



NZ Climate & Health Council

2 October 2017

Submission on the Productivity Commission's Issues Paper about a Low-Carbon Economy

Thank you for the opportunity to have input into this Issues Paper. This submission was prepared by Dr Dermot Coffey and Dr Alexandra Macmillan of OraTaiao: the NZ Climate and Health Council.

We would like the opportunity to speak about this submission to the Productivity Commission's Inquiry in person. We would also welcome the opportunity to have further input into the Inquiry, as the country's only climate change NGO focused on wellbeing and equity.

Kind regards

A handwritten signature in blue ink that reads "Alex Macmillan".

Alex Macmillan

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About OraTaiao

- Climate change is increasingly recognised as the biggest global health threat of the 21st Century^{1,2}, as well as the greatest opportunity to improve health³
- [OraTaiao: New Zealand Climate & Health Council](#) has over 600 health professional members. Our [Health Call to Action on Climate Change](#) is supported by 17 leading health professional organisations including the New Zealand Medical Council, the New Zealand Nurses Organisation and the Public Health Association.
- OraTaiao is part of a [worldwide movement of health professional authorities](#) urgently focusing on the health challenges of climate change.
- As senior doctors and health professionals, we are advocating on behalf of our patients and communities.
- OraTaiao is a politically non-partisan incorporated society, with rapidly growing membership and support across the New Zealand health sector. OraTaiao emphasises science, evidence, health, equity and resilience. We regard climate change adaptation and mitigation as New Zealand health priorities.
- We take a broad view of health, one that incorporates a range of wellbeing outcomes (social, environmental, physical, cultural, spiritual and economic), and acknowledging that health starts outside the health sector in economics, natural and built environments, in people's houses, neighbourhoods and workplaces, and in policies that protect, enhance and shape these health building blocks.
- We honour Māori aspirations, uphold the principles of Te Tiriti o Waitangi, and strive to reduce inequalities between Māori and other New Zealanders We are guided in our practice by the concepts of kaitiakitanga (guardianship), kotahitanga (unity), manaakitanga (caring), and whakatipuranga (future generations).

Our Vision

We consider that a healthy, fair, net-zero NZ economy with high quality of life is possible, though will now require more rapid and deep change because of our collective continued inaction. We envision pathways to a stable, low-emissions economy built on the Treaty of Waitangi, the development of a shared set of values for wellbeing, and participative processes backed by integrated, dynamic impacts modelling of policy options. We consider

¹ Costello A, Abbas M, Allen A, et al. Managing the health effects of climate change: Lancet and University College London Institute for Global Health Commission. Lancet 2009,373:1693–1733.
[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(09\)60935-1/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)60935-1/fulltext)

² World Medical Association. WMA Declaration of Delhi on Health and Climate Change,
<http://www.wma.net/en/30publications/10policies/c5/index.html>

³ Watts N, Adger, W. N., Agnolucci, P., Blackstock, J., et al. Health and climate change: policy responses to protect public health. Lancet 2015. doi: 10.1016/S0140-6736(15)60854-6

the communication of short-term health, wellbeing and fairness co-benefits; the leadership of government and the health sector; and a move from GDP as a measure of progress towards wellbeing economics to be fundamental to achieving this vision.

Summary of recommendations

Recommendation 1

We recommend a clear wellbeing framework be proposed by the Commission, that makes clear what is meant by wellbeing. We strongly urge the use the New Economics Foundation's useful frameworks for wellbeing, adapted to a New Zealand context.

Recommendation 2

We urge the Commission to re-frame "growing incomes" to be more equitable – equitably ensuring incomes that support wellbeing would be a more appropriate goal

Recommendation 3

We recommend the consideration of population growth in the work of the Inquiry, while acknowledging that New Zealand will continue to have high in-migration, especially as a result of climate change

Recommendation 4

Value and include health and equity costs and benefits in modelling of low emissions pathways and policies

Recommendation 5

We strongly recommend the health opportunity in widening the Inquiry scope on agriculture to consider what a healthy, climate-resilient food system would look like, and value the health and equity benefits of both reducing food insecurity and reducing dietary greenhouse gas emissions

Recommendation 6

We urge the Inquiry to use the hierarchy of policies recommended by the IPCC 5th Assessment Report: 1. Trip Avoidance; 2. Modal shift to active and public transport; 3. Energy efficiency of vehicles; Fuel carbon intensity. This hierarchy can apply to light vehicles, freight and aviation trips

Recommendation 7

When discussing electric vehicles, the Inquiry should include electric public transport and electric bikes, as well as shared ownership models for electric cars

Recommendation 8

We urge the Inquiry to take a wellbeing and equity approach to considering pathways for reducing transport emissions, ensuring that modelling of such pathways accounts for the health and equity benefits and includes policies that rebalance the National Land Transport Fund away from road building and maintenance towards active and public transport investments

Recommendation 9

Pathways for reducing greenhouse gas emissions from the housing stock should balance healthy increases in housing energy efficiency with decarbonisation of housing energy supply

Recommendation 10

To successfully reduce greenhouse gas emissions from housing, the government will need to deal with the split incentive in the private rental sector

Recommendation 11

The potential for mitigation needs to be incorporated into pathways for adapting our housing stock to climate-related sea level rise, severe weather events, in some places the need for cooling, and to climate-related in-migration

Recommendation 12

We need a Zero Carbon Act with urgency as proposed by Generation Zero

Recommendation 13

Harnessing the power of financial institutions should include divestment of public funds from fossil fuel exploration, extraction and retail

Recommendation 14

Public policy needs to be transparently protected from the involvement and vested interests of the fossil fuel industry

Recommendation 15

Multilateral trade and investment agreements need to include explicit carve-outs for climate change policies and legislation, as well as protection for governments and public policy from Investor-State Dispute Settlement clauses relating to climate change policy

Recommendation 16

To embed wide support for effective reduction in greenhouse gas emissions, the government needs to ensure consistency in its approach by ending fossil fuel exploration and exploitation in New Zealand, including its own fossil fuel exploration and extraction subsidies.

Recommendation 17

We strongly recommend participatory approaches to decision-making that are supported by integrated, dynamic, systems modelling that is based on a shared set of values, a wellbeing framework incorporates health and equity outcomes. There are some promising examples of such processes from the public health, environmental management and system dynamics literatures

Recommendation 18

Engage the health sector in leadership for change towards a zero-carbon future, and enable and require the health sector to show leadership in reducing its own greenhouse gas emissions.

Please find below our details comments and evidence-based justification for our recommendations.

The Commission's overall approach

We commend the Commission for espousing a “wellbeing” approach to considering a low carbon future.

We consider using wellbeing as a fundamental framing principle is crucial, not just because climate change is an issue for wellbeing but because:

- Health and equity co-benefits of well-designed action can begin to occur tangibly and immediately – providing positive public support for ongoing action
- These co-benefits will not occur on their own – and there is the possibility for health co-harms of climate action unless we put wellbeing and fairness at the centre of climate policy
- Changing the discourse to talking about climate change as a wellbeing issue rather than an environmental or economic one will speak across political ideologies
- Talking about climate action as an *opportunity for wellbeing* is more likely to activate people, avoiding the paralysis caused by the current discourse of climate change as a diffuse and catastrophic future threat

However, other than saying that a wellbeing approach will be used at the start, there is little initial framing of what is meant by this, and very little in the rest of the document to support the statement. Having a guiding framework of wellbeing is crucial if New Zealand is to have a real conversation about climate change – and the other planetary boundaries we are breaching in the name of economic growth.

- What opportunities exist for the New Zealand economy to maximise the benefits and minimise the cost that a transition to a lower net-emissions economy offers, while continuing to grow incomes and wellbeing?

We consider this as to be a fundamentally flawed underlying question. The relationship between income and wellbeing is non-linear and complex and it is but one contributor to health and happiness. In addition, a more nuanced approach is needed – there is no need for the government, for instance, to have a goal of increasing the income of the wealthiest, while it is a fundamental job of government to ensure to address distributive injustice. In NZ, income inequities are unquestionably harming the wellbeing of the poor, as well as, arguably, everyone's wellbeing. A focus, therefore on adequate incomes for all would be a more appropriate goal of this question.

One major omission from the issues paper is any discussion on population growth. Population growth in NZ is currently just over 2.0% per annum, with about 1/3 due to natural increase and 2/3 due to net inward migration⁴. This is high for an OECD country. New migrants tend to rapidly take on the emission profile of their new country, and it is

⁴ Statistics New Zealand.

http://www.stats.govt.nz/browse_for_stats/population/estimates_and_projections/NationalPopulationEstimates_HOTPA30Jun17.aspx accessed 01/10/2017

important to consider this when planning immigration levels in the context of rapidly changing global and national emission profile. At current emission levels, having fewer children in high emission countries is one of the most powerful methods to reduce overall carbon emissions⁵. Apart from migration, the best ways of managing and controlling natural population growth are well known and still a fruitful area of policy development: improvements in equitable access to high quality education and employment opportunities for young women; freely available, culturally appropriate access to family planning services. There is an unmet need for these health services in poorer areas of NZ⁶, and improving these would help improve health equity as well as overall carbon emissions.

Recommendation 1

We recommend a clear wellbeing framework be proposed by the Commission, that makes clear what is meant by wellbeing. We strongly urge the use the New Economics Foundation’s useful frameworks for wellbeing, adapted to a New Zealand context.

Recommendation 2

We urge the Commission to re-frame “growing incomes” to be more equitable – equitably ensuring incomes that support wellbeing would be a more appropriate goal

Recommendation 3

We recommend the consideration of population growth in the work of the Inquiry, while acknowledging that New Zealand will continue to have high in-migration, especially as a result of climate change

Q1

How can the Commission add the most value in this inquiry?

A wellbeing approach has been very much absent from the discourse about climate change in New Zealand. Given the Productivity Commission’s stated role, we consider that it could add most value with a strong wellbeing framework underpinning the Inquiry – see comments above for the specific value this would add.

The health and equity costs and benefits of particular pathways towards a low emissions New Zealand can and should be included in pathways modelling, including in economic modelling. Examples of climate mitigation policies that have already had health-related cost-benefit analysis specific to New Zealand include shifting from car trips to urban cycling; housing insulation and clean heating schemes; and reductions in dietary ruminant and dairy intake. The methods used in these analyses can easily be extended to other policy examples across the major emissions sectors.

⁵ Wynes S, Nicholas KA. The climate mitigation gap: education and government recommendations miss the most effective individual actions. 2017 Environ. Res. Lett. 12 091001

⁶ Jatrana S, Crampton P. Primary health care in New Zealand: Who has access? Health Policy 93:1; November 2009, 1-10

Recommendation 4

Value and include health and equity costs and benefits in modelling of low emissions pathways and policies

Q4

What are the main opportunities and barriers to reducing emissions in agriculture?

From a wellbeing and equity perspective, there is a huge opportunity in shifting from an agricultural system geared to producing a single commodity for export (milk powder) towards a diverse resilient low-carbon food system.

The current export profile of agricultural goods greatly exposes the NZ economy to global shifts away from animal protein as a food source. 80% of food related greenhouse gas emissions are associated with livestock production⁷. A switch from an average Western diet to a purely plant based one would reduce annual emissions by 300-1600kg CO₂e per person per year. There is a strong link between the average high-calorie, highly animal sourced diet in NZ and our most common non-communicable “lifestyle” illnesses like obesity, type 2 diabetes mellitus, cardiovascular disease and many cancers⁸. Transitioning to a mainly plant based diet is estimated to have the potential to reduce global mortality by 6-10% with the main health and environmental benefits being most gained in high income countries⁹. The health, emission and environmental benefits from a dietary change-driven modification of agriculture, particularly away from red meat and dairy product production, would have a much bigger impact than unproven efforts to reduce GHG production through animal diet, vaccination or genetic modification¹⁰.

We consider that for NZ to reduce its agricultural greenhouse gas emissions we are going to have to think about agriculture as a resilient food production system rather than simply as a single commodity producer driving economic growth¹¹.

⁷ Food and Agriculture Organization of the United Nations (2006) Livestock’s Long Shadow. Rome: Food and Agriculture Organisation

⁸ WHO. The Global Strategy on Diet, Physical Activity and Health.

http://www.who.int/dietphysicalactivity/media/en/gsf_general.pdf Accessed 01/10/2017

⁹ Springman M, Godfray HC et al. Analysis and valuation of the health and climate change cobenefits of dietary change. PNAS. 2106 113; 4146-4151

¹⁰ Tilman D, Clark M (2014) Global diets link environmental sustainability and human health. Nature 515(7528):518–522

¹¹ Food Climate Research Network. What is a sustainable healthy diet? A discussion

paper. http://www.fcrn.org.uk/sites/default/files/fcrn_what_is_a_sustainable_healthy_diet_final.pdf Accessed 01/10/2017

Food security, affordability and nutrition are climate impacts we can predict with high confidence¹², including in New Zealand¹³. The most recent published estimates of food insecurity in New Zealand are from the 2008/2009 Adult Nutrition Survey, concluding that 7.3% of all households are already classified as suffering from low food security, while Māori women (18.4%) and Pacific women (22.4%) have the highest rates¹⁴. Any “wellbeing” and equity-focused discussion on low-carbon transition pathways need to therefore ensure such pathways increase rather than further reduce food security.

Our own recent research, in progress, on the potential for climate-friendly diets to reduce greenhouse gas emissions, suggests that diet (made up of imported and locally grown foods) contributes the equivalent of 14% of the nation’s total greenhouse gas emissions, acknowledging that dietary and agricultural emissions only partially overlap. Despite this non-overlap we see considerable potential in a debate about climate-friendly diets to influence agricultural production. This discussion is already happening internationally, and it is likely that New Zealand’s high income food markets will move from the demand already being placed on our agricultural sector to report emissions from our current exports, to looking for a greater part of their diet from low carbon, plant-based sources. When we modelled lifecycle emissions from food groups together with the current average NZ diet, we found that more than half of our dietary emissions come from animal protein, processed meats and highly processed foods which are high in saturated fat, sugar and refined grains.

The other main finding from our research is that a combination of food waste reduction, and replacement of one serving of protein from meat to two servings of plant-based protein could reduce dietary emissions by a fifth. For every serving of meat replaced with plant protein, a reduction in one’s own weekly dietary emissions of 11% is possible. This would come with co-benefits for health and health equity, which are in the process of being modelled and valued.

Even this health co-benefits modelling does not include yet the potential to address New Zealand’s freshwater crisis. We are seeing increasing rates of waterborne enteric disease, with a growing excess in rural areas, particularly of campylobacteriosis¹⁵. This is almost certainly attributable to the increasing intensity of dairy farming – with higher numbers of livestock per square km; higher inputs of nitrogen; and more irrigation all putting pressure on freshwater quality (including drinking water). Climate change, through drought, increased heavy rainfall events and warming waters, will exacerbate these pressures, and

¹² IPCC, 2013: Summary for Policymakers. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker TF, Qin D, Plattner G-K, Tignor M, Allen SK, et al (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2013. <https://www.ipcc.ch/report/ar5/wg1/>

¹³ Bennett H, Jones R, Keating G et al. Health and equity impacts of climate change in Aotearoa-New Zealand, and health gains from climate action. NZMJ 2014 <http://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2014/vol-127-no-1406/6366>

¹⁴ Ministry of Health 2011 A Focus on Nutrition: Key findings from the 2008/09 NZ Adult Nutrition Survey. Chapter 7 Food Security <http://www.health.govt.nz/publication/focus-nutrition-key-findings-2008-09-nz-adult-nutrition-survey>

¹⁵ Wilson N, Slaney D, Baker M, et al. Climate change and infectious diseases in New Zealand: A brief review and tentative research agenda. Rev Environmental Health 2011;26(2):93-99. <http://www.reference-global.com/doi/abs/10.1515/REVEH.2011.013>

early impacts of climate change will include a rise in waterborne illness. This will only increase the imperative to shift our thinking about agriculture.

We see the main barriers to achieving such reductions as being political, institutional and economic:

- There has been a significant shift in the way the food system is considered in recent decades, including governance by a Ministry of Primary Industries and a discourse of commodification that puts simple measures of economic growth ahead of people's health and environmental wellbeing
- Agriculture is excluded from the Emissions Trading Scheme
- A number of other perverse subsidies exist, whereby the government pays for other agriculture externalities, including water pollution, and inputs such as irrigation schemes

Recommendation 5

We strongly recommend the health opportunity in widening the Inquiry scope on agriculture to consider what a healthy, climate-resilient food system would look like, and value the health and equity benefits of both reducing food insecurity and reducing dietary greenhouse gas emissions

Q9

What policies would best encourage the uptake of electric vehicles in New Zealand?

Q10

In addition to encouraging the use of electric vehicles, what are the main opportunities and barriers to reducing emissions in transport?

While acknowledging that a transition to electric private motor vehicles will need to be one part of reducing transport emissions, OraTaiao has concerns that the paper focuses to an excessive degree on this as the main means to reduce carbon emissions from transport ("Electric vehicles (EVs), powered by batteries, offer by far the greatest opportunity to reduce transport emissions in New Zealand,") and not enough on the wellbeing and equity benefits that increased active transport and public transport can offer.

Electric private motor vehicles have the benefits of reduced emissions at the time of use, particularly in an NZ context with such a high percentage of grid power from renewable sources, partly reduced air pollution and partly reduced noise pollution. However, they have a significant 'embedded' carbon emission cost during manufacture (obviously this would be indirect unless they were manufactured in NZ, but mainly due to the batteries EVs currently have higher carbon emissions during manufacture than their fossil fuel powered

equivalents¹⁶). Secondly, although carbon emissions and NOx and particulate pollution are reduced at the time of use, at least half of the air pollution due to motor vehicle use is due to road, brake and tyre wear and dust displacement¹⁷.

The major problem with EVs is that they do nothing to reduce the other problems associated with a car-dominated transport system- physical inactivity, congestion, road trauma, storage problems, neighbourhood severance and a huge opportunity cost associated with the building, extension and maintenance of the road network.

Approximately 50% of New Zealand residents do not achieve the minimum recommended levels of physical activity of 2.5 hours per week of moderate exercise¹⁸. Physical inactivity was calculated to cost New Zealand \$1.2bn in 2010¹⁹. The significant costs associated with road trauma, with traumatic road deaths averaging over 300 per year, can also be reduced by increasing uptake of active (and public) transport.

Properly funding, developing and promoting active transport has been identified as the most important way of promoting physical activity. These can be realised with even modest shifts to active transport- shifting even 5% of short urban trips to active transport would save an estimated 116 lives per year due to increased physical activity²⁰. Indeed, in Auckland it was estimated in 2014 that each dollar spend on cycling infrastructure would generate savings of \$6-\$20 primarily from the health benefits of reducing physical inactivity²¹.

There are additional benefits from a shift of freight from the roading network to an electrified rail network, due to their disproportionate involvement in road trauma. HGVs are responsible for 6% of the total vehicle kilometres in NZ, but account for 21% of the fatalities²².

Finally, these benefits are even more marked in lower socio-economic areas and among Māori and Pacific Island populations where car ownership levels are lower and the prevalence of the diseases of physical inactivity are higher⁷, and provision of and improvement in active transport and public transport networks would help protect people

¹⁶ www.ucsusa.org/EVlifecycle Accessed 28/09/2017

¹⁷ European Commission JRC Policy and Science Reports. Non-exhaust traffic related emissions. Brake and tyre wear PM. 2014 <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC89231/jrc89231-online%20final%20version%202.pdf>

¹⁸ NZ Ministry of Health. Activity levels in New Zealand. Annual Report of Key Results 2013/14. <http://www.health.govt.nz/your-health/healthy-living/food-and-physical-activity/physical-activity/activity-levels-new-zealand> Accessed 27/09/2017

¹⁹ Auckland Council, Waikato Regional Council, Wellington Regional Strategy. The costs of physical inactivity: toward a regional full-cost accounting perspective. https://www.waikatoregion.govt.nz/assets/PageFiles/25488/The_Costs_of_Physical_Inactivity.PDF accessed 27/09/2010

²⁰ Lindsay, G., Macmillan, A., Woodward, A. (2011). Moving urban trips from cars to bicycles: impact on health and emissions. Australian and New Zealand Journal of Public Health, 35:54–60.

²¹ Macmillan A, Connor J, Witten K, Kearns A, Rees D, & Woodward A. (2014). The societal costs and benefits of commuter bicycling: Simulating the effects of specific policies using system dynamics modelling Environmental Health Perspectives, 122(4)

²² Briggs, D., Mason, K., Borman, B.. Rapid Assessment of Environmental Health Impacts for Policy Support: The Example of Road Transport in New Zealand. International Journal of Environmental Research and Public Health, 2016; 13(1): 61.

against the likely disruptive rather than smooth societal shift from fossil fuel to electric powered vehicles²³.

Public transport also offers health benefits, primarily due to the incidental physical activity that occurs at the beginning and end of each trip²⁴, as well as the reduction in carbon emissions from an electrified network. Additional benefits include improved road safety, reduced congestion, increased social contact, and better network resilience., and public transport allows more equitable access to mobility for younger, older and poorer socioeconomic groups. There is also growing evidence that cities prioritising active and public transport do better economically and enjoy better quality of life²⁵²⁶.

The significant effects of public and active transport on the road trauma rates in NZ should not be underestimated. The total social costs of road trauma was \$3.79bn in 2016 incorporating costs due to loss of life and life quality, loss of output, medical costs, legal costs and property damage costs²⁷.

Recommendation 6

We urge the Inquiry to use the hierarchy of policies recommended by the IPCC 5th Assessment Report: 1. Trip Avoidance; 2. Modal shift to active and public transport; 3. Energy efficiency of vehicles; Fuel carbon intensity. This hierarchy can apply to light vehicles, freight and aviation trips

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When discussing electric vehicles, the Inquiry should include electric public transport and electric bikes, as well as shared ownership models for electric cars

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Q16

What policies and initiatives would best promote the design and use of buildings that produce low greenhouse gas emissions?

²³ Arbib J, Seba T. Rethinking Transportation 2020-2030. RethinkX+Report_051517.pdf accessed 28/09/2017

²⁴ Rissel, C., Curac, N., Greenaway, M., Bauman, A. (2012). Physical activity associated with public transport use—a review and modelling of potential benefits. *Int J Environ Res Public Health* 9(7): 2454-78

²⁵ Davis A (2010) Value for money: An economic assessment of investment in walking and cycling. UK: Government Office for the South West & Department of Health

²⁶ New Zealand College of Public Health Medicine. Policy statement on Physical Activity and Health. Wellington: New Zealand College of Public Health Medicine, 2014.

<http://www.nzcpmh.org.nz/policypublications>

²⁷ Ministry of Transport. The social cost of road crashes and injuries.

<http://www.transport.govt.nz/research/roadcrashstatistics/thesocialcostofroadcrashesandinjuries/> accessed 28/09/2017

There are significant health advantages to improving building and insulation standards in NZ buildings. Studies conducted in low socio-economic regions of NZ have shown that inexpensive housing insulation leads to a significantly warmer and drier indoor environment, significantly lower energy costs and a lower number of days off work and a lower rate of hospitalisation due to respiratory illness. It is estimated that there is an overall benefit of at least \$2 for every \$1 invested in housing insulation, and these benefits are most obvious in areas with poorer and older housing stock, and lower socioeconomic areas where fuel poverty is more prevalent²⁸. Given these additional health and economic benefits, we believe there is a continued role for government assistance to subsidise retrofitting of existing houses.

Increasingly, the responsibility for ensuring affordable and healthy housing for low income families has been shifted from the state/society to the market. This has allowed the government to afford significant tax cuts, particularly for high income earners, and resulted in extremely poor quality private rental housing to undermine the health and futures of low income children particularly Māori and Pacific children. Thus far, encouraging improvements in the energy efficiency and weather-tightness of these houses has been unsuccessful because of a “split incentive”. We consider there to be a strong argument for removing this split incentive through a combination of regulation (e.g. the proposed rental housing Warrant of Fitness) and government finance.

It is important we also learn from the UK’s recent experience of policy failure and unintended health consequences in the form of the Green Deal. Beyond a certain, predictable point, continuing to chase increasing airtightness in old buildings, because this is seen as a “low hanging fruit” for reducing carbon emissions, leads to problems with rot, mould and indoor air pollution, unless ventilation is also dealt with. A much simpler approach with clear win-wins for health in the housing stock would be to:

1. Improve insulation and carbon-neutral, energy-efficient heating sources that minimise air pollution
2. 100% decarbonise the housing electricity supply
3. Ensure that highly energy efficient and healthy houses are built in response to the demand for new housing, including the need for new housing as a result of adapting to sea level rise

Recommendation 9

Pathways for reducing greenhouse gas emissions from the housing stock should balance healthy increases in housing energy efficiency with decarbonisation of housing energy supply

Recommendation 10

The government will need to deal with the split incentive in the private rental sector

²⁸ Howden-Chapman P, Matheson A, Crane J et al. Effect of insulating existing houses on health inequality: cluster randomised study in the community. *BMJ* 2007;334:460

Recommendation 11

The potential for mitigation needs to be incorporated into pathways for adapting our housing stock to climate-related sea level rise, severe weather events, in some places the need for cooling, and to climate-related in-migration

Q19

What type of direct regulation would best help New Zealand transition to a low-emissions economy?

Net emissions in NZ have increased by 68% from 1990-2015, and there has been a severe lack of leadership or planning by successive NZ governments. OraTaiao strongly considers that legislation similar to the UK's 2008 Climate Change Act and the Victorian 2017 Climate Change Act is needed as a matter of urgency. We support the call for government to adopt the Generation Zero Zero Carbon Act²⁹.

Any such direct regulation should be built on the principles of the Treaty of Waitangi.

Recommendation 12

We need a Zero Carbon Act with urgency

Q23

How can New Zealand harness the power of financial institutions to support a low-emissions transition?

In health, we have had a salutary 70-year experience with addressing the harm caused by tobacco, including a growing understanding of the unethical and illegal tactics used by multi-national corporations to undermine evidence-based, effective public policy. It is now evident that many fossil fuel corporations have used similar means to cast doubt on climate science and unethically undermine climate policies to protect profit. This has caused, and will continue to cause increasing deaths and serious harms around the world. It is possible to robustly attribute this mortality and morbidity to the knowing collective actions of fossil fuel industry players. Therefore, it is vital that the government and public financial institutions stop investing in the exploration, extraction and retail of fossil fuels.

Recommendation 13

Harnessing the power of financial institutions should include divestment of public funds from fossil fuel exploration, extraction and retail

²⁹ <http://zerocarbonact.nz/>

Q25

In addition to “core” climate policies and institutions, what other changes to policy settings or institutional frameworks are required to effectively transition New Zealand to a low-emissions economy?

Further to the above comments about the fossil fuel industry’s knowing and active role in climate change harms to human health, here are some further lessons from the health sector experience with tobacco:

1. Working “with” the fossil fuel industry is a mistake – there is an irreconcilable tension in objectives between profit-making based on climate pollution, and public policy to protect human wellbeing from climate change
2. Guidelines for governments are needed to protect public policy from vested interests of fossil fuel industries in international agreements and national policy-making
3. A great deal more transparency is needed in climate change policy-making about industry – government interactions, including political party funding and in-kind support
4. Removal “official observer” status of fossil fuel companies and screen public badges for industry attendance at policy conventions
5. Carve outs are needed in trade agreements to protect climate change legislation and policy and avoid – including stronger exceptions to Investor-State Dispute Settlement clauses to avoid the government being sued by multinational corporations for loss of profit.

Recommendation 14

Public policy needs to be transparently protected from the involvement and vested interests of the fossil fuel industry

Recommendation 15

Multilateral trade and investment agreements need to include explicit carve-outs for climate change policies and legislation, as well as protection for governments and public policy from Investor-State Dispute Settlement clauses relating to climate change policy

Q27

What approaches, such as regulatory frameworks or policy settings, would help embed wide support among New Zealanders for effective reduction of domestic greenhouse gas emissions?

Currently there is a huge inconsistency in the government’s approach to climate change. On the one hand, there is some inadequate commitment to reduce our national greenhouse gas emissions, while on the other hand, the current government continues to promote and facilitate further exploration and extraction of coal, oil and gas. This inconsistency does not engender wide support for making societal level change. Further exploration for oil and gas,

and further permits to mine for coal are incompatible with a safe climate for human wellbeing.

Recommendation 16

To embed wide support for effective reduction in greenhouse gas emissions, the government needs to ensure consistency in its approach by ending fossil fuel exploration and exploitation in New Zealand, including its own fossil fuel exploration and extraction subsidies.

Q28

Is New Zealand's current statutory framework to deal with climate change adequate? What other types of legislation might be needed to effectively transition towards a low-emissions economy?

We consider that a more constitutional statutory framework for climate change legislation will be needed than is currently possible with our legislation, to create a stable, ratcheting approach to reducing emissions that sends a consistent and predictable signal to civil society, businesses and organisations.

Recommendation 15

Climate change legislation in the form of a Carbon Zero Act or similar will need to have more constitutional embeddedness than is currently possible with general legislation in New Zealand

Q29

Does New Zealand need an independent body to oversee New Zealand's domestic and international climate change commitments? What overseas examples offer useful models for New Zealand to consider?

We support Generation Zero's proposal for an independent Climate Commission, with similar functions to the UK Climate Committee. However, we consider the membership of the UK Climate Committee to be inadequate to its task, being dominated by climate scientists and the energy industry. One of our comments on their proposal is as follows:

"If the role of the NZ Commission is to advise government on how to do societal transformational change to meet its climate target, using a values-based framework, then climate scientists aren't going to be terribly helpful. In fact, we consider the make-up of the UK Climate Committee to be one of its biggest failings. Climate scientists answer questions about "what is". The Commission is trying to answer questions about "what we should do" in the light of the "what is" of climate science. This requires a range of *transdisciplinary* stakeholders, with expertise in the values-based integration of knowledge across sectors; in modelling or envisioning futures and back casting what's needed to get there; in policy and politics; and in societal change-making. There will need to be particular sectoral and climate science knowledge fed into the process for sure. We have plenty of people who would fit these descriptions." (OraTaiao comments on Generation Zero's Climate Commission proposal).

Recommendation 16

We support an independent Climate Commission with a similar role to the UK's Climate Committee but with membership made up of *transdisciplinary* stakeholders equal to the task of social transformation

Q31

What types of analysis and underlying data would add the greatest value to this inquiry?

Q33

What are the main co-benefits of policies to support a low-emissions transition in New Zealand? How should they be valued and incorporated into decision making?

Q39

What do you see as the main benefits and opportunities to New Zealand from a transition to a low-emissions economy?

We consider these three questions to be asking similar things. Here is an evidence-based table summarising the health and equity co-benefits across the main emissions sectors:

Emissions reduction measure	Health and wellbeing benefits
Transport sector An equity-focused shift towards electric public transport and active transport	Increased habitual daily physical activity (reductions in cancer, heart disease, diabetes, obesity, depression); reduced air pollution (reductions in cancer, lung disease, heart disease) and noise pollution (stress, heart disease); reduced road traffic injuries; improved neighbourhood social connection and sense of security; improved daily contact with nature; reduced population stress levels; more equitable access to jobs, education, healthcare and health-promoting goods and services
Housing Universal insulation and carbon-zero, low air pollution, affordable heating	Reductions in asthma, respiratory illnesses, cardiovascular disease, cold-related deaths; improvements in mental wellbeing; reduced living costs for poor households

<p>Electricity generation 100% renewable electricity generation</p> <p>More small scale community-owned electricity generation</p>	<p>Reduced air pollution (cardiopulmonary mortality, asthma and lung cancer); resilience to electricity price rises and severe weather events affecting the grid</p>
<p>Food and diet Reduced intake of red meat, animal protein and highly processed foods</p> <p>A shift from a commodified agricultural sector dominated by intensive dairy to a diverse, low emissions, plant-based food production system</p>	<p>Reduced water pollution (reductions in water-borne enteric disease), reduced bowel cancer, obesity and cardiovascular disease, reduced plastic waste from highly processed foods, improved food security and micronutrient intake, improved food system resilience to climate shocks</p>

Adapted from Haines et al 2009 Lancet;374:2104-14

Recommendation 17

We strongly recommend participatory approaches to decision-making that are supported by integrated, dynamic, systems modelling that is based on a shared set of values, a wellbeing framework incorporates health and equity outcomes. There are some promising examples of such processes from the public health, environmental management and system dynamics literatures.

Q34

Who are the most important players in driving forward New Zealand's transition to a low-emissions economy?

We consider health professionals and the health sector to be one group of actors whose social standing, ethics, potential for leadership and knowledge about social change provide an opportunity for them to be an important group to help drive and lead change towards a zero-carbon pathway. In addition, they can speak to the health and fairness co-benefits of action to individuals and at a population level. The fact that the health sector has a considerable climate impact itself creates a dissonance that is not in keeping with the principle of *primum non nocere* (first do no harm), creating added incentive for leadership. A good place to start would be to rapidly phase out the 35 hospital coal burners around the country.

Recommendation 18

Engage the health sector in leadership for change towards a zero-carbon future, and enable and require the health sector to show leadership in reducing its own greenhouse gas emissions.

Q40

**What does your long-term vision for a low-emissions economy look like?
Could a shared vision for New Zealand be created, and if so, how?**

We consider that a healthy, fair, net-zero NZ economy with high quality of life is possible, though will now require more rapid and deep change because of our collective continued inaction. We envision pathways to a stable, low-emissions economy built on the Treaty of Waitangi, the development of a shared set of values for wellbeing, and participative processes backed by integrated, dynamic impacts modelling of policy options. We consider the communication of short-term health, wellbeing and fairness co-benefits; the leadership of government and the health sector; and a move from GDP as a measure of progress towards wellbeing economics to be fundamental to achieving this vision.