Submission No 443

INQUIRY INTO COAL SEAM GAS

Organisation: Sutherland Climate Action Network

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Submission to the General Purpose Standing Committee No. 5 Inquiry into Coal Seam Gas

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This submission relates to term 1f in the Inquiry's Terms of Reference: "**Effect on greenhouse gas and other emissions**."

Fossil methane gas, whether conventional ("natural gas") or coal seam gas, is championed by some as a "transition fuel," a stepping stone to renewable energy, a necessary stage in the shift towards a low-carbon economy.

This argument is based on three false assertions:

1. Greenhouse emissions from gas-fired electricity generation are lower than coal
2. It is not possible or not affordable to shift straight from coal to renewable energy
3. We have time to gradually reduce emissions from fossil fuel over many decades

1. Greenhouse emissions from gas-fired electricity are similar to coal

It is true that at the point of end-use in an electricity generation facility, combustion of methane produces substantially less CO_2 per unit of power generated (56% that of coal).

However in judging the efficacy of a response to climate change, the relevant comparison is not the emission of a single gas, CO_2, at a single stage of the process (generation), but full life-cycle emissions of all greenhouse gases, both warming and cooling. A switch from coal to gas reduces CO_2 from combustion but also increases methane emissions through leakage and reduces cooling aerosol pollution from coal mining, particularly through SO_2.

When these are considered, "the substitution of gas for coal as an energy source results in increased rather than decreased global warming for many decades," according to a recent study[1] by eminent[2] climate scientist Tom Wigley. Wigley found that even assuming *zero* methane leakage, switching half the world's coal energy to gas by 2050 would *increase* warming until 2050 and reduce the projected 3°C warming in 2100 by only an insignificant 0.1°C.

The last time the planet was 3°C warmer than today was 3 million years ago, before humans evolved, when the sea level was 10-40 metres higher[3]. Rapid warming by 3°C (or 2.9°C) means a hellish future of super-storms, heat waves, expanding deserts and rising seas[4].

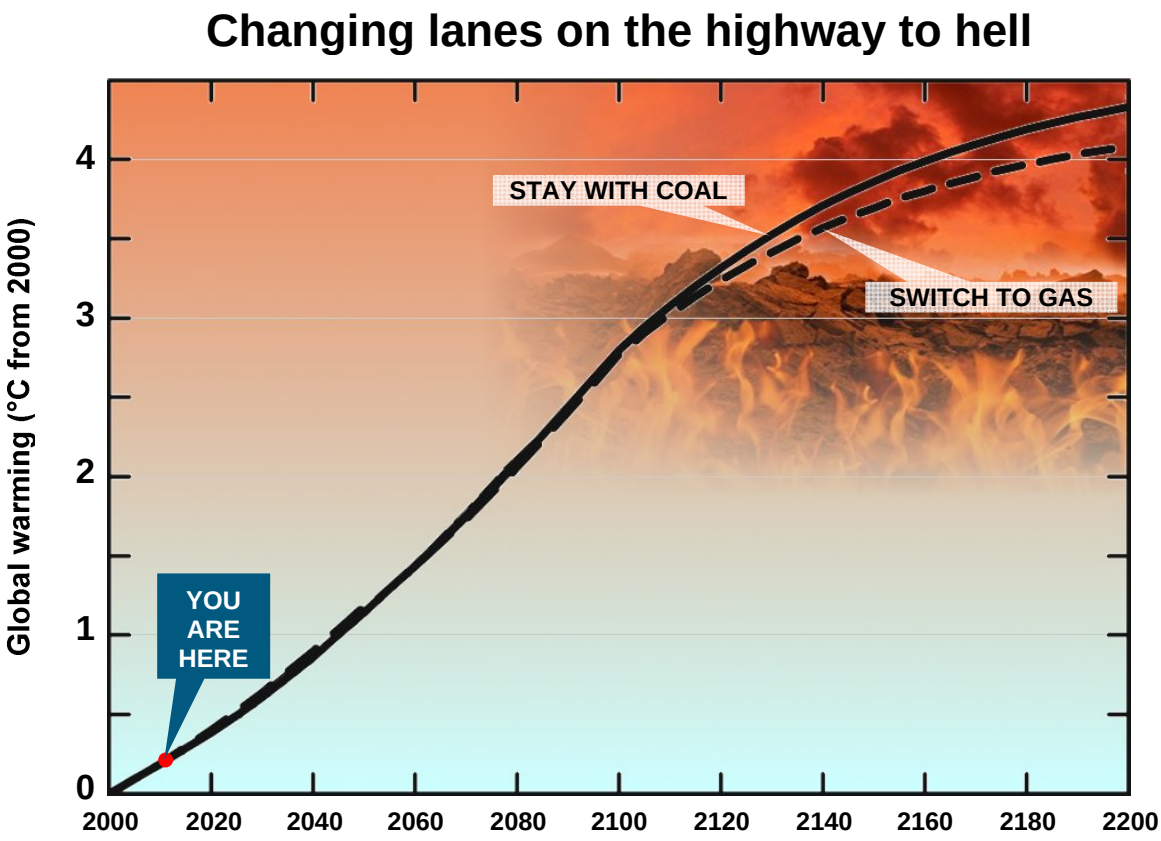
Therefore switching from coal to gas is just changing lanes on the highway to hell.

[1] TML Wigley, *Coal to gas: the influence of methane leakage*, Climatic Change, Springer Netherlands, August 2011, pp 1-8. http://dx.doi.org/10.1007/s10584-011-0217-3

[2] A Google Scholar search for scientific publications by Tom Wigley in relevant fields since 1992 shows 41 results, with a high citation rate and high degree of relevance to modern climate science. http://tinyurl.com/scholar-wigley accessed 13 September 2011

[3] ME Raymo, JX Mitrovica, MJ O'Leary, RM DeConto & PJ Hearty, *Departures from eustasy in Pliocene sea-level records*, Nature Geoscience, 4, 328–332, 2011 http://www.nature.com/ngeo/journal/v4/n5/full/ngeo1118.html

[4] David Spratt, *What would 3 degrees mean?* http://climatecodered.blogspot.com/2010/09/what-would-3-degrees-mean.html



Fiddling while the Earth burns: the negligible effect on global warming of switching half the world's coal energy to gas by 2050, assuming 5% gas leakage.

Source: Wigley 2011

2. A direc[illegible] ordable

Beyond Zero Emissions and Melbourne University have demonstrated in their Zero Carbon Australia plan[5] that it is both technologically feasible and affordable for Australia to meet all our energy demands from renewable sources within as little as 10 years.

Wind is the cheapest renewable energy source and, despite intermittency, can supply 40% of electricity demand. The remaining 60% can be provided by baseload concentrating solar thermal plants with molten salt storage, similar to the Gemasolar power plant now supplying power 24 hours a day to the Spanish electricity grid[6]. A small percentage of backup energy could come from burning wheat stubble when required.

The cost is affordable, requiring an investment of $37 billion per annum over 10 years. This is similar to the amount Australians pay for insurance, around 3% of our GDP. With the projected savings in coal, gas and oil costs, the plan actually *saves over a trillion dollars* by 2040 against business as usual, even without factoring in a carbon price or avoided costs of climate change. It also creates up to 140,000 clean-tech Australian jobs and a potentially lucrative export industry in solar thermal and wind technology.

In contrast, establishing an expanded fossil methane gas industry creates stranded gas assets as the price of renewables reach parity and below. It entrenches a new group of powerful corporations who will further oppose and delay the shift to renewable energy for decades to come.

[5] M Wright & P Hearps, *Zero Carbon Australia Stationary Energy Plan*, 2010, http://zerocarbonplan.org
[6] Gemasolar, Torresol Energy, 2011 http://www.torresolenergy.com/TORRESOL/gemasolar-plant/en

Figure 2: 24 hour solar power

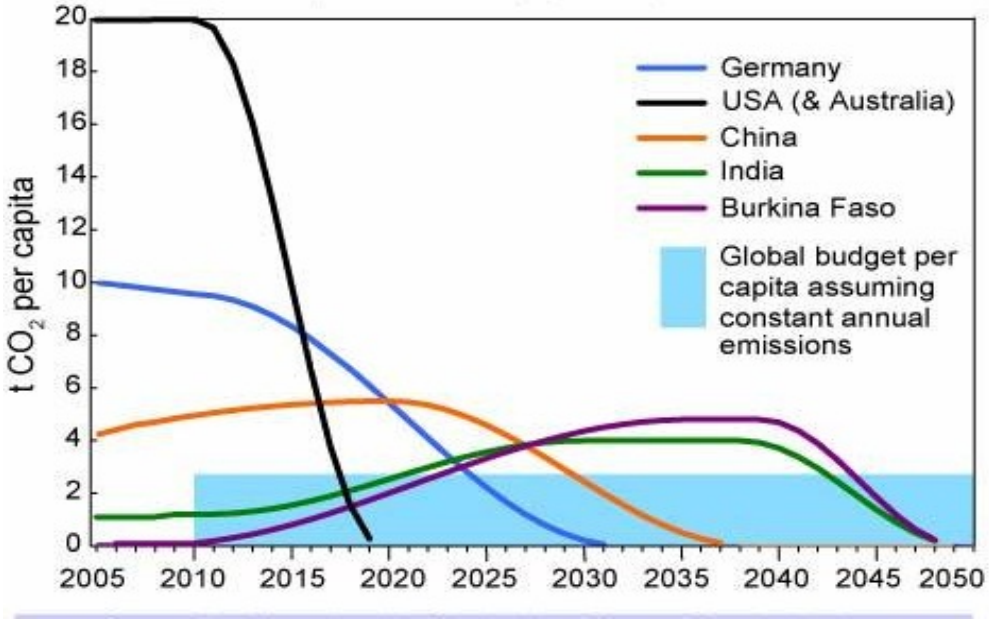
Solar power at night: Tony Windsor, Ross Garnaut and Beyond Zero Emissions CEO Matthew Wright with Torresol representatives at the Gemasolar baseload solar power plant, now generating 20 MW around the clock by storing heat in molten salt tanks.

Photo: Beyond Zero Emissions

3. We must reduce emissions to zero by 2020 to keep global warming below 2°C

To have just a 67% chance of keeping global warming below the already dangerous level of 2°C, the world must emit no more than 750 Gt CO_2 by 2050. This equates to a per capita CO_2 budget of 2.7 tonnes per person per year[7]. Due to our high current emissions, to stay within this budget, Australia, like the USA, must reduce emissions to zero by 2020[8].

Figure 3: Why zero emissions by 2020



Cold turkey: To have a ⅔ chance of staying below 2°C global warming, high emitters like Australia must reach zero emissions in ten years.

Source: Adapted from Schellnhuber 2009[8]

[7] German Advisory Council on Global Change (WBGU), *Solving the climate dilemma: The budget approach*, 2009. http://www.wbgu.de/en/publications/special-reports/special-report-2009/

[8] HJ Schellnhuber, *Terra Quasi Incognita: Beyond the 2°C line*, International Climate Conference: 4 degrees and beyond, September 2009. http://www.eci.ox.ac.uk/4degrees/programme.php