



Review of SPF's Energy portfolio:

Risks, returns and opportunities

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Section I. Introduction

The members of Strathclyde Pension Committee are the trustees of its investments and are ultimately legally responsible for the proper investment and safekeeping of these funds. With financial risks of investing in fossil fuels becoming clearer every day, the managing body of Strathclyde Pension Fund has the responsibility to fulfill its fiduciary duty to its members and to make prudent decisions regarding the level of risk it exposes them to.

Assessing the exposure of fossil fuel companies is essential to the long-term sustainability of any fund. By acting promptly on its energy portfolio, the fund would benefit from acquired experience in fossil fuel assessment and low-carbon opportunities, preparing the way to insure that it meets its medium and long-term liabilities and prevents potential future loss.

This report intends to serve as an advisory document for the Strathclyde Pension Fund and its members, evaluating financial risks and opportunities regarding the carbon-intensive assets and increasing exposure of the fund. The research reviews the current volatility of the fossil fuel market in general and provides specific assessment of SPF's financial performance and reinvestment strategies.

Section II. Investment in carbon-intensive companies – an increasingly risky investment

i. Unburnable carbon and further resource exploration

In December 2015, at the Conference of the Parties (COP21) in Paris, 175 countries, including the UK, committed themselves to limit the rise of global temperatures to 2°C. Such a limit corresponds to a specific amount of carbon dioxide that can be released into the atmosphere. This creates a particular risk in fossil fuel markets, referred to as the ‘carbon bubble’.

As stated by Carbon Tracker Initiative, the 2°C limit has significant economic consequences, since it influences the amount of fossil fuels that can be burnt.¹ In order to stay under the internationally agreed limit of 2°C, 60-80% of fossil fuel reserves, which contribute to the market value of fossil fuel companies, are to be rendered ‘unburnable’. These reserves would thereby become ‘stranded assets’, which would mean that current reserves are significantly overvalued, amounting to a ‘carbon bubble’. The carbon bubble renders the fossil fuel market vulnerable to increasing amounts of risks.

In addition, fossil fuel investments are exposed to market forces and changing energy commodity prices. Energy innovation and competing low-carbon technologies, such as the advancement in energy efficiency, battery storage and the deployment of cost-effective renewable energy technologies have the potential to impact the future demand of fossil fuel.

Consequently, financial analysts such as Mercer², HSBC³ and the Bank of England⁴ have acknowledged the current and increasing exposure of the fossil fuel industry, pointing out the potential downward revaluation of assets, leading to the loss of invested capital. Research conducted by Oxford University demonstrated that €6 billion have already been lost through stranded assets in gas plants in the years leading up to 2013.⁵

Furthermore, fossil fuel companies still direct a large portion of cash flows towards CAPEX (capital expenditure), i.e. to efforts of discovering new reserves. According to the Grantham Research Institute on Climate Change, the sum spent on CAPEX in 2012 by the top 200 listed coal, oil and gas companies totalled \$674 billion.⁶ This was around five times larger than the returns through dividends to their shareholders,

¹ James Leaton, *Unburnable Carbon: Are the world's financial markets carrying a carbon bubble?* (London: Carbon Tracker Initiative, 2012), p.8, available at: <http://www.carbontracker.org/wp-content/uploads/2014/09/Unburnable-Carbon-Full-rev2-1.pdf>, accessed 13 May 2016.

² Mercer, *Investing in a Time of Climate Change* (Mercer, 2015), available at: <http://www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf>, accessed 13 May 2016.

³ HSBC, *Scoring the Climate Risk: G20 vulnerability increases* (HSBC Bank plc: 24 Sept. 2013) available at: <file:///M:/030214-scoring-climate-change-risk-2013.pdf>, accessed 15 May 2016.

⁴ Bank of England, Mark Carney, Speech: Braking the Tragedy of the Horizon - climate change and financial stability (Lloyd's of London: 29 September 2015), available at: <http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech844.pdf>, accessed 15 May 2015

⁵ Ben Caldecott and Jeremy McDaniels, *Stranded generation assets: Implications for European capacity mechanisms, energy markets and climate policy* (Oxford: Smith School of Enterprise and the Environment, 2014), available at: <http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Stranded%20Generation%20Assets%20-%20Working%20Paper%20-%20Final%20Version.pdf>, accessed 13 May 2016.

⁶ James Leaton *et al.*, *Unburnable Carbon 2013: Wasted capital and stranded assets* (London: Carbon Tracker Initiative; Grantham Research Institute on Climate Change and the Environment; London School of Economics, 2013), p. 16., available at: <http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2014/02/PB-unburnable-carbon-2013-wasted-capital-stranded-assets.pdf>, accessed 13 May 2016.

which equated to \$126 billion. In addition, in a study of 37 oil companies, Citigroup estimated that as much as 40% of the current investment cycle (around \$1.4 billion) could have been directed to projects that struggle to generate acceptable returns at oil prices below \$75 a barrel.⁷

In relation to international oil companies (IOCs), research conducted by Oxford University found that under current practices, IOCs are failing investors through incomplete CAPEX reporting.⁸ The research underlined that current disclosure ‘falls far short of being adequate for investors to make knowledgeable and prudent assessments of the diversification strategies and practices being pursued by IOCs’ (p.4). It also demonstrated that poor project diversification can lead to a company being at further risk due to the fact that ‘changing economic, political, social, and environmental conditions are not controllable by the individual IOCs’ (p.8). This leaves investors unable to know to what extent such companies are exposed to the danger of stranded assets, leading to difficulties and uncertainties in assessing the financial risk.

ii. Recent Oil Shock

Beginning in June 2014, and driven by excess supply, the price of a barrel of oil dropped dramatically from prior highs of above \$100 to the low price level of under \$30 in January 2016.⁹ This has put a significant pressure on the profit margins of the industry and led to the cancellation of a number of high profile projects totaling \$380 billion by January 2016, including Shell’s Arctic drilling and Statoil’s exploration off the coast of Greenland.¹⁰ The lower prices of oil has resulted in poor financial returns to the shareholders of fossil fuel companies. For instance, between June 2014 and January 2016, the share price of Royal Dutch Shell declined by close to 50%.¹¹ Furthermore, research conducted by the Guardian has evaluated that following the current crash of coal industry and the dramatic drop in oil prices, the Strathclyde Pension Fund has already lost £26 million.¹²

A recent report by Chatham House compounds the problem faced by IOCs in a market dominated by state-run companies.¹³ The state-run companies often have much lower production costs: \$9 per barrel in

⁷ Jason Channell *et al.*, *Energy Darwinism II: Why a Low Carbon Future Doesn’t Have to Cost the Earth* (New York: Citigroup, 2015), available at: <http://climateobserver.org/wp-content/uploads/2015/09/Energy-Darwinism-Citi-GPS.pdf>, accessed 13 May 2016.

⁸ Dane Rook and Ben Caldecott, *Evaluating Capex Risk: New Metrics to Assess Extractive Industry Project Portfolios*, (Oxford: Smith School of Enterprise and the Environment, 2015), available at: <http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Evaluating%20Capex%20Risk%20-%2010.02.15.pdf>, accessed 13 May 2016.

⁹ EIA, ‘Petroleum and Other Liquids’, available at: https://www.eia.gov/dnav/pet/PET_PRI_SPT_S1_D.htm, accessed: 2016, April, referred to monthly data.

¹⁰ N.a., ‘The oil conundrum’, *The Economist*, 23 January 2016, available at: <http://www.economist.com/news/briefing/21688919-plunging-prices-have-neither-halted-oil-production-nor-stimulated-surge-global-growth>, accessed 13 May 2016.

¹¹ Yahoo Finance, ‘ROYAL DUTCH SHELL-B Stock.’, 2016, available at: <https://uk.finance.yahoo.com/q/hp?s=RDSB.L>, accessed 2016, April, referred to monthly historical price data.

¹² Damian Carrington, ‘Millions wiped off UK local government pensions due to coal crash, analysis shows’, *The Guardian*, 12 October 2015, available at: <http://www.theguardian.com/environment/2015/oct/12/millions-wiped-off-uk-local-government-pensions-due-to-coal-crash-analysis-shows>, accessed 13 May 2016.

¹³ Paul Stevens, *International Oil Companies: The Death of the Old Business Model* (London: Chatham House, 2016), available at: <https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2016-05-05-international-oil-companies-stevens.pdf>, accessed 13 May 2016.

Saudi Arabia compared to \$23 in the US and \$44 in the UK.¹⁴ The report shows that IOCs have only been able to access high cost regions in the last couple of decades. The reason why they are maintaining low prices now is due to a reliance on old fields, masking what the report claims as a failing business model. However, most damning is that 'the prognosis for the IOCs was already grim before governments became serious about climate change and the oil price collapsed'.¹⁵ The current crisis will just exacerbate this issue.

¹⁴ WSJ News Graphics, 'Barrell Breakdown', *The Wall Street Journal*, 15 April 2016, available at: <http://graphics.wsj.com/oil-barrel-breakdown/>, accessed 13 May 2016.

¹⁵ Stevens, *International Oil Companies*.

Section III. Providing confidence to shift to low-carbon alternatives

Growing awareness of the risks of the carbon bubble as well as the emergence of the Fossil Free movement has sparked a shift among index managers to explore the possibility of offering indexes which exclude fossil fuel companies. Following this, research has been conducted that compares the historical performance of all-world indexes with and with-out fossil fuel companies being excluded.

Certain issues arise when using this as a measure of risk assessment for future investment decisions. First and foremost, past performance does not guarantee future results. Financial environments are constantly shifting; the recent collapse of oil and the poor performance of oil companies heavily tilted the results of any analysis including the last 1½ years. While it is likely that the low oil price trend will continue, this report will analyse different performance periods excluding and including the recent oil price drop.

The MSCI ACWI excluding Fossil Fuel is a broad global index, which includes developed and emerging markets as well as large and mid-cap stocks. With the inclusion of the recent oil crash, the ex Fossil Fuel index saw annualised gross return over 6 years of 10.49% compared to the standard index's 9.35%¹⁶. Moreover, MSCI has found that the ex Fossil Fuel index is slightly less volatile than the standard with a volatility beta of .98, which runs counter to an often cited criticism of the Fossil Free movement that divestment lowers portfolio diversity and thus increases instability (figure 1). This study is further supported by Standard & Poor's Global 1200 Fossil Fuel Free index performance data, which is back tracked to December 2011.¹⁷ As of 31st March 2016, the last 3 years saw an annualised total return of 8.64% compared to the benchmark's 7.12%, once again with a lower volatility and better risk adjusted return.

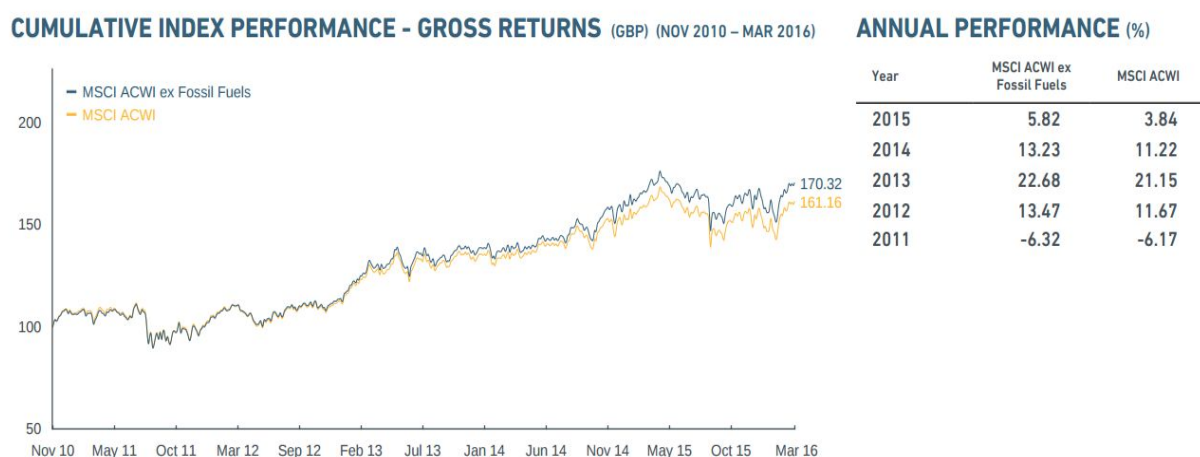


Figure1: https://www.msci.com/resources/factsheets/index_fact_sheet/msci-acwi-ex-fossil-fuels-index-gbp-gross.pdf

¹⁶ MSCI ACWI Ex Fossil Fuels Index (GBP)

https://www.msci.com/resources/factsheets/index_fact_sheet/msci-acwi-ex-fossil-fuels-index-gbp-gross.pdf

¹⁷ S&P Dow Jones Indices, *S&P Global 1200 Fossil Fuel Index*, available at:

<http://us.spindices.com/indices/equity/sp-global-1200-fossil-fuel-free-index-usd>

On the other hand, FTSE Russell’s research into the effects of stranded assets’ timescale includes an eight year period before the oil crash and during the financial crash of 2008 (figure 2). This period allows us to see that divestment has been financially safe without dramatic shifts in the price of oil. As FTSE concluded: ‘It can be seen that historically over the entire period the return of the two indexes are very close to each other, but the FTSE Developed ex Fossil Fuel index has lower volatility’, similar to the period including the recent oil crash.¹⁸

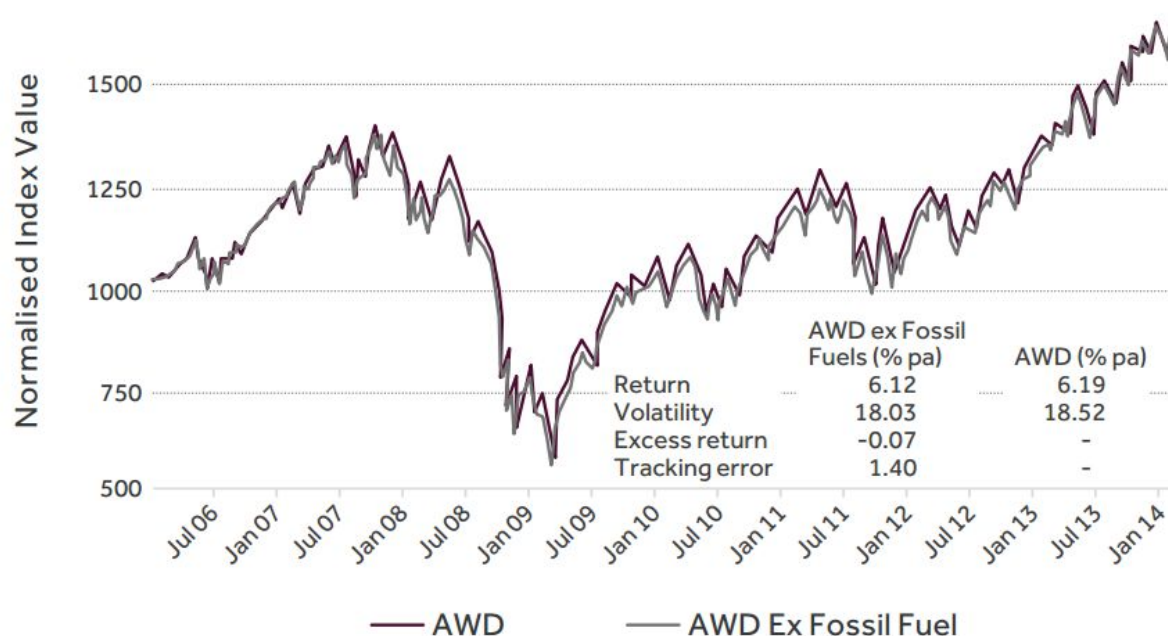


Figure 2: http://www.ftse.com/products/downloads/FTSE_Stranded_Assets.pdf

Furthermore, Parametric, a US investment management company, looking at a similar period between January 2004 and December 2014, analysed two different indexes: a US based one (the S&P 500) and a global one excluding the US (the MSCI EAFE). They also came to similar conclusions: “[W]e find that divestment can be achieved with minimal impact on portfolio return or volatility over the long-run. In other words, an investor can track a standard broad market index reasonably well even while excluding fossil fuel related securities.”¹⁹ These two independent studies show that even before the oil crash and during a global recession, a divested portfolio can be expected to at least match their benchmarks and maintain better volatility.

Taken in combination, the equal levels of annualised volatility and the higher annualised return for the index that excludes fossil fuels present evidence that divestment from fossil fuel companies does not increase the risk exposure of a portfolio and may actually increase its profitability. The recent drop in oil prices shows the real financial impact of being exposed to an increasingly unstable industry, indicating that early divestment from the companies with the most carbon-intensive assets represents a risk-limiting strategy.

¹⁸ FTSE Russell, *FTSE Developed ex Fossil Fuel Index Series* (London: London Stock Exchange Group companies, 2015), p. 7, available at: http://www.ftse.com/products/downloads/FTSE_Stranded_Assets.pdf, accessed 13 May 2016.

¹⁹ Jennifer Sireklove, *Fossil Free Investing* (Seattle: Parametric, 2015), p. 2, available at: <https://www.parametricportfolio.com/insights-research/paper/fossil-free-investing>, accessed 13 May 2016.

Section IV. Building a more resilient Fund – shifting capital to alternative investment

In order to meet the Fund's future liabilities, reduce risk, enhance financial performance and follow environmental, social and governance (ESG) principles, it is necessary that SPF begins to channel its investments into climate-resilient assets. The Strathclyde Pension Fund has clearly recognised the need for a transition and has recently added several sustainable investments to its portfolio. The Direct Investment Portfolio of November 2015 lists several investments into the wind energy sector, including local developments and the expansion of existing offshore wind farms.²⁰ £10 million has been invested in Resonance British Wind Energy, £50 million in The Green Investment Bank Offshore Wind Fund, and £30 million in Temporis Onshore Wind Fund. Investments have also been made into the development of biogas and reducing methane emissions, including a £10 million investment in Iona Environmental Infrastructure and a further £20 million in Albion Community Power PLC.

These recent investments are an important step in SPF's transition away from unsustainable carbon-intensive industries into a portfolio with a long-term focus that recognises the necessity of a low-carbon economy to remain below 2°C of warming and to prevent catastrophic global climate change. However, if the work done so far is to be applauded, more needs to be done. SPF needs to divest from fossil fuels and channel its investments into a greener, more sustainable, and more socially just future.

Further investment opportunities lie in continuing to support and benefit from the growth of the green energy sector, including community power generation. Money that is divested from the fossil fuel industry and reinvested sustainably could produce promising returns in the burgeoning green energy market and in other socially responsible sectors such as development of social housing. These sectors would not only generate long-term sustainable returns, but would have beneficial outcomes for communities at large. Investments in these sectors will have a greater effect and mean a great deal more for communities than any investments in the fossil fuel industry would.

Climate change challenges investors to revert from functioning as 'future takers' and to become 'future makers' instead.²¹ The investment portfolio of an institution must reflect the low-carbon future it claims to support. Moreover, Christina Figueres, former chief of the United Nations Climate Change Secretariat, has remarked that fossil fuel divestment 'is not about excluding any asset from portfolios, [but] about strategically allocating assets to accelerate a shift that is already in place', further emphasising the positive effects that be achieved by re-investment in the green sector²².

²⁰ Strathclyde Pension Fund, *Direct Investment Portfolio* (Glasgow: SPF, 2015), available at: <http://www.spfo.org.uk/CHttpHandler.ashx?id=31630&p=0>, accessed 15 May 2016.

²¹ Mercer, *Investing in a Time of Climate Change* (Mercer, 2015), available at: <http://www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf>, accessed 13 May 2016.

²² Business Green, *BlackRock reveals how it could make it easier for investors to Ditch Fossil Fuels*, (Business Green: 28 Oct 2015), available at: <http://www.businessgreen.com/bg/analysis/2432202/blackrock-reveals-how-it-could-make-it-easier-for-investors-to-ditch-fossil-fuels>, accessed 15 May 2016.

i. Review of Ex-Fossil Fuel Indexes and Reinvestment Opportunities

There is an increasingly diverse range of advisors, fund managers and indexes specialising in assisting investors that wish to invest in a low-carbon economy whilst minimising financial risk. The Etho Climate Leadership Index (ECLI), for example, is based on greenhouse gas emissions and performance according to ESG considerations. Companies identified as 'laggards' by this index are outperformed by climate leaders, who are generating a 14.6% greater average return over a ten-year period²³. The ECLI uses climate efficiency as an effective proxy for corporate efficiency and good management, which is ultimately rewarded by improved financial return.

Significantly, the financial mainstream is also actively responding to concerns about stranded assets and the increasing demand for fossil free products. Following this, new low carbon indexes and fund managers are rapidly emerging, providing shareholders with an opportunity of less financially risky investments. These include:

- Green Bond Market indexes such as Barclays MSCI Green Bond Index family;²⁴ the Solactive Green Bond Index; The S&P Dow Jones Green Bond Index; the BofA Merrill Lynch Green Bond Index;
- BlackRock, the world's largest fund manager, is due to launch indexes based on the FTSE developed ex Fossil Fuel family.²⁵
- The SPDR S&P 500 Fossil Fuel Free ETF, released December 2015 has already seen \$71m in investments.²⁶

²³ Etho Capital. "Etho Climate Leadership Index (ECLI)." *Etho Capital*. N.p., 2016. available at: <http://mysocialgoodnews.com/tag/climate-change/page/2/>

²⁴ The World Bank, *Green Bond Fact Sheet* (Washington: The World Bank, 2013), available at: <http://treasury.worldbank.org/cmd/pdf/WorldBankGreenBondFactSheet.pdf>, accessed 13 May 2016.

²⁵ Business Green, *BlackRock reveals how it could make it easier for investors to Ditch Fossil Fuels*, (Business Green: 28 Oct 2015), available at: <http://www.businessgreen.com/bg/analysis/2432202/blackrock-reveals-how-it-could-make-it-easier-for-investors-to-ditch-fossil-fuels>, accessed 15 May 2016.

²⁶ State Street Global Advisors SPDR, 'SPDR S&P 500 Fossil Fuel Free ETF', n.d., available at: <https://www.spdrs.com/product/fund.seam?ticker=spyx>, accessed 13 May 2016.

ii. Global Trends of Reinvestment in Renewables

The recent landmark Mercer report ‘Investing in a Time of Climate Change’ demonstrates that varying extremes of climate change will unequivocally impact financial returns of investors (figure 3).²⁷ The models used in this report also determine that the renewables sub-sector could see average annual returns increase by between 6% and 54% over a 35-year time horizon. Conversely, average annual returns from the coal sub-sector could fall between 18% and 74% over the same time frame, including more pronounced effects in the next decade, with returns eroding between 26% and 138% of average annual returns. Following this, the Bloomberg New Energy Finance in association with FS-UNEP Collaboration Centre has evaluated that the annual global investment in 2015 in renewable energy has reached a new world’s record of \$286 billion , which ‘was more than double the estimated \$130 billion invested in coal and gas power stations in 2015.’²⁸

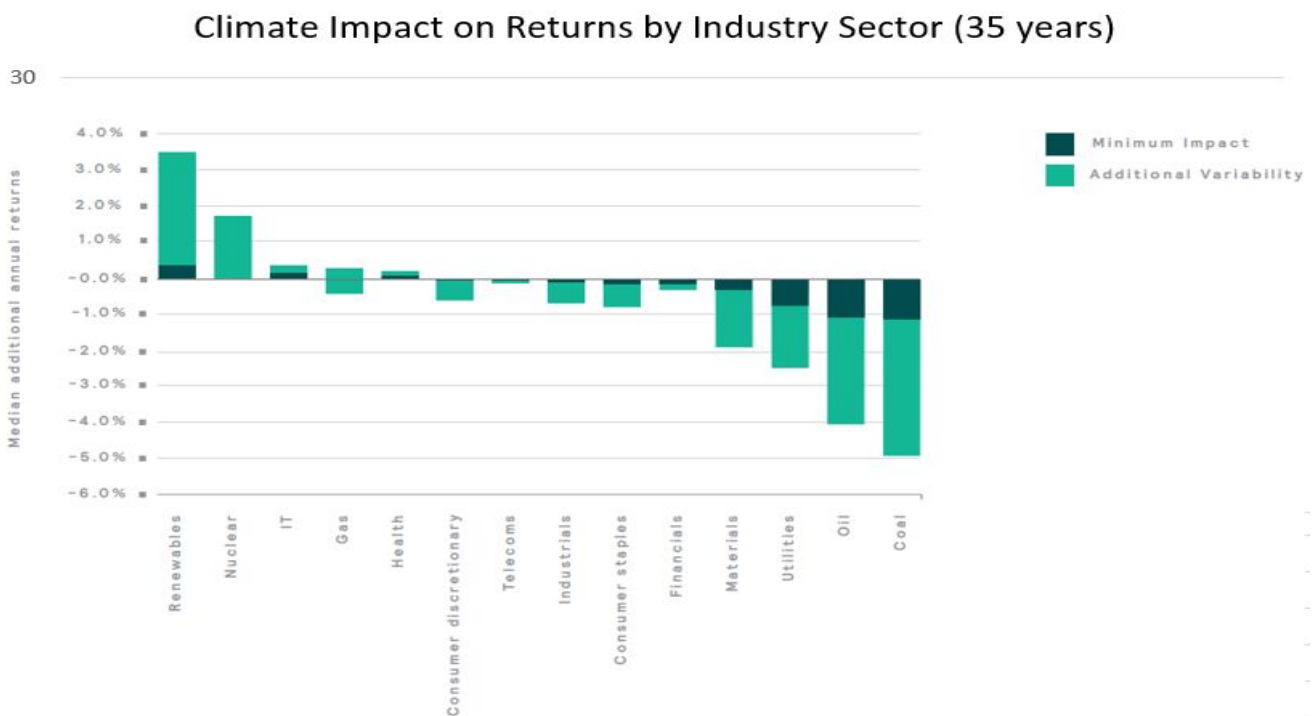


Figure 3: <http://www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf>

²⁷ Mercer, *Investing in a Time of Climate Change* (Mercer, 2015), available at: <http://www.mercer.com/content/dam/mercer/attachments/global/investments/mercer-climate-change-report-2015.pdf>, accessed 13 May 2016.

²⁸ Joseph Byrne *et al.* (Frankfurt School-UNEP Centre), *Global Trends in Renewable Energy Investment 2016*, (Frankfurt: Frankfurt School of Finance and Management, 2016), available at: http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2016lowres_0.pdf, accessed 13 May 2016.

iii. Investment Opportunities in Infrastructure and Energy Efficient Buildings

The New Climate Economy report suggests that ensuring or maintaining economic growth in the next 15 years will require a significant increase in investment, an estimated cumulative \$90 trillion of investment in infrastructure.²⁹

When assessing infrastructure assets, investors need to take into account the following factors regarding efficiency and resilience of assets to climate change in terms of future Policy and Technological innovations. Such factors follow additional sources of investment applying to:

- The replacement of ageing assets;
- The provision of additional capacity to reflect socio-economic growth (a growing global population and rising living standards in developing economies);
- The replacement of assets or construction of new assets as part of adapting to climate change;
- The increasing efficiencies to support economic growth.

In addition, energy efficiency financing in buildings has been regarded as a key improvement to be made in order to bring strategic benefits at the international, national, sectorial and individual level. As the UK³⁰ and the EU³¹ are net energy importers, energy efficiency – especially in buildings³² – is perceived as essential as it will increase energy security, reduce fuel poverty and strengthen a competitive energy efficiency market.

The International Energy Agency (IEA) takes as an example the insulation of buildings to show how such investment has a self-integrated multiplier effect³³:

- At an individual level: Lower energy bills, increased disposable income, improved health care and homes;
- At a sectoral level: Increase in resale value of homes, job in insulation and production of insulation material;
- At a national level: Increase in job creation, energy security, reduced public health spending, reduced energy demand and local price reduction;

²⁹ The Global Commission on the Economy and Climate, *Better Growth, Better Climate: The New Climate Economy Report* (Washington: New Climate Economy, 2014), available at: <https://files.lsecities.net/files/2014/11/NCE-2014-Better-Growth-Better-Climate-Synthesis-Report.pdf>, accessed 13 May 2016.

³⁰ Department of Energy and Climate Change, *UK Energy in brief 2015* (London: UK Gov. National Statistics, 2015), available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/516837/UK_Energy_in_Brief_2015.pdf, accessed 14 May 2016.

³¹ European Commission, *Energy, Imports and secure supplies* (Brussels: Eurostat, 2016), available at: <https://ec.europa.eu/energy/en/topics/imports-and-secure-supplies>, accessed 14th May 2016.

³² Institutional Investors Group on Climate Change (IIGCC), *Driving New Finance for Energy Efficiency Investments* (London: IIGCC, 2015), available at: http://www.iigcc.org/files/publication-files/IIGCC_2015_Driving_New_Finance_for_Energy_Efficient_Investments_final_WEB.PDF, accessed 13 May 2016.

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³³ Lisa Ryan and Nina Campbell, *Spreading the Net: The Multiple Benefits of Energy Efficiency Improvements* (Paris: IEA, 2012), available at: https://www.iea.org/publications/insights/insightpublications/Spreading_the_Net.pdf, accessed 13 May 2016.

- At an international level: GHG emission reduction and energy price reduction.

This proves that long term investments shifting from a carbon-intense economy to a low carbon local economy will prove economically viable not only in Scotland, but also globally.

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