



28/03/2021

Climate Change Commission

Climate Justice Action

Aotearoa

By EMAIL

<https://haveyoursay.climatecommission.govt.nz/comms-and-engagement/future-climate-action-for-aotearoa/>

Submission to Climate Change Commission first draft advice consultation

The Public Health Association of New Zealand (PHA) is a national association with members from the public, private and voluntary sectors. Our organisation's vision is 'Good health for all - health equity in Aotearoa', or 'Hauora mō te katoa – oranga mō te Ao', and our purpose is to advocate for the health of all New Zealanders. To achieve this, we provide a forum for information and debate about public health action in Aotearoa New Zealand. Public health action aims to improve, promote and protect the health of the whole population through the organised efforts of society.

We recognise Te Tiriti o Waitangi as Aotearoa New Zealand's founding document, defining respectful relationships between tangata whenua and tangata Tiriti, and are actively committed to supporting Te Tiriti values in policy and legislation.

The Public Health Association of New Zealand acknowledges Ora Taiao in our submission, and strongly support all recommendations made by Ora Taiao on the Climate Change Commission draft advice document.

The Climate Change Commission is consulting on its first package of advice to the

Government which will help shape Aotearoa's climate crisis response. In their current form, the Commission's draft recommendations ignore the important health and equity gains that could be made from the right kinds of climate action. They also do not sufficiently recognise te Tiriti o Waitangi, nor the obligations and responsibilities that arise as a consequence of that.

According to the former WHO Director-General, Dr Margaret Chan: "*achieving net zero emissions is the most important global health intervention now and for decades to come,*" and that the "*health benefits will outweigh the costs of mitigation policies, even without considering the longer-term health and economic benefits of avoiding more severe climate change.*"¹

In summary, the Commission's advice must:

- focus more on health and wellbeing, and seize the important opportunities for better health, and health equity, in Aotearoa.²
- support global health equity through proposals that are responsible, ambitious and transformational
- centralise Te Tiriti o Waitangi as a fundamental cornerstone of it's advice.

The climate change commissions consultation questions:

Climate action which will also improve health, health equity and centralise te Tiriti o Waitangi

PHANZ asks that the draft advice focus on human health and wellbeing, and seize opportunities to greatly improve health:

- We can cut emissions in ways that greatly improve health, health equity and wellbeing. The draft advice must recognise, quantify and optimise these important

¹ Chan Fung Fu-Chun, M. (2021) Accelerating towards net zero emissions: the most important global health intervention. *The Lancet Planetary Health*. 5 (2), e64-e65.

² This is particularly important at this time, given the health reforms as a result of the Simpson Review of the Health and Disability Sector.

health co-benefits. Recent studies clearly show that well-designed climate action is needed to optimise health gains³.

- The right to the highest attainable standard of health is recognised in the UN Declaration on Human Rights⁴, and hauora (health and wellbeing)⁵ is one of the taonga guaranteed to all citizens under te Tiriti o Waitangi.
- Health and wellbeing must be a top priority, including mental health given the known mental health effects of climate change.^{6,7}
- The draft advice must consider and advise a more responsible Nationally Determined Contribution (NDC) based on our Paris Agreement commitments. Taking into account greater capability and historic responsibility, Aotearoa's fair share increases ten-fold from our current NDC. This means careful cost-benefit calculations, stronger emissions budgets, offshore emissions trading, and climate financing beyond our fair share.
- To ensure Aotearoa's climate policy delivers the full potential health and health equity gains, we recommend the Minister for Climate Change appoint a general public health specialist and a Māori public health specialist to the Commission and set up a multi-disciplinary health advisory group to review Aotearoa's emission reduction options.

PHANZ asks that the draft advice centralise Te Tiriti o Waitangi:

- For Māori, climate change means displacement and dispossession from lands, heritage and resources, disruption of family relationships; loss of cultural identity and knowledge, increased poverty and marginalisation, worse health, and effects on their spiritual relationship with the natural environment⁸
- The draft advice report acknowledges the 'Treaty Partnership' but it is important that we don't reduce a te Tiriti kaupapa and narrative to simply an equity argument. We need the special partnership relationship, as contemplated by te Tiriti, to be

³ Hamilton, I. et al. (2021) The public health implications of the Paris Agreement: a modelling study. *The Lancet Planetary Health*. 5(2), E74-83.

⁴ United Nations (1948) Universal Declaration of Human Rights. GA Resolution 217A (III), UN GAOR. Resolution 71, UN Document A/810. 1948, United Nations: New York.

⁵ Reid, P. & Robson, B. (2007) *Understanding health inequities* in Robson, B. & Harris, R. (eds). *Hauora: Māori standards of health IV. A study of the years 2000-2005*. Te Rōpū Rangahau Hauora a Eru Pōmare: Wellington.

⁶ Berry, H. et al (2010) Climate change and mental health: a causal pathways framework. *Int J Public Health*. 55: 123-132.

⁷ Royal Australian and New Zealand College of Psychiatrists (2020) *Addressing the mental health impacts of natural disasters and climate change-related weather events. Position statement*. Available at: <https://www.ranzcp.org/news-policy/policy-and-advocacy/position-statements/addressing-mental-healthimpacts-natural-disasters> (Accessed 23/02/2021)

⁸ Jones R, Bennett H, Keating G, Blaiklock A. (2014) Climate Change and the Right to Health for Māori in Aotearoa/New Zealand. *Heal Hum Rights J* 16(1):54–68. Available at: <https://www.hhrjournal.org/2014/07/climate-change-and-the-right-to-health-for-maori-in-aotearoanewzealand/> (accessed 23/02/2021)

front and centre, and acknowledging that Māori are **not** “just one-of-many stakeholders”.

- In revising Aotearoa’s Nationally Determined Contribution (NDC), we note that the Waitangi Tribunal states⁹ in their Ko Aotearoa Tēnei (Wai 262) report: “...that it is for Māori to say what their interests are, and to articulate how they might best be protected - in this case, in the making, amendment, or execution of international agreements. That is what the guarantee of tino rangitiratanga requires.”
- OraTaiao agrees with the draft advice to include a progress indicator to partner with iwi/Māori and local government to implement emissions reducing pathways. But, this advice must recommend how this partnership will be funded/resourced, operationalised, and monitored for accountability, efficacy and impact. Māori must be represented at all levels of decision making.
- The PHA supports the establishment of national Māori decision making body: Te Komehana o Taiao. Te Komehana o Taiao would award consents that might have some impact on the environment; the work of the Komehana would be underpinned by Mātauranga Māori. It would use cultural bases, cultural protocols based on longstanding relationships with land, water and sky; it would prioritise the significance of the environment for health and wellbeing. Te Komehana Taiao would work in conjunction with Te Rūnanga Whakapiki Mauri¹⁰

1. The pace of change

Big Issues question 1. Do you agree that the emissions budgets we have proposed would put Aotearoa on course to meet the 2050 emissions targets?

*Strongly agree - Agree - Neutral - Disagree - **Strongly disagree** - Do not know*

Background: There are three emissions budgets within the draft advice covering the periods 2022-2025, 2026-2030 and 2031-2035. These will dictate the pace of change within each sector. The second two budgets can be amended in future advice, but the first budget will be set formally this year.

PHANZ **strongly disagrees** because the emissions budgets are not ambitious nor set to be achieved quickly enough:

- They do not meet our international obligations under the Paris Agreement 2015 and are inconsistent with our IPCC 2030 targets.

⁹ New Zealand. Waitangi Tribunal. (2011) Ko Aotearoa tēnei : a report into claims concerning New Zealand law and policy affecting Māori culture and identity. Te taumata tuatahi. (Waitangi Tribunal report 2011). <https://www.waitangitribunal.govt.nz>

¹⁰ Tā Mason Durie Transcript: Key Note Speaker for The Future of Māori Health Forum, 30th November 2020 Grand Hall, Parliament Buildings Wellington. Te Rau Ora

- Aotearoa has a greater responsibility as a developed nation to contribute to a globally equitable response, so at a minimum our IPCC 2030 targets should be met.
- Without more ambitious emissions budgets, Aotearoa will contribute to deepening health, social and economic inequities. The health and socioeconomic impacts of climate change disproportionately harm populations who have contributed the least to the problem. Moreover, climate change interacts with existing structural and socioeconomic determinants of health exacerbating long standing health inequities within and between countries.¹¹
- The budgets ignore the importance of rapid cuts now and instead postpone the deeper necessary greenhouse gas emissions cuts to the second and third budget, which raises the issue of intergenerational equity and tikanga.
- The cuts to biogenic methane are on the lowest trajectory of the 24-48 percent cuts needed by 2050.
- We support the focus on decarbonisation and away from net emissions reductions through forestry sinks.

2. Future generations

Big Issues question 2. Do you agree we have struck a fair balance between requiring the current generation to take action, and leaving future generations to do more work to meet the 2050 target and beyond?

*Strongly agree - Agree - Neutral - Disagree - **Strongly disagree** - Do not know*

PHANZ **strongly disagrees** that a fair balance has been struck.

- The principles of both intergenerational equity¹² and tikanga require the current generation to do everything possible to stop climate breakdown and reduce the harm we inflict on future generations. We must also catch up a generation of neglect since 1990.
- The United Nations Committee on the Rights of the Child has said that “climate change is one of the biggest threats to children’s health and exacerbated health disparities.”¹³

¹¹ [The 2020 report of the Lancet Countdown on Health and Climate Change](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32290-X/fulltext)

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)32290-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32290-X/fulltext)

¹² Mary Robinson Foundation (2015) Meeting the needs of Future Generations: Applying the principle of intergenerational equity to the 2015 processes on climate change and sustainable development. Position paper. Dublin. Available at: https://www.mrfcj.org/wp-content/uploads/2015/09/MRFCJPositionPaper_MeetingtheNeedsofFutureGenerations_12August2015.pdf (Accessed 23/02/2021)

¹³ United Nations Committee on the Rights of the Child. General Comment No. 15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health (art. 24), 17 April 2013, UN Doc. CRC/C/GC/15 [Internet]. Geneva. Geneva: United Nations Committee on the Rights of the Child; 2013. ¹²

- Failing to implement healthy and equitable climate policies now accepts an avoidable burden of ill-health in future generations, disproportionately affecting already marginalised children¹²
- The risk of a 1.5°C overshoot and crossing tipping point boundaries may create an irredeemable situation for future generations. This is an unfair risk to which they must not be subjected.

3. Our contribution

Big Issues question 3. Do you agree with the changes we have suggested to make the NDC compatible with the 1.5°C goal?

Strongly agree - Agree - Neutral - Disagree (our changes are too ambitious)- Strongly Disagree (our changes are not ambitious enough) - Do not know

Nationally Determined Contributions (NDCs) are at the heart of the Paris Agreement and the achievement of these long-term goals to limit warming to no more than 1.5°C above preindustrial levels. NDCs embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.

A useful summary of the Nationally Determined Contribution and how it fits in with the overlapping targets of the emissions budgets and Emissions Trading Scheme can be found on pages 21-24 of Johnson and Tong's report for Oxfam New Zealand.¹⁴

The reason to stay within this limit of warming has significant implications for health as laid out by the IPCC: "Climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C"¹⁵

Increase NZ's Nationally Determined Contribution

PHANZ agrees with the Commission's recommendation that to make our Nationally Determined Contribution (NDC) more compatible with global efforts to limit warming to 1.5°C above pre-industrial levels, Aotearoa's reduction of net emissions must be much more than 35% below 2005 gross levels by 2030. However, PHANZ *disagrees with the Commission's failure to make specific recommendations on strengthening our contribution.*

Bennett H, Jones R, Keating G, Woodward A, Hales S, Metcalfe S. Health and equity impacts of climate change in Aotearoa-New Zealand, and health gains from climate action. *NZ Med J.* 2014;127(1406)

¹⁴ Johnson, A. & Tong, D. (2020) Oxfam New Zealand, A Fair 2030 Target for Aotearoa. Available at: <https://www.oxfam.org.nz/wp-content/uploads/2020/09/Oxfam-NZ-Briefing-A-Fair-2030-Target-for-Aotearoa.pdf> (accessed 01/03/2021)

¹⁵ <https://www.ipcc.ch/sr15/chapter/spm/>

- The Commission should provide specific advice to the government that New Zealand [increase its contribution to global efforts to reduce greenhouse gas emissions at least ten-fold](#), ranging from 80 - 133% reduction on 1990 levels in order to contribute our globally equitable share and account for our high historic emissions¹⁶. This would be met with a combination of our national emissions reductions, international offsets and climate finance for developing countries.
- As acknowledged in the report, deeper emission reductions will contribute to reducing the risk of an overshoot beyond 1.5°C with its incrementally greater health risks.¹⁷
- The Commission should consider and account for the health co-benefits in their advice on how much the government should strengthen the Nationally Determined Contribution beyond 35% and the policies used to achieve it. Beyond health costs/savings in economic terms, the Commission should be compelled to strengthen our contribution and centre health in its strategy based on everyone's right to the highest attainable standard of health.
- In order to meet our global obligations as a relatively wealthy nation (according to Gross National Income per capita) and as a historically high emitter, New Zealand must contribute further to global mitigation by doubling its climate financing, particularly to least developed countries.

Annual reporting and offshore mitigation strategy communication:

PHANZ strongly recommends that [the Commission reports annually on a wider range of data](#). This will help us better identify and manage risks quickly and demonstrates our good faith emissions reductions to other nations. In practice, this information may be collated by other government agencies for the Commission.

This wider information includes:

- [Thorough cost-benefit analysis of domestic mitigation](#), including: immediate and longer-term health benefits, including benefits to mental health; impacts on immigration occasioned by climate change refugees; impact on forests (an increase in fire prevalence as a result of higher temperatures much like Australia experiences now); impact on Māori economy; well-being and te Tiriti partnership; job creation (rates, pay level, conditions, distribution, locations and ease of transition); impacts on Treasury Living Standard framework domains; infrastructure value over this century; equity across New Zealand and across generations, and overall well-being.

¹⁶ *ibid*

¹⁷ Watts, N. Et al. (2021) The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. *The Lancet*. 397 (10269); 129-170.

- GDP changes are much too crude a measure to evaluate New Zealand’s well-being, future resilience, and how best to allocate NDC components including recommended domestic mitigation policies.

4. Role and type of forests

Big Issues question 4. Do you agree with our approach to meet the 2050 target that prioritises growing new native forests to provide a long-term store of carbon? Strongly agree - Agree - Neutral - Disagree - Strongly disagree - Do not know

PHANZ agrees with the approach to provide a long-term store of carbon.

- Native forests offer ecosystem rehabilitation and protection, and we depend on the health and biological richness of the living world.
- We support the significant increase in new native forests and the assumption that no further native deforestation occurs from 2025. All native habitats must be incorporated into this approach. For example, wetlands and tussock should be recognised for their role in storing carbon and protected from destruction.
- PHANZ strongly advocates for Mana Whenua to be resourced and enabled to act as Kaitiaki.
- We support the development of this policy in conjunction with an increased focus on emission reduction rather than offsetting.

5. Policy priorities to reduce emissions

Big Issues question 5. What are the most urgent policy interventions needed to help meet our emissions budgets? (Select all that apply)

Action to address barriers - Pricing to influence investments and choices - Investment to spur innovation and system transformation - None of them

PHANZ recommends the following urgent priorities:

Include public health and equity benefits and impacts in Aotearoa’s climate policy

- PHANZ recommends public health and 50 percent Māori representation on the Commission’s board and the immediate establishment of a multidisciplinary health advisory group to the Commission for the purpose of ensuring health and health equity benefits and impacts are accounted for in the Commission’s advice to the Government.

Why?

- There are significant opportunities to improve the health and wellbeing of New Zealanders at the same time as reducing greenhouse gas emissions.

- Non-communicable diseases (including cardiovascular disease, chronic respiratory, cancers and diabetes) account for 89% of deaths annually in Aotearoa including 27,000 premature deaths¹⁸, disproportionately affecting Māori¹⁹. Healthy equitable climate policy that promotes affordable active transport, sustainable food systems and healthy homes can substantially reduce the burden of non-communicable diseases in Aotearoa and contribute to reducing health inequities.
- For example, respiratory diseases are the third most common cause of death in NZ, costing \$ 5.5 billion every year, accounting for one in eight hospital stays²⁰. Elimination of air pollution from fossil fuel burning and better insulated warm homes could offer significant health benefits.

Transport: Increase and improve active and public transport

- PHA agrees with many of the recommendations to reduce greenhouse gas emissions in the transport sector such as rapid decarbonisation of the vehicle fleet but have significant concerns the advice represents a continuation of the status quo dominance of private vehicle ownership. What is required is a transformational shift in transport mode to electric public transport, active transport and from road freight to sea and rail freight. This will address greenhouse gas emissions but also improve health, wellbeing and equity.
- The co-benefits of more ambitious goals for active and public transport should be included in the Commission’s recommendations. For example, more equitable access to transport; further reduced air pollution (half of motor vehicle related air pollution deaths are caused by non-fossil fuel burning such as tyre wear and brake use²¹); improved population health through increased exercise²² and improved liveability of towns and cities due to reduced vehicle movements.
- We agree with the Commission’s summary (p.85) that, “Access to transport is a particular issue for some Māori, iwi Māori wellbeing, hauora and health outcomes. Transport is hugely important for Māori to connect to their whānau, haukāinga, and tūrangawaewae...(transport is a) key enabler for the haukāinga to collect resources

¹⁸ WHO (2018) *World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2018*.

WHO:Geneva. Available at: https://www.who.int/nmh/countries/nzl_en.pdf (Accessed 28/02/2021).

¹⁹ Phillips, B et al (2017) Mortality trends in Australian Aboriginal peoples and New Zealand Māori. *Population Health Metrics*. 15, 25. Available at: <https://link.springer.com/article/10.1186/s12963-017-0140-6> (Accessed 28/02/2021)

²⁰ Health Navigator (2020) *Respiratory disease*. Available at: <https://www.healthnavigator.org.nz/health-az/r/respiratory-disease/> (Accessed 28/02/2021)

²¹ European Commission JRC Policy and Science Reports. (2014) Non-exhaust traffic related emissions. Brake and tyre wear PM. Available at:

<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC89231/jrc89231-online%20final%20version%202.pdf> (Accessed 28/02/2021)

²² 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.

and provide services to the marae.” We recommend this specifically be addressed and strengthened.

- The Commission recommends 4% of road freight is moved to rail and sea by 2030. This is unambitious and does not factor in the environmental and financial costs of electrifying heavy road vehicle traffic or the associated safety benefits of moving freight off roads.

Strengthen policy advice on public transport:

- a. Reclassifying Necessary action 2 “Develop an integrated national transport network to reduce travel by private vehicles and increase walking, cycling, low emissions public and shared transport” as a time critical action.²³
- b. The “National Land Transport Fund” should be reoriented to reflect a focus on active and public transport. In particular a focus should be on access to public and active transport for children travelling to and from school.
- c. Electrified public transport needs major investment as a public health good and should be free for under 25’s, with reduced fares for other age groups. There should be enhanced quality and access to public transport.
- d. Mode shift to cycling needs to be supported by incentivising the rapidly accelerating uptake of electric bikes and through safe cycling infrastructure such as separated cycling lanes and quiet streets.²⁴
- e. Strengthen targets for public and active transport - at a minimum a 25% for walking, 15% for cycling and 15% for public transport by 2050 based on public health research.²⁵
- f. Private vehicle use should be curtailed through measures such as increased parking charges, zero emissions zones, widespread adoption of “traffic calming’ measures and reduced speed limits.
- g. Private vehicles should be regulated as a health hazard including the advertising of high emissions vehicles such as fossil fuel powered SUVs.
- h. All light vehicles entering the country should be zero emissions by 2030 (only battery electric vehicles). We support a rebate scheme to support this transition.

²³ Macmillan, A. (2021) The Climate Change Act will now shape the nation’s health: an assessment of the first policy recommendations to reach our zero carbon target. *NZMJ*. 134 (1530), 8-11.

²⁴ Macmillan, A., Woodward, A., et al. (2014) The Societal Costs and Benefits of Commuter Bicycling: Simulating the effects of specific policies using system dynamics modelling *Environmental Health Perspectives*, 122(4)

²⁵ <https://www.otago.ac.nz/active-living/otago710121.pdf>

- i. Policy advice on charging infrastructure should be strengthened to allow comprehensive networked access to urban and rural areas to support widespread uptake of affordable lower range electric vehicles.
- j. An enhanced target for road freight shifted from roads to sea and rail.

Agriculture: Develop healthier low-emissions food systems

- PHANZ believes the advice to the Government must be more transformative in regards to food systems. We need to establish a food and agricultural system that is equitable, improves health, is based in te Tiriti and reduces greenhouse gas emissions and environmental pollution.
- There is an understandable focus on food production emissions within the draft advice considering that agriculture accounts for almost half of New Zealand's overall emissions²⁶. However the targets are too weak and to optimise health outcomes significantly more attention must be paid to diet. The targets need to be strengthened.
- Unhealthy diets are a major contributor to increasing rates of non-communicable diseases including heart disease, diabetes and cancers. At the same time, global food production is threatening local ecosystems and pushing the limits of the Earth's natural systems.
- The EAT-Lancet Commission's report (Jan 2019)²⁷ quantitatively describes a universal healthy reference diet, based on an increase in consumption of healthy foods (such as vegetables, fruits, whole grains, legumes, and nuts), and a decrease in consumption of unhealthy foods (such as red meat, sugar, and refined grains).
- The Government needs to address economic disparities so that people are better able to make healthier food choices.

All industries are being asked to make changes, and this must include agriculture.

- PHANZ recommends cuts in biogenic methane well in excess of what is planned in the draft advice. We should target the 48% reduction by 2050 as a floor, not as a roof.

²⁶ Ministry for the Environment. (2020). New Zealand's Greenhouse Gas Inventory. Available at <https://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/new-zealands-greenhousegas-inventory>

²⁷ Willett, W. et al (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. The Lancet Commissions. 393 (10170), 447-492. Available at: <https://www.thelancet.com/commissions/EAT> (Accessed 28/02/2020)

- A defined reduction in national herd numbers is needed to ensure the ‘expected’ reduction and more happens by 2030. This can be achieved through:
 - maximum stocking numbers
 - as early as possible (2022) incorporation of Agriculture into the Emissions Trading Scheme. Legislation is already present to allow this²⁸, and it needs to be coupled with a rapid, clearly signposted reduction to zero of free credits in the Emissions Trading Scheme.
 - a ban on new dairy conversions and support to re-convert existing farms.
- Urgent reductions in synthetic nitrogen fertilisers, acknowledging the increasing body of evidence linking nitrate groundwater pollution with colorectal cancer causation.²⁹

Support farmers

Given the changes that are required to the agricultural sector, the capacity and wellbeing of farmers needs to be centred throughout the transition.

- Farmers themselves must have buy-in and feel supported through the entire process, which is a key principle to a just transition and climate justice.
- Their wellbeing must also be centred given the [need to improve and support the mental health](#) of our farmers in Aotearoa.

²⁸ Ministry for the Environment (2020) *Overview of the New Zealand Emissions Trading Scheme reforms*. Available at: <https://www.mfe.govt.nz/overview-reforming-new-zealand-emissions-trading-scheme> (Accessed 23/02./2021)

²⁹ Ward, M. et al (2018) Drinking water nitrate and human health: an updated review. *Int J Environ Res Public Health*. 15(7): 1557. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6068531/> (accessed 25/02/2021).

We recommend the Government develop a strategy that outlines how farmers will be supported towards a zero-carbon future.

Promote, resource and enable food sovereignty of Māori as Tangata Whenua

PHANZ supports the Commission's recommendations around partnership with Māori. This needs to include enabling food sovereignty for Māori as Tangata Whenua which is critical for enabling a just transition. For example:

- Extending the Māori Agribusiness fund beyond 2023.
- Funding to support developments in Māori agribusiness and regenerative farming that is iwi led.

Heat, industry and power: Move away from fossil-fuels and increase insulation in homes and buildings

- PHANZ advises more rapid removal of coal from the NZ energy system with a transition to non-fossil fuel-based forms of energy including replacing industrial coal boilers.
- Immediate cessation of new gas burner installation.
- Warmer and better insulated homes:
 - NZ housing policies need to keep its residents warm and healthy through: - adopting more efficient, well-insulated housing which will lead to warmer homes and reduce seasonal electricity demand.
 - Switch away from solid fuel heating in houses to electricity and enable greater renewable supply.
- Phasing out of coal for food processing (mainly in the dairy sector) is not scheduled to occur until 2035. This should be revised down to 2027, at the latest.
- Removal of free credits from the Emission Trading Scheme.

Recognise the mental health impacts of climate change

- Extreme climatic events pose immediate risks which can have negative effects on wellbeing³⁰. People with existing mental illnesses are also more exposed to the physical impacts of climate change³¹.
- There is a need to revisit strategies that protect the areas that are vulnerable to increased flood risk and preserve Māori sacred sites that are exposed and positioned at erosion-prone coastal lands.
- For New Zealanders, especially for Māori community³², their natural environment is the heart of their identity. Threatened coastal areas, disturbed forests, encroachment into their cherished lands and even routine exposure to climate change news can cause ongoing grief and anxiety and further escalate their risk perceptions, pessimism, helplessness and guilt. The Commission's recommendations must consider these mental health effects when devising strategies.

Reduce emissions in the healthcare sector

- F-gases are a significant contributor to healthcare emissions, especially anaesthetic gases or metered-dose inhaler propellants. OraTaiao recommends the draft advice directly address these, and offer advice for rapidly reducing their use as is already clinically indicated (for inhalers³³), or where clinical equipoise exists (anaesthesia)
- Procurement is the major source of healthcare emissions. We support Necessary Action 15 (p 126 of draft advice) under consultation question 19 requiring government procurement policies to "include climate change considerations," but recommend this advice be strengthened significantly.

7. Technology and behaviour change

Big Issues question 6. Do you think our proposed emissions budgets and path to 2035 are both ambitious and achievable considering the potential for future behaviour and technology changes in the next 15 years?

Strongly agree - Agree - Neutral - Disagree - Strongly disagree - Do not know

³⁰ Royal Australian and New Zealand College of Psychiatrists (2020) Addressing the mental health impacts of natural disasters and climate change-related weather events. Position statement. Available at: <https://www.ranzcp.org/news-policy/policy-and-advocacy/position-statements/addressing-mental-healthimpacts-natural-disasters> (Accessed 23/02/2021)

³¹ Bouchama, A., et al (2007) Prognostic factors in heat wave related deaths: a meta-analysis. *Arch Intern Med.* 167(20), 2170-6.

³² Ngati Porou. Kaitiakitanga/Environment. Available at: <https://ngatiporou.com/nati-story/ourkorero/kaitiakitanga-environment> (accessed 28/02/2021)

³³ Beasley, R. (2020) *NZ Adolescent and Adults Asthma Guidelines*. Asthma and Respiratory Foundation NZ: Wellington. Available at: https://www.nzrespiratoryguidelines.co.nz/uploads/8/3/0/1/83014052/arfnz_adolescent_and_adult_asthma_guidelines_.pdf (accessed 28/02/2021)

PHANZ strongly **disagrees**.

- The draft advice is overly focused on future technology changes when we already know actions we can take now to achieve more rapid decarbonisation and reform of our food systems.

Future technology changes may increase the pace of change, but should not be dependent upon when there are actions we can take now.

- “Ambitious and achievable” must also be evaluated in the context of the relative benefits, costs, and risks in meeting some of our responsible (ten-fold greater) Nationally Determined Contribution through international emissions trading over the coming decades. OraTaiao calls for much more sophisticated economic modelling in the draft advice - Aotearoa’s future health and well-being matters, likewise the other humans we share this world with.
- The advice must account for projected health costs (in economic terms) from delayed action, and the health cost savings resulting from changes in its advice, and in amendments to the 2025-2030 and 2030-2035 budgets.
- The draft advice must also recognise that behaviour is often the result of our system and can be changed by government policy.
- In order to maximise health benefits and emissions cuts, and to optimise behaviour change, we recommend: Public health expertise and 50% Māori representation on the Climate Change Commission, and a multidisciplinary health advisory group including behaviour change expertise (e.g. from psychology, general and Māori health promotion, and social and behavioural science).

Bibliography

About the Climate Change Commission

The purposes of the Commission are laid out in the Zero Carbon Act. See here: New Zealand Legislation. (2019). *Climate Change Response (Zero Carbon) Amendment Act 2019*. (No 61, Public Act 8 New Parts 1A to 1C). Retrieved from <https://www.legislation.govt.nz/act/public/2019/0061/latest/LMS183848.html>

He Pau a Rangi. (2021). Climate Change Commission. Retrieved from <https://www.climatecommission.govt.nz/>

Impacts of climate change on health and rights

Chan Fung Fu-Chun, M. (2021) Accelerating towards net zero emissions: the most important global health intervention. *The Lancet Planetary Health*. 5 (2), e64-e65.

IPCC. (2021). Reports Retrieved from <https://www.ipcc.ch/reports/>

Royal Society. (2017). *Human Health Impacts of Climate Change for New Zealand - Evidence Summary* (978-1-877317-29-3). Retrieved from

<https://www.royalsociety.org.nz/assets/documents/Report-Human-Health-Impacts-ofClimate-Change-for-New-Zealand-Oct-2017.pdf>

Masson-Delmotte, V., Zhai, P., Pörtner, H.O., Roberts D., Skea, J., Shukla, P.R., Pirani, A., Moufouma-Okia, W., Péan, C., Pidcock, R., Connors, S., Matthews, J.B.R., Chen, Y., Zhou, X., Gomis, M.I., Lonnoy, E., Maycock, T., Tignor, M., Waterfield, T. (2018). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Retrieved from <https://www.ipcc.ch/sr15>

Birch, E. L. (2014). A Review of “Climate Change 2014: Impacts, Adaptation, and Vulnerability” and “Climate Change 2014: Mitigation of Climate Change” Intergovernmental Panel on Climate Change.(2014).(Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change). New York, NY: Cambridge University Press. 2,621 pages. Available online at <http://ipcc-wg2.gov/AR5/report/finaldrafts/> ; Intergovernmental Panel on Climate Change.(2014).(Contribution of Working Group III to the ...

Watts, N. et al. (2021). The 2020 report of The Lancet Countdown on health and climate change: responding to converging crises. *The Lancet*, 397(10269), 129-170. doi:10.1016/s0140-6736(20)32290-x <https://www.lancetcountdown.org/2020-report/>

Ministry for the Environment. (2020). *Main report Pūrongo Whakatōpū National Climate Change Risk Assessment for New Zealand Arotakenga Tūraru mō te Huringa Āhuarangi o Āotearoa*. Retrieved from <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/national-climatechange-risk-assessment-main-report.pdf>

World Health Organisation. (2013). Climate, Environment and Health Action Plan and Information System (CEHAPIS). Retrieved from <https://www.euro.who.int/en/healthtopics/environment-and-health/Climate-change/activities/integrating-health-in-policies-formitigation-of-and-adaptation-to-climate-change/projects-on-health-in-mitigation-andadaptation/climate,-environment-and-health-action-plan-and-information-system-cehapis>

Jones R, Bennett H, Keating G, Blaiklock A. (2014) Climate Change and the Right to Health for Māori in Aotearoa/New Zealand. *Heal Hum Rights J* 16(1):54–68. Available at: <https://www.hhrjournal.org/2014/07/climate-change-and-the-right-to-health-for-maori-inaotearoanew-zealand/> (accessed 23/02/2021)

United Nations (1948) Universal Declaration of Human Rights. GA Resolution 217A (III), UN GAOR. Resolution 71, UN Document A/810. 1948, United Nations: New York.

Mary Robinson Foundation (2015) *Meeting the needs of Future Generations: Applying the principle of intergenerational equity to the 2015 processes on climate change and sustainable development*. Position paper. Dublin. Available at: https://www.mrfcj.org/wpcontent/uploads/2015/09/MRFCJPositionPaper_MeetingtheNeedsOfFutureGenerations_12August2015.pdf (Accessed 23/02/2021)

United Nations Committee on the Rights of the Child. General Comment No. 15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health (art. 24), 17 April 2013, UN Doc. CRC /C/GC/15 [Internet]. Geneva. Geneva: United Nations Committee on the Rights of the Child; 2013.

OraTaiao. (2016) Child rights and climate change in Aotearoa New Zealand Supplementary information for the UN Committee on the Rights of the Child. https://www.orataiao.org.nz/child_rights_and_climate_change_in_aotearoa_new_zealand

OraTaiao. (2016) Submission on UN Committee on the Rights of the Child 2016 Day of Discussion "Children's Rights and the Environment". https://www.orataiao.org.nz/submission_from_orataiao_the_new_zealand_climate_and_health_council_to_the_united_nations_committee_on_the_rights_of_the_child_2016_day_of_discussion_children_s_rights_and_the_environment

Nationally Determined Contributions, health and equity

Hamilton, I., Kennard, H., McGushin, A., et al. (2021) The public health implications of the Paris Agreement: a modelling study. *Lancet Planet Health*. 5: e74–83

WHO. Noncommunicable diseases mortality. (2020) World Health Organization. Geneva. <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-mortality>

Chan, M. (2021) Accelerating towards net zero emissions: the most important global health intervention. *Lancet Planet Health*. 5(2):E64-E65

World Health Organization WHO. - Noncommunicable Diseases (NCD) Country Profiles, New Zealand 2018. World Health Organisation. Geneva. www.who.int/nmh/countries/nzl_en.pdf

Johnson, A. & Tong, D. (2020) Oxfam New Zealand, A Fair 2030 Target for Aotearoa. Available at: <https://www.oxfam.org.nz/wp-content/uploads/2020/09/Oxfam-NZ-Briefing-A-Fair-2030-Target-for-Aotearoa.pdf> (accessed 01/03/2021)

Oxfam NZ. (2020) *Standing with the frontlines*. Oxfam:NZ briefing paper 2020. Available at: www.oxfam.org.nz/wp-content/uploads/2020/12/Oxfam-NZ-Briefing-Standing-with-thefrontlines.pdf (Accessed 28/02/2021)

UN Framework Convention on Climate Change. (2021). Nationally Determined Contributions (NDCs) | UNFCCC. Retrieved from The Paris Agreement and NDCs: <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determinedcontributions-ndcs/nationally-determined-contributions-ndcs>

Health equity and climate change

Reid, P. & Robson, B. (2007) *Understanding health inequities* in Robson, B. & Harris, R. (eds). Hauora: Māori standards of health IV. A study of the years 2000-2005. Te Rōpū Rangahau Hauora a Eru Pōmare: Wellington.

Bennett, H., Jones, R., Keating, G., Woodward, A., Hales, S., & Metcalfe, S. (2014). Health and equity impacts of climate change in Aotearoa-New Zealand, and health gains from climate action. *The New Zealand Medical Journal (Online)*, 127(1406), 16-31.

Jones, R. (2019) Climate change and Indigenous Health Promotion. *Global Health Promotion*. 26(3), 73-81. Available at: <https://journals.sagepub.com/doi/full/10.1177/1757975919829713> (Accessed 28/02/2012)

Jones, R. (2016). UN experts urge New Zealand to protect children's rights from climate change [Press release]. Retrieved from https://www.orataiao.org.nz/un_experts_urge_new_zealand_to_protect_children_s_rights_from_climate_change

Phillips, B et al (2017) Mortality trends in Australian Aboriginal peoples and New Zealand Māori. *Population Health Metrics*. 15, 25. Available at: <https://link.springer.com/article/10.1186/s12963-017-0140-6> (Accessed 28/02/2021)

Te Tiriti o Waitangi and Māori

O'Connell, E., Greenaway, T., Moeke, T., McMeeking, S., & Treasury, T. (2018). *He Ara Waiora/A Pathway Towards Wellbeing*. (978-1-98-855670-3). Retrieved from NZ Treasury's: *He Ara Waiora - Pathway Towards Wellbeing* - <https://www.treasury.govt.nz/publications/dp/dp-18-11>

The Reserve Bank of New Zealand. (2018). *Te Ōhanga Māori – The Māori*

Economy. Retrieved from NZ Reserve Bank's: *Te Ōhanga Māori - The Māori Economy 2018*
Available at: <https://www.rbnz.govt.nz/research-and-publications/researchprogramme/te-ohanga-maori-2018> (accessed 28/02/2021)

OraTaiao. (2019). OraTaiao submission on the Zero Carbon Bill - Climate Change Response (Zero Carbon) Amendment Act, 15 July 2019 [Press release]. Retrieved from OraTaiao's Zero Carbon submission: https://www.orataiao.org.nz/climate_change_response_zero_carbon_amendment_act_zero_carbon_bill

Jones R, Bennett H, Keating G, Blaiklock A. (2014) Climate Change and the Right to Health for Māori in Aotearoa/New Zealand. *Heal Hum Rights J* 16(1):54–68. Available at: <https://www.hhrjournal.org/2014/07/climate-change-and-the-right-to-health-for-maori-inaotearoanew-zealand/> (accessed 23/02/2021)

New Zealand Waitangi Tribunal. (2011). *Ko Aotearoa Tenei: Te Taumata Tuatahi : a Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity* (9781869563004). Retrieved from www.waitangitribunal.govt.nz

Phillips, B et al (2017) Mortality trends in Australian Aboriginal peoples and New Zealand Māori. *Population Health Metrics*. 15, 25. Available at: <https://link.springer.com/article/10.1186/s12963-017-0140-6> (Accessed 28/02/2021)

Pokapū Akoranga Pūtaiao. (2017). Understanding kaitiakitanga — Science Learning Hub at The University of Waikato Te Whare Wānanga o Waikato. Retrieved from <https://www.sciencelearn.org.nz/resources/2544-understanding-kaitiakitanga>

Te Runanganui o Ngati Porou. (2021). Kaitiakitanga - Environment - Ngati Porou. Retrieved from <https://ngatiporou.com/nati-story/our-korero/kaitiakitanga-environment>

Air quality, healthy homes and public health

Nottage, R. A. (Ed.). (2010). *Climate change adaptation in New Zealand: Future scenarios and some sectoral perspectives*. New Zealand Climate Change Centre.

Vohra, K., Vodonos, A., Schwartz, J., Marais, E. A., Sulprizio, M. P., & Mickley, L. J. (2021). Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem. *Environmental Research*, 110754

Ministry of the Environment (2009). Environmental report card: Air quality (particulate matter – PM10) https://www.mfe.govt.nz/sites/default/files/air-report-card-2008_0.pdf

Telfar Barnard, Zhang, J. (2019). *The impact of respiratory disease in New Zealand: 2014 update*. the Asthma Foundation. https://s3-ap-southeast-2.amazonaws.com/assets.asthmafoundation.org.nz/images/NZ-Impact-Report-2018_FINAL.pdf

Telfar Barnard, L., Baker, M., Pierse, N., & Zhang, J. (2015). *The impact of respiratory disease in New Zealand: 2014 update*. in April 2015 by the Asthma Foundation..<https://s3-ap-southeast-2.amazonaws.com/assets.asthmafoundation.org.nz/documents/REPORT-Theimpact-on-respiratory-disease-in-New-Zealand-2016-update.pdf>

Health Navigator. (2020). Respiratory disease | Health Navigator NZ. Retrieved from Health Navigator (n.d.). <https://www.healthnavigator.org.nz/health-a-z/r/respiratory-disease/>

Tenancy Services. (2021). Heating standard » Tenancy Services. Retrieved from Tenancy (n.d.). <https://www.tenancy.govt.nz/healthy-homes/heating-standard/>

Wimalasena, N., Chang-Richards, A., Wang, K. I. K., Dirks, K. N., Zhou, N., Lim, K., & Weerappulige, A. (2020). Environmental monitoring and thermal performance of New Zealand rental housing: an exploratory study. *Intelligent Buildings International*, 1-9.

Jack, M., Mirfin, A. & Anderson, B. (2019). Quantifying the potential of ultraefficient houses to reduce seasonal electricity demand and enable greater renewable supply. https://eprints.soton.ac.uk/445372/1/OERC_High_Performance_Housing_presented.pdf

Burrows, L. (2021). Deaths from fossil fuel emissions higher than previously thought | Harvard John A. Paulson School of Engineering and Applied Sciences [Press release]. Retrieved from New Harvard-UCL evidence on death from fossil fuels: <https://www.seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higherpreviously-thought>

Transport and human health

Macmillan, A. (2021) The Climate Change Act will now shape the nation's health: an assessment of the first policy recommendations to reach our zero carbon target. *NZMJ*. 134 (1530), 8-11.

Royal Society Te Apārangi. (2017). Human Health Impacts of Climate Change for New Zealand. Wellington, New Zealand.

Bennett, H., Jones, R., Keating, G., Woodward, A., Hales, S., & Metcalfe, S. (2014). Health and equity impacts of climate change in Aotearoa-New Zealand, and health gains from climate action. *The New Zealand Medical Journal (Online)*, 127(1406), 16-31.

Kwan, S. C., & Hashim, J. H. (2016). A review on co- benefits of mass public transportation in climate change mitigation. *Sustainable Cities and Society*, 22, 11-18. doi: 10.1016/j.scs.2016.01.004

Shaw, C., Hales, S., Howden-Chapman, P., & Edwards, R. (2014). Health co-benefits of climate change mitigation policies in the transport sector. *Nature Clim. Change*, 4(6), 427-433. doi: 10.1038/nclimate2247

Borlaug, B., Salisbury, S., Gerdes, M., & Muratori, M. (2020). Levelized Cost of Charging Electric Vehicles in the United States. *Joule*, 4(7), 1470–1485.

Celis-Morales, C. A., Lyall, D. M., Welsh, P., Anderson, J., Steell, L., Guo, Y., Maldonado, R., Mackay, D. F., Pell, J. P., Sattar, N., & Gill, J. M. R. (2017). Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study. *BMJ*, 357, j1456.

Fishman, E., Schepers, P., & Kamphuis, C. B. M. (2015). Dutch Cycling: Quantifying the Health and Related Economic Benefits. *American Journal of Public Health*, 105(8), e13–e15.

Hamilton, I., Kennard, H., McGushin, A., Höglund-Isaksson, L., Kiesewetter, G., Lott, M., Milner, J., Purohit, P., Rafaj, P., Sharma, R., Springmann, M., Woodcock, J., & Watts, N. (2021). The public health implications of the Paris Agreement: a modelling study. *The Lancet Planetary Health*, 5(2), e74–e83.

Patterson, R., Panter, J., Vamos, E. P., Cummins, S., Millett, C., & Laverly, A. A. (2020). Associations between commute mode and cardiovascular disease, cancer, and all-cause mortality, and cancer incidence, using linked Census data over 25 years in England and Wales: a cohort study. *The Lancet. Planetary Health*, 4(5), e186–e194.

Wei, W., Ramakrishnan, S., Needell, Z. A., & Trancik, J. E. (2021). Personal vehicle electrification and charging solutions for high-energy days. *Nature Energy*, 6(1), 105–114.

European Commission JRC Policy and Science Reports. (2014) Non-exhaust traffic related emissions.Brake and tyre wear PM. Available at: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC89231/jrc89231online%20final%20version%202.pdf> (Accessed 28/02/2021)

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.

Massey University. (2021). About transport and health. *Environmental Health Indicators New Zealand*. Retrieved from <https://www.ehinz.ac.nz/indicators/transport/abouttransport-and-health/>

Litman, T. (2020). *Evaluating Public Transit Benefits and Costs - Best Practices Guidebook*. (250-508-5150). Todd Litman Victoria Transport Policy Institute. Retrieved Evaluating

Public Transit Benefits and Costs: Best Practices Guidebook 5 June 2020 Todd Litman Victoria Transport Policy Institute <https://www.vtpi.org/tranben.pdf>

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 Modeling *Environmental Health Perspectives*, 122(4). doi: DOI:10.1289/ehp.1307250

Briggs, D., Mason, K., Borman, B. (2016) 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*.13(1): 61.

Examples of cycling network benefits:

Le Gouais, A., Panter, J.R., Cope, A. Powell, J.E., et al (2021) A natural experimental study of new walking and cycling infrastructure across the United Kingdom: The Connect2 programme. *Journal of Transport and Health*. 20, 100968

Gysels, D. (2020) “The Ghent Living Streets: experiencing a sustainable and social future,” in Curtis, C (ed) *Handbook of Sustainable Transport*. Edward Elgar Publishing Ltd: Cheltenham. 269–279.

Marqués, R., Hernández-Herrador, V. (2017) On the effect of networks of cycle-tracks on the risk of cycling. The case of Seville. *Accident Analysis & Prevention*. 102, 181-190.

Félix, R., Cambra, P. & Moura, F. (2020) Build it and give ‘em bikes, and they will come: The effects of cycling infrastructure and bike-sharing system in Lisbon. *Case Studies on Transport Policy*. 8(2), 672-682.

Saša Poljak Istenič, S. P. (2016) Reviving public spaces through cycling and gardening. Ljubljana – European Green Capital 2016. *Etnološka tribina*. 39, 157-175

Food systems, agriculture, diet and human health

Willett, W. et al (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet Commissions*. 393 (10170), 447-492. Available at: <https://www.thelancet.com/commissions/EAT> (Accessed 28/02/2020)

Poore, J. & Nemecek, T. (2018) Reducing food’s environmental impacts through producers and consumers. *Science*. 360(6392), 987–992, PMID: 29853680, 10.1126/science.aaq0216.

Rangatiratanga and Oritetanga: responses to the Treaty of Waitangi in a New Zealand study

(June 2010)

<https://pubmed.ncbi.nlm.nih.gov/20461598/>

Ministry for the Environment. (2020). *National Policy Statement for Freshwater Management 2020*. Retrieved from

<https://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/national-policystatement-for-freshwater-management-2020.pdf>

Ministry for the Environment. (2020). New Zealand's Greenhouse Gas Inventory.

<https://www.mfe.govt.nz/climate-change/state-of-our-atmosphere-and-climate/newzealands-greenhouse-gas-inventory>

Drew J, Cleghorn C, Macmillan A, Mizdrak A. (2020) Healthy and Climate-Friendly Eating Patterns in the New Zealand Context. *Environmental Health Perspectives*. 128(1): 017007.

Auckland Council. (2019). Te Tāruke-ā-Tāwhiri. Retrieved from

<https://www.aucklandcouncil.govt.nz/have-your-say/topics-you-can-have-your-sayon/auckland-climate-action-framework/Documents/aucklands-climate-action-frameworkoverview.pdf>

Ministry of Primary Industries. (2020). *Māori Agribusiness Extension (MABx) Programme | MPI | NZ Government*. Retrieved from <https://www.mpi.govt.nz/funding-ruralsupport/maori-agribusiness-funding-support/maori-agribusiness-extension-mabxprogramme/>

Food and Agriculture Organization of the United Nation. (2019). Sustainable Healthy Diets Guiding Principles. Retrieved from <http://www.fao.org/3/ca6640en/ca6640en.pdf>

New Zealand College of Public Health Medicine. (2020). Sustainable, Healthy Food Systems - Policy Statement. Retrieved from

https://www.nzcphm.org.nz/media/142943/2020_sust_healthy_food_systems.pdf

Jones, R. (2019). Agricultural sector must be held accountable for climate and health harm [Press release]. Retrieved from

https://www.orataiao.org.nz/agricultural_sector_must_be_held_accountable_for_climate_and_health_harm

OraTaiao. (2019). Health professionals welcome 'Great Food Transformation' [Press release]. Retrieved from

https://www.orataiao.org.nz/health_professionals_welcome_great_food_transformation

Stanley-Clarke, N. (2019). The role of agricultural professionals in identifying, mitigating and supporting farming families during times of stress: Findings of a qualitative study. *Aust J Rural Health*, 27(3), 203-209. doi:10.1111/ajr.12507

Walker, J.F. (2012) Mental health in the rural sector: A review. Farmsafe: NZ. Available at: <https://www.mentalhealth.org.nz/assets/ResourceFinder/Mental-health-in-the-ruralsector-a-review-2012.pdf> (Accessed 28/02/2021)

Huambachano, M. (2019). Indigenous food sovereignty: Reclaiming food as sacred medicine in Aotearoa New Zealand and Peru. *New Zealand Journal of Ecology*, 43(3), 1-6. doi:10.2307/26841826. Available at: <https://www.jstor.org/stable/26841826?seq=1> (Accessed 28/02/2021).

Mental health and Climate Change

Royal Society NZ. (2017). <https://www.royalsociety.org.nz/assets/documents/Report-Human-Health-Impacts-of-Climate-Change-for-New-Zealand-Oct-2017.pdf>

Stat, NZ (2019). <https://www.stats.govt.nz/indicators/new-zealands-greenhouse-gasemissions#:~:text=In%202018%20New%20Zealand's%20gross,1.0%20percent%20lower%20than%202017.&text=Emissions%20from%20transport%20were%20up,up%2089.7%20percent%20from%201990.>

Wang, X., et al. (2014) Acute impacts of extreme temperature exposure on emergency room admissions related to mental and behavior disorders in Toronto, Canada. *J Affect Disord*, 155, 154-61.

Bouchama, A., et al (2007) Prognostic factors in heat wave related deaths: a metaanalysis. *Arch Intern Med*. 167(20), 2170-6.

Department of Conservation, New Zealand Biodiversity Action Plan 2016-2020. (2016) Department of Conservation: Wellington, New Zealand.

Doherty, T.J. & Clayton, S. (2011) The psychological impacts of global climate change. *American Psychologist*. 66(4), 265.

Berry, H. et al (2010) Climate change and mental health: a causal pathways framework. *Int J Public Health*. 55: 123-132.

Royal Australian and New Zealand College of Psychiatrists (2020) *Addressing the mental health impacts of natural disasters and climate change-related weather events. Position statement*. Available at: <https://www.ranzcp.org/news-policy/policy-and->

[advocacy/positionstatements/addressing-mental-health-impacts-natural-disasters](#)

(Accessed 23/02/2021)

Waste and health

Yu, Y. Et al (2018) Effects of ambient air pollution from municipal solid waste landfill on children's non-specific immunity and respiratory health. *Environmental Pollution*. 236, 38290.

Emissions Trading Scheme

Ministry for the Environment (2020) *Overview of the New Zealand Emissions Trading Scheme reforms*. Available at: <https://www.mfe.govt.nz/overview-reforming-new-zealandemissions-trading-scheme> (Accessed 23/02/2021)

The Aotearoa Circle. Native Forests: Resetting the balance. PwC New Zealand. (2020) <https://www.pwc.co.nz/services/consulting/sustainability/the-aotearoa-circle-nativeforests-report.pdf>

Biodiversity and health

Biodiversity Unit. (2020). Health and Biodiversity. Retrieved from <https://www.cbd.int/health/>

The Economics of Biodiversity: The Dasgupta Review. Abridged Version. (2021) publication is available at: www.gov.uk/official-documents-public-enquiries@hmtreasury.gov.uk

IUCN. Information paper: Biodiversity and human health and well-being (Nov 2018). https://www.iucn.org/sites/dev/files/information_paper_biodiversity_and_human_health_and_well-being.pdf

Chivian, E and Bernstein, A. (2010) How Our Health Depends on Biodiversity. *Center for Health and the Global Environment* Available at: https://www.bu.edu/sph/files/2012/12/Chivian_and_Bernstein_2010_How_our_Health_De_pends_on_Biodiversity.pdf (accessed 28/02/2021)