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Climate Change and Health – Ora Taiaio

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For some people “climate change” is nothing more than a buzzword, but the reality that it is our century’s greatest global health opportunity. Although the causal relationship between climate change and health outcomes may be hard to visualise, there is a clear link, and there is no question that populations all around the globe are already suffering from the effects of our changing climate. In this article we discuss the relationship between climate change and health; the role the health sector can take in addressing its own contribution to climate change and creating a more sustainable future, and the ways we as individuals can act to reduce our carbon footprint and help shift our industries and society towards a clean energy future.

Climate change is a result of the increased human production of greenhouse gases. Since the industrial revolution, this production has accelerated with technological advances and the increased use of transport, electricity generation, industry, and agriculture. The gases released from these activities trap heat within the earth’s atmosphere, which in turn causes the climate to change.

Climate change impacts on health in terms of two broad categories: direct impacts and indirect impacts. The most obvious direct impact is the injuries and deaths that result from extreme weather events. Storms, droughts, floods, heatwaves and wildfires are all becoming more prevalent at an alarming rate. Many health systems around the world are not equipped to deal with the impact of these events. Two examples are the extreme 2003 European heatwave which led to over 70,000 deaths, and flooding in Pakistan in 2010 that resulted in 6 million people needing emergency medical care.

Air pollution, a major health issue, is also inextricably linked with climate change. The sources of both fine particulate matter and greenhouse gas emissions are broadly the same: polluting energy systems. Globally, eight million people die every year due to exposure to indoor and outdoor air pollutants. Air pollution is already the second greatest cause of death from non-communicable diseases such as ischaemic heart disease

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cause of death from non-communicable diseases such as ischaemic heart disease, strokes, chronic obstructive pulmonary disease and lung cancer. In today's world, over 90% of urban populations breathe air which contains pollutant levels exceeding WHO guidelines, and these levels are set to increase. A warming climate will only act to worsen this air quality. Increases in wildfires and dust storms will not only heighten the emission of pollutants but will increase pollen and airborne allergens as well.

In terms of indirect impacts, changes in ecologies may increase contamination of food, water and sanitation resulting in food insecurity and malnutrition, especially likely to affect our young and elderly. Spread of climate sensitive infectious diseases is also set to increase with rising temperatures favouring particular disease vectors. Certain diseases such as malaria, dengue and Lyme disease may start moving into previously unexposed territories. Long-term consequences to consider include the impact of extreme weather events on mental health; job insecurity; and loss of land and culture. Many of our Pacific neighbours, for example, are already feeling the effects of rising sea levels. Changing climates and extreme weather events are likely to only increase population displacement and for many communities, reduce access to healthcare.



As a Pacific nation, we have an important role in advocating for the Pacific region

Health sector a core focus of UN's International Day of Older Persons 'journey to age equality' (/nzmj-digest/nzmj-digest-issue-91/features/health-sector-a-core-focus-of-uns-international-day-of-older-persons-journey-to-age-equality)

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and providing meaningful platforms for other Pacific nation voices to be heard.



Around the world climate change will worsen health inequities both within and between countries. People who are poorer, at extremes of age or unwell are more vulnerable to the impacts of climate change. Unfairly, countries that have contributed the least to emission production are likely to be hit the earliest and hardest. New Zealand, as a high percapita emitter (5th highest in the OECD), has a responsibility to slow down and reverse its growing emissions as well as aim for far more ambitious emission reduction targets, taking into consideration climate justice, historical responsibility as well as current capacity to mitigate. As a Pacific nation, we have an important role in advocating for the Pacific region and providing meaningful platforms for other Pacific nation voices to be heard.

Indigenous communities will be disproportionately affected by climate change. In New Zealand Māori already experience stark health inequities compared to non-Māori. A large number of the projected impacts of climate change will act to worsen these inequities. A disparate proportion of Maori are living in deprived areas and working in

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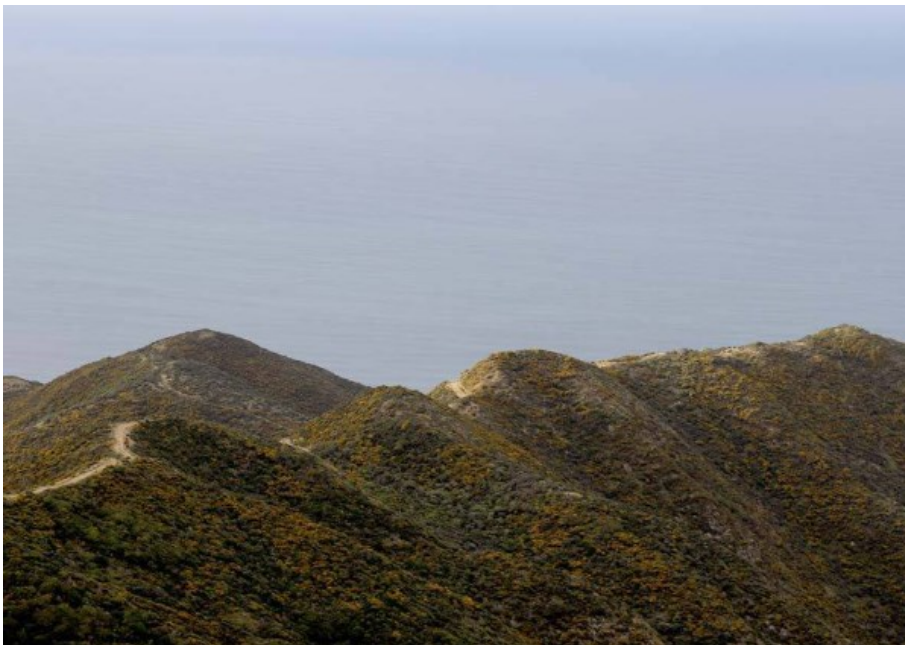
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low-income jobs so will consequently suffer more from the projected impacts on food security and housing. The close relationship Māori share to the whenua and the practice of collecting food from the land will increase the risk of contracting food borne disease. Māori are more vulnerable to the effects of exposure to extreme heat and therefore job security as they are more likely to work outdoors.³

The economy is also largely invested in industries that are sensitive to climate change and therefore the financial burden from projected climate impacts and policy changes would also be detrimental to the health and wellbeing of this population. When considering the effects of climate change in Aotearoa it is essential to prioritise Māori knowledge and worldviews. As a nation we have a duty to align future climate change action with Te Tiriti o Waitangi, and to have equitable outcomes for tangata whenua as the backbone to these plans.

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The many ways in which climate mitigation and health goals overlap, and the significant roles of various socioeconomic and environmental determinants - often beyond the control of the health sector - emphasise the importance of cross-sectoral collaboration as well as transparent accounting of the health implications in all sectors; a “health-in-all-policies” approach. Indeed, the health benefits from climate mitigation policies contribute significantly to offsetting the costs of climate action and must be considered accordingly. For example, the value of health gains associated with meeting the Paris Agreement alone would be worth twice the cost of policies required to get there. For example, the sources of climate change and air pollution are broadly the same: polluting energy systems. As such, policies and interventions that target a reduction of either form of air pollution are excellent opportunities for countries and municipalities to simultaneously contribute to both positive health and climate outcomes.



These opportunities are present in many sectors - in urban planning, the built environment can have a significant role in shaping lifestyles and behaviours of its inhabitants - for example, green spaces are crucial parts of cities and provide opportunities for safe physical activity. Pedestrian and cycle-friendly neighbourhoods as well as adequate visibility and lighting have been shown to increase in physical activity of up to 160%, as well as decrease air pollution by taking cars off the streets. The

consequences of motor vehicle oriented land-use and transportation policies on air pollution and climate change, as well as the health co-benefits such as physical activity, decreased motor vehicle accidents, and NCDs is significant, and can be supported by other policies that encourage easier and equitable access to active, public, and rapid mass transport. Better housing conditions, such as better insulation and low-emission stoves and heat sources can contribute significantly to illnesses associated with cold, damp, and overcrowded housing, which also disproportionately affect our poorest. In agriculture, a transition towards diets low in red and processed meats and rich in plant-based foods can significantly reduce morbidity and mortality from NCDs - eating high amounts of red and processed meat can increase the risk of premature death by 29%. Well planned climate action, therefore, is also a significant opportunity in tackling the burden of health inequities globally and in NZ.



What is the health sector's role in all of this?

Not only does climate change impact on health but the health sector in itself is a significant contributor to greenhouse gas emissions. In the United States the health sector is responsible for 10% of the country's total emissions and is the world's seventh largest producer of carbon dioxide. Australia's health sector is accountable for 7% of their emissions and according to the Energy Efficiency and Conservation Authority, the New Zealand healthcare system is "the largest emitter in the public sector," excluding transportation. The Ministry of Health recently released a publication encouraging District Health Boards (DHBs) to take on a leadership role in promoting sustainability and climate change action. Given the threat that climate change poses to health, it is vital that the sector leads by example in reducing its emissions.

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The World Health Organisation (WHO) defined seven key aspects of a climate friendly hospital in their report, “Healthy hospitals, healthy planet, healthy people: Addressing climate change in healthcare settings”. These are as follows: energy efficiency, green building design, alternative energy generation, transportation, food, waste and water. There are inspiring examples of health centres making impressive strides in each of these areas. The Gunderson Health System in Wisconsin, USA achieved energy independence in 2014 by putting extensive efforts into energy conservation, clean production and recycling and waste management. Princess Alexandra Hospital in Brisbane was recently featured in the media for its sustainability projects which include an operating theatre waste management programme which by 2014 had decreased the amount of clinical waste by 79% and resulted in savings of approximately \$155,000/year. These hospitals are just two of many around the world whose actions should be commended. If they can do it, the rest of us can too, including our own hospitals here in New Zealand.

In their recent health and sustainability report the Ministry of Health discusses six “action areas” for DHBs which mirror the themes of WHO’s recommendations. Within New Zealand we have already seen some success within these domains such as in travel/transport with hospitals encouraging commuter ride sharing and building bike infrastructure. The Ministry of Health recently announced that the damaged coal boilers at Christchurch Hospital will be replaced by more sustainable woody biomass boilers. A significant decision given the effect of coal on both air pollution and climate change. In 2015 Middlemore Hospital’s Anaesthetic department started implementing a strategy to reduce greenhouse gas emissions from volatile inhaled anaesthetic agents. By 2018 their carbon reduction strategy “inform, audit, encourage and iterate” had resulted in a decrease of approximately 600 metric tons of CO₂/year as well as financial savings. After being approached by anaesthetists from Middlemore, researchers at the University of Auckland have also become involved in developing innovative new strategies to combat this issue and hope their technology will reduce emissions by 20,000 tonnes of CO₂ equivalent per annum.

These successes should be celebrated but there are still lots of improvements to be made across the country. Looking at just one area, waste, an observation we have made is of the waste management within hospital cafeterias. Many cafeterias continue to use single-use plastic cutlery and cups. The recycling and rubbish bins are not always clearly marked, and recycling bins become full of food waste and rubbish too. Usually there are no compost bins available. In many cafeterias the purchase of bottled water is promoted by large refrigerators and a lack of cups and water fountains and it is not uncommon to see doctors get a new water bottle every lunchtime.

Cafeterias are an easy example to use because they are so accessible, but they are of course only a reflection of broader sustainability issues in hospitals as a whole. Waste disposal contributes a large amount of greenhouse gases, not to mention the environmental costs of making resources (e.g. plastic cutlery) before they are briefly used and then thrown away. WHO specifically mentions that decreasing sales of bottled water is an action that hospitals should take as up to 2000 times more energy is required to produce bottled water than tap water. A simple strategy we suggest in this context is to create educational signs reminding staff to use bins correctly, bring their own containers/cutlery for lunch and consider drinking tap water over bottled. Most DHBs have intranets through which this education could be promoted. Furthermore it would be ideal to provide reusable cups, cutlery and plates, which some DHBs already do.

Finally, what can we do to address climate change at an individual level?

Every day we make choices and as a collective, we have an important role to play in moving our society towards a clean energy economy. All purchases have a carbon and environmental footprint, from the clothes we wear to the food we put on our plates. Minimising the amount we buy, particularly of goods like plastics, is one way we can lower our environmental impact. As consumers, what we choose to buy directly affects industry decision making too. The apparel industry, for example, is responsible for 10% of global emissions, and will continue to pursue unsustainable fast fashion if they are rewarded by purchases and ongoing profitability. Trying to buy second hand and long-lasting clothing reduces our impact and puts pressure on the fashion industry to become more sustainable too.

As individuals, our decisions around what we eat is perhaps one of the strongest ways we can contribute towards a cleaner future - affecting up to 37% of global emissions. The Intergovernmental Panel on Climate Change August 2019 report is the latest in a line of international publications recommending a transition towards a diet higher in plant-based foods, which would drastically reduce our impact on the environment while providing significant co-benefits in terms of human health. Within agriculture and associated land-use, animal agriculture is especially resource intensive, contributing up to 60% of all agricultural emissions. Livestock provides just 18% of calories but takes up 83% of the world's farmland. This is an especially important driver for deforestation and its associated climate impacts, with the cattle sector being responsible for about 80% of all deforestation in the Amazon, and the single largest driver of deforestation worldwide.

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In NZ in particular, there is no escaping the connection between meat on our plates and emissions - agriculture is responsible for half of NZ's total emissions, and almost 75% of this come from methane produced by livestock. The most effective first step is to cut out ruminants - specifically beef and lamb, which are responsible for the majority of these emissions. Meat is a cornerstone of dishes in many cultures, and there are many reasons why a wholly plant-based diet may not be feasible for everyone. For the vast majority of individuals on a Western diet, however, increasing the proportion of plant-based foods is an affordable and accessible choice that greatly benefits both individual and planetary health.

Roughly one-third of all food globally is wasted, or about 1.3 billion tonnes, enough to feed the world's hungriest four times over. If global food waste were a country, it would be the third largest producer of greenhouse gas emissions behind the United States and China, and up to 10% overall. Reducing waste and over-purchasing at an individual level is especially important in wealthier countries, where the majority of waste occurs after the food hits the supermarket. Reducing this waste by not over-purchasing would reduce greenhouse gas emissions and improve food security, which has both health and societal co-benefits.

There are many other ways we can contribute as individuals to the climate change movement. Our choices around transport, purchases and personal investments are other important examples. Individual choices alone, however, can often be regressive, and need to be supported and enabled by government policies and corporate commitments. This is where individuals need to come together as a collective. Advocating for sustainability and climate change issues, especially within our sphere of influence, can help spread the message and promote solutions. In the health sector, OraTaiao is one example of one of these organisations and there are many other like-minded ones in various sectors around the world. There are many grassroots movements and NGOs

various sectors around the world. There are many grassroots movements and NGOs that focus on climate change and certainly these groups play an important role in achieving a sustainable future for all. The divestment movement is an example of a particularly successful grassroots movement, with institutions and individuals representing 8 trillion committed to divestment, which contributes to stigmatising continued this sector and companies whose actions at present are irreconcilable with achieving internationally agreed goals. As citizens, we can empower our politicians and hold them accountable. We can show elected officials that climate change is an issue important to us, and vote for those who will make and advocate for meaningful policy changes. Climate change is and should be a nonpartisan issue, because one thing we all share in common is the planet we live on.

“Global climate change is no longer an ominous future threat but a dawning reality – one that is already creating disturbing shifts in the natural and human environment...” This 2009 statement from WHO is truer now and more urgent a decade on. Extensive research and modelling continue in an attempt to predict the future impacts of climate change and there is an estimated 100 million people who could be forced into extreme poverty by the year 2030.

Addressing these issues will undeniably be costly and demand heavy political commitment. Yet, the costs of action will be dwarfed by the cost of inaction imposed upon our future and our children’s future. It is now up to the preventative action and resilience of nations around the world as to just how much climate change will impact on society in the years to come.

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