Stranded Assets

Challenging the status quo

Fossil fuels have been integral to global economic development. Recent research questions whether oil, gas and coal assets will be extracted and burnt indefinitely in light of climate regulation. We consider environmental, social, political and economic factors that are changing the outlook for fossil fuels and the implications for long-term investors.
What is a stranded asset?

The term ‘stranded asset’ refers to the unexpected devaluation or writedown of an asset. For fossil fuels, this could happen because of a physical barrier, such as getting oil or coal out of the ground and transporting it to market, or a reduction in the demand for a fuel that makes the cost of extraction unviable.

Presently, fossil fuels – coal, oil and natural gas – account for 87% of global primary energy consumption. With world leaders due to meet at the Conference of Parties in 2015 to discuss a universal agreement to limit greenhouse gas emissions, there is a debate taking place among asset owners, asset managers and fossil fuel companies about the implications future climate regulation will have for reserves.

At Standard Life Investments, we take a wider view of stranded assets and consider how environmental, social, governance and economic drivers can change the value of tangible assets (such as fossil fuel reserves, goods and services) as well as intangible assets (such as brand value and reputation).

The value of such assets can be affected by a variety of risks including regulation, technology substitution, supply constraints, cost structure, price and demand.

In that context, this paper attempts to answer three questions.

- To what extent will climate regulation impact fossil fuel demand?
- Which trends are changing the outlook for fossil fuels?
- What does this mean for investors?

In answering these questions, we will present the key findings from internal research conducted on the outlook for oil and coal producers. We will also outline Standard Life Investments’ approach to analysing company exposure and suggest five crucial questions to ask fossil fuel companies.
Climate change and fossil fuel demand

The current stranded assets debate focuses on the risk to fossil fuel reserves from increasing carbon regulation. The debate was triggered by the 2011 Carbon Tracker Initiative report, ‘Unburnable Carbon’. The thesis compared the carbon equivalent of fossil fuel reserves to the carbon budget and questioned whether fossil fuel companies will be able to extract their oil, gas and coal reserves in light of climate regulation.

In 2009, world leaders agreed that greenhouse gas emissions must be limited to keep global temperature increases within two degrees of pre-industrial levels (the so-called 450 Scenario). To stay within these parameters, the International Energy Agency (IEA) estimates that roughly only one-third of proven fossil fuel reserves can be consumed by 2050.

Under the 450 Scenario, the IEA’s World Economic Outlook calculates that global fossil fuel demand would need to decrease by 11.3% by 2035. The most significant change in demand forecasted under this scenario is faced by coal; from 2011 levels global coal demand tapers and peaks by 2020 before falling 33% by 2035. Meanwhile, global oil demand will increase 4% by 2020 before decreasing 13% by 2035.

The Conference of Parties (COP) in Paris in 2015 presents an opportunity for global leaders to agree greenhouse gas limits. However, there remain significant challenges to an agreement being reached at the global level and, with national and regional governments already having announced measures, we expect these programmes to remain prevalent. An example of this would be the 2030 EU climate and energy package which sets a target of a 40% reduction in greenhouse gas emissions, as well as targets for renewables and energy efficiency.

It is our view that thermal coal is the fossil fuel most vulnerable to stranding owing to its substitutable nature and inextricable link to energy demand. In contrast, there are few substitutes for oil in transportation and for metallurgical coal in steel making.
The changing outlook for fossil fuels

There are a number of factors currently influencing the outlook and demand for fossil fuels.

**Divestment campaigns**

The 350.org campaign is a climate movement that originated in the US in 2012. It calls on asset owners to 'divest within five years from direct ownership and any commingled funds that include fossil fuel public equities and corporate bonds'.

While several asset owners have responded to this by divesting, including Glasgow University and Rockefeller Brothers Fund, some are choosing to engage with companies instead. Furthermore, the amount divested to date is not sufficient to affect the liquidity of these companies. However, the movement does signal a change in society’s attitude towards the social and environmental externalities of business. The movement also comes from younger generations and we can expect that these leaders of tomorrow will continue to place importance on environmental sustainability and higher corporate standards.

The reputational damage from these campaigns has long-term consequences for a range of stakeholders from investors to customers and employees.

**Governments are waking up to the environmental impact of extracting and burning fossil fuels**

The environmental damage caused by the Deepwater Horizon spill in 2010 has heightened awareness of the environmental impact of oil production. Major fossil fuel producing and consuming countries are implementing stringent environmental regulations to address the challenges. These national regulations have implications for fossil fuel development. A high-profile example is the Keystone XL pipeline connecting Canadian oil sands to the US. President Obama has announced that he would only approve the pipeline if it “does not significantly exacerbate the problem of carbon pollution”.

Thermal coal combustion is another area where governments are striving to address the environmental impact, associated as it is with air pollution, carbon emissions and waste. It also requires large amounts of water for cooling purposes. Most industrialised countries are looking to decrease and clean up coal consumption in order to overcome these environmental challenges. In the US, the Environmental Protection Agency (EPA) has proposed greenhouse gas limits for new and existing coal power plants. These regulations face legal and political challenge but, if enacted, they will require significant investment from coal consumers if they are to become compliant.

Such regulation is not limited to the developed world. For developing countries, increasing environmental regulation is highly likely. In the case of China, environmental standards for coal power producers are already as stringent as European standards. Indeed, China is facing social unrest on account of extreme levels of air pollution in industrialised cities. The country has responded by tackling coal consumption, the main cause of air pollution. China has set coal consumption caps in several regions and has outlined restrictions on imports of dirty coal (coal with high ash and sulphur content). Since China accounts for 50% of global coal consumption, changes in demand for imports have implications for seaborne coal prices.
Energy efficiency, renewables and battery storage

Energy efficiency makes economic and environmental sense. Global GDP growth has uncoupled from energy consumption, illustrating the reducing energy intensity of the global economy. According to the BP Energy Outlook 2035, the number of vehicles will double by 2035 from the 1.1 billion in existence today. However, oil demand for transport will increase by only 20% between 2012 and 2035. The majority of this saving is on account of fuel economy standards for car manufacturers.

There is also disruption to the energy mix from renewable energy and battery storage. It is easier to utilise solar energy – for example, from a panel on a home roof – if the owner can store the energy from midday and use it at 7pm when peak supply is required.

For now though, the cost of energy storage is an important barrier to the substitution of intermittent and unreliable renewable sources (wind and solar) for base-load electricity and the transportation sector.

However, battery costs are falling rapidly. Auto manufacturers such as Tesla expect the cost of batteries to reach $180 per kWh by 2020 from $300-400 today. Projected battery costs would allow renewable energy integration and enable partial ‘off-grid’ domestic supply.

Projected energy storage battery costs heighten the attractiveness of renewable energy and present a challenge to coal’s contribution to the energy mix. A further consequence of falling battery costs is the increased competitiveness of electric vehicles. Currently, BP estimates full-battery electric vehicles will account for 7% of new car sales by 2035 but if battery costs fall and charging infrastructure improves, displacement of conventional vehicles could be more marked.
Thermal coal demand outlook

Coal producers depend on high prices to maintain margins, generate positive free cashflow and support company valuations. If coal demand drops, oversupply causes prices to fall, and high-cost producers are hit first. Since the average reserve life of coal companies analysed is 30 years, long-term structural trends are important for company valuations.

We run a coal demand outlook model to assess coal demand in the top eight coal-consuming countries. The model integrates traditional economic drivers of coal demand (GDP growth and energy intensity) with environmental trends (environmental standards for coal consumers and policies to reduce coal consumption) to provide a holistic picture.

A structural shift in global coal demand growth?
China represents 50% of global consumption and together the top eight countries represent 83%. Coal demand growth is driven by energy demand growth and coal’s contribution to the energy mix.

Analysis identifies India as key to seaborne coal prices. India accounts for 8% of global coal consumption and has abundant domestic reserves. However, the country remains a net coal importer. Questions remain over whether India will overcome systemic energy infrastructure challenges to take up the excess coal demand lost by China’s slowing growth and transition away from coal. Furthermore, to what extent will India’s growth uncouple from coal consumption through the development of distributed renewable energy solutions?

Over 310 million people in India are without access to electricity; roughly equal in size to the population of the US. Electric power intensity per capita is 21% of Chinese levels. Coal contributes 55% of India’s primary energy consumption, with little competition from alternatives. India has not developed stringent environmental standards for coal consumers compared with Europe and China. This presents an opportunity for India to take up the excess demand that will be lost in China.

The coal demand outlook model outlines a structural shift in coal demand, with growth slowing compared with the previous two decades. Six of the key markets are facing multiple negative forces that could challenge the coal growth rates of previous decades.
The future of oil supply

Conventional sources of oil are harder to find. 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.

Finding and listing costs have been increasing for the major oil and gas companies over the last ten years. Although oil prices have been high, until more recently, western majors had negative free cashflows after dividends in 2013. Indeed, 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. A current example of this would be some onshore oil assets in the Niger Delta, where political instability in Nigeria has disrupted production.

Identifying the most risky oil assets

We run a supply model to rank the riskiness of future oil pipeline projects. The model considers factors including environmental and carbon risk, technical complexity, political risk, breakeven costs and payback periods.

Projects with high breakeven costs and long payback periods are exposed to long-term changes in demand for fossil fuels (Goldman Sachs suggests that there is currently over $600 billion of potential capital expenditure with a breakeven cost of $85 per barrel). Furthermore, concerns about the environmental impact of oil production risks a company’s licence to operate.
What does this mean for investors?

As long-term investors, we aim to analyse the material trends that will impact company returns. We do this through our Focus on Change investment process where we consider the factors that are changing the outlook for fossil fuels, including the divestment campaign, environmental regulation and technological innovation.

There are two steps to our approach.

**Identifying companies exposed to stranded assets**
We have developed a framework to assess the relative exposure of companies to fossil fuel stranding. First, we analyse large coal producers from North America, Europe, Asia and Australia. Next, we analyse the oil and gas majors operating globally. These companies have direct exposure to fossil fuel demand, since lower demand means lower prices. This tool allows us to identify the companies within our portfolios that are most exposed to changes in fossil fuel demand or shifts in the industry cost curve.

- **Financial materiality** – what proportion of current and future projected profit is from fossil fuels? By analysing the contribution of fossil fuels to a firm’s value, we can capture diversification benefits.

- **Project production costs and risk** – where does the company sit on the industry cost curve? What proportion of capital expenditure is in high-risk projects? If companies are investing in projects that have a high breakeven cost, environmental or social risk, and long duration, they are exposed to long-term stranding.

- It is fossil fuel-focused companies with a higher proportion of future value derived from high cost/high-risk projects that are most exposed to changes in the industry cost curve or political landscape.

**Engaging with fossil fuel companies**
The second step to our approach is to engage with the fossil fuel companies we invest in. We need to understand what assumptions around climate regulation and competition from renewables they are using in their fossil fuel demand forecasting. Additionally, is the company investing in renewables or environmental solutions to meet global energy demand requirements?

We have developed five key questions to ask fossil fuel companies to understand their exposure to stranded assets.

- Has the company considered the risk of stranded assets? What is its view of the carbon budget debate?

- Has the company run scenario analysis across its whole portfolio to identify the assets most at risk from demand changes under a 2°C warming scenario? If so, what were the outcomes and what is its view of the probability of the event?

- What assumptions are being made about environmental regulation and technological innovation in fossil fuel demand forecasting models?

- Does the company consider environmental, social and governance issues in its capital expenditure decisions?

- Is the company investing in technologies/business activities that will benefit from increasing environmental regulation?

We believe engagement allows investors to assess the extent to which a company is considering the long-term sustainability of its business model.
The ‘Unburnable Carbon’ debate is simple and impactful. The research has stimulated a frank discussion between investors and fossil fuel companies about the likelihood of a carbon-constrained world and its financial implications. In our view, thermal coal is the fossil fuel most vulnerable to climate regulation.

While the prospect of a global agreement for carbon emissions remains uncertain, we expect national and regional policies to build over the longer term. The question then is whether current capital expenditure for future production will be affected by changes to the political landscape.

The divestment campaign and environmental concerns are having an impact on sentiment for fossil fuels. Furthermore, technological innovations are enabling efficiency gains and increasing the competitiveness of alternative sources of energy. These trends will benefit some companies, but will have negative consequences for others.

There are examples of current oil and coal assets that have already been stranded due to environmental, social and political factors. At Standard Life Investments, we consider these factors alongside traditional economic analysis when examining the prospect of fossil fuel stranding. Furthermore, by actively engaging with companies we gain insight into how they are dealing with the issues raised in the stranded assets debate and the measures they are taking to ensure the long-term sustainability of their business.
If you would like to find out more please visit www.standardlifeinvestments.com where you will find contact details for your location.

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