Submission to Senate Inquiry into Wind Turbines

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About the Climate and Health Alliance

The Climate and Health Alliance (CAHA) is a not-for-profit organisation that is a national alliance of organisations and people in the health sector working together to raise awareness about the health risks of climate change and the health benefits of emissions reductions.

CAHA's members recognise that health care stakeholders have a particular responsibility to the community in advocating for public policy that will promote and protect human health.

Membership of the Climate and Health Alliance includes a broad cross section of the health sector with 28 organisational members, representing hundreds of thousands of health care professionals from a range of disciplines, health care service providers, institutions, academics, researchers, and health consumers.

The Climate and Health Alliance, as it name suggests, is concerned with the health threats from climate change, and the organisation works to raise awareness of those risks and advocate for effective societal responses, including public policies, to reduce risks to health.

Parts of this work involves examining and seeking to mitigate the drivers of climate change, which in large part (in terms of Australia's contribution) arise from the burning of fossil fuels for energy and transport.

These concerns extend include both the climate impacts as well as the direct and immediate impacts associated with pollution from burning fossil fuels (from energy and transport sectors in particular).

To this end, the Climate and Health Alliance has produced a number of submissions and reports. It produced the Coal and Health in the Hunter: Lessons from One Valley for the World in 2015; the joint report 'Our Uncashed Dividend' with The Climate Institute on the health benefits of reducing greenhouse gas emissions; led the development of the Joint Position Statement and Background Paper on Health and Energy Choices; conducted a national Roundtable on the Health Implications of Energy Policy; prepared a Briefing Paper on the same topic; produced a film on the risks to health and climate from coal and gas, The Human Cost of Power; conducted a national Forum on Climate and Health: Research, Policy and Advocacy; and contributed to numerous conferences, community dialogues, and forums, both nationally and internationally on these issues.

For more information about the membership and governance of the Climate and Health Alliance, please see Appendix A. For further information see www.caha.org.au

1. Introduction

This submission to the Inquiry into the application of regulatory governance and economic impact of wind turbines responds to the following Terms of Reference:

i. any other related matter (in this case, the economic, health and environmental drivers for investing in wind energy as outlined in the submission and accompanying documents).

2. Overview

This submission is comprised of the accompanying papers: ***Health and Energy Choices – Position Paper*** and ***Health and Energy Choices – Background Paper*** published by the Climate and Health Alliance (CAHA), Public Health Association of Australia PHAA), National Toxics Network (NTN), Services for Australian Rural and Remote Allied Health (SARRAH), Australian Nursing and Midwifery Federation (ANMF), Australian Medical Students Association (AMSA), and Women's Health East (WHE) in November 2014.

The Position Paper outlines the agreed position of the signatory health sector groups in relation to the implications of energy choices on people's health in Australia. The accompanying Background Paper provides an overview of evidence with regard to the risks to human health and wellbeing associated with fossil fuel energy resources as well as their alternatives.

3. Key messages

The papers' key messages are that:

- The mining, transportation and burning of fossil fuels such as coal and petroleum products have significant and under recognised detrimental effects of people's health from air, soil and water pollution, and contribute to cardiovascular, respiratory, neurological, reproductive, endocrine and kidney disorders.
- Decisions about energy choices in Australia are being made on the basis of inaccurate assessments of costs and benefits, with economic benefits frequently overstated and costs to health, environment and other industries overlooked or ignored.
- Continuing to develop Australian fossil fuel resources such as coal and gas threatens to push global temperatures beyond the limit agreed by the world in 2009 two degrees Celsius above preindustrial levels. Climate scientists

warn however that even this level of warming may “cause large climate change with disastrous consequences” for humans and other species

- The health and medical community have a responsibility to intervene in public policy decision-making where health is at risk – and current energy policy in Australia constitutes a serious risk.
- The Australian community, politicians and policymakers must urgently reconsider our energy choices.
- Safer, healthier choices are available and affordable. To protect community health and wellbeing, social cohesion, the economy and the environment, these must be substituted for fossil fuel energy resources as rapidly as possible.

4. Summary of evidence relating to wind turbines and human health

Wind power is Australia’s fastest growing energy source, with 1634 wind turbines spread across 51 operating wind farms, as well as one small wind farm located in the Australian Antarctic Territory.[1,2] The amount of wind power in Australia has doubled in the past five years.[3] Wind now accounts for 3.4% of total energy production, although in some states such as South Australia, where there are 15 wind farms with an installed capacity of 1,203MW, wind energy supplies up to 26% of the total electricity supply.[4,5] Public support for wind power in Australia is high, including in both urban and rural communities.[6]

Adverse health effects from wind turbines have been reported in Australia and internationally. There are claims about health effects resulting from exposure to infrasound (low frequency sound, in the range less than 200Hz), and about the character of the noise and associated reports of sleep disturbance and annoyance, which have the potential to contribute to stress related disorders. Differences of opinion exist among acousticians regarding the specific characteristics of the sound, and of the physiological mechanism underlying those complaints.

The available Australian and international evidence does not support the view that the infrasound or low frequency sound generated by wind farms causes adverse health effects for people living or working in proximity to them.

While audible noise from wind turbines has been demonstrated to be much lower than many other sources of environmental noise, this component is associated with annoyance.[7] Noise levels, including infrasound, diminish with distance from the source wind farm.[8] It has been argued that wind farm noise is too low to be audible,

whereas reports suggest that under certain conditions, sound can be heard at a distance of several kilometres.[9] The variable tonal or fluctuating swish from wind turbines has been suggested as the prime contributor to annoyance in susceptible people[10] which they find more annoying than transportation or industrial noise at comparable levels.[11]

At distances beyond 500 metres, infrasound and low frequency sound generated by wind farms in Australia is thought to be below the level capable of causing health effects to occur, and there is no accepted physiological mechanism where sub-audible infrasound from wind farms could cause health effects. A number of mechanisms additional to noise have been suggested that may account for complaints attributed to the operation of wind turbines.[12,13] These include the 'nocebo' effect, in which expectations of symptoms can become self fulfilling; misattribution of pre-existing or new symptoms to a novel technology; worry about the technology increases the chances of someone attributing symptoms to it; and social factors, including negative media reporting and interaction with lobby groups, which can increase symptom reporting.[14,15]

A systematic review commissioned by the National Health and Medical Research, investigated the scientific literature for evidence of a causal link between wind farms and human health outcomes. Human health impacts arising from proximity to wind turbines from audible, infrasound, low frequency noise, electromagnetic radiation and shadow flicker effect were considered. These reviews also examined parallel evidence. The purpose of this step was to identify potential physiological mechanisms, or evidence of direct health effects arising from characteristics affiliated with wind turbines yet derived from other (non-wind-farm) sources. These reviews found an absence of reliable or consistent evidence to demonstrate these characteristics directly cause health effects. On the other hand, no evidence was identified in the dual reviews to conclusively demonstrate that there is no health effect, although none were designed to test the impossibility of an effect. The NHMRC's Systematic Review findings concurred with previous reviews, in finding a paucity of rigorous, well designed studies exists. Several studies reported symptoms among people living near wind farms, but these failed to eliminate potential for confounding and bias.[16] Hence conclusions could not be drawn that a causative relationship exists.

Several studies demonstrated anxiety about the sound source elevates negative responses, and this underpins a potential source of tension. The association between expectations and health outcomes dates back to Hippocrates[17] and is well established in the health psychology literature. The influence of pre-intervention

expectations upon positive or negative outcomes is consistently demonstrated across a range of health endpoints, including weight loss,[18] smoking cessation,[19] and post-operative recovery.[20] Indeed the pervasive power of expectations is responsible for the double-blind design becoming a universal standard for evaluation studies [21] and the “power of positive thinking” is used therapeutically.[22]

Negative expectations potentiate adverse effects if patients are informed that the therapy (or exposure) they are about to receive is “dangerous”, “unsafe”, “ineffective”, “limited”, or has “potential side-effects”.[23] “Nocebo response” is the term to describe new or worsening symptoms that are caused only by negative expectations on the part of the patient and/or negative verbal and nonverbal communications on the part of the treating person, without any treatment or intervention.[24] People who have higher levels of concern about how various aspects of modern life, such as exposures potentially harming their health, report higher levels of physical symptoms than people with lower levels of concern. [25] The nocebo response can also be powerfully elicited through news reports and social media.[26] Recent studies have specifically tested attitudes and reported symptomatology in response to wind farm noise. Crichton et al. demonstrated response differentials between pre-exposure positive and negative information and post exposure symptomatology.[27,28]

In Australia, an audit of all known complaints using wind company records, news media reports and searches of 2394 public submissions to three government enquiries found that there are large historical and geographical variations in wind farm complaints.[29] This suggests that social factors in addition to the noise are potentially at play.

Annoyance can contribute to physiological or psychological stress responses,[30] and can cause sleep disturbance and sleep deprivation, which can negatively impact on wellbeing. Influential factors that can enhance or mitigate the annoyance levels in those exposed to the noise include prior attitudes to wind farms, their visibility and receiving financial recompense (or not).[31,32,33]

Studying of quality of life is an inexact science. Perception of quality of life varies between individuals and is dynamic within them, and people with different expectations will report that they have a different quality of life even when they have the same clinical condition.[34] Additionally, people whose health has changed may report the same level of quality of life when measures are repeated. It is also apparent that current measures do not take account of expectations and cannot distinguish between changes in the experience of disease and changes in

expectations of health. This provides little comfort for people who report symptomatology, and it contributes to the complexity in characterizing the relationship between wind farms and human health.

The point remains that research into the potential health effects of proximity to wind farms has been limited, and is generally of insufficient quality to generate evidence of a causal link. Conclusions therefore cannot be made that health effects do exist. Differentiation between nocebo responses and health responses that are not induced by pre-existing negative attitudes or negative messaging is difficult. Hence the necessity for studies designed to exclude the possibility of pre-loading expectations of health harm. Complaints however, cannot be ignored. Research is clearly needed in order to assess whether potential health effects are in fact occurring or not.

However, with respect to Australia's energy future, broader consideration of energy choices and health is required. Consecutive wind farm reviews have found no evidence of health harm meanwhile extensive international literature consistently links fossil fuels with far reaching direct health harms.

The balance of evidence clearly suggests that wind turbines are likely to be considerably less damaging to human health in the short and long term at a population level than fossil fuel alternatives.[35]

The problems associated with annoyance, while unfortunate for those affected, are relatively minor when considered in relation to the significant adverse effects associated with the use of fossil fuels, and the millions affected.[36] The net harm potential is on a vastly different scale.

5. Recommendations

The papers offers as the submission to this Inquiry make a series of recommendations for governments, industry, the health sector and the community – spelling out the steps that must be taken to minimise threats to health from current energy choices.

The Position Paper states:

- Governments must make decisions about energy policy on the basis of scientific evidence and accept the responsibility to act in the public interest.
- Governments should facilitate, and communities should participate in, active citizen engagement in policy development.
- Business and industry accept their obligations to respond to the negative health impacts of fossil fuels and support a transition to renewable energy.
- The health sector must broaden its advocacy to ensure the implications for health are recognised and acknowledged by evidence based policies in the energy sector.
- All sectors, government, industry (including health) and the community should amplify their efforts to reduce their own emissions and support others to do likewise.

The signatories of this paper make the following recommendations for the **Federal Government** to fast track a cleaner, healthier, energy future for Australia and the world:

- Cease all subsidies to the fossil fuel industry including provision of infrastructure
- Increase the renewable energy target to ensure that at least 60 per cent of Australia's electricity comes from renewable sources by 2020.
- Commit to emissions reductions targets consistent with Australia's fair share of the global carbon budget, starting with 50% emissions reductions from 1990 levels by 2020
- Increase the carbon price to accurately reflect the total costs associated with emitting each tonne of greenhouse gases, including all hidden health and other costs
- Commit to funding for research to evaluate the health and social impacts of fossil fuels in affected communities in Australia
- Establish a national enforceable air quality standard for fine particle pollution (PM 2.5) along with effective monitoring and regulation

- Invest in education and training opportunities to support the development of the workforce required to enable the economy to transition away from fossil fuels and support a just transition for fossil fuel workers to new industries
- Strengthen the national standard for ground level ozone and monitoring and enforcement regimes
- Develop enforceable emissions standards for vehicles consistent with international best practice
- Introduce project loan guarantees to support renewable energy deployment to reduce economic uncertainty and support the expansion of the renewable energy industry
- Maximise energy efficiency in all government operations to reduce reliance on energy generated from fossil fuels
- Develop mandatory environmental sustainability accreditation standards for healthcare
- Reduce reliance on coal and fossil fuelled power by purchasing green energy from renewable sources
- Facilitate infrastructure and create policy to increase the uptake of renewable powered electric or hybrid vehicles
- Establish national regulations to require comprehensive environmental, health and social impact assessments for all coal and unconventional gas exploration and mining projects in Australia
- For impact assessments to include assessment of all pollutants associated with coal and unconventional gas activities including those associated with flaring, intentional venting, fugitive emissions, diesel use, production of mining waste and waste water
- Commission independent full life cycle and cost-benefit analysis of the long-term environmental impacts of the fossil fuel industry that include clean-up and remediation of contaminated areas, treatment of wastewater, groundwater impacts, landfill capacity for waste products and accurate assessment of the industry’s greenhouse gas contribution

APPENDIX A

Climate and Health Alliance Committee of Management

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CAHA Organisational Members

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Australian College of Nursing (ACN)
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Australian Hospitals and Healthcare Association (AHHA)
Australian Health Promotion Association (AHPA)
Australian Medical Students Association of Australia (AMSA)
Australian Physiotherapy Association (APA)
Australian Institute of Health Innovation (AIHI)
Australian Women's Health Network (AWHN)
Australian Nursing and Midwifery Federation (ANMF)
Australian Psychological Society (APS)
Australian Research Council for Children and Youth (ARACY)
Australian Rural Health Education Network (ARHEN)
CRANA*plus*
Doctors Reform Society (DRS)
Friends of CAHA
Health Consumers' Network (Qld)
Health Issues Centre (HIC)
Koowerup Regional Health Service
Psychology for a Safe Climate
Public Health Association of Australia (PHAA)
Co-health (formerly North Yarra Community Health)
School of Public Health and Community Medicine, UNSW
Services for Australian Rural and Remote Allied Health (SARRAH)
Women's Health East
Women's Health in the North
World Vision Australia

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Professor Simon Chapman, Professor of Public Health, University of Sydney
Dr Susie Burke, Senior Psychologist, Public Interest, Environment & Disaster Response, Australian Psychological Society

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