Whoever Figures Out How To Safely Trap Carbon Will Make A Fortune

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IT'S easy to be sceptical - deeply - about efforts to clean up Australia's coal industry.

"Clean coal" is an oxymoron and even advocates shy away from the term. Capturing and storing greenhouse gases is eminently worse than avoiding the emissions in the first place. Safely trapped carbon dioxide is still pollution - and there's plenty of doubt about the safety part.

Industry has hardly put its money where its mouth is. By one estimate business has invested only about $10 million to build carbon capture and storage facilities in Australia so far - a piddling sum given our coalminers sell more than $50 billion of the stuff a year.

The constant discussion about why coal is needed to fulfil our power requirements is frustrating. There are plenty of ways to make significant cuts in the base level of power we use - by retrofitting buildings for greater energy efficiency, for example.

Wind and solar would be more credible substitutes for our power needs if we stopped wasting energy in the first place.

Combine them with tidal and geothermal power, and surely we'd be on the way to a genuine renewable energy supply?

But for now, coal-fired power stations provide about 80 per cent of our electricity and coal remains our biggest export earner - $43 billion this financial year. More than 30,000 jobs depend on it directly.

Sad to say, there's no way the Government is going to turn its back on the coal industry.

Launching the Global Carbon Capture and Storage Institute this week, the Prime Minister Kevin Rudd said: "The cold, hard reality [is] that coal will be the major source of power generation for many years."

Carbon Capture and Storage (CCS) - which can be used to cut emissions for gas-fired power plants, cement factories, iron and steel works - remains the key to cleaning up coal. The G8 last year accepted estimates that CCS could provide 20 per cent of the 60 per cent emissions reductions needed to stabilise atmospheric CO2 concentrations at about 450 parts per million - which most conservationists and many scientists believe is not low enough to avoid global warming.

Australia has got to be in it. The institute will get $100 million of public funding a year to 'facilitate CCS projects".

Major resources companies such as BHP Billiton, Rio Tinto and BP are behind the initiative but have not committed money yet.

As recent reports have highlighted, CCS projects like Santos's $700 million Moomba storage project in South Australia (championed last year by Tim Flannery) have been shelved in the wake of the financial crisis and lower oil and gas prices.

A joint Rio Tinto-BP carbon capture project in Western Australia fell over last year.

As the engineer John Martin told G-Biz, "Santos and Rio are not fools." That is, they know a dud technology when they see one.

Martin, the head of a private Melbourne company called Docklands Science Park, reckons he has the answer - a patented CCS process called Pulse Combustion Driven Thermoacoustic Refrigeration.

He says this is a far cheaper alternative to the "amine capture" technology (which cleans CO2 from flue gases) favoured by the CSIRO, the CRC for Greenhouse Gas Technologies and others.

The technical arguments are way beyond this column. Martin is blunt about the risks associated with the storage techniques favoured by the coal industry.

Underground aquifers will be poisoned. Caps to storage reservoirs could rupture, he says. Hundreds died of suffocation in Africa when naturally formed CO2 bubbles erupted from Lake Nyos in Cameroon.

Martin urges the injection of liquefied CO2 - and the nitrates and sulfates that his technology captures - into the "silts" on the sea floor, at depths of 3.3 kilometres or more.

The heavy liquids would not interact with the sea, he says, but would sit under the surface forever - rolling aside in the event of a geological disruption such as a volcano.

It's wrong, wrong, wrong - but these are desperate times. The CRC chief executive, Peter Cook, says the Australian Government is rightly against the disposal of CO2 into the sea, and he questions whether international approval would be gained to do this.

The CRC prefers storage in hard sediments. Cook says the risk of leakage from such geosequestration is extremely low - an facility near Nagaoka, Japan, withstood an earthquake measuring 6.4 on the Richter scale in 2004 with no leakage.

On Friday the CRC, which is about 40 per cent industry funded, passed an Australian milestone, storing its 50,000th tonne of CO2 onshore at its Otway Basin demonstration project near Warrnambool in Victoria.

The Global CCS Institute chief, Nick Otter, says the body will try to remove the barriers that are stopping bigger commercial scale projects going ahead, including "regulatory and public acceptance issues".

The Federal Minister for Resources and Energy, Martin Ferguson, recently legislated to allow the commercial development of 10 carbon storage "blocks" under the seabed off Australia's coast now. Shell is already actively exploring in Victoria's Gippsland Basin.

On Thursday, Mr Rudd recommitted the Government to providing financial support to build a commercial scale CCS facility - one which could capture more than a million tonnes of CO2 a year. But Australia would need to trap 300 million tonnes of CO2 a year to negate emissions from its coal-fired power stations.

Mr Rudd did not say as much, but we are likely to see a commitment of up to $2 billion in next month's

budget. It's an area where the Government is spending money on clean energy. Whoever gets CCS right, will make themselves a bomb.