



DOCTORS
REFORM
SOCIETY

The Doctors Reform Society of Western Australia



Submission to the Independent Scientific Panel Inquiry into Hydraulic Fracture Stimulation in Western Australia 2017

We must consider the health impacts of fracking

The Doctors Reform Society is a health organisation which aims to improve health for all people in a socially just and equitable way. We believe that human health depends fundamentally on a healthy environment. We accept the scientific consensus that anthropogenic global warming is occurring, that this is a great hazard to health, and that urgent action to combat this is required.¹

It is from our health perspective that we wish to make a brief submission to the current inquiry on fracking in Western Australia. It is vital that Australian governments, including the Western Australian state government, respond to climate change not just as an environmental issue or an energy issue but also as a serious health issue.

Health and climate change

The current and potential future health implications of climate change are profound.^{2,3} Health impacts of climate change include both direct effects (heatwaves, storms, flooding, drought) and indirect effects (such as malnutrition due to food insecurity, displacement of populations due to rising sea levels, changing patterns of infectious diseases, mental illness, pollution-induced physical illness, and conflict).³ Health effects of climate change are expected to be greatest amongst socioeconomically deprived communities. Even now, climate change is estimated to cause hundreds of thousands of deaths annually, globally.⁴ As for the future, a recent report from the Intergovernmental Panel on Climate Change found confidently that without substantial mitigation efforts, there is a “high to very high risk of severe, widespread and irreversible impacts globally” of climate change.⁵ Policies to mitigate climate change therefore need to be given great priority worldwide, including in Australia.

We are very concerned about Australia’s poor progress towards mitigation of, and adaptation to climate change. Many Australian climate experts believe that Australia’s 2030 goals are an insufficient contribution towards the Paris agreement’s global goal of constraining global warming to 1.5 - 2 degrees centigrade.⁶ On current trends, experts believe Australia’s progress is insufficient to meet even these insufficient targets.^{7,8} We need much greater ambition and action across many sectors of Australian society to make better progress towards a safe future climate.

Essentially, we believe that emissions reduction should be as quickly as possible. We note that Australia’s Climate Change Authority recommended “a 2025 target of 30 per cent below 2000 levels [and] further reductions by 2030 of 40 to 60 per cent below 2000 levels”.⁹ These are more ambitious targets than those to which our current government has committed. However, given that these do not aim for the 1.5 degrees centigrade warming limit aspired to at Paris, and given the uncertainties inherent in modelling, and the harms we are already witnessing at a lower level of warming, we prefer to endorse the expert-derived targets recommended by the Climate and Health Alliance (of which our sibling organisation, the Doctors Reform Society of Australia, is a member). These are:

- “a minimum target of 20% of 2000 levels by 2020;
- a minimum of 40% of 2000 levels by 2025;

- a minimum of 60% of 2000 levels by 2030;
- a minimum of 80% of 2000 levels by 2035;
- full decarbonisation by 2040; and
- negative net emissions by 2050.”¹⁰

Fracking has important near term and long term health impacts

Fracking has the potential to impact human health in both the short term and the longer term.

In the short term, emerging evidence finds associations between fracking and human health. Evidence from several studies in the United States has found that in utero exposure to fracking sites is associated with low birth weight.^{11,12} Low birth weight is in turn associated with various adverse health consequences later in life.¹³ It is possible that these health outcomes relate to exposure to toxic air pollution; various studies have found that levels of ozone, ethane, and other chemicals are increased near fracking sites.¹²

Safe water is vital for human health. There is evidence that fracking can lead to contamination of ground water¹⁴ or to threats to aquatic biodiversity, and to the ecological “services” provided by natural organisms dependent on local water supplies.¹⁵

In the longer term, reliance on gas as a fuel will worsen climate change. This is partly due to the carbon dioxide produced when gas is burnt, and partly due to the intense warming effect of methane when leaked.

Gas-fired electricity is less carbon intensive at the point of combustion than coal.¹⁶ However, gas is still a significant source of carbon dioxide when burnt, and methane when leaked is a particularly potent greenhouse gas when leaked – 86 times as potent as carbon dioxide over a 20 year window, and 34 times as potent over a 100 year window.¹⁷ There is growing concern that even modest fugitive emissions from unconventional gas extraction may more than offset the supposed environmental benefits of gas, due to the warming effect of the leaked methane.¹⁸ In the United States, satellite and surface observations suggest a significant increase in methane emissions during recent years in which unconventional gas extraction has been vigorous.¹⁹

It is not feasible for WA to develop its gas resources and also meet our international climate obligations. A recent report from Climate Analytics makes the numbers clear: of the global “carbon budget” of 570 GtCO₂e, Australia gets a share of 5.5 GtCO₂e, with Western Australia attributed 1 GtCO₂e of this. Even WA’s conventional gas resources would contribute 7.5 GtCO₂e; tapping unconventional gas via technologies like fracking would contribute another 19.5 to 28.9 GtCO₂e of pollution.²⁰ A fracking industry in Western Australia simply does not fit within WA’s obligations to a reasonably safe climate for current and future generations.

Some claim that gas may have a transitional role as we progress to a renewably-generated electricity system, to deal with intermittency of power supply from renewables. This claim is probably overstated due to the complementarity of wind and solar generation, improvements in smart grid technology including ancillary services, use of storage technologies (pumped hydro, thermal solar/molten salt, batteries), the reliability afforded by renewable energy generation which is widely geographically distributed, and opportunities for reductions in demand via efficiency improvements.²¹ Modelling by several independent groups (including the Universities of Melbourne and NSW, the Australian National University and the Australian Energy Market Operator) has found that a transition to 100% renewable electricity production is feasible and affordable for Australia.^{22–25}

Consequently, we see great potential hazards in pursuing unconventional sources of gas such as fracking, and little or no role for even conventional natural gas in a responsible Australian future.

Conclusion

We believe, as does the World Health Organisation, in “health in all policies” – that health impacts should be considered in all policy-making processes.²⁶ With regards to Western Australia’s policies on fracking, we believe policy-making must consider the public health consequences of fracking in both the near and long term.

For the health of Australians, and all other people with whom Australians share our planet, we believe Australian governments must show much greater ambition and move as quickly as possible to a decarbonised future. The time for parliamentary scuffles over the reality of climate change is long past. We appeal to the WA government to ban unconventional gas extraction technologies such as fracking, and to instead seize the considerable opportunities for renewable energy generation in our wide state.

References

1. Doctors Reform Society of Australia. 13. Climate Change and Environmental Health [Internet]. Doctors Reform Society. [cited 2017 Feb 19]. Available from: <http://www.drs.org.au/policy/13-environmental-health/>
2. McMichael AJ, Campbell-Lendrum DH, Corvalan CF, Ebi KL, Githeko AK, Scheraga JD, et al. Climate change and human health: risks and responses [Internet]. Geneva, Switzerland: World Health Organisation; 2003. Available from: <http://www.who.int/globalchange/publications/climchange.pdf>
3. Watts N, Adger WN, Agnolucci P, Blackstock J, Byass P, Cai W, et al. Health and climate change: policy responses to protect public health. *Lancet*. 2015 Nov 7;386(10006):1861–914.
4. Vidal J. Global warming causes 300,000 deaths a year, says Kofi Annan thinktank [Internet]. *the Guardian*. 2009 [cited 2018 Mar 18]. Available from: <http://www.theguardian.com/environment/2009/may/29/1>
5. IPCC. IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Internet]. Geneva, Switzerland: IPCC; 2014 p. 151. Available from: <http://www.ipcc.ch/report/ar5/syr/>
6. Talberg A, Skarbek A, Alexander C, Canadell P, Christoff P. Australia’s post-2020 climate target not enough to stop 2C warming: experts [Internet]. *The Conversation*. [cited 2017 Feb 19]. Available from: <http://theconversation.com/australias-post-2020-climate-target-not-enough-to-stop-2c-warming-experts-45879>
7. Mark D. Greenhouse gas reduction not enough to reach 2030 target: climate economist [Internet]. *ABC News*. 2016 [cited 2017 Feb 19]. Available from: <http://www.abc.net.au/news/2016-03-15/emission-rates-not-close-enough-to-achieve-the-2030-target/7248126>
8. Climate Action Tracker. Australia - Climate Action Tracker [Internet]. [cited 2017 May 4]. Available from: <http://www.climateactiontracker.org/countries/australia.html>
9. Climate Change Authority. Final report on Australia’s future emissions reduction targets [Internet]. [cited 2017 May 4]. Available from: <http://climatechangeauthority.gov.au/reviews/special-review/final-report-australias-future-emissions-reduction-targets>
10. Climate and Health Alliance. Submission to UNFCCC Taskforce, Department of Prime Minister and Cabinet on Australia’s post 2020 emissions reduction targets [Internet]. 2015. Available from: http://res.cloudinary.com/caha/image/upload/v1440730144/Post-2020-Emissions-Reduction-Targets-CAHA-Submission-Final_zl0jqj.pdf

11. Currie J, Greenstone M, Meckel K. Hydraulic fracturing and infant health: New evidence from Pennsylvania. *Sci Adv*. 2017 Dec 1;3(12):e1603021.
12. Concerned Health Professional of New York & Physicians for Social Responsibility. Compendium of scientific, medical and media findings demonstrating risks and harms of fracking (unconventional gas and oil extraction) (5th ed.) [Internet]. 2018 Mar. Available from: <http://concernedhealthny.org/compendium/>
13. Negrato CA, Gomes MB. Low birth weight: causes and consequences. *Diabetol Metab Syndr*. 2013 Sep 2;5:49.
14. Hildenbrand Z, Santos I, Schug K. Detecting Harmful Pathogens In Water: Characterizing The Link Between Fracking And Water Safety [Internet]. *Science Trends*. 2018 [cited 2018 Mar 18]. Available from: <https://sciencetrends.com/detecting-harmful-pathogens-water-characterizing-link-fracking-water-safety/>
15. Entekin S, Trainor A, Saiers J, Patterson L, Maloney K, Fargione J, et al. Water Stress from High-Volume Hydraulic Fracturing Potentially Threatens Aquatic Biodiversity and Ecosystem Services in Arkansas, United States. *Environ Sci Technol*. 2018 Feb 20;52(4):2349–58.
16. Preliminary Report of the Independent Review into the Future Security of the National Electricity Market [Internet]. Commonwealth of Australia Department of the Environment and Energy; 2016. Available from: <http://www.environment.gov.au/energy/publications/energy-market-preliminary-report>
17. Vaidyanathan G. How Bad of a Greenhouse Gas Is Methane? [Internet]. *Scientific American*. [cited 2018 Mar 18]. Available from: <https://www.scientificamerican.com/article/how-bad-of-a-greenhouse-gas-is-methane/>
18. Howarth RW, Santoro R, Ingraffea A. Methane and the greenhouse-gas footprint of natural gas from shale formations. *Clim Change*. 2011 Jun 1;106(4):679.
19. Turner AJ, Jacob DJ, Benmergui J, Wofsy SC, Maasackers JD, Butz A, et al. A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations. *Geophys Res Lett*. 2016 Mar 16;43(5):2016GL067987.
20. Hare B, Roming N, Fuentes H, Hutfilter U, Schaeffer M, Beer M. Western Australia's Gas Gamble - Implications of natural gas extraction in WA [Internet]. *Climate Analytics*; 2018 Mar [cited 2018 Mar 18]. Available from: <http://climateanalytics.org/publications/2018/western-australias-gas-gamble.html>
21. Provenzano V. The Intermittency of Wind and Solar: Is It Only Intermittently a Problem? [Internet]. *CleanTechnica*. [cited 2017 Feb 27]. Available from: <https://cleantechnica.com/2013/08/12/intermittency-of-wind-and-solar-is-it-only-intermittently-a-problem/>
22. Australian Energy Market Operator. 100 per cent renewable study - modelling outcomes [Internet]. 2013 [cited 2017 Feb 27]. Available from: <https://www.environment.gov.au/climate-change/publications/aemo-modelling-outcomes>
23. Elliston B. Simulation modeling of 100% renewable energy in the Australian national electricity market [Internet]. [cited 2017 Feb 27]. Available from: <http://www.ies.unsw.edu.au/our-research/simulation-modeling-100-renewable-energy-australian-national-electricity-market>
24. Wright M, Hearps P. Stationary Energy Plan [Internet]. University of Melbourne Energy Research Institute; 2011 Aug [cited 2017 Feb 27]. Available from: <http://bze.org.au/stationary-energy-plan/>

25. Blakers A, Lu B, Stocks M. 100% renewable energy in Australia [Internet]. Australian National University; 2017 Feb. Available from:
<http://energy.anu.edu.au/files/100%25%20renewable%20electricity%20in%20Australia.pdf>
26. World Health Organisation. Health in All Policies: Framework for Country Action [Internet]. WHO. [cited 2017 Feb 19]. Available from: <http://www.who.int/healthpromotion/frameworkforcountryaction/en/>