



COLLEGE OF NURSES AOTEAROA (NZ) Inc

P O Box 1258
Palmerston North 4440
P: (06) 358 6000
E: admin@nurse.org.nz
www.nurse.org.nz

Submission on: Climate Change Commission 2021 Draft Advice for Consultation

26th March 2021

To: The Climate Change Commission

Tēnā Koutou

The College of Nurses Aotearoa (NZ) Inc, welcomes the opportunity to comment on the Climate Change Commission 2021 Draft Advice for Consultation. The College is a professional organisation of New Zealand nurses. We aim for excellence in nursing practice and health care delivery by supporting nurses in their ongoing professional development. We develop strategic consumer alliances with the aim of creating 100% access and zero disparities in Aotearoa New Zealand health care. We provide a leading voice for the nursing profession and professional commentary on issues which affect nurses, and also the health of the whole community. The College membership comprises registered nurses and nurse practitioners and is supported by a bi-cultural Board. The College is an Organisational member of OraTaiao: The NZ Climate and Health Council with whom we have conferred for this submission.

We wish to make the following comments:

The Climate Change Commission's consultation questions

Your one big thing?

The College of Nurses Aotearoa (NZ) asks the Commission to put health at the heart of their advice to the Government. We support the intent of the advice to the Government to achieve a cleaner, greener, healthier and more sustainable future however, the advice needs to be more ambitious and

centralise health, health equity and te Tiriti o Waitangi. Strong climate action to reduce our reliance on fossil fuels offers the greatest opportunity to improve health and health equity. Recent studies clearly show that well-designed climate action is needed to optimise health gains (1). There are clear benefits from public health policy that supports behaviour change and makes healthier choices easier. We therefore ask the commission to seize the opportunity to include more specific references to health. The draft advice must recognise, quantify and optimise these important health co-benefits. Public health and evidenced based policy must be prioritised over corporate and industry interests.

The right to the highest attainable standard of health is recognised in the UN Declaration on Human Rights (2), and hauora (health and wellbeing) (3) 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. (4,5)

The nursing profession in Aotearoa New Zealand is a 60,000 strong workforce with direct access to the public and a key role in health advocacy and patient education. Less than 50% of nurses work in District Health Boards, with the majority working in cross sector agencies such as corrections, defence and schools. Other areas include NGO's, private providers, aged care, Plunket, family planning, Iwi providers, primary care, education and regulation to name but a few. This means nurses are able to impact areas of public health and wellbeing to which few others have access.

Nurses are highly trusted health professionals and it would be prudent to include nursing in policy development and implementation. Investing in public health policy and the health workforce that provides care and education to the public would bring cost savings in the long run and be money well spent. One example of this is further investing in Nurse Practitioners who can deliver expert health services at a fraction of the cost of funding locum general practitioners. More investment in primary health care would reduce the costs and burden on the hospital system. There is scope to include sustainability in the New Zealand Nursing Council competencies which all nurses must abide by and to include climate and health education as part of the nursing degree.

The benefits of public health expertise in response to the Covid-19 pandemic has been clearly demonstrated, resulting in Aotearoa New Zealand being viewed as a world leader in public health. At present our emissions targets are deemed insufficient to reach the goal of net zero emissions by 2050 for the Paris Agreement (6). There is an opportunity for us to be world leaders again with a bold and ambitious public health response to climate action. To ensure Aotearoa New Zealand's climate policy delivers the full potential health and health equity gains, we recommend the Minister for Climate Change appoint a public health specialist to the Commission and set up a multi-disciplinary health advisory group to review Aotearoa New Zealand's emission reduction options. We recommend the inclusion of commissioners with expertise in both public health and climate change, at least one of which should be a Māori public health specialist.

The College 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 environment (7). The draft advice report acknowledges the 'Treaty Partnership' but it is important that we don't reduce a te Tiriti kaupapa and narrative to an equity argument. We need the special partnership relationship, as contemplated by te Tiriti, to be front and centre, and acknowledging that Māori are not to just be

consulted or “just one-of-many stakeholders”. In revising Aotearoa New Zealand’s Nationally Determined Contribution (NDC), we note that the Waitangi Tribunal states (8) 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.” The College 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.

Our six big issues - 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 disagree**

The emissions budget as currently set out is not ambitious enough for the scale of change needed over the coming decade. The budgets must be inline with our international obligations under the Paris Agreement 2015 and consistent with the IPCC 2030 targets. Time is being wasted as our emissions continue to rise while we discuss our strategies and the policies required to reduce them. The longer we delay making cuts in our emissions the more drastic action will need to be taken. Although our emissions are a small part of the global total, we have an ethical obligation as a developed nation with one of the highest emissions per capita, to take prompt climate action. As transport and agriculture emissions are our two largest sectors this should form the basis of our response.

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 (9).

Our six big issues - 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 disagree**

The principles of both intergenerational equity and tikanga require the current generation to do everything possible to stop climate breakdown and reduce the harm we inflict on future generations (10). Change is coming, the question is how we embrace, plan and approach the change as a country. Those living now have benefitted from easy access to the energy from fossil fuels which raises an intergenerational issue of fairness. As we shift towards a lower energy economy there will need to be policy action to encourage the shift to cleaner energy resources. 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." (11). Failing to implement healthy and equitable climate policies now accepts an avoidable burden of ill-health in future generations, disproportionately affecting already marginalised children (12). 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.

Our six big issues - our contribution

Big issues 3. Do you agree with the changes we have suggested to make the NDC compatible with the 1.5°C goal? **Disagree (our changes are not ambitious enough)**

The College 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 New Zealand's reduction of net emissions must be much more than 35% below 2005 gross levels by 2030. However, The College notes the Commission's failure to make specific recommendations on strengthening our contribution further. The draft advice must consider and advise a more ethical, responsible and ambitious NDC based on our Paris Agreement commitments. 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" (13). Taking into account greater capability and historic responsibility, Aotearoa New Zealand's fair share increases significantly from our current NDC. This means careful cost-benefit calculations, stronger emissions budgets, offshore emissions trading, and climate financing beyond our fair share. 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 emissions (14).

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 (15). The Commission should consider and account for the health co-benefits in their advice on how much the government should strengthen the NDC 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.

Our six big issues - role and type of forests

Big issues 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? **Agree**

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 be protected from destruction. Our approach to forestry must consider

how Mana Whenua will be enabled to act as Kaitiaki. We support the development of this policy in conjunction with an increased focus on emission reduction rather than offsetting.

Our six big issues - policy priorities to reduce emissions

Big issues 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

The College supports urgent policy interventions around action to address barriers, pricing to influence investments and choices and investment to spur innovation and system transformation. We consider the following recommendations to be six key areas to focus on:

1. Include public health and equity benefits and impacts in Aotearoa New Zealand's climate policy

The College recommends public health 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. 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 New Zealand including 27,000 premature deaths (17), disproportionately affecting Māori (18). 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 New Zealand 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 stays (19). Elimination of air pollution from fossil fuel burning and better insulated warm homes could offer significant health benefits.

2. Transport: Increase and improve active and public transport.

The College 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 College recommends 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 (21).

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; improved population health through increased exercise (20) and improved liveability of towns and cities due to reduced vehicle movements.

The advice to “develop an integrated national transport network to reduce travel by private vehicles and increase walking, cycling, low emissions public and shared transport” needs to be prioritised. The Commission should 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 (22). Supporting this would improve traffic congestion and free up space for those that rely solely on car use.

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 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. The College recommends an enhanced target for road freight to be shifted to sea and rail. The “National Land Transport Fund” should be reorientated away from roading projects to reflect a focus on active and public transport with a particular focus on the national railway, separated cycleways and safe travelling to and from school for children.

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. The introduction of a nationwide travel card could help normalise public transport use and make it easier for people to travel nationally.

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 (23). The College supports this to reduce accidents and injuries from lack of dedicated cycle lanes throughout the country especially rurally.

Private vehicle use should be curtailed through measures such as increased parking charges, zero emissions zones, and widespread adoption of ‘traffic calming’ measures and reduced speed limits. Private vehicles should be regulated as a health hazard including the advertising of high emissions vehicles such as fossil fuel powered SUVs. All light vehicles entering the country should be zero emissions by 2030 (only battery electric vehicles). We support a feebate scheme to support this transition. 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.

3. Agriculture: Develop healthier low-emissions food systems

The College 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 emissions (24). However the targets are too weak and to optimise health outcomes significantly more attention must be paid to diet.

Unhealthy diets are a major contributor to increasing rates of non-communicable diseases including heart disease, diabetes and cancers. At the same time, global industrialised food production is threatening local ecosystems and pushing the limits of the Earth's natural systems. The EAT-Lancet Commission's report (25) describes a universal healthy reference diet where people have enough food; it is predominantly plant based and has a minimal intake of animal source foods, refined grains and highly processed foods. The New Zealand Dietary guidelines need to be updated to include information on sustainable healthy diets. The New Zealand College of Public Health Medicine has released a comprehensive policy statement on Sustainable Healthy Food Systems which could guide this update (26). The Government also needs to address rising economic disparities so that people are enabled to make healthy food choices.

All industries are being asked to make changes, and this must include agriculture. The College recommends cuts in biogenic methane well in excess of what is planned in the draft advice. We should target the 48% reduction by 2050. 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 and as early as possible (2022) incorporation of Agriculture into the Emissions Trading Scheme. Legislation is already present to allow this (27), and it needs to be coupled with a rapid, clearly signposted reduction to zero of free credits in the Emissions Trading Scheme. There needs to be a ban on new dairy conversions with support to re-convert existing farms. There needs to be urgent reductions in synthetic nitrogen fertilisers, acknowledging the increasing body of evidence linking nitrate groundwater pollution with colorectal cancer causation (28).

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. We recommend the Government develop a strategy that outlines how farmers will be supported towards a zero-carbon future. Promote and centre food sovereignty of Māori as Tangata Whenua.

The College 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.

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

The College advises:

- More rapid removal of coal from the 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: - 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.

5. Recognise the mental health impacts of climate change

Extreme climatic events pose immediate risks which can have negative effects on wellbeing (29). People with existing mental illnesses are also more exposed to the physical impacts of climate change (30). 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 community (31), 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 on-going 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.

6. Reduce emissions in the healthcare sector

In England, the NHS has set ambitious and detailed targets in "Delivering a 'Net Zero' National Health Service" (32). This document could form the basis of a Ministry of Health plan to transform our health service. There should be an investment and coordination of sustainability officers across all District Health Boards to ensure change is occurring strategically throughout the country. Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆) and nitrogen trifluoride (NF₃) are a significant contributor to healthcare emissions, especially anaesthetic gases or metered-dose inhaler propellants. The College recommends the draft advice directly address these, and offer advice for rapidly reducing their use as is already clinically indicated, for example inhalers (33), 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 all government procurement policies to "include climate change considerations," but recommend this advice be strengthened significantly.

Our six big issues - technology and behaviour change

Big issues 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 disagree**

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. Any future technology changes may increase the pace of change, but should not be depended 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. 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 on the Climate Change Commission, and a multidisciplinary health advisory group including behaviour change expertise (e.g. nursing, psychology, health promotion, and social and behavioural science).

Ngā mihi



Professor Jenny Carryer RN PhD FCNA(NZ) CNZM
Executive Director, College of Nurses Aotearoa



Rebecca Sinclair RN PgDip SCPHN

REFERENCES

- 1 Hamilton, I. et al. (2021) The public health implications of the Paris Agreement: a modelling study. *The Lancet Planetary Health*. 5(2), E74-83.
- 2 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.
- 3 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. 2 March 2021
- 4 Berry, H. et al (2010) Climate change and mental health: a causal pathways framework. *Int J Public Health*. 55: 123-132.
- 5 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.ranzcp.org%2fnews%2dpolicy%2fpolicy%2dand%2dadvocacy%2fposition%2dstatements%2faddressing%2dmental%2dhealthimpacts%2dnatural%2ddisasters&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-84ce1108bf7215c8f94d4dbdb1a02a1e154f4ce7> (Accessed 23/02/2021)
- 6 Climate Action Tracker <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fclimateactiontracker.org%2fcountries%2fnew%2dzealand%2f&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-e56e376e65cb12b8fd13e73ce2d33f34833022ff>
- 7 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.hhrjournal.org%2f2014%2f07%2fclimate%2dchange%2dand%2dthe%2dright%2dto%2dhealth%2dfor%2dmaori%2din%2daotearoanewzealand%2f&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-25900a0955ee47d936660c40fbb2f8013cd517c1> (accessed 23/02/2021)
- 8 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.waitangitribunal.govt.nz&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-5fd86d71f9115bff8fa9dbc7b7ea0d18c3c2ed0d> 2 March 2021
- 9 The 2020 report of the Lancet Countdown on Health and Climate Change <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.thelancet.com%2fjournals%2flancet%2farticle%2fPIIS0140%2d6736%2820%2932290%2dX%2ffulltext&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-02bcf5d8d552cba12e9b5fb3cc88d1c80fcb79ea>

10 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.mrfcj.org%2fwpcontent%2fuploads%2f2015%2f09%2fMRFJCJPositionPaper%5fMeetingtheNeedsofFutureGenerations%5f12August2015.pdf&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-969246ab447f6d8f523fb4e47002799239d10f30> (Accessed 23/02/2021)

11 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 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)

13 IPCC, 2018: Summary for Policymakers. In: 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 [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.ipcc.ch%2fsr15%2fchapter%2fspm%2f&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-f2c5b44be968ca68cc03aba599f30834612a0b14> (Accessed 25/03/2021).

14 ibid

15 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.

17 WHO (2018) World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2018. WHO:Geneva. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.who.int%2fnmh%2fcountries%2fnzl%5fen.pdf&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-757370d0604eeb73f74d9f9bb6387d6e89a3ea38> (Accessed 28/02/2021).

18 Phillips, B et al (2017) Mortality trends in Australian Aboriginal peoples and New Zealand Māori. Population Health Metrics. 15, 25. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fink.springer.com%2farticle%2f10.1186%2fs12963%2d017%2d0140%2d6&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-66aa44879d97d9a1ae84365f11c8caf7c290d74d> (Accessed 28/02/2021)

19 Health Navigator (2020) Respiratory disease. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.healthnavigator.org.nz%2fhealth%2daz%2fr%2frespiratory%2ddisease%2f&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-9d8c0d83f484246cbf153fe45df089f6e11dab63> (Accessed 28/02/2021)

- 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. (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.
- 22 Mandic S, Jackson A, Lieswyn J, Mindell JS, García Bengoechea E, Spence JC, Wooliscroft B, Wade-Brown C, Coppel K, Hinckson E. (2019) Key Policy Recommendations for Active Transport in New Zealand. Dunedin, New Zealand: University of Otago <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.otago.ac.nz%2factive%2dliving%2fotago710121.pdf&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-94458523df6b5dd6b1b0c206134cd6e3f8640856> (Accessed 25/03/2021)
- 23 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)
- 24 Ministry for the Environment. (2020). New Zealand's Greenhouse Gas Inventory. Available at <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.mfe.govt.nz%2fclimate%2dchange%2fstate%2dof%2dour%2datmosphere%2dand%2dclimate%2fnew%2dzealands%2dgreenhousegas%2dinventory&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-b4618179f4b750614c830d68bbebf4e9177b5bee>
- 25 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.thelancet.com%2fcommissions%2fEAT&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-846fcc98abc3c0d3bf0c79e3c3978c15e77d7c2b> (Accessed 28/02/2020)
- 26 New Zealand College of Public Health Medicine (2020) Sustainable, Healthy Food Systems Policy Statement. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.nzcphm.org.nz%2fmedia%2f142943%2f2020%5fsust%5fhealthy%5ffood%5fsystems.pdf&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-e4d3b4ce79d42aae6e5e0b16238abe8439251f95> (Accessed 25/03/2021)
- 27 Ministry for the Environment (2020) Overview of the New Zealand Emissions Trading Scheme reforms. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.mfe.govt.nz%2foverview%2dreforming%2dnew%2dzealand%2demissions%2dtrading%2dscheme&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-530339baf6200659eed259e5c2ae1e951a9cc800> (Accessed 23/02./2021)
- 28 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.ncbi.nlm.nih.gov%2fpmc%2farticles%2fPMC6068531%2f&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-703882d5630760050e03e23f93c2cdd24f04ae2a> (accessed 25/02/2021).

- 29 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://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.ranzcp.org%2fnews%2dpolicy%2fpolicy%2dand%2dadvocacy%2fposition%2dstatements%2faddressing%2dmental%2dhealthimpacts%2dnatural%2ddisasters&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-84ce1108bf7215c8f94d4dbdb1a02a1e154f4ce7> (Accessed 23/02/2021)
- 30 Bouchama, A., et al (2007) Prognostic factors in heat wave related deaths: a meta-analysis. Arch Intern Med. 167(20), 2170-6.
- 31 Ngati Porou. Kaitiakitanga/Environment. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fngatiporou.com%2fnati%2dstory%2fourkorero%2fkaitiakitanga%2denvironment&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-cd637de8adad9fdda215de2755662412a0af0009> (accessed 28/02/2021)
- 32 NHS (2020) Delivering a 'Net Zero' National Health Service <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.england.nhs.uk%2fgreenernhs%2fwp%2dcontent%2fuploads%2fsites%2f51%2f2020%2f10%2fdelivering%2da%2dnet%2dzero%2dnational%2dhealth%2dservice.pdf&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-0386f2b6578a737bef80efc93448e8cda59b4343>
- 33 Beasley, R. (2020) NZ Adolescent and Adults Asthma Guidelines. Asthma and Respiratory Foundation NZ: Wellington. Available at: <https://smex12-5-en-ctp.trendmicro.com:443/wis/clicktime/v1/query?url=https%3a%2f%2fwww.nzrespiratoryguidelines.co.nz%2fadultguidelines.html&umid=a6a4faf6-15a2-4fc6-a03b-5820acd91ff0&auth=30e3f2e30e464276dede9a7f1c0d737f933697d5-7df18596000531d73f8ab715777293b0bc4aa532> (accessed 25/03/2021)