Insights

FTSE Russell

FTSE Developed ex Fossil Fuel Index Series

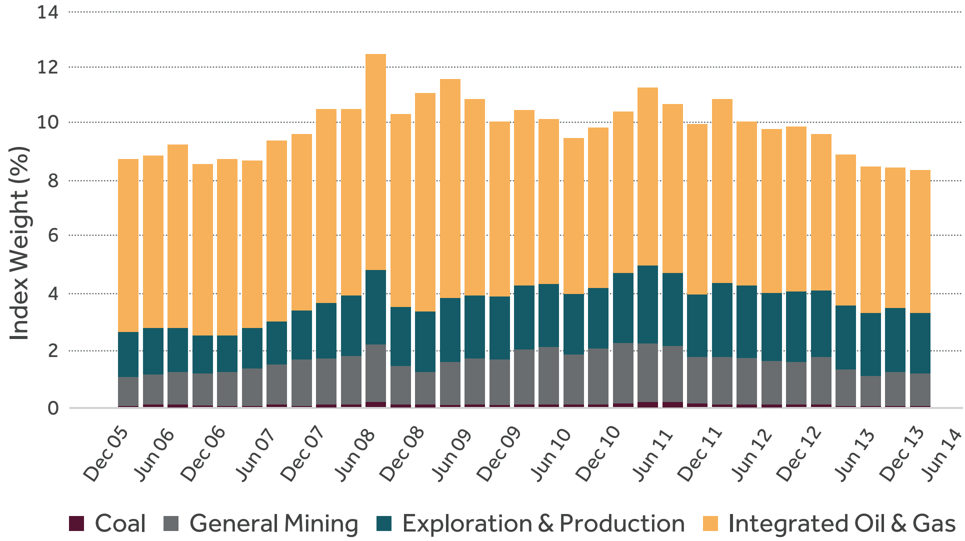
Understanding stranded assets

Stranded assets are fossil fuel deposits, including oil, gas and coal, that should remain unburned or in the ground in order for the world to avoid the worst impacts of climate change. These unsustainable assets are exposed to risks of write-offs or downward revaluations from both general market movements and increasing regulations driven by the realisation that current economic activities have to change if we are to avoid a rise in global average temperature of more than 2°C above pre-industrial levels. In order to stay within the limits of the 2°C increase, the majority of remaining deposits must remain "stranded."

There is an increasing body of academic, economic and financial research into the subject. This stranded assets research covers a variety of topics including identifying the level of potential stranded assets; the cost of extracting those reserves; modelled levels of stock revaluations if assets become stranded; the impact on the stock exchanges on which the stranded assets are quoted; accounting standards; corporate creditworthiness and ratings. The vital importance of energy in driving GDP growth means that the impacts of climate change and the notion of stranded assets could lead to systemic economic, financial and risk issues for governments, regulators and financial markets.

Chart 1 below shows that between approximately 9 – 12% of the total size of developed world stock markets come from companies' revenues/reserves directly linked to carbon over the last 8 years.

Chart 1



Source: FTSE Group, March 31, 2014

What are the reactions to this possible systemic risk?

There are four broad responses market participants may adopt to the challenges posed by stranded assets:

i. ignore the risks and do nothing;

ii. accept that it is necessary to factor in the long-term shift to a Low-Carbon Economy into valuations and capital allocation; understand the exposure to a range of future scenarios; ensure that these risks are considered in the risk management and asset allocation processes; engage with companies to ensure that management are scrutinised and challenged effectively on their use of capital; engage with policymakers and financial regulators about long-term systemic risks posed by climate disruption;

iii. systematically adjust the portfolio to be tilted towards those companies with a relatively low carbon footprint whilst simultaneously be tilted away from those with a relatively high carbon footprint; or

iv. divest either directly by selling fossil fuel companies or, more indirectly, by structuring new portfolios without exposure to fossil fuels. In recent years, a number of fossil fuel divestment initiatives have been gathering pace – for example

   350.org (http://350.org/); and

   Divest-Invest Philanthropy (http://divestinvest.org/).

Methodologies to capture stranded assets in an equity index

There are a number of ways of capturing a carbon management strategy in an equity index, including:

- totally exclude stocks with stranded assets
- select a threshold of carbon exposure above which companies would be excluded
- create a tilted index where the weights of the constituents are tilted towards/away from those constituents with relatively lower/higher levels of stranded assets. Although the average exposure to stranded assets is reduced, it is not completely eliminated
- combine a carbon tilted index with an Environmental, Social and Governance and climate change/environment erosion/resource depletion overlay – any desired (practical) level of expected tracking error can be targeted
- indexes may be traditional market capitalisation weighted or alternatively weighted, for example, fundamentally weighted or risk management weighted.

Exclusion criteria

Industry exposure to un-burnable carbon and stranded assets may come in a variety of forms:

i. upstream companies that explore, own and exploit carbon reserves – literally, the companies that explore, find, extract and determine whether or not to leave the carbon (in its various forms) in the ground;

ii. the midstream and support companies that are involved in the supply chains of the upstream companies included in category i. above;

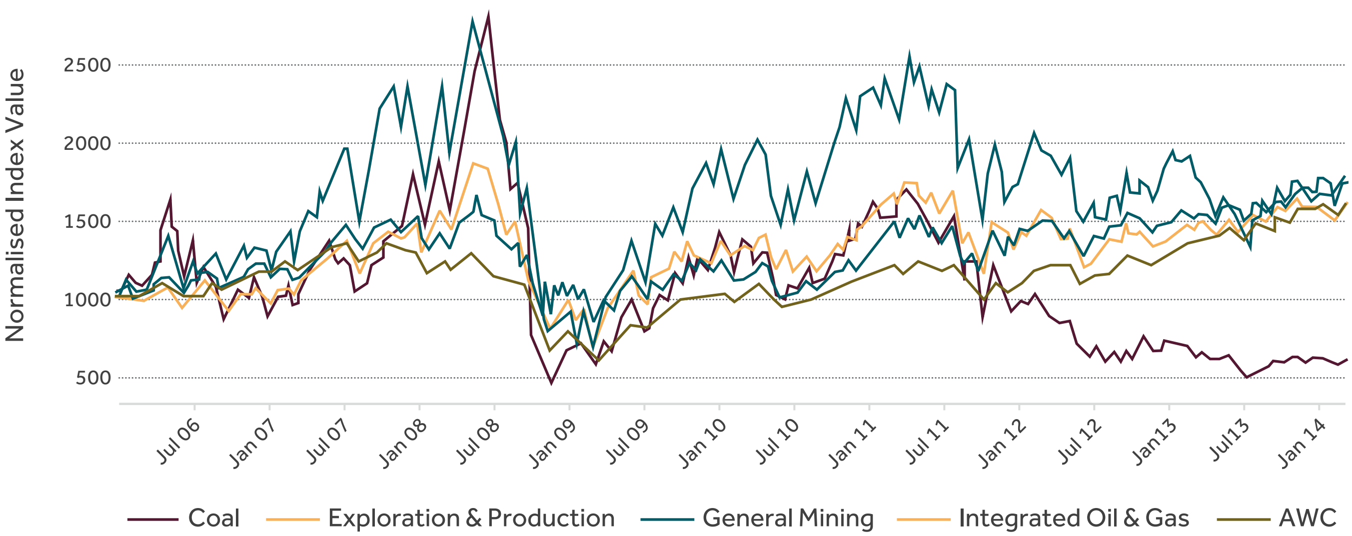
iii. the companies whose goods, products or services use the extracted carbon in a multitude of processes that emit pollutants into the atmosphere – typically CO_2 and methane, but also black soot and other particulates; and

iv. lending institutions that provide the finance to explore, develop and utilise the carbon deposits.

The objective of the FTSE Developed ex Fossil Fuel index is to eliminate the companies that explore, own, and directly extract carbon reserves, as outlined in section i. above.

Chart 2 shows the historic performance of the Industry Classification Benchmark (ICB) subsectors that have the most direct exposure to stranded carbon assets.

Chart 2



Source: FTSE Group, March 31, 2014. Past performance is no guarantee of future results.

FTSE exclusion criteria are designed to be transparent, easy to understand, quantifiable and repeatable.

Excluded stocks are companies whose principal business activity is identified by a combination of

- Industry Classification Benchmark[1] (ICB) Subsector; and
- Standard Industrial Classification[2] (SIC) System.

Companies that satisfy the following conditions are **excluded** from the index:

- classified as in the ICB subsectors – Exploration & Production (0533), Integrated Oil & Gas (0537), Coal Mining (1771) and General Mining (1775); and *either*
- have revenues arising from Bituminous Coal and Lignite Surface Mining (SIC code: 1221), Bituminous Coal Underground Mining (SIC code: 1222), Anthracite Mining (SIC code: 1231), Crude Petroleum and Natural Gas (SIC code: 1311) or Natural Gas Liquids (SIC code: 1321); *or*
- proved and probable reserves in coal, oil or gas based on the companies' published Annual Report and Accounts.

Companies that provide services to the fossil fuel industry, use fossil fuels, or finance exploration are not excluded from the index. The index is tailored to specifically exclude those companies directly engaged in extracting the fossil fuels that are at the heart of stranded assets.

[1] Industry Classification Benchmark – a Single Standard Defining the Market (www.icbenchmark.com)

[2] United States Department of Labor – Occupational Safety & Health Administration (https://www.osha.gov/pls/imis/sic_manual.html)

Structure of the Excluded Stocks

Table 1 shows the summary of the excluded stocks' market capitalisation, weight and total stock count based on the constituents of the FTSE Developed ex Fossil Fuels Index at March 31, 2014.

Table 1

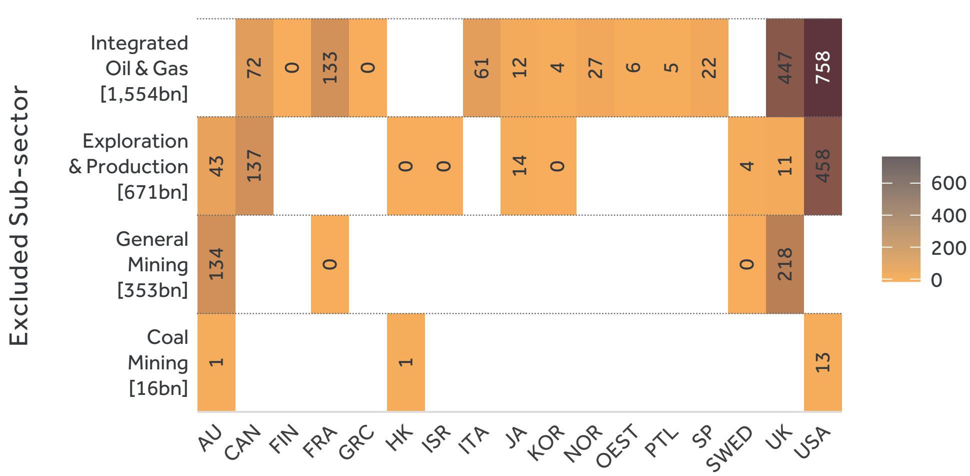
ICB subsector	Market value of excluded stocks (US$ bn)	Percent of total	Nr. of excluded companies
Integrated Oil & Gas	1,554	59.9	21
Exploration & Production	671	25.9	42
General Mining	353	13.6	8
Coal Mining	16	0.6	5
Total	**2,594**	**100.0**	**76**

Source: FTSE Group, March 31, 2014

Chart 3 shows the market capitalisation of the Excluded Stocks split by country and ICB Subsector, in the form of a heatmap –

- Companies within the Integrated Oil & Gas subsector – with an aggregate market value of US$1,554bn – are the largest excluded sector. The stocks in this subsector are concentrated in the US and UK markets (US$758bn and US$447bn of market capitalisation respectively) which represents over 77% of the subsector
- The USA, UK, Canada and Australia are the most affected countries
- The Coal Mining subsector is relatively small and confined to just three countries, of which the USA is the most important; however, a number of diversified mining companies with fossil fuel interests are captured in the General Mining subsector.

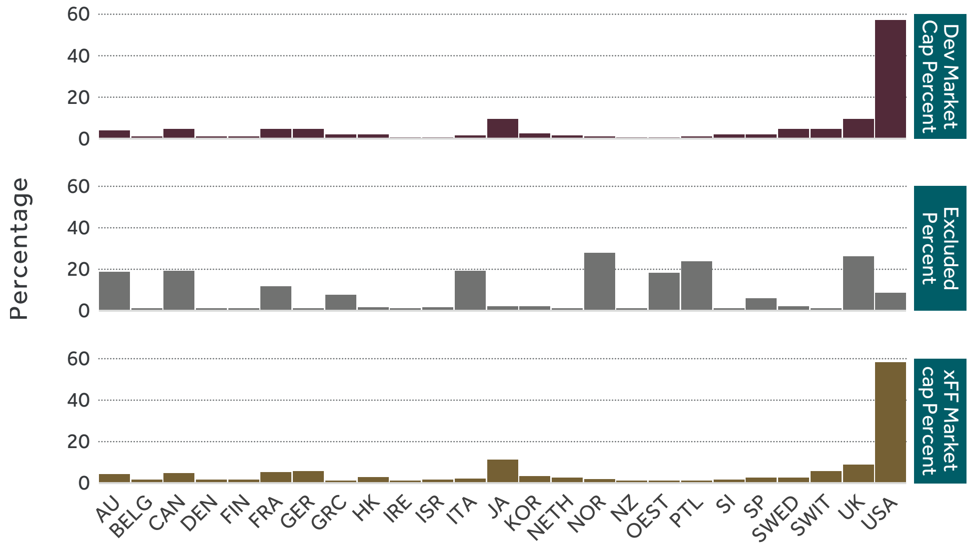
Chart 3



Source: FTSE Group, March 31, 2014

Chart 4 shows the country exposure of the FTSE Developed Index (top panel) and, for comparison, the FTSE Developed ex Fossil Fuels Index (bottom panel). They are broadly similar.

Chart 4



Source: FTSE Group, March 31, 2014

The middle panel (shown in green bars) represents the percentages of the country weights in the FTSE Developed Index that are represented by the excluded assets. For example, this panel shows that the excluded stocks represent approximately 25% of the value of Norway in the FTSE Developed Index. So, whilst the USA market contains the largest absolute value of excluded assets (relative to the size of the market (see Chart 3), concentration of the excluded stocks in the USA market is more modest as can be seen in the middle panel of Chart 4. Relative to the size of the counties in the index, Norway, UK, Portugal, Canada, Italy and Australia are the most affected.

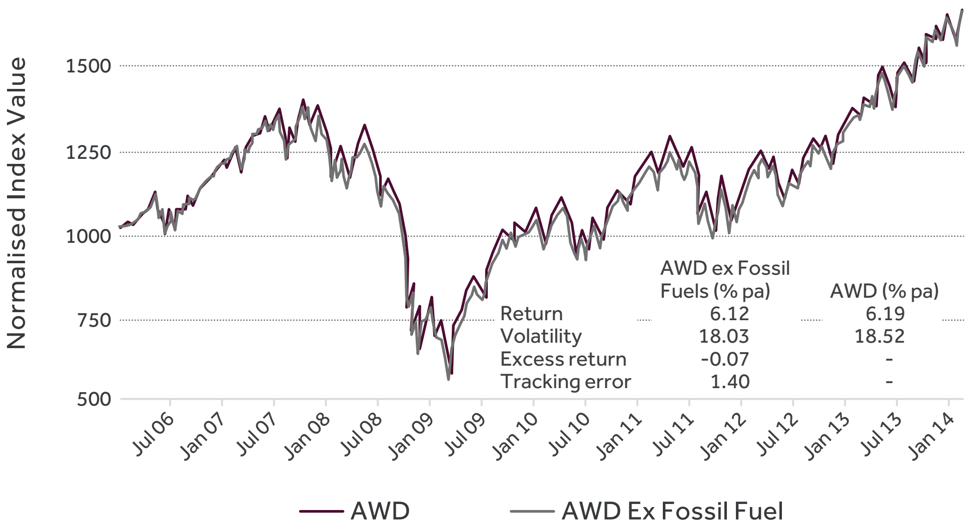
There are additional financial and valuation ratios, risk analytics, attribution analysis, etc., that can reveal additional insight into the differences between the FTSE Developed Index and the FTSE Developed ex Fossil Fuel Index. So, for example, the dividend yield on the FTSE Developed Index is approximately 2.40%; this falls by 6bps to 2.34% for the FTSE Developed ex Fossil Fuel Index, reflecting the fact that the excluded stocks have a higher dividend yield on average.

Measuring the market

The FTSE Developed ex Fossil Fuel Index is based on total exclusion – those stocks that are identified as excluded stocks are removed entirely from the index.

Chart 5 shows the historic performance of the FTSE Developed ex Fossil Fuel Index against its benchmark (the FTSE Developed Index). 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.

Chart 5



Source: FTSE Group, March 31, 2014. Past performance is no guarantee of future results.

Acknowledgement

The ex Fossil Fuel Index has been designed and built with the close co-operation of the Natural Resources Defense Council, a not-for-profit organization with more than 1.4 million members that works to protect the world's natural resources, public health and the environment (see www.nrdc.org).

For more information about our indexes, please visit ftserussell.com.

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