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RISK – THE BIG MISPRICING

MONTHLY VIP BRIEF



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How many times have we heard institutional investors explain – often in their talking-to-children voice – that the reason they do not invest in clean energy is that they dislike sectors with policy risk? In the light of events in the past year, perhaps their trustees should ask them whether they are worrying about the right things.

Almost a year ago, the Deepwater Horizon spill saw oil industry stalwart BP's shares collapse by half before recovering to trade around 25% down; in January this year an impoverished vegetable-seller in Tunisia set himself on fire, triggering a wave of unforeseen revolutions in the region that supplies some 40% of the world's oil and gas; and then Japan is hit by the 1000-year earthquake, leading to a near meltdown of its Fukushima Daiichi nuclear complex, with immense consequences for the world's energy system. Meanwhile Chevron is appealing a \$9.5bn environmental judgement in the Ecuadoran courts and BP is facing a billion-dollar lawsuit from TNK over its Rosneft deal, and all of this is playing out against the usual backdrop of coal mine collapses, gas explosions and concerns about pollution and water availability.

It does rather look like investors in the energy industry – and indeed in industries dependent on abundant,

cheap, safe energy - are mispricing risk on a heroic scale. Let us take six different risks, in no particular order.

The first of these is environmental risk, which activists have long argued has been mispriced by the energy sector. The feature on page 18 investigates the environmental concerns associated with shale gas, the Great White Hope for the fossil-fuel generation industry not just in the US, but increasingly in European countries such as Poland, as well as in China and India. The speed at which the shale gas sector can grow, and the eventual cost of the resulting gas, will be determined by the impact of "fracking" on water supplies. Across the fossil energy sector, investors are making bets without adequately considering either the risk of being stuck with the bill for future environmental clean-up, or the risk of extra environmental legislation being imposed during the life-time of the assets.

The second mispriced risk relates to security of supply. The current wave of political unrest and revolutions in Africa and the Middle East has taken everyone by surprise. But one lesson for the energy industry should be that the lowest-cost supplier can easily become no supplier at all, if the political pillars fall away. Oil production by Libya for instance has fallen from 1.5m barrels a day to almost zero over the course of the last few weeks. Householders pay building insurance so they can sleep at night in the knowledge that they will not lose everything. The energy industry has too often gone to sleep at night heavily exposed on security of supply.

The third risk (related to that of security of supply) is that of price uncertainty. A

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wind farm may produce electricity intermittently, but the nature of the intermittency can be easily modelled, and at least there will not be gyrations in the cost of generation. With fossil fuel, this is simply not the case. Gas and coal prices rise and fall sharply. The Henry Hub natural gas price, for instance, has gone from \$7 per MMBTu to \$13.30, down to \$2, up to \$6 and back to \$4, all in the space of four years.

Estimates by the US Energy Information Administration show that the average percentage error of its forecasts of natural gas wellhead prices over a 22-year period was nearly 68%, while for coal prices charged to generating plants it was 48%, and average electricity prices 20%. The EIA notes: "Natural gas generally has been the fuel with the least accurate forecasts."

Utilities may take the view that they can manage short-term volatility by hedging on a rolling basis, and, because gas-fired generation is so dominant in the power mix in many countries, they may be able to pass on a large part of any gas price increase to the electricity consumer. But neither of these solutions is perfect, or cost-free. And for a country as a whole, a high degree of uncertainty over the level of gas prices in three, five or 10 years' time, has a negative impact on investment in the economy. At the country level, for sure, it should make sense to move towards technologies such as wind that are not exposed to price uncertainty, even if the levelised cost is a little higher than that of gas-fired generation at the time the decision is taken. How many policy-makers do this calculation?

Our fourth category of risk is that of cost over-runs. This relates particularly, but not exclusively, to another rival of clean energy, nuclear. Experience shows that the larger and more centralised the infrastructure project, the more likely the delay and the cost over-run. The highest-profile new nuclear project in Europe, Finland's Olkiluoto 3 plant, is running 60% over budget and will start operations five years late. Clean energy projects also suffer delays – Cape Wind has been over 10 years in the planning – but once construction begins for onshore wind and PV plants, they are fairly straightforward to complete on

time. PV plants can be built in three or four months, onshore wind farms in six or nine.

The fifth mispriced risk relates to carbon pricing. Although the Copenhagen/Cancún process failed to introduce a global price on carbon, nevertheless around the world increasing carbon prices are a reality. In Europe, the EU-ETS has been up and running for six years now, and will continue to operate - whatever happens on the international stage and despite the gross fraud from which the system has suffered. Bloomberg New Energy Finance's latest forecast for the European carbon price in 2020 is for an increase from around EUR 16 to EUR 44. Carbon trading is likely to be introduced in Australia and South Korea in the coming decade and perhaps in China. Even where a carbon cap and trade system is a political non-starter, carbon prices are being introduced by other means, via regulation on energy efficiency, energy taxes, or vehicle gas mileage rules.

Over the 10 years ahead, given the steady drumbeat of new science confirming the worst predictions of climate scientists, it seems inevitable that these explicit or implicit carbon prices will continue to rise, creating a very real risk of stranded fossil energy assets, in particular in the coal sector.

And finally, catastrophic failure. The Deepwater Horizon oil spill in the Gulf of Mexico could cost BP up to \$41bn - that is the amount set aside in its 2010 accounts to cover the bill.

At Fukushima, the bill will include costs of the heroic efforts by hundreds of workers to cool down its reactors, the protracted loss of economic output in the 20km exclusion zone (estimated at \$128.5bn by Roubini Global Economics last week), the decommissioning and clear-up costs, and the costs of replacing 4.7GW of generating capacity. On top of that, there is the possibility of healthcare costs resulting from radioactivity. Nuclear is a technology that depends on an implicit public subsidy, since no private enterprise could possibly buy insurance on this scale and still generate electricity competitively.

It is difficult to see the same catastrophic hazards in wind or solar generation.

These technologies are not risk-free - maintenance staff are sometimes tragically killed or injured by blade breakages and other problems. There are also operational and financial risks that are now much better understood than five years ago – including the risk of low wind conditions, and the risk of abrupt changes in policy support, such as last retrospective changes to eligible operating hours, tariffs and taxes on existing PV plants in Spain and the Czech Republic.

For sure, some renewable power technologies could pose systematic risks - geothermal drilling in Zurich was blamed for setting off seismic activity, marine power devices could break loose and cause a shipping accident. Large hydro dams can – and have – burst and killed significant numbers of people. Another, in the future, could be carbon capture and storage, where the danger of CO2 leakage, not just from the final underground storage, but also from a potential pipeline rupture in a populated area, needs to be addressed. Generally, however, any risks posed by clean energy assets are local and limited in nature.

Once these six risks - local environmental, security of supply, volatility of price, construction over-runs, climate, and catastrophe - all become part of the decision-making process in the more sophisticated energy industry of the 2010s, we believe financiers and policy-makers will make a very different set of investment choices.

- **There will be no shortage of views on the issue of risk in a debate entitled "The Battle for New Power Capacity" on the second day - Tuesday 5 April - of the forthcoming Bloomberg New Energy Finance Summit in New York. It promises to be a stimulating, and perhaps boisterous, session. We will also be running a special, extra session on the implications of the Daiichi nuclear emergency on the first day of the Summit, Monday 4 April.**

To find out more, or book your tickets for the Summit, please go to www.bnefsummit.com. I look forward to welcoming you there. ■

AN AUSTRALIAN CARBON PRICE: TAKE 2

If you have been reading the headlines about the government's proposal to introduce a carbon price in Australia in the last few weeks, you would be forgiven for thinking that we had gone back to 2008. Just under three years ago, newspapers were awash with the proposal for a federal cap-and-trade system – the Carbon Pollution Reduction Scheme (CPRS). But following two defeats in the Senate, this plan was put back on the shelf by the then Prime Minister, Kevin Rudd – a decision that ultimately led to a change in Labor party leadership and a considerable swing in support to the Greens in the 2010 federal elections.

Six months or so later on 24 February 2011, current Labor Prime Minister, Julia Gillard, outlined the government's plans to implement a carbon price mechanism from 1 July 2012. The proposed scheme would have a fixed price for three to five years before moving to an emission trading scheme. Covering over 75% of Australia's emissions, the fixed price will give certainty in the early transitional years. The question now is whether the 2011 plan will follow the same fate as the CPRS.

The announcement has provoked a similar response to the CPRS, with comparisons drawn between Gillard and Libyan dictator Gaddafi and senators dancing the Hokey Pokey while critiquing the carbon pricing plans. Labor has also taken a hit, with support falling six points to 30% according to a poll published on 8 March in *The Australian* newspaper, putting the party well behind the opposition Coalition with 45%.

However, the immediate backlash does not necessarily mean the end for Gillard's carbon pricing plans. One reason for optimism is the change in composition of the two houses of Parliament following the 2010 elections when Labor secured a wafer-thin 76-74 majority in the lower house. In addition, the Greens will hold the balance of power in the Senate from

CARBON COMMENT



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July 2011. The government therefore needs to win the support of the Greens plus three balance-of-power independent MPs in the lower house to get its legislation through. On a positive note, the Greens and these MPs all broadly support a carbon price.

But considerable negotiation will be needed before all sides are satisfied. When the CPRS was first proposed, the Greens had three principal areas of contention: they said the emission target was too soft, they opposed the uncapped use of international offsets and were against what they saw as overly generous compensation to industry. This year's proposals should satisfy at least the first two concerns: the contentious target issue has been put on the back burner as a fixed-price period enables Australia to buy time for such negotiations; and like the CPRS, international credits will likely be used but the government is considering imposing restrictions.

In the end the deal-breaker will likely be the level of business compensation. Under the CPRS the power sector was to receive AUD 7.3bn (\$7.2bn) over 10 years with a further AUD 1.5bn (\$1.5bn) for the coal industry and AUD 1.3bn (\$1.3bn) for trade-exposed, emissions-intensive industries. To win the support of the Greens it seems likely that these figures will be reduced or linked to clean energy and abatement investment in some way.

In addition, the independent MPs are unlikely to support anything too extreme, and the government will want to demonstrate its ability to reform and be economically responsible.

Many businesses are broadly supportive of a carbon price including mining giant BHP Billiton, Shell and some power companies. But there are conditions to that support: BHP wants all exporting sectors to be exempt, while others want generous compensation payments to offset costs. In the long run, many industries need certainty - and would prefer a well-designed price over nothing - but they have different definitions of 'well-designed'.

Public support will be important, however, and to date the opposition Coalition has run a successful campaign highlighting increases to living expenses and arguments about job losses and excessive costs. Recent polls have shown that many currently oppose what the government is doing but most support a price so long as they are compensated for increased living costs. The government is therefore implementing a comprehensive strategy to educate and win over the people.

It appears that Labor is playing a long game, knowing that we are still over two years away from the next federal elections. It has released a framework early, which has unsurprisingly sparked a strong negative response, but there is still plenty of time for opponents to wear themselves out before it publishes the details of its plan. In addition, the government is consulting widely, enabling stakeholders to contribute to the design phase of the scheme. There is a long way to go but the numbers are currently in Labor's favour. If they can work through the devils in all the detail – of which there are several – then Australia will introduce a price on carbon in 2011. ■

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