

## **Coal is as old as the hills. But could it be too old?**

OPEC tells us that presently there are 1,500 billion barrels of oil underground and under the sea.

And according to the World Coal Association there are 1,038 billion tonnes of coal in the ground. Which based on current rates of extraction, will take about 132 years to dig up.

And of course, due to the laws of conservation of energy, that energy will never disappear.

But an interesting thing has been happening over the past few years.

In the UK in 1970, 95% of the energy was produced from fossil fuels.

However, in 2013, that number was closer to 80%.

And overall they are actually using less energy than they did in 1970.

In South Australia 30% of energy already comes from renewables.

In Perth, where I am from, we have 360MW of rooftop solar PV, growing at 20% per annum, even with a small feed in tariff.

So an interesting phenomena is on the horizon.

Although the energy is existing.

We have less desire to use it and we are sourcing from different places.

China once wanted coal fired power but even they are getting smog sensitive.

They are now producing more energy from renewables each year than we have in our whole power system.

China and the US just issued a joint statement pledging combined action to reduce their carbon emissions.

If China, famed for it's dirty smog and not particularly enlightened ideology is leading the way, that should tell us something.

At one level though this shouldn't surprise us.

Where things that have value have then gone out of use.

**Old computer picture – slide 1.**

Could I sell this to anybody?

Could anyone give me a disk to put in it?

Could I print from it?

No.

And so it could be with energy.

The implications of this are interesting.

Because of the changes there are some financials tied up with it.

### Financials Slide 2

Pension funds have trillions of dollars invested directly in fossil fuels companies.

Ben Caldecott's talk will go through the technical stuff like this in more detail.

But essentially, you might think the laws of supply and demand will just take care of this.

That the market will always find a way use this carbon.

After all, there's always some service that can decode your old floppy disks.

Actually in a way the best example is the Sony Betamax.

### Betamax Slide

Because it was cheaper, and in many ways a better base-load system.

And yet it went out of date.

Now the question I'd like you in the audience to answer for me is:

Surely we assume that with all that coal still out there, someone somewhere will build a coal fired power station to make energy out it?

Is the 8 million thousand tonnes of coal used globally last year likely to be more than the amount of coal we'll use this year. If not, is the coal in the ground still worth as much?

If demand diminishes, the price will go down and at some point it could become unviable for companies to extract it.

So is the coal in the ground worth as much as it is currently valued at?

Let's take a look at a few different things.

### Leggings slide

Some things were in fashion.

And do go back in fashion.

Like leggings and flares.

Who would have thought?

Or as an interesting case with Germany.

Who suddenly regarded their dependence on Russian gas as worrying, and now coal might come back in fashion.

At least in the short term as they ramp up their renewables investments.

Ultimately, how do you sell last year's fashion?

Cheaply is the answer.

Energy has something else going on – like a technology that gets superseded.

It's tempting to think that coal is forever. It's chemically the same as diamonds, and it is of course forever theoretically.

It's as old as the hills.

Overall is the trend with fossil fuels like Betamax or is it like flared trousers?

Is it going out, only to come back in again later, or, is it going out for good?

And if it is going out for good, what are the implications for your Super?

Something interesting has been happening to the relative cost of coal and gas.

### Graphs of the price of coal gas and wind.

Since 2013, building [new wind in Australia is cheaper than new fossil fuels](#). This investment produces a cheaper source of electricity because wind and solar don't have the input costs of coal and gas producers, [which is bringing generation costs down](#).

When I was at investment bank J.P. Morgan, the guys we didn't want to talk to much were the new clean technology companies. They were seen as just too risky. But now they have reached the mainstream.

### Solar graphs

There will be a moment where other renewables cost less than fossil fuels, as illustrated by these two slides on solar.

There is research going on all over the world, which is highlighting how much carbon dioxide is being burnt and extracted – like this one from Carbon Tracker.

### Carbon Tracker Map Slide

The stigmatization of fossil fuels is real.

Leaders from around the world are speaking out.

Lets take a look at some of these now.

### Slides with quotes of people.

Even women are speaking out!

There's a social opprobrium being heaped on industry too.

Divestment campaigns like this one this evening are happening all over the world.

All this means the amount of coal being used, and therefore its value has an uncertain future.

Carbon is becoming politically less acceptable.

This, in my view could trigger the death spiral of fossil fuel energy.

And that could mean that there is a whole swathe of coal resources underground which no one wants.

Rather like technology that becomes obsolete.

It's not just the bone in the nose greenies that are doing this, its hardcore financial players. Here's one example.

### HSBC slide

Many financial institutions and investors have already begun to divest, including Rabobank, Storebrand, the Uniting Church of Christ, and the largest pension fund in the world, the Norwegian Pension Fund, that own 2% of the European stock exchange.

How do we reconcile these seemingly opposite views?

Where, on the one hand in Australia we have a gas and coal boom.

Both this and renewables growth are going on.

But the growth of one will overtake the other.

When you retire, your superannuation is made up of companies which make and sell things. These things give the company a valuation, and your shares a value.

Would you want your superannuation to be invested in \$500,000 Betamax tapes?

#### Betamax slide

Obviously not, because you can't sell that. You couldn't even give one away!

It could be exactly the same case with fossil fuels.

There is a global commitment to limit man made global warming to 2 degrees Celsius.

If the stigmatization of fossil fuels continue, and the renewable alternatives are cheaper, fossil fuel companies may not be able to use or sell 80% of their fossil fuel reserves.

Whereas 80% of those fossil fuel reserves are currently on those companies balance sheets. And reflected in their share price.

Which makes up the value of your super.

There are interesting consequences.

Superannuation funds which are heavily invested in fossil fuels are facing potential problems.

There could become a critical breakdown when carbon becomes an untouchable.

And if your Super is invested, you could be impacted.

Carbon might bite people in the arse more than just with rising temperature.

Thank you.