

Fossil Fuel Investments

Increased Socio-Political Risk Exposure to Portfolios

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Economy in Relation to Risk

Economic risk is the chance that macroeconomic conditions like exchange rates, government regulation, or political stability will affect an investment.

Three Main Risk Factors I'll Be Focusing On:

- Social
- Political/Legislative
- Fossil Fuel Corporate Business Operations

Political/Regime Risk

- **Current Political Instability where there are Fossil Fuel Reserves**
 - **Case Studies:** The Middle East: Saudi Arabia, Iran, and Iraq ^{1,2,3}, Arab Spring Uprisings^{4,5}, Greek Debt Crisis⁶, Brexit^{7,8}, The Dakota Access Pipeline⁹
- **Increasing Protests in Relation to Fossil Fuels**
 - **Case Studies:** The Dakota Access Pipeline^{10,11}, The People's Climate March¹², Youth Currently in Federal Lawsuit Suit Over Climate Change¹³, Fossil Fuel Divestment Movement^{14,15,16}, Ballot Initiatives 75 & 78^{17,18,19}, Keystone^{20,21}
- **Increasing Regulation and Key Legislation to Limit Fossil Fuel Production**
 - **Case Studies:** UN Climate Talks (COP 21) agreement²², Obama halting Dakota Access pipeline production due to protests, Obama rejecting Keystone XL, Shell cancels projects in the Arctic and Canada after protests²³

1. <http://globalriskinsights.com/2016/05/iraq-political-instability/>
2. <https://www.brookings.edu/blog/markaz/2016/06/16/the-political-implications-of-transforming-saudi-and-iranian-oil-economies>
3. https://www.chathamhouse.org/sites/files/chathamhouse/public/Research/Energy_%20Environment%20and%20Development/1012pp_opec.pdf
4. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2011/09/MEP_2.pdf
<https://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/03/MEP-8.pdf>
5. <http://marketrealist.com/2015/01/crude-oil-market-key-overview/>
6. <http://oilprice.com/Energy/Energy-General/What-The-Brexit-Result-Means-For-The-UK-Oil-And-Gas-Industry.html>
7. <http://www.cnbc.com/2016/06/24/the-us-companies-being-hit-hardest-by-brexit-vote.html>
8. <http://mlexmarketinsight.com/editors-picks/brexit-threatens-uk-fossil-fuel-investments-chatham-house-says/>
9. <http://fortune.com/2016/09/11/dakota-access-pipeline-results/>
10. <https://www.theguardian.com/us-news/2016/sep/13/dakota-access-pipeline-protests-north-dakota-sioux>
11. <http://www.nbcnews.com/news/us-news/federal-judge-denies-tribe-s-request-halt-dakota-access-pipeline-n645616>
12. <http://www.politico.com/story/2014/09/peoples-climate-march-nyc-111177>

14. <http://www.forbes.com/sites/jamesconca/2016/05/01/climate-change-litigation-the-children-win-in-court/#7ddba7815dfe>
15. <https://350.org/cop21-divestment/>
16. <https://policy.m4bl.org/invest-divest/>
17. <http://www.arabellaadvisors.com/wp-content/uploads/2015/09/Measuring-the-Growth-of-the-Divestment-Movement.pdf>
18. <http://www.boulderweekly.com/news/signatures-for-initiatives-75-and-78-turned-in-for-the-count/>
19. <http://www.cnbc.com/2016/08/05/colorado-fracking-fight.html>
20. <http://blogs.barrons.com/stockstowatchtoday/2016/09/13/what-were-they-thinking-anadarko-petroleum-doubles-down-on-offshore/>
21. <http://www.businessinsider.com/obama-keystone-xl-pipeline-2015-11>
22. <http://fortune.com/2015/12/17/energy-companies-feel-the-burn-from-paris-climate-deal/>
23. <http://energydesk.greenpeace.org/2015/12/14/cop21-how-have-the-worlds-fossil-fuel-giants-reacted/>
24. <http://www.usnews.com/news/business/articles/2015/10/29/shell-reports-net-loss-of-74-billion-after-arctic-exit>

Other Social Factors to Consider

- **Increased Public Support/Investment in Renewables and Battery Storage¹**

- **Key Stats:**

- 2015 produced a new record for global investment in renewable energy. The amount of money committed to renewables excluding large hydro-electric projects rose 5% to \$285.9 billion, exceeding the previous record of \$278.5 billion achieved in 2011.
- The amount of generating capacity added in wind and solar photovoltaics last year came to 118GW, far above the next highest annual figure, 2014's 94GW. Overall, renewables excluding large hydro made up 53.6% of the gigawatt capacity of all technologies installed in 2015, the first time it has represented a majority. Global investment in renewable power capacity, at \$265.8 billion, was more than double dollar allocations to new coal and gas generation, which was an estimated \$130 billion in 2015.
- Other developing countries also raised their game – India saw its commitments rise 22% to \$10.2 billion, while Brazil (\$7.1 billion, down 10%), South Africa (\$4.5 billion, up 329%), Mexico (\$4 billion, up 105%) and Chile (\$3.4 billion, up 151%) all joined it in the list of the top 10 investing countries in 2015. The list of developing countries investing more than \$500 million last year also included Morocco, Uruguay, the Philippines, Pakistan and Honduras. Investment in Europe slipped 21% to \$48.8 billion, despite that continent's record year for financings of offshore wind, at \$17 billion, up 11%. The US enjoyed a 19% bounce in renewable energy commitments to \$44.1 billion, its highest since 2011, with solar accounting for just over two thirds of that total. Japan attracted \$36.2 billion, almost the same as in 2014, thanks to its continuing boom in small scale PV.
- Renewable generation costs continue to fall
- Rising increase in battery storage

- **Increasing Awareness of Climate Change due to natural disasters**

- Climate change is a positive feedback loop
- **Case Studies:** Hurricane Katrina², Hurricane Sandy³

1. http://fs-unep-centre.org/sites/default/files/publications/globaltrendsrenewableenergyinvestment2016lowres_0.pdf
2. http://bagrow.com/pdf/10_1007_s13412-016-0391-8.pdf
3. <http://www.highbrowmagazine.com/1908-after-hurricane-sandy-climate-change-back-political-agenda>

The Fossil Fuel Industry is a Risky Business

- **Conventional sources of fossil fuels are harder to find.** ¹
 - The IEA forecasts that conventional crude oil production will decrease between 2012 and 2035. Many oil and gas companies are being forced to invest in **unconventional, technically complex and/or risky projects in order to replace reserves**.
 - Although oil prices have been high, until more recently, western majors had negative free cashflows after dividends in 2013. They have faced calls from shareholders to implement capital discipline and stop investing in unattractive projects.
 - **Analysis of 12 majors shows that total capital expenditure over the last nine years has increased by 169%, while total production has actually decreased by 2%.** The oil price volatility in 2014, of which oversupply was a significant driver, highlights the implications of shifts in the oil supply cost curve. Companies are entering more risky, remote and technically challenging locations which have the potential to become stranded.
- **It is an Economically Volatile Industry: It Functions through Boom and Bust Cycles** ²
 - The oil industry is cyclical. The long history of the oil industry has been one of boom and bust cycles. During the booms we hear about windfall profits, but during the downward part of the cycle, oil companies lose a lot of money and many people lose their jobs.
 - It is a function of the capital-intensity of the business, and the multi-year lag time in getting projects executed.
 - The carbon budget and related government initiatives to foster the energy transition away from fossil fuels will create further complexity in the oil and gas market and, consequently, increase oil price volatility while reducing oil and gas demand³
- **As riskier projects are undertaken, mistakes are guaranteed to occur. In key case studies, there's an inadequate response to crisis.**
 - Because it is inherently risky: spills, worker exploitation, and other liabilities are guaranteed to occur
 - 1.3 gallons of petroleum spills into U.S. waters from vessels and pipelines in a typical year. A major oil spill could easily double that amount.
 - Oftentimes there is inadequate response to accidents from fossil fuel corporations, increasing public stigmatization toward these corporations. This damages corporate reputation.

■ **Case Studies:** Deepwater Horizon Spill^{4,5,6} Exxon Valdez⁷

1. http://www.standardlifeinvestments.com/WP_Stranded_Assets_White_Paper/getLatest.pdf
2. <http://www.financialsense.com/contributors/robert-rapier/boom-bust-five-stages-oil>
3. https://www.accenture.com/t20160527T044626_w_us-en_acnmedia/PDF-11/Accenture-Strategy-Energy-Perspectives-Consequences-COP21.pdf
4. <https://www.epa.gov/enforcement/deepwater-horizon-bp-gulf-mexico-oil-spill>
5. <http://www.takepart.com/article/2015/04/06/cleanup-products-deepwater-horizon-spill-we-re-toxic>
6. <http://scholarship.sha.cornell.edu/cgi/viewcontent.cgi?article=1209&context=chrrpubs>
7. <http://www.nytimes.com/1989/04/21/business/exxon-s-public-relations-problem.html?pagewanted=all>

How do these risks factor into portfolio performance?

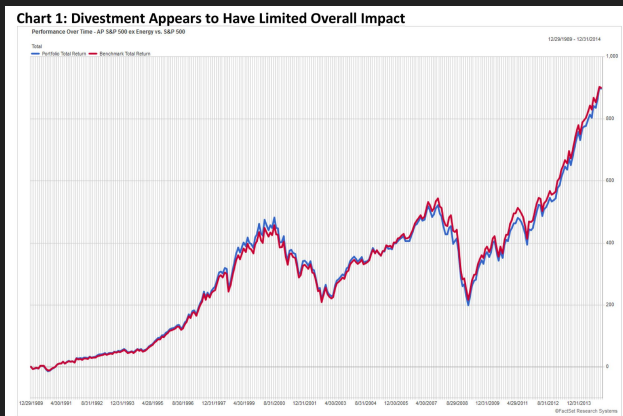
- Imbalanced risk/reward ratio¹
- No political risk insurance for fossil fuel investments²
- Wasted Capital and Stranded Assets
 - They are being shared for more than they are worth³
 - Fossil fuel companies risk wasting up to \$2.2 trillion in the next decade by pursuing projects that could be uneconomic in the face of international action to limit climate change
 - Two-thirds of the total financial risks are currently earmarked for new and existing oil projects, the biggest fossil fuel sector at risk behind natural gas
 - Under a 2°C scenario, exploration would be stopped and development capex would be slashed.⁴
 - Paris Climate talks majorly play into this with the 1.5 degrees agreement

1. <http://www.investopedia.com/terms/r/riskrewardratio.asp>
2. <https://www.environmental-finance.com/content/news/blackrock-warns-on-stranded-assets.html>
3. <http://www.platts.com/latest-news/natural-gas/london/fossil-fuel-sector-seen-risking-22-trillion-on-26288566>
4. https://www.accenture.com/t20160527T044626_w_us-en/_acnmedia/PDF-11/Accenture-Strategy-Energy-Perspectives-Consequences-CO21.pdf
5. <https://www.epa.gov/enforcement/deepwater-horizon-bp-gulf-mex>

Divestment: Case Studies and Implications

- **Case Studies:**

- Union of Concerned Scientists Divestment₁
- Rockefeller Fund₂
- Divestment study simulated over 25 years found no harm from divesting a portfolio of fossil fuels. The simulated divestment portfolio excluded energy stocks, while increasing the weights of the remaining index constituents on a pro rata basis. Returns are virtually identical for the 25-year period ending December 31, 2014, implying no tradeoff between values and performance. See below:



1. <http://www.ucsusa.org/sites/default/files/attach/2015/06/divestment-case-study-union-of-concerned-scientists.pdf>
2. <http://money.cnn.com/2015/10/26/investing/fossil-fuel-divestment-rockefeller-brothers-fund/>
3. <http://www.thinkadvisor.com/2015/04/23/fossil-fuel-divestment-portfolio-consequences-and>

Q & A