Impax
ASSET MANAGEMENT

Storms on the Horizon

IS CLIMATE CHANGE POLICY LIKELY TO UNDERMINE THE VALUE OF FOSSIL FUEL ASSETS, AND SHOULD INVESTORS DIVEST?

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1. Executive Summary

Over recent months there has been a discernible change in attitudes towards addressing climate change. A combination of scientific, social, political and technological factors has led many to believe that serious action by governments to reduce greenhouse gas ("GHG") emissions is now increasingly likely.

Several financial analysts are warning that energy portfolios face a risk that tighter regulations on emissions of carbon dioxide ("CO_2"), a GHG, could lower demand for fossil fuels, making these assets substantially less valuable. Some are taking a radical view and recommending complete divestment from companies holding fossil fuel assets.

Impax has discussed elsewhere[i] the pros and cons of full divestment, arguing that, given an increased likelihood of regulatory intervention affecting the fossil fuel sector, the most compelling strategy for investors is to:

(a) ascribe a higher risk premium to the ownership of fossil fuel assets,

(b) reduce levels of ownership of fossil fuels accordingly, and

(c) invest the proceeds of partial divestment in assets that have similar energy price factor risk.

To illustrate the financial consequences of full divestment, we have analysed historical data to show that over the past six years[ii], eliminating the fossil fuel sector from a global benchmark index would actually have had a small positive return effect. Furthermore, much of the economic effect from owning fossil fuel stocks could have been replicated with 'fossil free' energy portfolios consisting of energy efficiency and renewable energy stocks, with limited additional tracking error and further improved returns[iii].

2. A Rising Risk Premium on Fossil Fuel Assets

The scientific consensus that human activity – particularly the burning of fossil fuels – is warming the climate is continuing to strengthen. In October 2013, the Intergovernmental Panel on Climate Change ("IPCC") published its fifth assessment report examining the state of climate science. It found clear evidence of a sustained and unequivocal rise in global temperatures, and noted that limiting further temperature rise will require substantial and sustained reductions in GHG emissions[iv].

For the first time, the IPCC report referenced a so-called 'carbon budget' – the maximum volume of GHGs that can be emitted globally if we are to avoid dangerous climate change. It stated that, to have a better than two-thirds (66%) chance of keeping the global average temperature rise below 2°C compared to pre-industrial times, total cumulative emissions from all human sources since the Industrial Revolution will have to be limited to no more than 790 gigatonnes of carbon (equivalent to 2900 gigatonnes of CO_2). Approximately 515 gigatonnes of carbon (1890 gigatonnes of CO_2) had already been released into the atmosphere by 2011[v].

After the inconclusive outcome to the Copenhagen climate negotiations in 2009, the policymaking process around climate change is once more picking up speed. December 2015 is the deadline for a successor agreement to the 1997 Kyoto Protocol, and optimism is building that a new international climate change regime will be agreed at talks that month in Paris.

Behind this optimism is an apparent willingness by the world's two largest emitters – China and the US – to take action on emissions of GHGs. Faced with growing domestic disquiet about air quality, China has embarked upon a "war on pollution", particularly targeting coal-fired power generation and vehicle emissions. As well as tackling local air quality concerns, China made a landmark announcement on 1 September 2014, stating plans to start a national market in carbon trading by 2016. The Chinese government aims to cut the intensity of emissions by up to 45% before 2020 from 2005 levels[vi].

Meanwhile, following a US Supreme Court ruling in 2007 that CO_2 could be considered a pollutant under the Clean Air Act, the US Environmental Protection Agency unveiled in June 2014 a rule that will, if implemented as proposed, cut emissions of CO_2 from existing coal-fired plants by 30% by 2030, compared with 2005 levels[vii].

Government efforts to limit GHG emissions are likely to take the form of direct or indirect charges or taxes, which would raise the cost of fossil fuels for consumers while depressing prices for producers. Owners of fossil fuel assets that are affected by these changes are vulnerable to a drop in revenue, while those assets with a high marginal cost of production may become uneconomic or "stranded".

GROWING CONCERN FROM FINANCIAL ANALYSTS: WEAK RESPONSE FROM INCUMBENTS

Some energy-focused analysts[viii] have commented on the material risk that government actions to combat climate change could depress the valuation of fossil fuel assets. For example, French research house Kepler Cheuvreux estimates that the fossil fuel sector would stand to lose revenues of US$28 trillion over the next two decades if stringent controls were placed on GHG emissions[ix]. Recent research from HSBC on climate change reported that European energy companies could see their market capitalisation fall 40-60%[x] if oil prices for producers, i.e. net of any carbon tax or cost of pollution permits, were to drop to US$50/barrel, while the value of the coal reserve assets of four of the largest mining companies could be slashed in half, wiping out US$20 billion[xi] of value.

To date, the response from the companies that explore for, develop and own fossil fuel assets has been relatively muted. Earlier this year, ExxonMobil[xii] and Shell[xiii] both made statements challenging the underlying thesis that the value of their balance sheets was at risk from government action on climate change. Exxon, in particular, rebutted the argument that governments will eschew cheap energy in favour of climate protection. Indeed, rational investors might question whether the political willingness exists to adopt the stringent climate policies that would lead to fossil fuel assets and companies with such exposure slumping in value.

PRESSURE BUILDING TO DIVEST

These regulatory and policy developments are fuelling momentum for the "fossil fuel divestment" campaign. This movement, which originated within US universities, bears some similarity to calls in the 1980s for divestment of stocks of companies that supported apartheid. Campaigners are particularly targeting college endowments and municipal and state pension funds, claiming that it is "morally wrong to profit by investing in companies that are causing the climate crisis"[xiv] and asking them to limit or divest their holdings in fossil fuel companies in response to rising concerns about global warming.

The campaign claims to have scored some notable successes. In May, Stanford University announced its intention to exclude direct holdings in 100 publicly traded coal extraction businesses from its US$19 billion endowment, and divest any direct holdings in privately held coal assets[xv]. The following month, the University of Dayton said it would begin to divest coal and fossil fuels from its US$670 million investment pool.[xvi] Dozens of foundations, cities, counties and religious institutions have also made divestment commitments, with the World Council of Churches, representing 500 million Christians, being one of the latest to do so[xvii]. Although these announcements have generated a good deal of publicity, the wider investment community remains sceptical of the merits of the divestment case.

The next section of this paper presents Impax's analysis of the historical consequences of full divestment of fossil fuel stocks.

3. The Investment Implications of Divestment

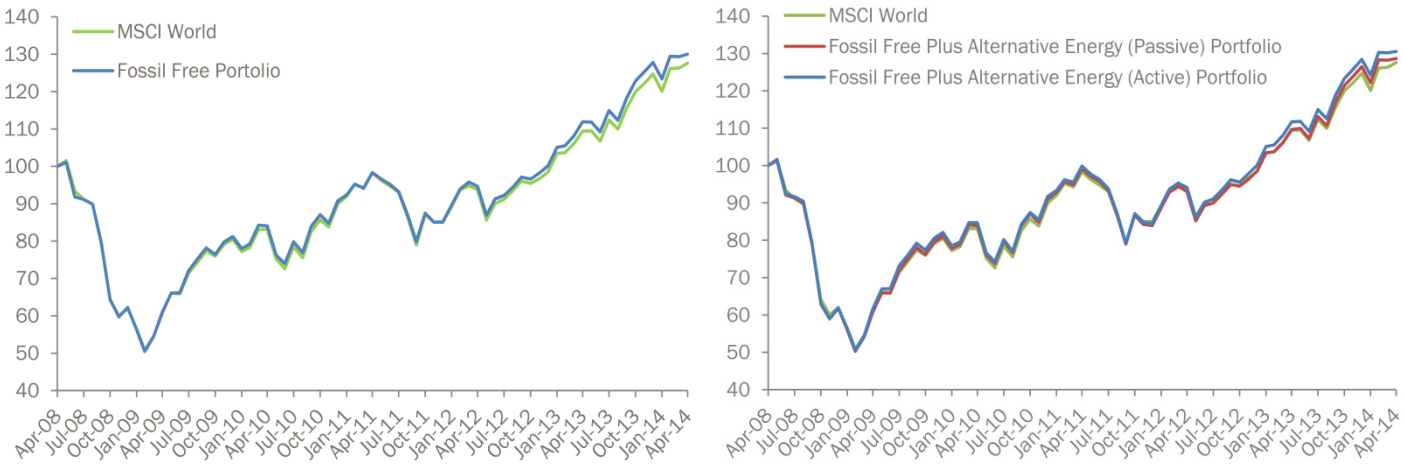
Although a growing body of robust, credible investment-orientated research is highlighting the un-priced risks that are accumulating in the fossil fuel sector, many investors are concerned that divestment from fossil fuel stocks would introduce other types of risk into their portfolios. Foremost among their concerns is that excluding energy, a material component of most global indices, will increase volatility and tracking error, and potentially lead to underperformance.

We looked at how three investment portfolios without exposure to the fossil fuel extraction and production sector would have actually performed in recent years:

1. The MSCI World Index without the fossil fuel energy sector (the "Fossil Free Portfolio");
2. Replacing the fossil fuel stocks of the MSCI World Index with a passive allocation to an investable universe of renewable energy and energy efficiency stocks (the "Fossil Free Plus Alternative Energy (Passive) Portfolio"); and
3. Replacing the fossil fuel stocks of the MSCI World Index with an actively managed portfolio of renewable energy and energy efficiency stocks (the "Fossil Free Plus Alternative Energy (Active) Portfolio").

We analysed returns over six years in order to utilise data from the FTSE Environmental Opportunities index series, which was launched in 2008. The results show that all three portfolios would have improved returns relative to the MSCI World Index with limited tracking error (see Figures 1 and 2 below).

Figure 1 – Six year cumulative returns for two alternatives to portfolio construction (rebased to 100)



Source: Factset, WM Reuters. Data to 30 April 2014 in USD.

Figure 2 – Global Equity Return and Risk Comparison for MSCI World and Fossil Free Portfolios

	Annualised Return	Annualised Volatility	Information Ratio	Tracking Error
MSCI World	4.1%	19.2%	-	-
Fossil Free Portfolio	4.5%	19.3%	0.2	1.5%
Fossil Free Plus Alternative Energy (Passive) Portfolio	4.3%	19.8%	0.1	1.7%
Fossil Free Plus Alternative Energy (Active) Portfolio	4.5%	20.0%	0.2	1.9%

Source: Factset, WM Reuters, 6 year data to 30 April 2014 in USD.

Returns are based on USD data. The impact of foreign exchange variations between the USD and other currencies are not considered. Past returns are not a reliable indicator of future returns.

The Investment Implications of Divestment (continued)

FOSSIL FREE PORTFOLIO

First, we removed the fossil fuel energy stocks[xviii] from the MSCI World Index (the largest constituents of which are listed in Appendix 1 on page 6).

Excluding the fossil energy stocks from the MSCI World Index over the last six years to the end of April 2014 would have improved returns by 0.4 percentage points annually, to 4.5% a year from 4.1%. The tracking error was 1.5% and the information ratio was 0.2.

This result mirrors recent research carried out by MSCI which has analysed the impact of removing 76 oil and gas exploration companies and 14 coal and consumable fuels stocks from its All-Country World Index Investable Market Index. In a back-testing exercise from 1 January 2007 to 31 December 2013, the MSCI ACWI Index minus these constituents outperformed by an annualised 0.1 percentage points with a tracking error of 1.2%[xix].

Aperio Group has also examined the effects of removing from the MSCI ACWI Index the Oil, Gas and Consumable Fuels sector and then optimising the hypothetical portfolio to track the original index as tightly as possible. Over a 14 year period ending 31 December 2013, Aperio found that this increased annual returns by 34 basis points while generating a small tracking error of 0.8%[xx].

FOSSIL FREE PLUS ALTERNATIVE ENERGY (PASSIVE) PORTFOLIO

Despite these encouraging historical data, investors may be understandably concerned that excluding an entire industry sector such as fossil energy and reallocating this portion across the other economic sectors means that they would miss out on any future outperformance of the energy sector.

So, as a replacement for MSCI Energy, we modelled the performance of the MSCI World Index with the fossil energy sector replaced with FTSE's Environmental Opportunities (EO) Energy universe, which currently comprises 247 energy efficiency and renewable energy stocks. The index's largest constituents are listed in Appendix 2 on page 6.

Over the six years to April 2014, the portfolio would have outperformed the MSCI World Index by 0.2% per year with a tracking error of 1.7%, producing an information ratio of 0.1.

FOSSIL FREE PLUS ALTERNATIVE ENERGY (ACTIVE) PORTFOLIO

Since 2008, Impax has been actively selecting and weighting stocks from the FTSE EO Energy universe. This enhanced Energy strategy was managed defensively during the recent recession.

Over the six years to April 2014, had the MSCI Energy allocation been substituted with the Impax enhanced EO Energy strategy, the portfolio would have delivered an annual return of 4.5%, i.e. an excess return of 40 basis points per annum compared with the MSCI World index, with a tracking error of 1.9% and an information ratio of 0.2.

4. Conclusions

Notwithstanding the encouraging historical results of lower levels of investment in fossil fuel assets, investors will want to assess the future prospects of these sectors and the alternatives discussed above. Although full analysis is outside the scope of this paper, there is mounting evidence that the alternative energy sector offers the prospect of stronger returns without the downside risks of owning fossil fuel assets, for example:

- In June 2014, The International Energy Agency (IEA) stated that it anticipated worldwide investment in non-hydro renewables will rise from over US$200 billion in 2012 (half of the total investment in power plants) to US$290 billion (55%) by 2035, including replacements[xxi].

- Other analysts are even more bullish. Bloomberg New Energy Finance (BNEF) predicts that annual investment across all renewable energy generation assets will increase to US$630 billion in 2030. This BNEF's median scenario. Its more aggressive scenario puts that figure at US$880 billion per annum[xxii].

- The IEA also forecasts a dramatic increase in investment in energy efficiency. Under its (conservative) "New Policies" scenario, it estimates that the current annual US$130 billion investment will rise to US$210 billion a year by 2020 and to US$530 billion a year by 2030. That figure would double to US$1.1 trillion/year in 2030 if policies were put in place to meet the IEA's (more aggressive) "450" scenario.

- Goldman Sachs notes a weakening outlook for thermal coal: "We believe environmental regulations, strong competition from gas and renewable energy and improvements in energy efficiency will gradually erode coal's dominant position. 2013 represents a watershed for the global coal market. On the demand side, we expect the growth rate in the seaborne market to slow down sharply from 7% in 2007-12"[xxiii].

- In 2013, ratings agency Standards & Poor's published a bearish report on the potential impact of climate change legislation on the oil and gas sector: "We see a deterioration in the financial risk profile of [smaller oil and gas companies] to a degree that would potentially lead to negative outlook revisions and then downgrades over 2014-17"[xxiv].

Investors who are minded to assign a higher risk premium to holding fossil fuel assets are likely to consider reducing their holdings accordingly. As the alternative energy sector develops, the opportunities for investment in diversified portfolios of robust assets in this area are set to expand, providing increasing scope for investors to deploy excess capital while maintaining energy market exposure.

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Appendices

Appendix 1: Current top 10 constituents of the MSCI Energy Sector

Company	Weight in Sector	Sub Industry	Region
Exxon Mobil Corporation	13.8%	Integrated Oil & Gas	North America
Chevron Corporation	7.5%	Integrated Oil & Gas	North America
BP PLC	4.9%	Integrated Oil & Gas	Europe
Royal Dutch Shell Plc Class A	4.7%	Integrated Oil & Gas	Europe
Total SA	4.7%	Integrated Oil & Gas	Europe
Schlumberger NV	4.1%	Oil & Gas Exploration & Production	North America
Royal Dutch Shell Plc Class B	3.3%	Integrated Oil & Gas	Europe
ConocoPhillips	2.7%	Oil & Gas Exploration & Production	North America
Occidental Petroleum Corporation	2.4%	Integrated Oil & Gas	North America
BG Group plc	2.1%	Oil & Gas Exploration & Production	Europe

Source: FactSet, WM Reuters. Data as of April 30, 2014 in USD

Appendix 2: Current top 10 constituents of the combined FTSE EO Energy Efficiency Index and FTSE EO Renewable & Alternative Energy Index

Company	Weight in Sector	Sub Sector	Region
Siemens AG	6.9%	Diversified Energy Efficiency	Europe
Honeywell International Inc.	4.5%	Diversified Energy Efficiency	North America
ABB Ltd.	3.4%	Power Network Efficiency	Europe
Enel S.p.A.	3.3%	Renewable Energy Developers & IPPs	Europe
Schneider Electric SE	3.2%	Power Network Efficiency	Europe
Emerson Electric Co.	3.0%	Industrial Energy Efficiency	North America
Iberdrola SA	2.8%	Renewable Energy Developers & IPPs	Europe
Vmware, Inc. Class A	2.5%	Industrial Energy Efficiency	North America
DENSO CORPORATION	2.3%	Transport Energy Efficiency	Asia Pacific
Fanuc Corporation	2.2%	Industrial Energy Efficiency	Asia Pacific

Source: FactSet, WM Reuters. Data as of April 30, 2014 in USD

http://www.ftse.com/products/indices/env-marketshttp://www.ftse.com/products/indices/env-marketsk

Sources

[i] http://www.pensionconsulting.com/Portals/0/UserReports/2014%2005%2020%20FINAL%20PCA%20Report-Divestment%20Financial%20Impact%20Academic%20and%20Market%20Research.pdf , May 2014, page 14 and refer to original document "Beyond Fossil Fuels: The Investment Case for Fossil Fuel Divestment", July 2013

[ii] Five year data used in Impax's first White Paper: Beyond Fossil Fuels, The Investment Case for Fossil Fuel Divestment. Now updated here with 6 year data to 30 April 2014.

[iii] Our original research was an analysis of historical data for the five years to 30 April 2008, which has now been updated for six year period to 30 April 2015 - Data for the global benchmark index minus fossil fuels is available for the last six years.

[iv] IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis.

[v] UN IPCC report Summary for Policymakers, http://www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf, GCI, 11 September 2013

[vi] Bloomberg New Energy Finance, https://www.bnef.com/News/90965 - (subscribers only), 1 September 2014

[vii] US Environmental Protection Agency, Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, proposed rule, 18 June 2014

[viii] Carbon Tracker's work has been picked up and developed by a number of financial institutions and rating agencies, including:

- HSBC, whose oil and gas analysts warned that European energy companies could see their market capitalisation fall 40-60% if oil prices drop to US$50/barrel, as a consequence of climate policies commensurate with the 2°C goal.
- Citi, which examined the value at risk from climate policies among Australian extractive companies within the ASX200 index.
- Standard & Poor's, which predicted that smaller oil companies – especially those heavily exposed to high-cost unconventional oil production – could face credit downgrades within a few years under its 'stressed' carbon reduction scenario.
- Aviva Investors, Bunge, Climate Change Capital and HSBC, which are funding research at Oxford University's Smith School of Enterprise & Environment into risks posed to investors by high-carbon stranded assets.

[ix] Kepler Cheuvreux, Stranded assets, fossilised revenues, USD28trn of fossil-fuel revenues at risk in a 450-ppm world, 24 April 2014

[x] HSBC (2013) Oil & Carbon revisited

[xi] http://reneweconomy.com.au/2014/hsbc-says-20bn-market-value-of-coal-assets-at-risk-36748, 20 January 2014

[xii] http://www.theguardian.com/sustainable-business/climate-change-exxon-total-shell-oil-gas-emissions-security, 29 April 2014

[xiii] http://s02.static-shell.com/content/dam/shell-new/local/corporate/corporate/downloads/pdf/investor/presentations/2014/sri-web-response-climate-change-may14.pdf, 16 May 2014
http://www.prnewswire.com/news-releases/shareholders-exxonmobil-takes-crucial-step-of-acknowledging-carbon-asset-risk--but-more-is-needed-253279031.html, 31 March 2014

[xiv] http://www.eaem.co.uk/news/investment-funds-divested-fossil-fuels-will-perform-better, 15 July 2013

[xv] http://news.stanford.edu/news/2014/may/divest-coal-trustees-050714.html, 6 May 2014

[xvi] https://www-secure.udayton.edu/news/articles/2014/06/dayton_divests_fossil_fuels.php, 23 June 2014

[xvii] http://www.oikoumene.org/en/resources/documents/central-committee/geneva-2014/report-of-the-finance-policy-committee/@@download/file/GEN_FIN06_APPROVED_Report_Finance_Policy_Committee.pdf, 2-8 July 2014

[xviii] The Fossil Energy stocks represent the companies within the MSCI World Index whose businesses are dominated by either of the following activities: 1) The construction or provision of oil rigs, drilling equipment and other energy related service and equipment and/or 2) the exploration, production, marketing, refining and/or transportation of oil and gas products, coal and other consumable fuels.

[xix] MSCI ESG Research, 'Options for Reducing Fossil Fuel Exposure', January 2014

[xx] This is based on the Global Classification Standards developed by MSCI and Standard & Poor's
http://www.aperiogroup.com/system/files/documents/building_a_carbon_free_portfolio.pdf

[xxi] World Energy Investment Outlook special report – International Energy Agency – http://www.iea.org/publications/freepublications/publication/WEIO2014.pdf, 19 May 2014, page 102

[xxii] New Energy Source: Bloomberg Finance, Global Renewable Energy Market Outlook 2013, http://about.bnef.com/presentations/global-renewable-energy-market-outlook-2013-fact-pack/, 23 April 2013, page 13

[xxiii] Goldman Sachs Global Economics, Commodities and Strategy Research – "The window for thermal coal investment is closing", July 2013

[xxiv] "What a Carbon-Constrained Future Could Mean for Oil Companies' Creditworthiness", Standard & Poor's, March 2013.