

# Submission on Action on the land: reducing emissions, conserving natural capital and improving farm profitability

April 2017



67 Payneham Road  
College Park SA 5069  
P 0422 974 857  
E [admin@dea.org.au](mailto:admin@dea.org.au)  
W [www.dea.org.au](http://www.dea.org.au)

Healthy planet, **healthy people.**

#### **DEA Scientific Committee**

Prof Peter Doherty AC  
Prof Stephen Leeder AO  
Prof Lidia Morawska  
Prof Hugh Possingham  
Dr Rosemary Stanton OAM

Prof Stephen Boyden AM  
Prof Michael Kidd AM  
Prof Ian Lowe AO  
Prof Peter Newman AO  
Prof Lawrie Powell AC  
Dr Norman Swan

Prof Emeritus Chris Burrell AO  
Prof David de Kretser AC  
Prof Robyn McDermott  
Prof Emeritus Sir Gustav Nossal AC  
Prof Fiona Stanley AC

Action on the land: reducing emissions, conserving natural capital and improving farm profitability.<sup>1</sup>

Doctors for the Environment Australia (DEA) welcomes the opportunity to make a submission to *Action on the Land*. DEA commends The Climate Change Authority for taking a lead in exploring the ways in which Australia's agricultural sector can move from being a major contributor to climate change and degradation of natural resources to being part of the solution, whilst maintaining or improving productivity. In this submission, DEA wishes to address the human health aspects of *Action on the Land*, which are multiple, but are not explicitly addressed in the Issues paper.

DEA is an independent, self-funded, non- government organisation of medical doctors in all Australian States and Territories. Our members work across all specialities in community, hospital and private practices. We work to prevent and address the diseases - local, national and global - caused by damage to our natural environment. We are a public health voice in the sphere of environmental health with a primary focus on the health harms from pollution and climate change.

## Recommendations

1. A 'Health in all Policies' approach should be adopted for the issues paper.
2. Priority must be given to reducing the greenhouse emissions of agricultural practice.
3. It must be recognised that land degradation and biodiversity loss due to agricultural practice have human health implications.
4. Specific land management practices have human health implications, which deserve recognition. Soil biodiversity and land clearance practices require particular attention.
5. Attention must be given to growing products that improve human nutrition and health.

## **1. World Health Organization's recommendation of "*Health in all Policies*"**

Doctors for the Environment Australia notes that '*health*' is mentioned in only one sentence in the 41-page discussion paper. In this brief submission, we seek to draw attention to the need for an understanding of health implications to be included in the Committee's deliberations.

All policy decisions have implications for human health and we recommend the World Health Organization's (WHO) approach of "*Health in All Policies*". This approach seeks to ensure that public policy making across all sectors systematically takes into account the health implications of decisions, seeks synergies, and avoids harmful health impacts, in order to improve population health and health equity.<sup>2</sup>

## **2. Agricultural sector greenhouse emissions and human health**

In Australia in the year up to March 2015, agriculture (not including transport and land-use change) accounted for 15% of Australia's greenhouse emissions, while concomitant land clearing accounted for at least a further 7%. Methane accounts for a significant proportion of agricultural emissions, and its reduction would have an important immediate effect on climate change.

DEA believes that, in discussing the urgent need for emissions reduction by the agricultural sector, and indeed the opportunities for carbon sequestration offered by changes in land management practices, the threat posed by climate change to human health should be made explicit. For policy makers and members of the public, climate change too often seems like a distant, intellectual problem. Discussion of human health aspects may help motivate the public and policy makers to support changes, and to adopt the necessary sense of urgency.

The human health impacts of climate change are already affecting Australia through droughts, and extreme weather events such as heat waves, floods and storms, and bushfires. Climate change is also likely to be associated with an increase in air pollution, infectious diseases and allergies. There is also likely to be an associated increase in mental illness related to social, environmental and economic stressors.<sup>3</sup>

### **3. Current degradation of the Australian environment: land management practices, land degradation, and biodiversity loss**

The degradation of natural resources and biodiversity loss are essential considerations in agricultural policy and practice. Natural resources and biodiversity are vital for the sustainability of agricultural systems, for resilience to the effects of climate change, and are also important for human health.

The latest State of the Environment Report 2016 indicates the condition of the environment is poor and deteriorating in some areas.<sup>4</sup> Climate change *"is an increasingly important and persuasive pressure on all aspects of the environment"* and *"is altering the structure and function of natural ecosystems, and affecting heritage, economic activity and human wellbeing"*.

The Issues paper acknowledges that agricultural practices often have deleterious effects on natural resources, including biodiversity loss, land degradation, and water pollution. Once again, explicit discussion of human health impacts may help the public and policy makers appreciate the importance of preserving natural resources.

Natural ecosystems support our health by filtering our air, providing fresh water and food, regulating our climate, directly improving human health and protecting against the spread of disease and pests. They also foster our mental wellbeing and serve as places of recreation and sources of nature-based jobs in tourism and other vocations.<sup>5</sup>

Land degradation, pollution and loss of biodiversity around waterways can have direct health consequences, for example by causing outbreaks of blue-green algae. The toxins produced by some species of blue-green algae have a number of health effects, causing liver damage, gastroenteritis, skin irritation, and increased incidence of fatal neurodegenerative disease such as the motor neuron disease amyotrophic lateral sclerosis.

Increased prevalence of certain infectious diseases has been linked to biodiversity loss. For instance, deforestation has been implicated in the spread of both malaria and Lyme disease. Outbreaks of Hendra virus in Queensland have also been partially attributed to loss of habitat of flying foxes, one of the vectors of the virus.

DEA commends the Issues paper for acknowledging the cultural, aesthetic and spiritual dimensions of the land and the ecosystems where agriculture is practiced. For Indigenous Australians, it is well recognised that the connection to land and country is essential to well-being and physical health.<sup>6</sup> Environmental degradation has also been shown to

have negative impacts on farmers' mental health. Natural Resource Management (NRM) interventions have been found to have complex a complex range of effects on the mental health and general well-being of participating farmers, and this needs to be taken into account when designing NRM programs.<sup>7</sup>

## **4. Land Management Practices and Human Health**

It is essential that human health impacts of land management practices be considered in agricultural policy and practice.

### **A) Soil biodiversity**

Land management practices that affect soil biodiversity are particularly significant for human health.<sup>8</sup> A reduction in below-ground biodiversity has been shown to impact negatively on human health by:

- Increasing the relative proportion of soil-borne pathogens. Disease risk in wildlife, plants and in humans has been shown to increase with soil biodiversity loss.
- Decreasing nutrient uptake by fruits and edible plants, resulting in less nutritious food.
- Reducing the stability of soil, leading to an increase in dust storms. Particulate matter carried in dust causes respiratory disease and lung tissue damage. Wind-blown soil may also contain pollutants or pathogens that adversely affect human health. One example is the soil fungus *Coccidioides immitis*, which has been implicated in outbreaks of valley fever in south west USA. Disturbance of soil releases fungal spores, which are distributed by the wind and result in lung disease and even death in animals and humans.
- Affecting water quality by reducing the ability of soil to infiltrate and percolate water. The ability of soil organisms to degrade pollutants and reduce the impact of poor sanitation is also impaired.

As the Issues paper suggests, there is considerable scope for improving agricultural practices in such a way as to decrease greenhouse gas emissions whilst simultaneously protecting the sustainability and biodiversity of the land, and maintaining or boosting productivity. DEA believes that the core focus of agricultural policy in Australia should be improving the productivity and resilience of existing agricultural land, and minimising clearing of native forest for agricultural purposes.

## **B) Land clearing**

In recent years while most other states were reducing land clearing, and even achieving net increases in forest cover, 90 per cent of Australia's land use emissions occurred in Queensland.

Land clearing rates in Queensland have tripled since 2010. The State-wide Land Cover and Trees Study (SLATS) for 2012-2014 showed that the annual rate of clearing increased from 153,638 hectares per year to almost 300,000 hectares per year in financial year 2013-14. SLATS data have shown land clearing in Queensland is now releasing more stored carbon into the planet's atmosphere than at any time in the past eight years— almost 36 million tonnes each year.<sup>9</sup>

Deforestation is the second highest contributor to agricultural emissions in Australia, after enteric fermentation. The 2015 World Wildlife Fund *Living Forests Report* identified Eastern Australia as a global deforestation front, with a projected loss of 3 – 6 million hectares between 2010 and 2030, with the drivers being small scale agriculture, as well as mining and unsustainable logging.<sup>10</sup> It is noteworthy that Australia was the only developed country appearing in this list.

It is important that the Commonwealth seeks the means to address the errant behaviour of states, which imperils national intent to reduce greenhouse emissions.

## **C) Other agricultural practices which impact upon human health**

Effluent from intensive animal rearing contains nitrogen and phosphorus, as well as biodegradable organic compounds, resulting in algal blooms, a decrease in dissolved oxygen in the water, and release of gases such as methane, carbon dioxide and hydrogen sulphide. Micro-organisms and chemicals such as disinfectants in manure can also pollute waterways, with subsequent risks to human health<sup>11</sup>.

The use of agricultural chemicals and antibiotics on an industrial scale directly affects human health. The genesis of antibiotic resistant organisms in rearing facilities is an increasing problem<sup>12</sup>. Pesticides pollute waterways, with downstream effects on the health of wild plants and animals, as well as humans.<sup>13</sup> Agricultural practices that minimise the use of these harmful chemicals are to be encouraged.

## **5. Agricultural products, nutrition and human health**

The human health effects of the products of the agricultural system should be essential considerations in agricultural policy and practice.

DEA observes that agricultural policies and discussion papers seldom acknowledge that the ultimate aim of the agricultural system might be the provision of nourishment for human beings. Indeed, it would seem that this consideration barely rates behind the issues of productivity and profitability. Our food production and distribution system is dysfunctional, and contributes unnecessarily to climate change and natural resource degradation on the one hand, and to health issues such as obesity, micronutrient deficiency and food insecurity on the other.<sup>14</sup> DEA believes that coordination across the agriculture, industry, retail and health sectors is vital in order to achieve a food system that is environmentally sustainable and contributes in a positive way to the health of our population.

The intersection of climate change effects of agriculture, and the health effects of agricultural produce, is at its most acute when considering the livestock industry. The Issues paper identifies enteric fermentation as the major agricultural contributor to greenhouse gas emissions, with additional contributions from manure management, primarily in intensive livestock systems. Measures to reduce livestock related emissions are discussed, but not the whether the overall amount and type of livestock farmed in Australia might be open to question. In health, excessive consumption of red meat has been linked to an increase in mortality from cardiovascular disease and cancer.<sup>15</sup> The Australian Dietary guidelines recommend no more than 65g of red meat per day,<sup>16</sup> and studies have suggested benefits for both the environment and health from decreasing meat consumption. For example, a recent study found that transitioning toward more plant-based diets that are in line with Healthy Global Diet recommendations (averaging no more than 43g of red meat per day) could reduce global mortality by 6-10% and food-related greenhouse gas emissions by 29-70% in 2050 compared to current dietary patterns.<sup>17</sup>

Australians are being encouraged to decrease red meat consumption for both health and environmental reasons, through campaigns such as '*Less meat less heat*'.<sup>18</sup> These campaigns presuppose that a reduction in meat consumption will lead to a reduction in overall meat production, rather than a shift to farming meat for the export rather than the domestic market. However, when health and environmental effects of the meat industry are taken into account, there is a strong imperative for a policy discussion around the quantities of meat Australia should be producing. A reduction in overall quantity of livestock would allow us to focus on ensuring the meat that is produced is of good quality, and associated with minimal, or even positive, environmental impact.

## Summary

Action to minimise the ways in which the agricultural industry impacts on both the climate and natural resources is both urgent and vital. As the

Issues paper outlines, there is increasing evidence that this can be done without adverse effects on productivity, and in such a way as to improve the long-term sustainability and resilience of food production in Australia. There are multi-level interactions between climate change, natural resource management, agriculture and human health, as outlined in this submission, and human health aspects should be taken into consideration when planning agricultural policy. In most cases, actions which are beneficial from the point of view of greenhouse gas emissions and natural resources, will be associated with co-benefits for health.

## References

- <sup>1</sup> <http://climatechangeauthority.gov.au/submissions>
- <sup>2</sup> [http://www.who.int/healthpromotion/conferences/8gchp/130509\\_hiap\\_framework\\_for\\_country\\_action\\_draft.pdf](http://www.who.int/healthpromotion/conferences/8gchp/130509_hiap_framework_for_country_action_draft.pdf)
- <sup>3</sup> Doctors for the Environment Australia Policy on Climate Change and Health. Accessible at <https://www.dea.org.au/wp-content/uploads/2017/02/DEA-Policy-Climate-Change-and-Health-v08-13.pdf>
- <sup>4</sup> <https://soe.environment.gov.au/>
- <sup>5</sup> Doctors for the Environment Australia Biodiversity Policy. Accessible at [https://www.dea.org.au/wp-content/uploads/2017/02/DEA\\_policy\\_biodiversity.pdf](https://www.dea.org.au/wp-content/uploads/2017/02/DEA_policy_biodiversity.pdf)
- <sup>6</sup> Sangha KK, Butler JRA, Delisle A, Stanley O (2011) Identifying links between ecosystem services and Aboriginal well-being and livelihoods in North Australia: applying the Millennium Ecosystem Assessment Framework. *Journal of Environmental Science and Engineering*. 5. 931-946.
- <sup>7</sup> Schirmer J, Berry H, O'Brien L (2013) Healthier land, healthier farmers: Considering the potential of natural resource management as a place-focused farmer health intervention. *Health and Place*. 24. 97-109
- <sup>8</sup> Wall D, Nielsen U, Six J (2015) Soil biodiversity and human health. *Nature* **528**, 69–76
- <sup>9</sup> <http://theconversation.com/land-clearing-in-queensland-triples-after-policy-ping-pong-38279>
- <sup>10</sup> World Wildlife Fund, Living Forests Report, 2015. Chapter 5: Saving Forests at Risk. Available at [http://awsassets.wwf.org.au/downloads/fl022\\_living\\_forests\\_report\\_chapter5\\_28apr15.pdf](http://awsassets.wwf.org.au/downloads/fl022_living_forests_report_chapter5_28apr15.pdf)
- <sup>11</sup> Department of Primary Industries, Water and Environment, Tasmania, 2001. Wastewater guidelines for intensive animal husbandry activities. Accessible at [http://epa.tas.gov.au/documents/wastewater\\_management\\_guidelines\\_for\\_intensive\\_animal\\_husbandry\\_activities.pdf](http://epa.tas.gov.au/documents/wastewater_management_guidelines_for_intensive_animal_husbandry_activities.pdf)
- <sup>12</sup> <http://www.agriculture.gov.au/animal/health/amr>
- <sup>13</sup> <https://theconversation.com/the-real-cost-of-pesticides-in-australias-food-boom-20757>
- <sup>14</sup> Tieleman L (2014). Health and Nutrition in Australia. Accessible at <http://www.futuredirections.org.au/publication/health-and-nutrition-in-australia/>
- <sup>15</sup> An Pan, Qi Sun, Adam M. Bernstein, Matthias B. Schulze, JoAnn E. Manson, Meir J. Stampfer, Walter C. Willett, Frank B. Hu, Red Meat Consumption and Mortality: Results from Two Prospective Cohort Studies. *Arch Intern Med*. 2012 Apr 9; 172(7): 555-563
- <sup>16</sup> Australian Dietary Guidelines, 2013. Accessible at <https://www.eatforhealth.gov.au/guidelines>
- <sup>17</sup> Springmann M, Godfrey CJ, Raynera M, Scarborough P. Analysis and valuation of the health and climate change cobenefits of dietary change. *Proc. Natl. Acad. Sci*. 2016;113(15):4146-51
- <sup>18</sup> <http://www.lessmeatlessheat.org>