

# Schroders

## Thermal coal

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End of the road?

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### End of the road?

Of the major fossil fuels used to generate energy, coal emits the highest proportion of carbon dioxide when burned. The transition from coal-fired power to lower-carbon and renewable energy is already underway in developed economies.

The proportion of increased energy demand from large emerging economies that will be met by thermal coal will reduce over time. Bolstered by the success of the Paris climate talks in December 2015, we believe these countries' transition to low-carbon sources of energy will arrive more quickly than markets have anticipated. With thermal coal already suffering at the bottom of the commodity cycle, it is unlikely to recover.

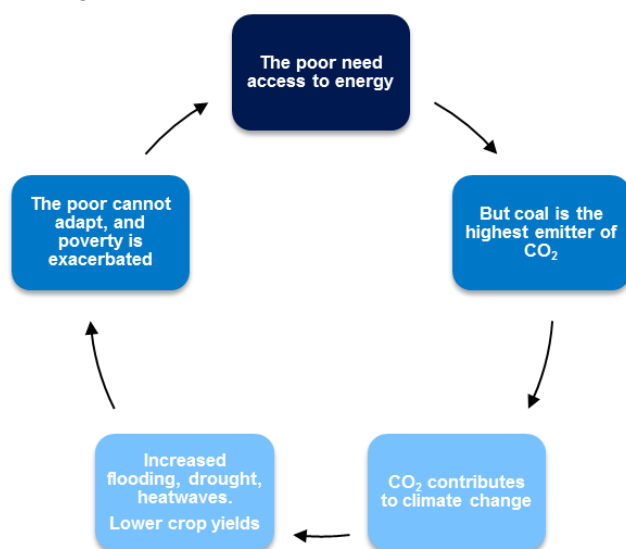
The 'stranded asset' debate has moved many analysts to think about the amount of potential 'unburnable' carbon in the ground, but little has been done on a company and mine level. Companies producing thermal coal will now have to move faster to reposition their portfolios and reconsider how they allocate capital to costly, long-term coal projects.

### Why companies still produce coal: The solution to energy poverty?

It is important to ask this question, as it is the defence of some of the major coal companies: their annual reports mention coal as the most important energy source for the future. It is true that access to reliable energy is linked to better health, education and economic growth.

However, recently the World Bank has rejected the notion that coal is the solution to poverty<sup>1</sup>. Increased coal consumption would lead to an increase in emissions, which means worsening climate conditions in the very countries for which coal is deemed to be 'the most important energy source', as illustrated below.

### The poverty-coal-climate conundrum



Source: Schroders.

Coal may play a role in reducing energy poverty, but renewable energy is more likely to fill that energy gap in the longer term. Global investment in clean energy in 2014 increased by 16% to US\$310 billion according to Bloomberg New Energy Finance, and technological innovation is steadily reducing the cost per megawatt hour (MWh) of solar and wind energy<sup>2</sup>.

<sup>1</sup>World Bank blogs, 'Clean energy, not coal, is the solution to poverty', 8 October 2015, <http://blogs.worldbank.org/voices/clean-energy-not-coal-solution-poverty>

<sup>2</sup>Goldman Sachs, 'Is Coal Reaching Retirement Age?', p6

Certainly the investment and infrastructure needed for renewables is costly; however we are already seeing commitments to increase investment in cleaner energy. The Paris Agreement reinforced previous pledges, committing to \$100 billion per year in climate finance for developing countries. The International Energy Agency predicts that Africa will be the first region to fuel its economic development on renewables, which are forecast to represent around 40% of Africa's electricity mix by 2040.

Companies that produce coal have now begun to factor this important shift into their capital expenditure plans and portfolio mixes, but have been slow in doing so. Carbon Tracker highlights that under a 2°C scenario, there is still approximately \$42 billion of 'unneeded capex' already invested in coal projects globally<sup>3</sup>.

### Regulation

The trajectory of climate-related regulation has been on the rise. In particular, there is regulation across both developed and developing economies to limit the amount of coal used in power stations. Aside from the climate angle, several regulatory steps are being made to move towards cleaner forms of coal, i.e. those that have lower impacts on air quality and health.

### Shift in approach at the big miners

We have reviewed the top four global diversified mining companies, assessing the proportion of coal in their portfolios, production costs, changing demand for coal in the key markets they serve, and portfolio adjustments they may have made. In a very tight commodity environment, we have analysed which mines operate at a cash costs above breakeven, and assessed the amounts of reserves held in the most expensive-to-operate mines.

### Mines operating above cash cost of \$60 per tonne

Company	Average Cost of Production (\$ per tonne)	Mines with cash costs above \$60pt	Reserves remaining in those mines (million tonnes)
Miner 1	\$58.2	6	285
Miner 2	\$56.9	2	247
Miner 3	\$66.0	3	329
Miner 4	\$56.9	0	n/a

Source: Schroders, Exane. Data as at 31 December 2015.

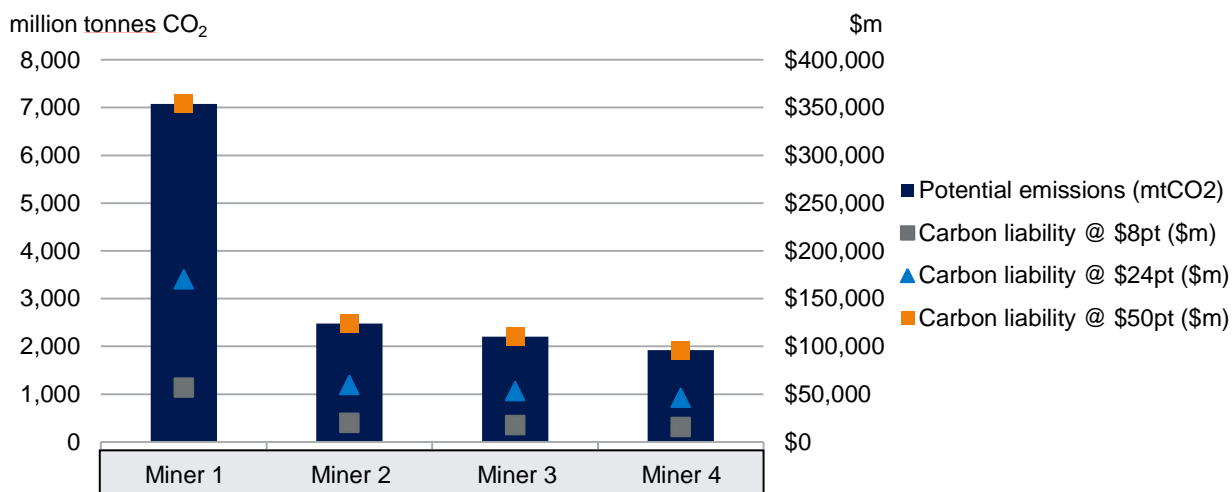
In recent years, BHP Billiton, Glencore, Rio Tinto and Anglo American increased production to service the Chinese market. But given the slowing growth rate in China, coupled with the rise in production of Chinese domestic coal, plus the carbon regulation catalyst, it is no surprise that Chinese demand for imported coal is falling. There are other markets with demand for thermal coal imports, including South Korea and Japan, but these regions are also transitioning fast towards low carbon energy, and demands are already being met through existing production.

Translating the amount held in reserves among these four companies to the amount of potential emissions gives us some indication of the likelihood of this coal being burned. In the chart below we have also applied a carbon price of \$8 per tonne, \$24 per tonne and \$50 per tonne as an indicator of the potential costs of emissions held in those reserves, if the coal were to be burned<sup>4</sup>. The figures are representative only: there is currently no global pricing mechanism, and the carbon price in Europe is currently around \$8 per tonne. The mining companies would not be liable for these costs as it is not they, but their customers, burning the coal. But the price of that carbon would be high: Miner 1's thermal coal reserves, for example, contain enough CO<sub>2</sub> emissions to generate a cost of \$353 billion. Given most of that cost would inevitably pass to customers, the pattern for coal demand starts to shift.

<sup>3</sup>Carbon Tracker, 'The \$2 trillion danger zone: How fossil fuel firms risk destroying investor returns', November 2015

<sup>4</sup>We use a carbon price of \$8 per tonne as this is the approximate current price of carbon traded on the EU Emissions Trading Scheme. We use \$24 as it is BHP Billiton's estimated 'central case' carbon scenario, following a ~3°C trajectory, and \$50 is BHP's 'global accord' scenario which aims for a 2°C trajectory.

### Potential emissions and cost of carbon



Source: Schroders.

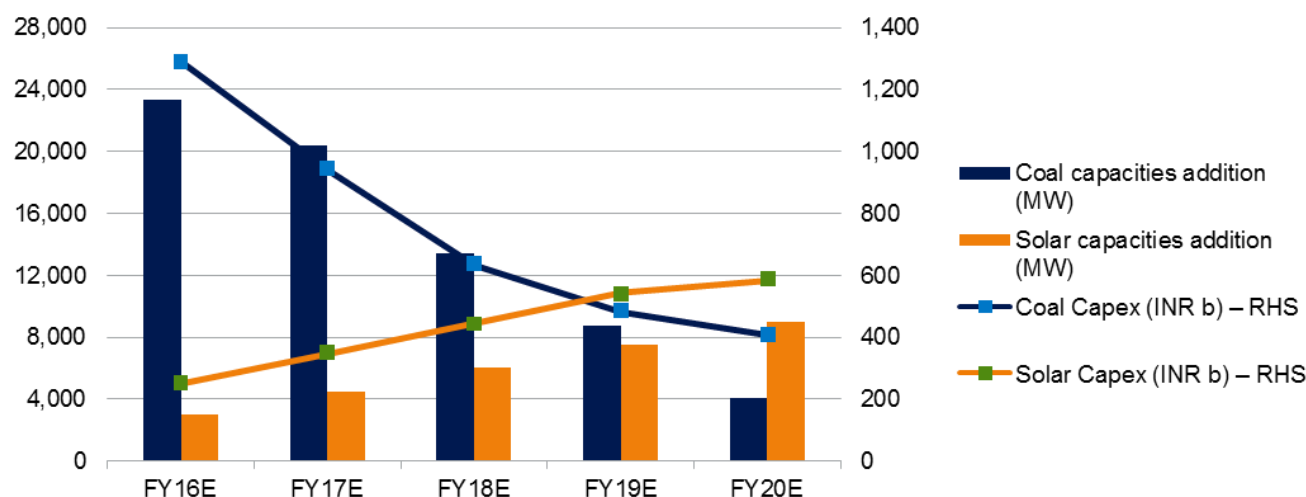
The four miners initially tackled the stranded assets debate quite cautiously. Now, their approach is more nuanced and solution-driven. Each has made some investment in cleaner coal and/or research into carbon capture, and most have been quietly exiting thermal coal.

### Domestic coal players... Cleaner coal will win

It is important to also consider the key domestic markets and their key players. Their coal production is so directly linked to local demand, supply, and regulation that any small factor – such as carbon regulation – can have lasting effects.

- **India – a wild card:** India still has big growth potential for coal. It is set to reduce thermal coal imports in the next 2-3 years which will favour domestic players, but increased carbon regulation will eventually limit that growth. Capital expenditure on solar energy is set to overtake that spent on coal by 2019, and India has targeted for renewable energy to account for 40% of electricity generation capacity by 2040.

### Solar capital expenditure and capacities in India could overtake coal



Source: Deutsche Bank, 2015

- **China – hunger for cleaner coal:** Coal currently accounts for 66% of China’s energy consumption. Demand will very soon be met by domestic companies, and that demand will start to fall as growth slows and climate change and anti-pollution drives become stricter. Domestic companies already investing in cleaner coal will benefit in the short to medium term.

- **US – diversify or export:** The decline of the US coal market is broadly linked to the rise of cheaper shale, but new regulations on emissions from coal-fired power plants have been the nail in the coffin. Domestic coal companies are diversifying their portfolios or reaching for the export market.

### What next for coal miners?

So why are companies still operating loss-making coal mines? The barriers to exit are not straightforward, and include miners being locked in 'take or pay' contracts, a lack of buyers willing to pay a reasonable price, and repositioning but not exiting coal completely.

In a tough environment, the better positioned companies will need to demonstrate:

- progressive and realistic attitudes to coal in their portfolios;
- understanding of local and regional carbon regulation;
- investment in cleaner coal strategies;
- and strict energy efficiency measures.

Investors also have a part to play. They should be questioning whether companies are in a position to weather further write-downs. They should review and encourage longer-term incentives for management of mining companies – the average life of a coal mine is generally much longer than a CEO's tenure.

Finally, there is a lack of detailed disclosure from most mining companies – for example, a surprising number of miners do not split out their coal assets into thermal coal and metallurgical coal. Both commodities have completely different end uses and customers, and this lack of split makes it difficult to analyse exposure.

The majority of companies do not disclose the ash and sulphur content of their coal – these both have harmful impacts on health. Other useful information would include the price assumptions that back the current book value of coal assets, and disclosure on long-term contracts.

At present no mining companies are carrying out all the actions above, or at least none have acknowledged publicly that they are doing this.

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