

Can the Carbon Bubble become a serious Financial Bubble?

Background briefing paper

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Abstract

The carbon bubble - the notion that a significant amount of fossil fuel reserves must be left in the ground if we are to keep to the 2 degrees global warming threshold - is becoming increasingly accepted by policymakers. The carbon bubble has significant implications for finance and investment, particularly within the fossil fuel sector. Therefore, it is financial policymakers and regulators, in addition to those in the climate and energy communities, who need to consider its effects.

The notion of the carbon bubble originates from the science based fact that – if we are to keep to the 2°C global warming threshold – a significant amount of fossil fuel reserves must be left in the ground. A recent estimate, which has been published in Nature¹, 80% of current coal reserves, a third of the oil reserves and half of the gas reserves would have to remain unused until 2050.

The financial repercussions of the carbon bubble have been a concern for analysts for some years before this Nature publication. In 2011 a Carbon Tracker Report in 2011² brought to the attention of the financial markets that the way the market was valuing carbon assets ignores the need to keep the fossil fuels underground, thus investors base their investments on the value of reserves without considering the need to limit their use. The top 100 companies have the top 100 listed coal companies and the top 100 listed oil and gas companies represent potential emissions of 745 GtCO₂, and the report estimates that 565 Gt can be emitted based on certain assumptions on the level of emissions permitted under the 2°C scenario. The stock market lists approximately 1.500 oil and gas firms with assets over 4.5trn US dollars and about 275 coal firms worth over \$230bn. A new estimation by HSBC of 2012³ argued that fossil fuel companies altogether would see their market value fall by half (worth \$ 2 trillion) in case they were forced to remove these 'stranded assets'. This would be more than the value of 2008 losses that triggered the Global Financial Crisis. A 2013 review by Carbon Tracker reaches similar conclusions to the 2011 study, but with a deeper analysis and wider ranges and scenarios. Conclusions do not vary substantially.

That fossil production constraints may well be developing soon can be inferred from some political developments. The G7 leaders recently stated in June 2015 that deep cuts in green-house gas emissions are needed and that the global economy should be decarbonised in the course of this century, with 70% of this decarbonisation by 2050. Such a political statement is likely to have repercussions in investment decisions in fossil fuels, betting that the political world will remain inactive is getting riskier.

The developments in the energy sector are also difficult to predict, with disruptive development, such as shale gas or technological change to a large extent driven by governments (e.g. renewable energy, storage). This aggravates the uncertainty of long term fossil fuel demand.

According to the FT⁴, investment firms are starting to consider fossil fuel assets as risky. The number of investors divesting from fossil fuel assets is increasing. The most significant event in this direction has been from AXA, one of the world largest insurers, when it recently (May 2015) announced that is selling its shares in coal companies, starting with \$559 million now to up to \$3 billion by 2020. AXA has declared that the damage risk of climate change impacts will have very large impacts on its operations and its financial stability. Investing in fossil fuels would be inconsistent with the operations and the future of the company. Impacts of a 2°C increase in temperatures would in fact threaten the sustainability of insurance companies. Other funds are divesting in fossil fuels, for example the

¹ McGlade C. and Etkins P. (2015), 'The geographical distribution of fossil fuels unused when limiting global warming to 2°C', letter, Nature, vol 517, 8 January 2015, pp.187- 203

² Carbon Tracker Initiative (2011), 'Unburnable Carbon – Are the world's financial markets carrying a carbon bubble?'

³ HSBC Global Research, 'Coal & Carbon, Stranded assets: assessing the risk', June 2012

⁴ FT, Fossil fuel investments widely seen as 'risky', 8 June 2015

Rockefeller Brother Fund⁵ or the Norwegian Sovereign Fund⁶, a growing number of cities in Europe and the US⁷. This movement has not yet reached any size threatening the coal and oil companies yet.

Meanwhile, sluggish demand and low prices for oil and coal, oil and gas, has reduced the value assets in the sector putting pressure on more expensive producers. A number of assets are presently already 'stranded', such as some north-sea platforms and other costly oil sources. Prices are not expected to increase in the short run. If to this we add an agreement of major economies to decarbonise, the specter of a carbon bubble generating a large financial bubble could become a reality. But depending on the speed and size of the changes, as well as overall value of the companies involved, results can be considerably different depending on the scenarios. After all medium term oil price shocks have occurred in the past and this one may just be cyclical.

In a Bank of England's official statement, Paul Fisher, Deputy Head of the PRA and Executive Director for Supervisory Risk and Regulatory Operations warned that "investments in fossil fuels and related technologies – a growing financial market in recent decades – may take a huge hit". He also states that there are "specific examples of this having happened".⁸ If governments do take climate action seriously much of the investments over the last years in new fossil fuel sources will lead to losses, i.e. stranded assets.

How serious is the Carbon Bubble risk?

The "Carbon Bubble" arguments are largely a construct, which depends on policy developments. The commitment to principles and the implementation of fossil fuel divestment measures on a global level is questionable in the near future.

Peter Helm in his recent Energy Futures paper⁹ considers the carbon bubble theory too simplistic, in particular a new interpretation based on initiatives to divest in the sector. He argues that the climate policy, divestment and even changes in the energy sector have little to do with present losses by fossil fuel companies. It is mainly an impact from economic slowdown and/or oversupply. He argues that as long as there is no carbon price the Carbon Bubble issue is overstated. Current low fossil fuel prices are a result of a commodity price cycle.

He also warns of the contradictory effects of low prices in oil. On the one hand it is a reflection of lower demand, but if prices continue to fall without a big decrease in demand, producers may start increasing supply to sell quickly. This will drive oil prices lower and not reduce in the short run production, but increase it, while slowing down change into cleaner technologies. Coal reserves are also very high and able to expand at low prices.

The relationship between investments, asset valuations, prices, technological change, public policy and production requires further analysis. The impact on investors may not be as high, as sometimes portrayed because fossil fuel assets are often owned by the governments. In other cases, investors hold

⁵ <http://www.rbf.org/about/divestment>

⁶ <http://gofossilfree.org/norways-divestment-is-great-news-but-this-is-the-last-moment-to-be-complacent/>

⁷ for example San Francisco or Seattle in the USA or Oslo in Europe. The London Assembly voted for divestment in April this year, but the decision has not been yet taken by the London Assembly

⁸ 'Confronting the challenges of tomorrow's world' - speech by Paul Fisher', 3 March 2015.

⁹ Helm D. (2015), 'Stranded Assets- a deceptively simple and flawed idea', Energy Futures Network, 22 October 2015

diversified diversifying portfolios exactly to reduce excessive exposure to risks due to changes in the fossil fuel sector.

Key Issues

- While addressing the climate change challenge will require that no more GHG emissions will be emitted, a lot of uncertainty about the scale and the pace exists. Carbon capture and storage or more generally, sequestration will influence this rate.
- There will be sectoral differences between coal, oil and gas both between especially regarding the pace and possibly the scale.
- The risk of a Carbon Bubble depends also on who holds the assets, e.g. governments or firms and how diversified the investors are.
- With divestment taking place already, the pace of divestment will be important to the risk of a bursting bubble.
- The carbon bubble may also be generated by disruptive technologies.

Scenarios may vary considerably, for example:

- If policies are put in place to curb emissions (such as carbon prices) there is a risk of an impact on markets due to stranded assets, but how high the impact is unclear.
- If prices remain low without efficient policies to address climate change, we may end having the inconveniences of stranded assets in addition to a high rate of cheap fossil fuel extraction. This may happen if disruptive technologies enter the market sufficiently. Cheap fossil fuel extraction then could limit the adoption of low carbon technologies.
- Prices of fossil fuel may increase due to the end of the financial crisis or other factors, leading to an increase demand and more oil extraction. No more stranded assets, but higher climate risks.

The issue of concern is the lack of any transitional strategy for the sector in the path to a low carbon economy. If the decarbonisation strategies for 2050 are intended to be achieved, then some orderly transition may be needed in the fossil fuel sector. Inadequate, conflicting or slow responses to climate change in investment and finance can entail risks that could be avoided under a more orderly transition.