index by 1.56% per year. For an index value of $10 million, this difference equals $156,000 per year. Some call this an "opportunity cost" – the cost of the 'road not taken'.

The following two graphs are snapshots taken from a Yahoo Finance search in January of 2015.

This graph tells you that from March of 2011 to January of 2015 companies that are the most carbon-efficient have outperformed the S&P 500 Index.



The next graph shows that from Jan 2010 to Jan 2015, fossil fuel companies underperformed the S&P500 by a large amount.



Stranded Assets (AKA the "Carbon Bubble")

Key messages for this section

- If we are going to live on a life-sustaining planet into the next two centuries, there is no way the fossil fuel industry can burn through the vast majority (80% - see sources below) of their reserves. Once restrictions are put on burning those reserves the fossil fuel industry will become grossly overvalued and people will lose money.
- The value of this 80% of known fossil fuel reserves that we cannot burn through is valued somewhere between $22T and 27T. The combined debt overhang of the housing bubble was 4T. Imagine the impact the carbon bubble will have on institutional investors and our economy at large.

What is an asset?

An *asset* is the property owned completely or partially in an investment portfolio. Examples: stocks, bonds, real estate, mutual funds, ETFs and cash are common asset types in investment portfolios. Fossil fuel company assets usually include plants, equipment and fossil fuel reserves. Company assets contribute to the value or stock price of the company.

Assets become 'stranded' if they become useless to a company, the market decides the company cannot extract value from them, or if the market has mis-valued the assets and is at risk of a correction.

What is a stranded asset?

Stranded assets as related to climate change were first identified by the Carbon Tracker Initiative in its 2011 report, "Unburnable Carbon".[1] It says that, if we limit the world's temperature increase to 2 degrees Celsius, the world can avoid catastrophic climate change, but if we do, most of the fossil fuel reserves of companies listed on global stock exchanges will become unburnable. Unburnable reserves will become worthless, and the market value of these companies, and companies in their supply chain, will decline to reflect the reduced value of their reserves.

Value of Unburnable Reserves

Fossil fuel companies value their reserves the same way they always have, and assume 100% will be burned to generate future revenue. They are not adjusting their reserve values to reflect the impact of COP21, climate change policy, growth of renewable energy, new regulations, potential carbon tax, or the growing social consciousness around the importance of addressing climate change.

An August, 2015 Citigroup report estimates "that the value of unburnable reserves could amount to over $100 trillion out to 2050.[2]" Others estimate unburnable reserves of $22 - $27tr. When asset values go down, company value goes down, and the price of company securities goes down, and people holding these securities in their own savings or retirement accounts will lose money will see account values go down.

To put this number in perspective, the total debt overhang of the housing bubble was only around $4T, and its effect on the economy was huge. Stranded assets are a much larger risk, whether you choose to use $27 Trillion or $100 Trillion as your estimate.

We know how important it is for investors to identify, measure and manage investment risk so it's important for investors to identify risks, measure them, and manage them.

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[1] This links to the 2014 version of this report. http://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf

[2] https://www.citivelocity.com/citigps/ReportSeries.action?recordId=41

A note about stranded assets

Stranded assets estimates vary between 30% and 80%. The 30% estimate is based in the IPCC "50% scenario", that assigns 50% probability of remaining below the 2 degree C. limit. The 80% estimate is based on the IPCC 80% scenario that assigns 80% probability of remaining below 2. The energy industry tends to use the 50% scenario, as do some asset managers, so Fund managers may be familiar with the lower figure or want to debate it.)

Fiduciary Duty

Key messages of this section

- If fossil free investment strategies are producing higher returns with an acceptable level of risk, fiduciaries have an obligation to explore minimizing fossil fuel exposure in their portfolios.
- If the world stands to see more regulation on carbon in coming years, which risks vast amounts of assets becoming *stranded*, fiduciaries have an obligation to explore minimizing fossil fuel exposure in their portfolios to protect the financial health of their beneficiaries.
- Investment guidelines like the Prudent Person rule combined with legal scrutiny can provide leverage in making the case for divestment

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What is fiduciary duty?

Fiduciary Duty is a term referring to the legal responsibility fiduciaries (people making big decisions about where an individual's/entity's money is invested) have to make financial or investment decisions that are in the best interest of their beneficiaries (clients).-- [DB - The Primer for Investment Trustees has a nice, plain English, definition also]

Trustees have specific duties and legal responsibilities.[3] The Department of Labor:

> Fiduciaries have important responsibilities and are subject to standards of conduct because they act on behalf of participants in a retirement plan and their beneficiaries. These responsibilities include:
>
> - Acting solely in the interest of plan participants and their beneficiaries and with the exclusive purpose of providing benefits to them;
> - Carrying out their duties prudently;

[3] http://www.dol.gov/ebsa/publications/fiduciaryresponsibility.html

- Following the plan documents (unless inconsistent with ERISA);
- Diversifying plan investments; and
- Paying only reasonable plan expenses.

The Prudent Investor Rule

The Prudent Investor Rule is a guideline applying to fiduciaries. It's an important rule to understand because legal hooks exist that may be able to leverage the Prudent Person rule to make the case for divestment. Most institutional funds are governed by the Prudent Investor Rule, in one form or another.

Here's an example of how one Minnesota law applies the Prudent Investor Rule: "(b) A trustee's investment and management decisions respecting individual assets must be evaluated not in isolation but in the context of the trust portfolio as a whole and as a part of an overall investment strategy having risk and return objectives reasonably suited to the trust."[4]

Key takeaways from the Prudent Investor Rule:

1) Evaluate decisions regarding individual securities ("assets") in the context of the entire trust portfolio as a whole, not in isolation. The "trust portfolio as a whole" requires evaluating the potential impact of a decision, not on one security ("asset"), not the one investment portfolio that holds it, but "the trust portfolio as a whole", which may consist of a dozen or more investment portfolios and thousands of securities.

For example, you may hear this in a meeting: "If we eliminate Exxon, then we reduce diversification, so we cannot eliminate Exxon" Possible responses: 1) What is the impact on the entire trust portfolio? 2) The impact on the entire trust portfolio is not material. 3) Prove the impact is material. We need to see the numbers.

Based on the Minnesota prudent investor rule, plan fiduciaries may be legally required to evaluate the impact of fossil fuel divestment on the entire fund, not on a single security. Strong evidence consists of statistical analysis that demonstrates that divestment has no material impact or a positive impact on a Fund.

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[4] https://www.revisor.leg.state.mn.us/statutes/?id=501B.151. This particular wording may or may not apply to any particular institutional investment portfolio. It is best to consult with an attorney to clarify the specific regulations that apply to any specific investment fund. This information is provided only as a local example of wording that is currently in force. The important point is the reliance on 'taking a whole portfolio perspective'.

Implementation of divestment – how to do it and do well

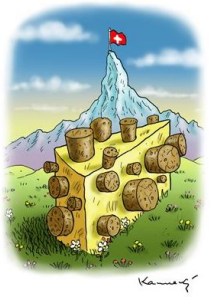
Key messages for this section

- When a portfolio eliminates fossil fuel securities, replaces fossil fuel with high-quality alternatives and applies standard portfolio construction methods, the risk attributed to divestment shrinks significantly.

1. Take out the fossil fuels: What is considered a fossil fuel security?
    - Top 200: use the Fossil Free Index[5]. FFI hired S&P/DJIA, to build the index. S&P/DJIA is a major index provider, who also publishes the S&P 500 & DJIA.
    - FTSE – this consists of [6]. .
    - Any security with proved & probable coal reserves or oil & natural gas reserves that are used for energy purposes: MSCI ACWI Fossil Free Index[7] As of May, 2015, only a British Pound version is available.

2. Choose a method for portfolio construction. Methods matter.
    - Do nothing - the "Swiss Cheese[8] method": this can be found in studies that aim to exaggerate the risk of divestment. How? Choose a portfolio, eliminate fossil fuel securities – and do nothing. The portfolio remains may look like Swiss cheese – full of holes, but not nearly as tasty. The portfolio is more risky than before, but divestment is not the reason. The cause of higher risk is less diversification, caused by poor portfolio construction. This method signals a flawed analysis. The conclusion does not follow from the data.

    - Replace - plug the holes: some studies take this partial solution, but this approach does not solve the risk problem very well. It fills the energy sector holes created by divestment, but adds risk by distorting other risk dimensions, like volatility, growth/value style, large/mid/small cap, or others. Replacements may include alternative energy, energy efficiency, water, infrastructure or broader ecological / economic justice strategy



    - **Best option:** Replace & Optimize: this is a standard method used by professional portfolio managers. In "portfolio construction", they use mathematical models to find the combination of security weights that

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[5] http://fossilfreeindexes.com/
[6] http://tcktcktck.org/2015/02/fossil-free-indexes-show-strong-performing-as-climate-concerns-grow/
[7] https://www.msci.com/resources/factsheets/index_fact_sheet/msci-acwi-ex-fossil-fuels-index-gbp-gross.pdf
[8] http://www.cagle.com/2014/02/swiss-cheese-summit/

provide the most diversification. Three tools are optimization, Monte Carlo analysis, and scenario analysis.

- Optimization minimizes risk per unit of return (= maximizes return/risk).
- Monte Carlo analysis shows the statistical distribution of returns.
- Scenario analysis models the portfolio's response to shocks, like the 2008 financial crisis.