Oil and Gas Exploration in the Beetaloo Basin Inquiry

Submission 15 August 2022

Author

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I was born in the UK in 1946 and became an Australian citizen in 1974. I retired recently from my own company, which ran combined value and risk management studies for 30 years.

The terms of reference for the inquiry are:

Oil and gas exploration and production in the Beetaloo Basin, with particular reference to the Industry Research and Development (Beetaloo Cooperative Drilling Program) Instrument 2021, which provides public money for oil and gas corporations.

Overview of the BCD Program
2.2
The BCD Program is a component of the Beetaloo Strategic Basin Plan (the Strategic Plan), which is part of the Australian Government's Gas-fired recovery plan. The program has two key objectives:
to accelerate exploration and appraisal activities for prospective petroleum resources in the Beetaloo; and
to incentivise drilling in the Beetaloo to deliver approximately 10 additional wells to build a comprehensive understanding of the resources.
2.3
The BCD Program is intentionally designed to operate on a first-come-first-served basis as opposed to a competitive or merit-based process.
The Department of Industry, Science, Energy and Resources (DISER) explained:
The limited pool of funding is expected to drive competition among petroleum permit or licence holders in the Beetaloo, operating in conjunction with the eligibility criteria to establish a de facto competitive process. The design also ensures the grants avoid duplicating existing industry activity or activity that might have occurred without support from the grant.
2.4
Applications for the BCD Program opened on 18 March 2021, with relevant material—including the Grant Opportunity Guidelines (the Guidelines)—published online. The Guidelines establish a framework for administration of the program, including eligibility and application assessment criteria.

1 Overview

I am strongly against any fossil fuel extraction from the Beetaloo Basin with or without public investment. I urge this Inquiry to reject any injection of public money into this proposal and to prohibit any fracking in the Beetaloo Basin for the following reasons.

1. The United Nations recently announced that Australia is last among 193 nations in effectively reducing the threat posed by human induced global heating (climate change).

2. Earth's average near surface temperature is already 1.1° Celsius (8%) above the pre-industrial average and carbon dioxide (CO2) concentration in the atmosphere is 50% (280 - 420 parts per million) above the pre-industrial average.

3. Carbon dioxide created today will remain in the atmosphere as follows: 33% remains after 10 years, 25% remains after 100 years, 19% remains after 1000 years. See the graph in **Appendix 1.**

4. Fracking of the Beetaloo Basin to extract methane gas (CH4) will result in fugitive emissions of this greenhouse gas and copious quantities of CO2 when the gas is burnt.

5. Any fossil fuel investment in the Basin can be expected to be operational in 40 to 50 years time thus producing greenhouse gases long after we need to reach net zero emissions in 2050 – or the whole facility will have been 'mothballed' thus wasting scarce capital.

6. Treasury's recently released Intergenerational Report forecasts that the federal budget will remain in net debt until 2061. Why would Australia borrow money in order to 'invest' in climate destroying infrastructure?

7. Gas extraction from the Beetaloo (or any other) Basin will continue to promote increasing CO2 build up and rising global temperatures leading to increasingly unstable climate and consequent damage and destruction of lives, infrastructure and environment.

8. Being a Brit I well remember discussions commencing there in 1961 that mankind would eventually live in a solar/hydrogen economy because that is the only long-term energy resource which is infinite and plentiful globally. In the 1970's the UK commenced its program of coal mine closures.

9. Information from Stanford University shows that total annual wind and solar primary energy that reaches earth is some 5,800 times mankind's total current energy demand of 0.65 zettajoules per year.

10. Bloomberg NEF and the CSIRO's current energy cost advice is that zero emissions solar and wind derived electricity (renewable energy) with battery back

up is cheaper in most nations than new fossil fuel electricity generation and cheaper than existing fossil fuel generation in an increasing number of nations as the cost of renewable energy continues to fall.

11. Current projections indicate that hydrogen produced from renewable energy is expected to be $2 per tonne by 2030 and competitive with methane gas – without the cost of damaging climate impacts.

12. The Australian Securities and Investment Commission have made it very clear *'that directors who fail to consider climate change risks now could be found liable for breaching their duty of care and diligence in the future.'*. Are politicians under any lesser obligation for making such considerations when making decisions that impact future generations?

13. The Australian Federal Court has delivered a landmark judgement on global heating. It found that Australia's Environment Minister owed future generations a duty of care when considering investment proposals liable to generate dangerous greenhouse gas emissions.

As committee members your responsibility is to address the asymmetric risk – as adults you are making a decision that will have little impact on you but significant impact on your children and grandchildren.

Please choose carefully and think of the future of your own, and other people's descendants.

Please reject the expenditure of public money on Beetaloo Basin and reject any expansion of oil or gas extraction in the Basin.

2 Basis of the Methane Gas Industry

2.1 "Gas Fired Recovery" – Emissions Calculations

The present basis of the gas industry in Australia is the previous, Coalition government's, "Gas Fired Recovery". There was then and is now no justification for this "Recovery" because, irrespective of the need for emissions reduction electricity can be generated at lower cost using renewable energy (see **Section 3.3**) and many methane gas industrial applications can now use hydrogen or alternative feedstock.

The basis on which the "Gas Fired Recovery" is based is however demonstrably false with regard to greenhouse gas emissions. On 1 July 2008 the Federal government passed Labor's *"National Greenhouse and Energy Reporting Regulations"* which, amongst other matters specified the global warming potential (GWP) of a variety of greenhouse gases present in the atmosphere.

However on 1 July 2020 the Coalition government made a critical change to this Regulation by changing the GWP value of carbon dioxide CO2 (the most prevalent greenhouse gas in the atmosphere) from **1** to **0.** This has the effect of eliminating the **global warming effect** of release of CO2 to atmosphere when fossil fuels are combusted. Therefore wherever GWP of emissions are quoted in accordance with the *"National Greenhouse and Energy Reporting Regulations"* **after** 1 July 2020 the emissions are quoted in carbon dioxide equivalents ('CO_2e') the figure will actually **exclude** any value of the GWP potential emissions from CO_2,

The Western Australia Environmental Protection Authority has uncovered this distortion in respect of the North West Shelf Project Extension Proposal.

I am unable to ascertain if the same distortion has occurred in calculations related to the GWP of the Oil and Gas Exploration in the Beetaloo Basin Proposal but it is a matter that needs to be investigate and resolved by this Inquiry.

2.2 Scope 3 Emissions

Australia typically calculates the 'scope 1 and 2 emissions' as required by the *"National Greenhouse and Energy Reporting Regulations" but* excludes any calculation of the 'Scope 3 emissions' that occur when the methane (or any other fossil fuel) is combusted overseas. Since some 80% of our methane gas is exported, whilst, strictly speaking, the **responsibility** for these emissions rests with the nation burning the resource. However the **effect** of combustion adds to the total greenhouse gas load and should be factored in at the source of the fossil fuel in question – once produce it will be burnt. These effects will be felt particularly in Australia, which is the developed nation most at risk from global heating.

In addition it should however be noted that any leakage of methane to atmosphere at any stage of production, transport and use will add to the carbon dioxide load as atmospheric methane degrades in time to CO_2 and H_2O (see **Section 3.4**).

The Inquiry should require that the long-term effects of proceeding with the Beetaloo Exploration be clearly spelt out publicly on the basis that fossil fuel extraction and use occurs as planned. What is the use of inquiring into exploration only if the long term effects of the proposal is not understood by taxpayers who are being asked to foot some of the bill and will certainly experience the negative effects of increased fossil fuel consumption?

2.3 Alternative Course of Action

In considering the proposed Oil and Gas Exploration in the Beetaloo Basin the Inquiry members should consider possible alternatives to proceeding as proposed in the Basin.

In addition to the environmental and economic issues raised in this submission a dollar of capital can only be spent once and this project will require substantial investment over a significant lifetime, perhaps some 40 to 50 years. Alternative, lower cost / lower impact options are available now to achieve the energy functions that this Beetaloo proposal purports to deliver and these should be identified in any consideration of this proposal.

A move to zero emissions renewable energy is inevitable and continue investment in obsolescent technology will simply rob these projects of much needed capital.

3 Urgency of Greenhouse Gas Emissions Reduction

3.1 Climate Council Climate Risk Map

In May 2022 the Climate Council placed its Australian Climate Risk Map on its website (1). The map allows anyone to find the estimated risk to any premises from global heating. Risks include increasing insurance premiums, inability to insure, and asset loss. This could be seen as an academic exercise unless it is concretised by identifying specific examples. We have consulted the map in respect of friends of ours who do not live in the inner city and an (anonomised) copy of the list is attached. You will note from the information that risks are forecast to continue to increase to 2100 even after we have supposedly reached zero net emissions by 2050. It is a shock for us to see the risks that our friends face and their properties will face for decades to come and highlights the need to act decisively now to reduce Australia's greenhouse gas emissions. (see **Application of Climate Risk Map Appendix 2**)

3.2 Expansion of the methane gas industry

Currently there are approved or about to be approved plans to massively expand the methane gas extraction industry in Australia including: Woodside's Browse and Scarborough gas fields and Santos's Barossa gas the Beetaloo (gas fracking) Basin in the Northern Territory and the Santos 20-year Narrabri methane gas project.

If the proposals go ahead, the science and policy institute Climate Analytics estimates that by 2030 Australia, with 0.3% of the global population, will be linked to about 13% of the greenhouse gases that can be emitted if the world is to meet the goals set in Paris. (2)

All this despite the International Energy Agency (IEA) stating in May 2021 that if we are to reach zero net emissions by 2050 there can be no new or expanded coal, gas or oil extraction projects. (3)

The IEA says that massive expansion of renewable energy is needed including “For solar PV, it is equivalent to installing the world’s current largest solar park roughly every day.” (4)

It was notable that the November 2021 COP26 failed to reach agreement on the elimination of government subsidies for exploration, extraction and combustion of fossil fuels. This is astounding coming 40 years after NASA’s original warning relating to the consequences of mankind’s uncontrolled greenhouse gas emissions.

3.3 There is an alternative

Mankind’s total primary energy demand (all forms of energy) is 180,000 terawatt hours per year. (5) This is equivalent to 0.65 zettajoules (ZJ) per year. (6)

The primary energy supplied to earth by solar radiation alone is 3,800 ZJ per year. (7)

Therefore solar energy alone is capable of supplying 5,800 times the energy that mankind presently consumes each year at a lower cost than fossil fuel electricity in Australia as evidenced by the CSIRO’s GenCost 2020-21 Report. (8)

CSIRO Chief Energy Economist Paul Graham summarised the Report saying, "Even taking into account these extra system integration costs, (storage and transmission expenditure) solar photovoltaics and wind continue to be the cheapest new sources of electricity for any expected share of renewables in the grid — anywhere from 50 per cent to 100 per cent. This is projected to continue to be the case throughout the projection period to 2050." (9)

In 2020 total electricity generation by source in Australia was as follows: renewables 24%, methane gas 20%, coal 54%. (10)

3.4 The need for rapid decarbonisation of Australia’s energy supply

I welcome the Government’s commitment to significantly upgrade the East Coast electricity transmission infrastructure to accept significantly increased renewable energy contribution to our power supply.

I caution that any attempts to retain gas or coal should be restricted to the absolute minimum use of existing plants as any expenditure there will simply rob renewable energy of much-needed finance.

Further, whilst methane gas is touted as a transition fuel it has a very significant negative impact on our climate.

When released to the atmosphere methane gas is up to 80 times more potent a greenhouse gas than carbon dioxide over a 20-year timeframe. Atmospheric

methane has increased substantially since 2007. (11) If burnt or if just left in the atmosphere for about 8 to 12 years methane combines with oxygen to form to carbon dioxide and water. From its release to atmosphere carbon dioxide is prevalent in the atmosphere as follows: 33% after 100 years and 19% after 1000 years. Methane is therefore a potentially far more damaging gas than carbon dioxide.

$CH_4 + 2O_2 >>>>>>>> CO_2 + 2H_2O$
METHANE OXYGEN CARBON DIOXIDE WATER
(12)

3.5 Present and Required Emissions Reduction Targets

Presently Australia's emissions reduction targets are Labor 43%, Liberal 35% by 2030 based on 2005 emissions. Neither of these are science-based.

Australia's Climate Council and Emergency Leaders for Climate Action have proposed a science-based 75% manmade greenhouse gas reduction target by 2030 based on 2005 emissions. (13) **(**14**)** (To a large extent this figure is informed by the very long residence time of carbon dioxide in earth's atmosphere – see **Section 3.4** above and **Appendix 1**) By contrast The US plans a 50-52% cut (on 2005 levels) and the UK: 68% cut (on 1990 levels). Greg Mullins, former commissioner of Fire & Rescue NSW, has asked the Federal government to "hit the accelerator pedal" to implement the "Six-point plan" proposed by the Emergency Leaders for Climate Action. (15) This urgency is very timely as Australia's greenhouse gas emissions actually rose 0.8% during the year to December 2021. (16)

Nigel Howard C Chem FRSC is a former Director of the UK Centre for Sustainable Construction, now living on Sydney's Northern Beaches, has provide a comprehensive list of essential actions necessary for government and the community to tackle our human-induced climate crisis. (17)

From the Climate Council's information (**Section 3.1**) is inevitable that Australia is already locked-in to very significant loss of lives, livelihoods and damage and destruction of assets for many decades to come. Sadly the decade of encouragement of fossil fuel expansion under the Coalition will never be recovered and consequential personal and economic loss cannot be prevented. This failure to exercise duty of care will be sheeted home to the conservatives in perpetuity.

I believe that Labor must now commit to and legislate **science-based** emissions reduction targets to 2030, 2040 with zero net emissions by 2050 at the latest.

To do otherwise would leave Labor in the same 'climate-fail box' as the Coalition when the consequences of our tardy emissions reduction process really hit home.

References

(1) https://www.climatecouncil.org.au/resources/climate-risk-map/

(2) https://www.theguardian.com/environment/2019/oct/09/northern-australia-fossil-fuel-climate-goals-paris-agreement

(3) https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

(4) https://www.iea.org/news/pathway-to-critical-and-formidable-goal-of-net-zero-emissions-by-2050-is-narrow-but-brings-huge-benefits

(5) https://ourworldindata.org/energy-production-consumption

(6) https://www.justintools.com/unit-conversion/energy.php?k1=zettajoules

(7) https://www.sciencedirect.com/science/article/abs/pii/S0360544205001805

(8) https://www.csiro.au/-/media/News-releases/2020/renewables-cheapest/GenCost2020-21.pdf

(9) https://www.csiro.au/en/news/news-releases/2020/renewables-still-the-cheapest-new-build-power-in-australia

(10) https://www.energy.gov.au/publications/australian-energy-statistics-table-o-electricity-generation-fuel-type-2019-20-and-2020

(11) https://www.theguardian.com/environment/2022/jul/05/global-heating-causes-methane-growth-four-times-faster-than-thought-study

(12) http://www.acamedia.info/sciences/sciliterature/globalw/residence.htm

(13) https://www.climatecouncil.org.au/resources/labors-2030-emissions-targets-must-aim-higher/

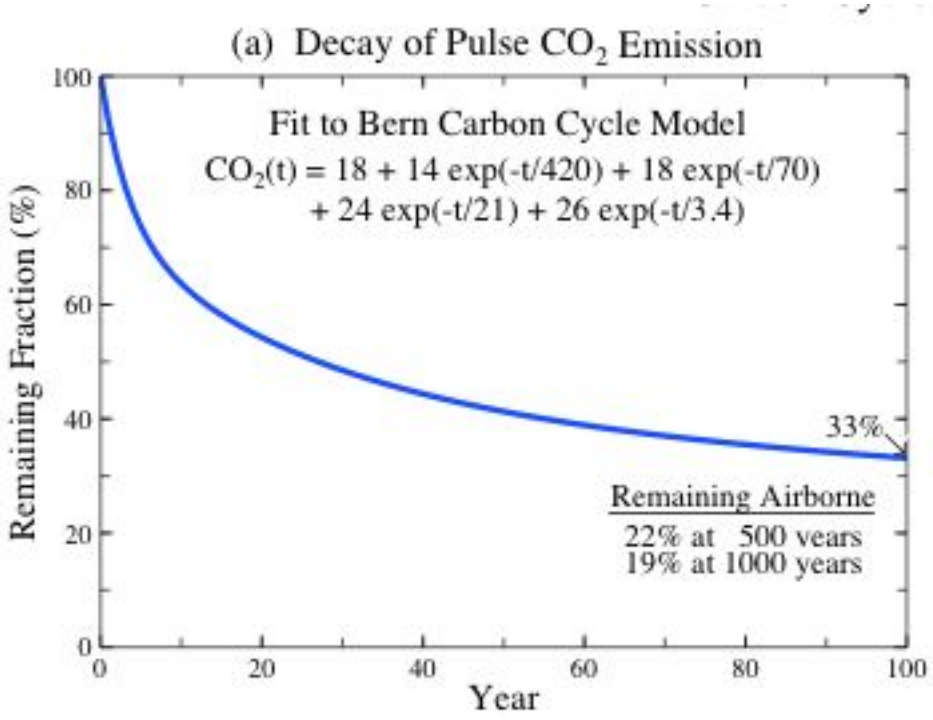
(14) https://emergencyleadersforclimateaction.org.au/wp-content/uploads/2022/05/ELCA-Six-point-plan-for-the-incoming-Federal-Government..pdf

(15) https://www.theguardian.com/commentisfree/2022/jul/05/australia-unprepared-for-climate-reality-of-consecutive-disasters-nsw-floods-flooding?utm_term=62c6bcb2b33284710ed91595b74020e7&utm_campaign=GreenLight&utm_source=esp&utm_medium=Email&CMP=greenlight_email

(16) https://www.industry.gov.au/data-and-publications/national-greenhouse-gas-inventory-quarterly-update-december-2021

(17) https://johnmenadue.com/climate-emergency-actions-are-needed-not-just-promises/

Appendix 1 – Retention of Carbon Dioxide in the Atmosphere



joos_shine.jpg

Appendix 2 - Application of Climate Risk Map

"Climate Change, driven by the burning of coal, oil and gas is supercharging our weather systems. **While climate change affects all Australians, the risks are not shared equally. In the most extreme instances, areas may become uninhabitable.**

Worsening extreme weather means increased costs of maintenance, repair and replacement to properties – our homes, workplaces and commercial buildings. As the risk of being affected by extreme weather events increases, insurers will raise premiums to cover the increased cost of claims and reinsurance.

Insurance will become increasingly unaffordable or unavailable in large parts of Australia due to worsening extreme weather.

This report outlines the top 20 most at-risk federal electorates to climate change-related extreme weather events, providing a brief profile of the top 10. The report also outlines the most at risk electorates for each state and territory. Check out our Climate Risk Map to see if your area is at risk."

https://www.climatecouncil.org.au/resources/climate-risk-map/

Friends whose homes are at risk as advised by the Climate Council's Australian Climate Risk Map

Risks are the percentage of properties at risk of all properties in the suburb	**Medium Risk Scenario**		
Address **Year >>>**	**2030**	**2050**	**2100**
Glenview Road, Mt Kuring-gai, NSW 2080	***100***	*100*	*100*
Henderson Road, Wentworth Falls, NSW 2782	***99.27***	*100*	*100*
St Andrews Avenue, Blackheath, NSW 2785	***95.11***	*98.02*	*98.02*
Wyomee Avenue, West Pymble, NSW 2073	***89.09***	*97.94*	*98.46*
William Street Bundanoon, NSW 2578	***66.39***	*89.52*	*90.57*
Abbotsford Road, Katoomba, NSW 2780	***60.94***	*65.93*	*67.21*
Palmgrove Road, Avalon, NSW 2107	***47.45***	*48.66*	*52.76*
Loftus Street, Bundeena, NSW 2230	***41.96***	*46.45*	*50.85*
Riviera Avenue, Terrigal, NSW 2260	***41.13***	*43.92*	*46.21*
Admiralty Avenue, Tea Gardens, NSW 2324	***36.98***	*39.5*	*64.9*
Merrivail Road, Pymble, NSW 2073	***26.24***	*32.45*	*33.89*
Paper Forest Road, Mangoplah NSW 2652 (Burrandana Zone)	***21.88***	*25.00*	*34.38*
Hawthorn Road, Bargo, NSW 2574	***16.4***	*21.25*	*23.04*