



**CLIMATE** AND  
**HEALTH**  
**ALLIANCE**

**Submission in response to  
Climate Change Authority  
2012 Renewable Energy Target Review**

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## About the Climate and Health Alliance

The Climate and Health Alliance (CAHA) is a not for profit organisation and a national alliance of organisations and people in the health sector who work 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.

The membership of the Climate and Health Alliance includes a broad cross section of the health sector with 27 organisational members, representing health care professionals from a range of disciplines, health care service providers, institutions, academics, researchers, and consumers.

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](http://www.caha.org.au)

## Overview

The Climate and Health Alliance wishes to make a submission for consideration in the Climate Change Authority 2012 Renewable Energy Target Review.

The submission includes the Climate and Health Alliance and The Climate Institute joint publication ***Our Uncashed Dividend*** (attached) that outlines the health benefits possible from reducing pollution associated with fossil fuels.

This report reviews the expert literature on health, pollution reduction strategies, and climate change. It has been written to raise awareness of the health co-benefits from strategies that also reduce greenhouse gas emissions, and to encourage support for a better understanding of the potential benefits for Australians. This submission includes additional evidence about the harm caused to human health from climate change and fossil fuelled energy generation.

The Climate and Health Alliance urges Climate Change Authority to consider these findings in its 2012 Renewable Energy Target Review.

## Key points

1. Climate change poses serious risks to health and requires a rapid transition to renewable energy technologies to reduce the risks and impacts of an unstable climate
2. Current energy systems in Australia are posing serious risks to health and contribute to emissions growth and subsequent climate change
3. Australia is well positioned to make a transition to a clean renewable energy future from which it can benefit economically and which will reduce risks to health
4. Energy policy must be developed cognisant of the broader consequences of energy choices and consistent with the best interests of all Australians
5. The Renewable Energy Target has worked effectively to deliver safe low cost power generation to substitute for polluting technologies and should be expanded to 40% by

2020 to deliver a more rapid transition to clean health and safe power generation for Australia

6. A comprehensive suite of policies are needed, in addition to an expanded renewable energy target, to develop a healthy, safe, sustainable energy future for Australia, such as feed-in-tariffs for renewable energy, removal of subsidies for fossil fuels, and phasing out of coal fired power stations. New renewable energy infrastructure should be supported by a range of financing options to encourage investment. Taxation incentives should be reformed to ensure clean technologies are encouraged, while polluting technologies are discouraged.

## **Climate change poses serious risks to health**

The international medical journal *The Lancet* in May 2009 described climate change as the biggest global health threat of the 21st century. Climate change poses serious immediate and long term threats to the health and wellbeing of the Australian and global population.

Average global temperature has increased almost 1°C over the last century.<sup>1</sup> Emissions to date have likely committed us to an increase beyond 2°C,<sup>2</sup> a level considered to pose “unacceptable risks to key natural and human systems, including significant loss of species, major reductions in food-production capacity in developing countries, severe water stress for hundreds of millions of people, and significant sea-level rise and coastal flooding”.<sup>3</sup>

The World Health Organisation estimates that even the modest warming that has occurred since the 1970s to 2004 was responsible for more than 140,000 extra deaths each year.<sup>4</sup> By 2009 climate change was responsible for the deaths of 300,000 people each year.<sup>5</sup>

There is however strong evidence that action on climate change can improve, even promote health. When presented in a health context, climate change is more likely to be considered an issue of personal significance, and lead to support for mitigation and adaptation.<sup>6</sup>

Climate change poses serious health risks to Australians. More frequent and more severe extreme weather events, including heatwaves, floods, fires and storms will increase illness, injury and death. Other effects include an increased incidence of infectious diseases, vector borne diseases, air pollution, mental illness, poor water quality and food insecurity.<sup>7</sup> Children, the elderly, Indigenous Australians, people with chronic illnesses, and those in coastal as well as rural, remote and regional communities are being disproportionately affected and are expected to continue to be severely impacted.

*\*See endnotes for references for this section.*

## **Our current energy systems are harming our health**

Current energy systems in Australia are posing serious direct risks to health and contribute to emissions growth and climate change.

Ill health and deaths associated with fossil fuel use is costing the community billions of dollars annually from respiratory, cardiovascular and nervous system diseases caused by exposure to

the extraction, transportation and combustion of coal, oil and gas. Air pollutants account for a huge proportion of the health costs, contributing to: respiratory diseases such as asthma and lung cancer; cardiovascular diseases which lead to heart attacks; while mercury contributes to developmental delay and permanently reduced intellectual capacity in exposed children.<sup>1</sup>

Heavy metals and carcinogens released during the processing of coal also contaminate water and food sources which can lead to long term health problems. In addition, the mining of coal exposes workers and local communities to dangerous coal dust, and it is a dangerous occupation in terms of health and safety.

Research from Europe published in the prestigious medical journal *The Lancet* estimates that 24 people die for every TWh of coal combusted, from the harmful effects of the airborne particulates, nitrogen oxide, and toxic metals such as mercury and lead released.<sup>2</sup> The International Energy Agency estimates that more than 7,500TWh of coal were burnt for electricity generation in 2009.<sup>3</sup> A recent study from the Harvard Medical School estimates the economic, health and environmental costs of the life cycle of coal is costing the US public a third to one half of a trillion dollars annually.<sup>4</sup> The Harvard study looked at the lifecycle costs of coal, including mining, transport, processing and combustion, which are not accounted for by the coal industry and the costs for which fall onto the rest of the community in increased health costs, injuries, illnesses and deaths. This study found if the estimated health and environmental costs of coal were included in the price of coal-fired electricity it would double or triple its cost, and make safer renewable energy generation cost competitive.

A recent study published in *American Economic Review* found that the gross external damages (largely from increased deaths) caused by coal fired power generation in the US amounted to \$53 billion annually. Even more significantly, it demonstrated coal is costing the US economy more than the industry generates.<sup>5</sup> This latter study arrived at a lower estimate of the external costs of coal combustion than the Harvard study due to lower estimates of air pollution damages, as well as significant differences in their assumptions of the cost of climate impacts.<sup>6</sup> Despite this, both studies firmly conclude that due to the externalisation of health and climate costs, the true cost of coal is not reflected in its current price. Stricter regulation and a cost that reflects these damages would therefore benefit the economy.<sup>7</sup>

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<sup>1</sup> Physicians for Social Responsibility, *Coal's Assault on Human Health*, November 2009.

<sup>2</sup> Markandya, A., and Wilkinson, P. Energy and Health 2: Electricity generation and health, *The Lancet*, Sep 15-Sep 21, 2007; 370, 9591.

<sup>3</sup> International Energy Agency, Emissions From Fuel Combustion, IEA Statistics, 2011 edition, page 122. Available at <http://www.iea.org/co2highlights/co2highlights.pdf>

<sup>4</sup> Epstein, P. Full cost accounting for the life cycle of coal, *Annals of New York Academy of Sciences*, 1219: 73-98.

<sup>5</sup> Muller, N et al. Environmental Accounting for Pollution in the United States Economy, *American Economic Review*, August 2011, 101, pp.1649–1675

<sup>6</sup> Skeptical Science, *True Cost of Coal Power - Muller, Mendelsohn, and Nordhaus*, 7 October 2011.

<sup>7</sup> Skeptical Science, *ibid.*

Somewhat outdated estimates put the health damage from Australian coal-fired power stations for the Australia community at \$A2.6 billion annually. Studies from overseas indicate the costs may be even greater.

The available evidence suggests that the health benefits from reducing pollution from fossil fuels through strategies to reduce emissions could substantially offset the cost of emission reductions.<sup>8,9,10</sup>

The huge contribution of coal-fired power generation to global warming and the strong evidence of its significant detrimental effects on human health must mean that coal for power generation is rapidly replaced by renewable energy technologies.

The harm to human health from fossil fuels extends well beyond its immediate health impacts, with climate change posing serious risks to health – and the timeframe for taking effective action rapidly dwindling.

The International Energy Agency has warned that the world has just five years to dramatically alter the way it uses energy, and that unless we stop investing in fossil fuels and begin the wide-scale and rapid deployment of renewable energy technology, we will lose the opportunity to prevent irreversible climate change.<sup>8</sup>

"The door is closing," Fatih Birol, chief economist at the International Energy Agency, said in November 2011. "I am very worried - if we don't change direction now on how we use energy, we will end up beyond what scientists tell us is the minimum [for safety]. The door will be closed forever."

## **Clean green energy systems will secure a healthier future**

Australia is well positioned to make a transition to a clean renewable energy future from which it can benefit economically.

Australia has abundant renewable energy resources that are the envy of the world. A 2010 report from Geoscience Australia and the [Australian Bureau of Agricultural and Resource Economics \(ABARE\)](#) confirms Australia has a very large and widely distributed renewable resource base, which includes wind, solar, bioenergy, geothermal, wave and tide as well as hydro resources.<sup>9</sup> According to this report, Australia's wind resources are "among the best in the world, primarily located in western, south-western, southern and south-eastern coastal regions but extending hundreds of kilometers inland".

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<sup>8</sup> Harvey, F. World headed for irreversible climate change in five years, IEA warns, The Guardian, 9 November 2011. Available at <http://www.guardian.co.uk/environment/2011/nov/09/fossil-fuel-infrastructure-climate-change>

<sup>9</sup> Geoscience Australia and ABARE, Australian Energy Resource Assessment, 2010, Canberra. Available at [https://www.ga.gov.au/image\\_cache/GA17412.pdf](https://www.ga.gov.au/image_cache/GA17412.pdf)

Our solar resources are also unparalleled: Australia has the highest average solar radiation per square metre than any other continent.<sup>10</sup> The amount of the Sun's energy falling on Australia in one day is equal to half the total annual energy required by the whole world.<sup>11</sup>

**Despite these abundant energy resources, Australia has failed to capitalise on securing our energy future by investing in technologies to harvest the clean, renewable, (and free) energy provided by sun and the wind and the waves.**

The Zero Carbon Australia 2020 Plan was developed by the Melbourne Energy Institute (MEI) and research consultancy Beyond Zero Emissions (BZE) in 2010. This plan demonstrates that not only does Australia have sufficient non-fossil renewable energy resources to power its entire stationary energy sector, but shows the transition to 100% renewable energy is affordable and can be accomplished in a short time frame.

These findings are supported by research from Stanford University that shows that the world could be powered entirely with renewable energy within 20-40 years, using technology that is available today and at a cost comparable to that of conventional, fossil-fuel-based energy.<sup>12</sup> Like the MEI/BZE report, the Stanford modelling uses wind and solar as the predominant resources, finding that the barriers to the implementation of policy to deliver this scenario are not technological or financial but social and political.<sup>13</sup>

Despite the claims of detractors from the fossil fuel sector, as identified in the 2010 report on renewable energy by the Australian Academy of Science, reliable renewable energy technologies such as wind and solar are commercially available right now for electricity generation.<sup>14</sup> Wind can achieve a capacity factor of up to 50% in Australian conditions, and solar thermal can provide base load power due to its ability to store power for up to 16 hours.

A landmark study published in *The Lancet* in 2009 found there are significant health gains possible from decarbonising electricity generation.<sup>15</sup> The health gains possible are large: a 2010 study from the University of Wisconsin evaluated the health co-benefits associated with improvement in air quality from strategies to reduce greenhouse gas emissions at an average benefit of \$50 per tonne of CO<sub>2</sub> avoided.<sup>16</sup>

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<sup>10</sup> Geoscience Australia and ABARE, chapter 10.

<sup>11</sup> Australian Academy of Science, *Australia's renewable energy future*, December 2009.

<sup>12</sup> Bergeron, L. The world can be powered by alternative energy, using today's technology, in 20-40 years, says Stanford researcher Mark Z. Jacobson, *Stanford Report*, 26 January 2011.

<sup>13</sup> Delucchi, M. and Jacobson, M. Providing all global energy with wind, water, and solar power, Part II: Reliability, system and transmission costs, and policies, *Energy Policy* 39 (2011) 1170–1190.

<sup>14</sup> Australian Academy of Science *ibid*

<sup>15</sup> Markandya, A. Public health benefits of strategies to reduce greenhouse gas emissions: low carbon electricity generation, *The Lancet*, Health and Climate Change Series 3, November 2009.

<sup>16</sup> Nemet, G.F. et al. Implications of incorporating air-quality co-benefits into climate change policymaking, *Environmental Research Letters*, 2010, Volume 5, number 1.

A 2010 report from Europe found the European Union could save €80 billion a year in health costs from cutting emissions through moving to cleaner energy systems.<sup>17</sup>

The *Acting Now for Better Health* report found that improvement in air quality from moving to cleaner energy systems would deliver significant improvements in population health and lead to more productive workplaces. These benefits are considered to be “only a small proportion of overall health benefits arising from climate policies”, as this report focuses only on the health impacts of reducing several air pollutants (fine particles, NO<sub>x</sub> and SO<sub>2</sub>), nor did it account for the direct benefits of reducing climate change.

The above evidence demonstrates the harm being caused by current energy policy that privileges and prioritises fossil fuels at the expense of human health and a clean renewable energy industry in Australia.

**Shifting to clean renewable energy systems is better for health, and can save billions of dollars annually in avoided ill health and productivity gains.<sup>18</sup>**

Wind and solar power in particular offer viable, clean, healthy and safe energy options for Australia. Wind power does not pose health risks, with over 17 international reviews concluding that there is no credible peer reviewed scientific evidence that demonstrates a direct causal link between wind turbines and adverse health impacts in people.<sup>19</sup> While a small number of people do claim adverse effects, these effects are thought to be related to stress associated with annoyance than any physiological factors.<sup>20,21</sup>

National energy policy should be focused on preparing Australians for that transition. In addition to developing the policy settings to incentive clean energy and discourage harmful and polluting energy technologies, this requires public engagement and education regarding the current implications of our energy supply systems to counter the misinformation from the industry regarding the inability of renewables to supply our energy needs.

Policy to encourage renewables needs to start with removal of perverse policy incentives such as existing subsidies to fossil fuels, but must include positive incentives such as an expanded renewable energy target to bring forward investment in renewable energy infrastructure development as well as hasten the innovation process by supporting and investing in research and development initiatives.

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<sup>17</sup> Health Care Without Harm (HCWH) and the Health and Environment Alliance (HEAL), *Acting Now for Better Health*, 2010, Brussels.

<sup>18</sup> Armstrong, F. *Our Uncashed Dividend*, Climate and Health Alliance and The Climate Institute, 2012.

<sup>19</sup> Climate and Health Alliance, *Wind turbines and health*, Position Statement, January 2010. Available at: [http://caha.org.au/wp-content/uploads/2012/01/CAHA\\_Position\\_Statement\\_on\\_Wind\\_final\\_240112.pdf](http://caha.org.au/wp-content/uploads/2012/01/CAHA_Position_Statement_on_Wind_final_240112.pdf)

<sup>20</sup> Chapman, S. 17 reviews on wind turbines and health ... and not a single one referenced, *British Medical Journal*, 11 March 2012. Available at: [www.bmj.com/content/344/bmj.e1527/rr/572780](http://www.bmj.com/content/344/bmj.e1527/rr/572780)

<sup>21</sup> Bowdler, D. Wind Turbine Syndrome – An Alternative View, *Acoustics Australia*, Vol. 40, No. 1, April 2012.

## **Clean, healthy and sustainable: policy for the 21<sup>st</sup> century**

From the perspective of health stakeholders, the Climate and Health Alliance asserts that there are sufficient grounds on the basis of protecting human health for governments to:

- introduce policies to rapidly increase the deployment of renewable energy;
- ban the further development of coal-fired power generation;
- correct the failure of markets to include the externalised costs of power generation through penalties for harm; and
- establish incentives to encourage technologies that do not cause harm.

The renewable energy target is one such tool to support the wider deployment of renewable energy. It has worked effectively to deliver safe low cost power generation to substitute for polluting technologies and should be expanded to deliver a more rapid transition to clean health and safe power generation for Australia.

The removal of the floor price for the carbon price in Australian may lead to a diminished incentive to reduce emissions through this mechanism therefore the expansion of the Renewable Energy Target is even more important in delivering emissions reductions. Australia should consider following the lead of countries such as Northern Ireland which, despite significantly fewer renewable energy resources and a less robust economy than Australia, have established a Renewable Energy Target of 40% by 2020.

A range of other policy mechanisms is also needed however to stimulate wider deployment of renewable energy technologies.

Policies that have been demonstrated to effectively stimulate a transition to renewable energy include the feed-in tariff, successfully used in Germany to deliver its 2020 renewable energy target ten years ahead of schedule.

Other important policy tools include emissions standards for power stations and transport, as well as energy efficiency standards for buildings and appliances. New renewable energy infrastructure should be supported by loan guarantees to encourage the financial sector to invest and taxation incentives reformed to ensure clean technologies are encouraged, while polluting technologies are discouraged.

**Cleaner, safer, and healthier energy options exist. We need energy policies in Australia that will actually reduce emissions and reduce risks to people's health.**

Therefore in addition to the carbon price and an expanded Renewable Energy Target, a suite of comprehensive policies must be developed to ensure Australia's future energy security in light of a substantial and imminent carbon liability and to ensure Australia's emissions reductions trajectory is consistent with Australia's fair share of the global responsibility to reduce emissions.



## **APPENDIX A**

### **Climate and Health Alliance Committee of Management**

Fiona Armstrong (CAHA President and Convenor)  
Erica Bell (Australian Rural Health Education Network)  
Lance Emerson (Australian Research Council for Children and Youth)  
Liz Hanna (Royal College of Nursing, Australia)  
Bret Hart (Alliance for Future Health)  
Ursula King (Australian College of Rural and Remote Medicine)  
Michael Moore (Public Health Association of Australia)  
Elizabeth Reale (Australian Nursing Federation)  
Kristine Olaris (Women's Health East)  
Julia Stewart (CRANApplus)

### **CAHA Organisational Members**

Australian Association of Social Workers (AASW)  
Australian College of Nursing (ACN)  
Australian College of Rural and Remote Medicine (ACRRM)  
Australian Council of Social Service (ACOSS)  
Australian Hospitals and Healthcare Association (AHHA)  
Australian Health Promotion Association (AHPA)  
Australian Medical Students Association of Australia  
Australian Physiotherapy Association  
Australian Institute of Health Innovation (AIHI)  
Australian Women's Health Network (AWHN)  
Australian Nursing Federation (ANF)  
Australian Psychological Society  
Australian Research Council for Children and Youth (ARACY)  
Australian Rural Health Education Network (ARHEN)  
CRANApplus  
Doctors for the Environment Australia (DEA)  
Doctors Reform Society (DRS)  
Friends of CAHA  
Health Consumers' Network (Qld)  
Health Issues Centre (HIC)  
Public Health Association of Australia (PHAA)  
Royal Australasian College of Physicians (RACP)  
North Yarra Community Health (NYCH)  
Services for Australian Rural and Remote Allied Health (SARRAH)  
Women's Health East  
Women's Health in the North  
World Vision

### **Expert Advisory Committee**

Dr Erica Bell, University Department of Rural Health, University of Tasmania  
Associate Professor Grant Blashki, Nossal Institute for Global Health  
Associate Professor Colin Butler, College of Medicine, Biology and Environment, Australian National University  
Professor Garry Egger, School of Health & Human Sciences, Southern Cross University  
Professor David Karoly, Federation Fellow in the School of Earth Sciences, University of Melbourne  
Professor Stephan Lewandowsky, School of Psychology, University of Western Australia  
Dr Peter Tait, RACGP General Practitioner of the Year 2007, Alice Springs  
Professor Anthony Capon, National Centre for Epidemiology and Population Health, Australian National University  
Professor Simon Chapman, Professor of Public Health, University of Sydney  
Dr Susie Burke, Senior Psychologist, Public Interest, Environment & Disaster Response, Australian Psychological Society  
Dr Marion Carey, Senior Research Fellow, Monash Sustainability Institute.

## ENDNOTES

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<sup>1</sup> Spratt, D, and Sutton, P. *Climate Code Red*, 2008.

<sup>2</sup> Karoly, D. The latest climate science and global impacts, in *Victorian Government Climate Change Green Paper*, 2009. p. 23.

<sup>3</sup> W. L. Hare, leading author of the IPCC 2007 report, quoted in Worldwatch Institute, *State of the World 2009: Into a Warming World*, Washington.

<sup>4</sup> World Health Organisation, *Climate change and health*, Fact Sheet no. 266, January 2010.

<sup>5</sup> Vidal, J. *Global warming causes 300,000 deaths a year*, guardian.co.uk, 29 May 2009.

<sup>6</sup> Maibach *et al.* *BMC Public Health* 2010, 10:299.

<sup>7</sup> Horton, G., and McMichael, T. *Climate Change Health Check 2020*, Report prepared by Doctors for the Environment for the Climate Institute, April 2008.