

Coal Power and Carbon Pollution Myths and Realities

By Terry Cardwell

I have been frustrated for a number of years.

- Frustrated at the rubbish being put forth about carbon dioxide emissions, thermal coal fired power stations, renewable energy and the ridiculous Emissions Trading Scheme.
- Frustrated at the lies told about global pollution (particularly during elections). Using power station cooling towers for an example, the condensation coming from those cooling towers is as pure as what comes out of any kettle.
- Frustrated about the mis-named man-made 'carbon emissions' (which of course is Carbon Dioxide emissions) and what it is supposedly doing to our planet.
- Frustrated about the lies and distortions told about renewable energy and its ability to replace fossil fuel energy generation.
- Frustrated at the ridiculous carbon credit programme, which is beyond comprehension.
- And further frustrated at some of the public who haven't got a clue about thermal power stations or renewable energy, but who still quote ridiculous figures about something they clearly have little or no knowledge of.

First, coal fired power stations do NOT send 60 to 70% of the energy up the chimney. The boilers of modern power station are 96% efficient and the exhaust heat is captured by the economisers and re-heaters and heat the air and water before entering the boilers.

The very slight amount exiting the stack is moisture as in condensation and CO₂. There is virtually no fly ash because this is removed by the precipitators or bagging plant that are 99.98% efficient.

The 4% loss is heat lost through boiler wall convection and minor heat loss up the stack. The full efficiency figures for modern black coal generators are:

- Boiler 96%
- Alternator 99%
- Turbine 46%
- With an overall efficiency figure of 44%.

Black bituminous coal fired power stations are highly efficient and can generate massive amounts of energy for our needs. They can generate power at efficiency of less than 10,000 b.t.u. per kilowatt and cost-wise that is very low.

The percentage cost of mining and freight is very low. The total cost of fuel is 8% of total generation cost and does NOT constitute a major production cost.

As for coal being laughed out of the country, China is building multitudes of coal fired power stations because they are the most efficient for bulk power generation.

We like, the USA, have coal fired power stations because we HAVE the raw materials and are VERY fortunate to have them. Believe me no one is laughing at Australia - exactly the reverse, they are very envious of our raw materials and independence.

The major percentage of power in Europe and U.K. is nuclear because they don't have the coal supply for the future.

Yes, it would be very nice to have clean, quiet, cheap energy in bulk supply. Everyone agrees that it would be ideal. You don't have to be a genius to work that out. But there is only one problem---it does not exist.

Yes, there are wind and solar generators being built all over the world but they only add a small amount to the overall power demand.

The maximum sized wind generator is 3 Megawatts, which can rarely be attained on a continuous basis because it requires substantial forces of wind. And for the same reason they only generate when there is sufficient wind to drive them. This of course depends where they are located but usually they only run for 45% - 65% of the time, mostly well below maximum capacity. They cannot be relied for a 'base load' because they are too variable. And they certainly could not be used for load control.

The peak load demand for electricity in Australia is approximately 50,000 Megawatts and only small part of this comes from the Snowy hydro Electric System because it is only available when water is there from snow melt or rain. And yes, they can pump it back but it costs to do that.

Tasmania is very fortunate in that they have mostly hydro electric generation because of their high amounts of snow and rainfall. They also have wind generators (located in the roaring forties) but that is only a small amount of total power generated.

.
Based on an average generating output of 1.5 megawatts (of unreliable power) you would require over 33,300 wind generators.

As for solar power generation much research has been done over the decades and there are two types - solar thermal generation and solar electric.

Any clean, cheap energy source is obviously welcomed but they would NEVER have the capability of replacing thermal power generation. So get your heads out of the clouds, do some basic mathematics and look at the facts instead of going off with the fairies (or some would say the extreme greenies.)

We are all greenies in one form or another and care very much about our planet. The difference is most of us are realistic. Not in some idyllic utopia where everything can be made perfect by standing around holding a banner, chanting a slogan and being a general pain in the backside.

Here are some facts that will show how ridiculous is this financial madness the government is proposing. Do the simple maths and see for yourselves.

According to the 'believers' the CO₂ in air has risen from 0.034% to 0.038% over the last 50 years.

To put the percentage of carbon dioxide in air in a clearer perspective:

If you had a room 12ft x 12ft x 7ft (or 3.7m x 3.7m x 2.1m), the carbon dioxide in that room would occupy a volume about the size of a large packet of cereal. (About 0.25m x 0.25m x 0.17m).

Australia emits about 1% of the world's total carbon dioxide. The government wants to reduce this by twenty percent – that is reduce emissions by 0.2% percent of the world's total CO₂ emissions.

What effect will this have on existing CO₂ levels?

By their own figures they state the CO₂ in air has risen from **.034% to .038%** in 50 years. Assuming this is correct, the world CO₂ has increased in 50 years by **.004** percent.

Per year that is .004 divided by 50 = **.00008** percent. (Getting confusing - but stay with me)

Of that because we only contribute **1%** our emissions would cause CO₂ to rise .00008 divided by 100 = **.0000008** percent.

Of that 1%, we supposedly emit, the governments wants to reduce it by 20% which is 1/5th of .0000008 = **.00000016 percent effect per year they would have on the world CO₂ emissions, based on their own figures.**

In the same room, that would equate to a volume the size **of a small pin!!!**

For that they have gone crazy with the ridiculous trading schemes, solar and roofing installations, clean coal technology, renewable energy, etc, etc.

How ridiculous is all that?

The cost to the general public and industry will be enormous. It will cripple and even close some businesses, large and small.

Terry Cardwell
Rockhampton Qld Australia
December 2009

Disclosure: This letter was written by a frustrated Terry and first published by the Rockhampton Daily Bulletin in December 2009. Since then, because of the initiative of Ron Kitching, it has gone around the world. This is a slightly edited version.

Terry Cardwell has spent 25 years in the Electricity Commission of NSW working, commissioning and operating the various power units. His last was the 4 X 350MW Munmorah Power Station near Newcastle. He is happy to answer questions. Terry can be reached at info.carbon-sense.com