

What does Taranaki need to do have a just transition
to healthy people living in a healthy climate?



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Abstract

Background and Aims: Climate change is increasingly being recognised in Aotearoa as a threat to health requiring immediate action. This has serious implications for communities across Taranaki, but particularly for vulnerable groups namely Māori, Pasifika, elderly, young and low-income families. The aim of this project is to interview key stakeholders both within and outside of the District Health Board and identify recommendations that can facilitate a “just transition to healthy people living in a healthy climate” in Taranaki. Recommendations had to be pro-equity, incorporate principles of Te Tiriti o Waitangi and be easiest to implement in the Taranaki context.

Methods: Literature review and stakeholder interviews were the main research methods carried out for this project. This was conducted over a period of six weeks. Key stakeholders were contacted through email. Interviews were conducted in person, through phone or through written responses to questions by email. The interview consisted of five main questions around stakeholder awareness of climate change health impacts, awareness of vulnerable groups impacted as well as pro-equity recommendations for reduction of the health impacts of climate change in Taranaki.

Results: Ten semi-structured interviews were carried out in total. Recommendations collected from stakeholders revolved mainly around the following themes: Revitalisation of sustainable indigenous practices, education and raising awareness, regulation of contributing industries, measures against existing inequity, as well as government and DHB action. Most commonly discussed from Māori stakeholders was the need to reinstate indigenous farming practices in contrast to education and raising awareness from Non-Māori stakeholders.

Conclusion: Awareness around climate change and health equity needs to be improved across Taranaki communities. The hope is that the recommendations collated here can be facilitated if not through the DHB, then through regional and central governing councils.

Introduction

Climate change presents itself as one of the biggest emerging threats to public health in the 21st century. It is increasingly being recognised as a “medical emergency”, a “threat to health” both locally and abroad [1]. More extreme weather events are forecasted for Taranaki which raise the potential for subsequent increases in rates of population injury, illness and death. It impacts on the broader socioeconomic determinants of health and raises concerns around food security, housing capacity and mental wellbeing [2]. This potentiates the continuation of health inequities in Taranaki, with Māori, Pasifika, children, elderly, young and low-income families listed as being particularly vulnerable [3]. In Taranaki, Māori feature a very youthful population [4] and are overrepresented across the lower socioeconomic deciles [5], thus forming a majority within the marginalised groups listed. The degradation of environment in itself, perpetuates the adverse impacts of climate change for Māori [6], necessitating proposals for action that are pro-equity, so as to secure the potential adaptive capacity of Māori and other marginalised peoples in Taranaki [7]. The need for pro-equity strategies is reiterated in the Ora Taiao¹ revised “Call to Action on Climate Change on Health”, envisioning a “**just transition to healthy people living in a healthy climate**” [8]. Local research on these issues is currently limited, with no reports found focusing on the Taranaki region in particular. The aim of this project is to interview stakeholders with the purpose of identifying strategies that can help facilitate this “**just transition**” for Taranaki. Recommendations implemented will have to be pro-equity, take into account the principles of Te Tiriti o Waitangi and be easiest to apply within the Taranaki context.

¹ Ora Taiao: NZ Climate and Health Council.

Methods

A brief literature review was conducted through several databases to review the available literature on climate change and its impacts on health equity in Aotearoa. Search terms used included “Climate change”, “health equity”, “New Zealand”, “Aotearoa” and “Taranaki.

Stakeholder Interviews:

Stakeholders were identified as people working within areas relating to either climate change or health both within and outside of the DHB. This was with the assistance of the TDHB Public Health Unit’s Senior Public Health Advisor, Mauri Ora Advisor and Health Equity Advisor. Given time constraints, candidates were prioritised and shortlisted to those having regional influence either within or outside the DHB.

Stakeholders were contacted through phone or email and given the option of either meeting to be interviewed in person, through phone or by sending written responses through email. 5 key questions were asked (*Appendix 2*) from stakeholders. Interviews in person were recorded and transcribed with consent, after which results were collated and qualitatively analysed under major themes. Conclusions for the study were subsequently drawn from recommendations that were pro-equity and aligned with Te Tiriti o Waitangi. Recommendations that do not take meet these requirements are mentioned but omitted from the project’s concluding recommendations.

Results – Stakeholder Interviews

A total of 32 potential stakeholders were contacted, with expressions of interest attained from 11 stakeholders, finishing with a total of 10 semi-structured interviews. The stakeholders interviewed involved participants from various agencies of local government, Iwi or the Taranaki DHB. Recommendations were also collected from anecdotal discussions at the Taranaki 2050 Roadmap: Health & Well-being Transition Pathway Action Planning (TPAP) Workshops, as well as from visits to Parihaka. Results for each question are outlined below:

Question 1: What impact do you think climate change will have on the health of people in Taranaki?

Direct Impacts

Responses attained here were fairly similar between stakeholders with all participants showing consensus around increases in extreme weather events leading to increases in illness, injury or mortality. Contamination and pollution of the natural environment as a consequence of industry-related activities was reported to contribute to increased rates of illness and disease further. An increase in vectors carrying tropical disease was also noted with increases in the incidence of conditions such as malaria or dengue fever likely to ensue.

Other responses noted here include:

- Potential increase in the influx of climate refugees from the Pacific Islands, due either to homes disappearing with rising seas, or due to saline intrusion of water tables which would make it impossible to grow food.
- Collapse of civilisation for increases in global temperature greater than 2 degrees, due to potentially severe food shortages.

Indirect Impacts

Widening systemic inequities:

- **Food security:** Most stakeholders agreed that food security and food sovereignty would be significantly impacted. One stakeholder highlighted the predictions from the Ministry of Environment which shows that New Zealand is likely to continue experiencing worsening droughts and extreme weather events, subsequently impacting local food production. Subsequent increases in the price of healthy foods (fruit and vegetables) will lead to nutritionally challenged diets, already linked to existing non-communicable disease epidemics (obesity, cardiovascular disease, diabetes, cancer). Stakeholders highlighted the potential this has to increase the prevalence of infection and infectious disease. A related impact is the greater dependency on mahinga kai to supplement the household diet, in turn increasing the potential of further illness from gastro-related infections, where the quality of traditional food gathering places are themselves compromised.
- **Housing:** Most stakeholders commented on the potential for climate change to exacerbate the existing housing crisis with more families likely to have inadequate and sub-standard housing in the years to come. This is reported to likely contribute to increased rates of disease e.g. respiratory problems, eczema and gastroenteritis. Compounding increases in urban housing costs highlight one stakeholder's particular concern around the potential of Māori being dispossessed of their whenua or unable to live in areas where they whakapapa to. Relocation to rural areas can add further to existing issues of access to quality health, social and educational services.
- **Employment:** Continuing over-representation in low-skilled employment raises the potential risk of Māori to prolonged sun-exposure, potentially increasing rates of skin cancer.
- **Loss of cultural identity:** A majority of stakeholders commented on the significant adverse impacts of climate change on the nature of the relationship between tangata whenua and the natural environment. One stakeholder noted particularly how the degradation of the natural environment and associated loss of biodiversity impacts in the way Māori connect to *Te Taiao*; the consensus from Māori stakeholders reiterating the importance of whenua to the maintenance of hauora in its entirety. Other impacts noted include:
 - Coastal erosion leading to loss of fishing areas, *kaimoana*, *tūrangawaewae* (places of belonging), *marae*.
 - Pollution degrading the *wairua* and *mauri* of waterways, impacting on customary practices like mahinga kai, kaitiakitanga and the mana of associated hapū and the iwi (as well as traditional practices like *rongoā* and *raranga*)
 - Loss of biodiversity eroding the mauri of *takutai moana*, which in turn impacts on values like, mana, manaakitanga and whanaungatanga.
 - Erosion and flooding of vulnerable *wāhi tapu*, *urupā*, *pā* and lands is resulting in a gradual loss of knowledge and connection to these places – resulting in a loss of identity

Question 2: Do you think that some groups of people in Taranaki will be more affected than others because of climate change? If so, who?

- Low income groups were most commonly listed by stakeholders as being particularly susceptible.
- Māori were noted by nearly all Māori stakeholders and only few non-Māori stakeholders

- Coastal Taranaki communities under-resourced with regards to services and resources, including regular and affordable transport to essential services.
- Farmers and people working in industries i.e. oil, gas, engineering, businesses.
- Elderly people.

Questions 3-5: Recommendations – What do you think are the main things we have to do to ensure a just transition to healthy people living in a healthy climate for Taranaki?

- ***Promoting Indigenous Sustainability***

The importance of returning back to indigenous farming practices was highlighted by most Māori stakeholders. This call is undergirded by Māori stakeholder reports on colonial activities having accelerated the degradation and exploitation of the natural environment that provides them with both physical and spiritual sustenance. As such, they recommend the establishment, funding and resourcing of initiatives for whānau, iwi and hapū to grow more of the *kai* (food) and *rongoā* that sustained their Māori *tupuna* (ancestors). Four stakeholders called for increased access to free food via community gardens, orchards, and *pātaka kai* with added resourcing for crop swap and food bank initiatives. Interview with one stakeholder highlighted various examples of existing initiatives namely those of Sustainable Taranaki, Seedsavers, Taranaki Crop Swap, and Farm Next Door. Anecdotal talks with Māori during a visit to Parihaka shone light on the work done by Taranaki Iwi around *pātaka* and *maara kai*, enabling local Māori to grow traditional crops that both sustain their families as well as those marginalised. Stakeholders also highlighted the importance of acknowledging other systems of wellness; an example mentioned for Māori can include promoting the use of *rongoā* and other indigenous knowledge systems around health as a whole; *Karakia, Waiora, Whanaungatanga, Māramataka*. One stakeholder called for an increasing in planting of native tree species. There are also calls for an increase in organic farming and building of commercial organic garden markets.

- ***Elevate Mana of Natural Landmarks***

One stakeholder recommended that local and central governments elevate the mana and legal status of waterways and natural landmarks. This was compared to work done by Whanganui iwi as manifested through the Te Awa Tupua (Whanganui River Claims Settlement Act) 2017 [12]. The hope of doing so in Taranaki is to afford greater legal protection and safeguarding of landmarks and natural resources.

- ***Regulation and Control of Industrial and Farming Activities***

A recurring theme from stakeholders was the call for central and regional action for the direct reduction of industrial activities that perpetuate current ill environmental state. Part of the recommendations made propose a change to emissions target deadlines, one stakeholder in particular suggesting a reduction of carbon emissions by half before 2030, in addition to national target for net zero greenhouse gas emissions by 2050. There is call for the reduction and regulation and dairy stocks and effluent releases polluting Taranaki's swamps and waterways. One stakeholder emphasised this reduction as being especially crucial for facilitating a just transition.

- ***Education and Awareness:***

Frequent mention was made regarding the need to educate Taranaki communities both regarding the issues and impacts of climate change but also on mitigation and adaptive strategies that they can implement within their own communities. This could also be manifested through Crown and local

council support for community-led and or schools-based initiatives that teach organic gardening and healthy eating. Several stakeholders and anecdotal talks highlighted the recent climate change school opening in Taranaki as an opportunity that could perhaps inspire the establishment of other schools centred on a sustainable ethos.

Māori stakeholders have identified a deficit in understanding of these issues within marae, hapū and iwi circles. They mention that Māori hold a keen interest on environmental issues that can affect their food sources and living environments. Recommendations are made as such to brief iwi leaders, run community forums and disseminate written information throughout Taranaki communities. Part of the recommendation for Māori from two stakeholders proposes the development of a Taranaki Iwi Climate Change Strategy engaging and implementing input for community-led solutions from Māori across Taranaki.

- ***Promoting Health Equity & District Health Board Action:***

Other recommendations collected from stakeholders revolved around action to correct existing inequities themselves as a means of reducing the likely disproportionate impact that climate change can occur for vulnerable groups in Taranaki. Recommendations collated here include calls for:

- Improved accessibility to healthcare services: funding through DHB to accommodate for further primary care cost reduction, improved transport and provision of specialist services to rural areas in Taranaki.
- Collaboration with other rural DHBs to expand use of nurse practitioners and certified physicians' assistants (especially in patient lifestyle education), where GPs are in short supply.
- Persuade parliament to authorise Reserve Bank Credit (spent directly into the economy) to be used (like the first Labour government did in 1936) cover severe budget shortfalls in health, housing and education.

One Māori stakeholder emphasised the need for equal share of the vote funds that come to the DHB between Māori and non-Māori initiatives. This was based off reports of frustration with DHB having only one Te Kawau Mārō² contract for the management of Māori health providers [13]. Other recommended areas of action, which also tie in to helping reduce existing inequities, is to increase the number of Māori staff hired within the DHB, particularly in areas of public and preventative health as well as a call to assess the DHB's existing debts, with two stakeholders calling for the redirection of funding towards preventative health as well as our most vulnerable communities. Additional recommendations urge the DHB to take a leading role in promoting education and awareness of climate change and health issues, as well as around promoting public health understanding around health equity and alternative forms of wellness. Discussions at the Taranaki 2050 Health & Well-being Transition Pathway Action Planning Workshops highlighted the potential for the establishment of a multi-organisational working group, between DHB, local and regional councils to help align objectives and implement action on climate change that mitigates its health impacts in Taranaki.

Discussion:

This project represents the first attempt to collect pro-equity recommendations for the reduction of the health and healthy equity impacts of climate change in Taranaki. Recommendations collected

² Te Kawau Mārō: Taranaki Māori Health Strategy / He Korowai Oranga Taranaki DHB, 2009-2029

highlight several potential areas of action by the DHB around increasing awareness of climate change and health equity, resourcing and advocacy as well as through the drafting of proposals for consideration by legislative authorities. The 10 interviewed stakeholders were all aware of the potential for direct and indirect impacts on health from climate change (See Table 1). However, not everyone was aware that lower income groups particularly Māori were more at risk from the adverse effects of climate change.

It is crucial that emphasis be made on the relationship that Māori hold with *Te Taiao*, and how it influences *Hauora*. Māori models of health reiterate the importance of this relationship [4], the most recent of which being Sir Mason Durie’s (2019) revised model for Māori Health Promotion, “*Matariki*” which highlights eight dimensions of health in this framework, 5 of which represent elements of the natural environment:

- *Ranginui*: calls for the protection of sky from pollution
- *Papatūānuku*: protecting the earth
- *Ngā Wai*: safeguarding rivers and oceans
- *Ngāhere*: forests
- *Te Ao Tuturu* – concerned with restoring natural balance



Figure 1: Reproduced graphic from Sir Mason Durie's updated framework for Māori Health Promotion - *Matariki* (2019).

The emphasis of environmental influence on *Hauora* is restated further through its basis on celestial media itself, which Sir Durie quotes as serving to “*remind us that we are part of an unbounded universe*” [14]. Within the Māori philosophical perspective, this connection with the environment for Māori is maintained through forces of *mauri*³ and other forms of energy [25]. The relevance of mitigation strategies for Māori is further highlighted in the deep intergenerational connection that Māori hold between the present generation, as future *tupuna*, and their *tamariki* [15].

³ *Mauri* – life essence or life force [18]

The final recommendations collated required analysis as to whether they were pro-equity and likely to improve existing health inequities. A pro-equity approach, for this project, assumes respect and honour of Te Tiriti o Waitangi principles. Te Tiriti, in itself sets out the guidance through which recommendations around climate change and health should be implemented. It mandates the equal partnership of Māori whilst upholding their right to *Tino Rangatiratanga* (autonomy and self-determination) over *Whenua* and *Ngā Wai*. Recommendations that are equitable for Māori, as such, must actively engage Māori participation, right to autonomy and facilitate the redistribution of power and resources [16].

Evaluation with regards to the efficacy of these recommendations could perhaps be assessed objectively on ensuing improvements in health outcomes and disparities observed in future. It is crucial, however, that this process be carried forth with the active engagement and participation of Iwi and Māori authorities in Taranaki. The applicability and potential success of implementation within the Taranaki context, is, for this project, partly based on existing work that has been successfully implemented carrying with it a strong strengths-based community centred approach.

Responses are often classified into one of two main approaches: mitigation and adaptation. Though pervasive in its use as a framework for climate change action in the published literature, reports note the need for supplementation with diverse mental modes and frames that employ appropriate language and cultural reference points [18], particularly relevant given the equity focus of this project. The considerable overlap between recommendations both contributing to mitigation and adaptation efforts warranted an outline of recommendations under alternative themes as follows:

Empowering communities with sustainable indigenous practices:

The resounding consensus from Māori stakeholders revolved around the return towards indigenous practices as well as the implementation of *Mātauranga Māori*⁴ as part of mitigation and adaptation efforts. Action in promoting practices that revive Māori cultural identity are mandated under Te Tiriti as well as by the United Nation's Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities. Māori stakeholders report an increasing disconnection from practices carried out by their tupuna; this detachment from cultural identity shown to worsen mental health outcomes [19], simultaneously acting to unfavourably impact both physical (through reduced nutrition), environmental and spiritual health for Māori. What is important to note is that these impacts are not isolated to Māori in Taranaki, but rather extend to all Māori across Aotearoa; the importance of implementing indigenous sustainability frameworks make this a nationally relevant consideration. Calls were also made by stakeholders, both Māori and non-Māori, to increase resourcing towards community food swap, *pātaka kai* and sustainable farming initiatives. Existing initiatives in Taranaki represent the potential for expansion and could perhaps have funding mobilised to help drive their successes further or encourage the establishment of new initiatives. This builds community resilience (against food security threats posed by climate change) and empowerment (through the growth and manufacture of their own produce), creating a positive feedback cycle of both emissions' reduction alongside a reduced reliance on imported food sources.

Elevating the Mana and Legal Status of Natural Landmarks

⁴ *Mātauranga Māori* is defined as: “a continuum of distinct knowledge with Polynesian origins that grew in Aotearoa New Zealand including Māori worldviews, values, culture and cultural practice, and perspectives that establish Māori identity, responsibilities, and rights to manage and use resources” [23].

One stakeholder emphasised the need to elevate the legal status and mana of major waterways and natural landmarks in Taranaki, just as was done with the Whanganui River whereby full legal personality was granted through the *Te Awa Tupua*⁵ (Whanganui River Claims Settlement) Act 2017. This of course, held relevance to Taranaki, through the relationship held by Ngā Rauru Kītahi⁶ with *Te Awa Tupua* [20]. Within Taranaki, this is also manifest through *Te Anga Pūtakerongo*; a record of understanding between the crown and Taranaki iwi⁷ agreeing on collective redress deed and legislation for the granting of legal personality and protection to *Ngā Maunga*⁸. This agreement, however, is non-binding by nature and has yet to pass as legislation. Legal personification of *Maunga* in Taranaki, for that matter, has yet to be fully achieved. The agreement also appears confined within the immediate area of *Ngā Maunga* without explicit reference over the inclusion of waterways and landmarks outside the conservation park boundaries [22]. The Te Urewera Act of 2014 represents another example alongside the legal appointment of guardians for Manapouri, Manawai and Te Anau Lakes through amendments to the Conservation Act in 1987[23] which, ascribe to whenua and wai the deep sense of reverence and respect carried for Te Taiao by tangata whenua. The deep connection that Whanganui Iwi have with Te Awa Tupua, for instance, is reflected through their *pepeha*: Ko au te awa, ko te awa ko au (I am the river, and the river is me) [24], or in the following *whakataukī* (or proverb), “Te toto o te tangata, he kai; te oranga o te tangata, he whenua” (while food provides the blood in our veins, our health is drawn from the land) [25]. Not only does the elevation of mana in this manner afford direct protection against environmental degradation, but it also confers numerous health benefits for tangata whenua both physically - in the assured quality of mahinga kai and safety of water sources for whānau and tamariki, as well as spiritually; the elevation of mana and protection acknowledging aspects of environment as manifestations of Atua⁹. The implementation of this recommendation will require collaborative commitment between local and central governments, legislative authorities and Taranaki Iwi. The Te Awa Tupua Act is reported as “the longest running litigation over Māori land claims in NZ history” [23]; the process through which both Te Awa Tupua and Te Urewera Acts were passed, will need analysis by Taranaki Iwi to guide drafting of a bill.

Education and Awareness Measures

Education and promotion around climate change and health remained a predominant issue of mention from nearly all stakeholders; calling for more investment into initiatives that increase awareness from all members of the community. Although the knowledge regarding the impacts of climate change on health was extensive from stakeholders in this study, more work needs to be done to gauge levels of awareness from the community so as to identify areas where promotion work would be most equitably beneficial. Māori stakeholders both within and outside of the Taranaki DHB stressed the heightened interest that Māori have on issues affecting *Te Taiao*, and so ensuring awareness within iwi, hapū and whānau circles fortifies the existing benefits that *kaitiakitanga*¹⁰ confers to both health as well as the environment. The capacity for Māori to exercise both *Tino Rangatiratanga* and *Kaitiakitanga* over their natural environment is also a legal, cultural and health right for Māori in itself, necessary in the

⁵ *Te Awa Tupua* – Whanganui River

⁶ *Ngā Rauru Kītahi* is one of 8 Taranaki Iwi who’s traditional boundaries however, fall within both Taranaki and Whanganui Districts.

⁷ Specifically, *Ngāa Rauru Kītahi, Ngāti Ruanui, Ngārūahine, Taranaki Iwi, Te Atiawa, Ngāti Mutunga, Ngāti Tama* and mandated representatives of *Ngāti Maru*.

⁸ Incorporating peaks of *Maunga Taranaki, Pouākai* and *Kaitake*.

⁹ *Atua* – God or Ancestor with continuing influence. Ranginui, Papatūānuku, and Tangaroa representing gods of sky, land and sea respectively.

¹⁰ *Kaitiakitanga* - the exercise of guardianship by the tangata whenua of an area in accordance with tikanga Maori in relation to natural and physical resources; and includes the ethic of stewardship [26].

maintenance of wellbeing for Māori across the region. The Resources Management Act 1991 also mandates “particular regard” for *Kaitiakitanga* and the keeping of this ethic of stewardship around decision making regarding the management and use of physical and natural resources [26].

The recent opening of a climate change-focused school in Taranaki this year represents an innovative and ground-breaking approach to climate change mitigation and adaptation, directly targeted towards educating children on sustainability through a community-integrated and entrepreneurial approach [27]. The high costs associated with enrolment, however, highlight concerns over accessibility to Māori as well as other marginalised groups. As of 2020, the school is still in its early stages, so it may well be crucial for the Ministries of Education, Health and local governing bodies to assess the success of their teaching programs to determine the potential for implementation (and extent of government resourcing required) at a national level. The modification of existing curricula was also mentioned as another avenue through anecdotal talks, which will require analysis of the processes used recently (for instance, with proposals for change to the existing NZ History curriculum) as a guide to gauge the potential for curricular changes in Taranaki. Currently the proposed changes to the NZ History and *Mātauranga o Aotearoa* curricula require additional resourcing and funds towards the: development of the curriculum by mana whenua, implementation across schools as well as capacity development from teachers [28]. The funding requirements following will need to be appreciated before implementation in Taranaki can be assessed.

Control from Contributing Industries¹¹

One of the predominant themes, particularly from Māori stakeholders called for the direct reduction and regulation of contributing industries by both regional and central authorities. The extent of pollution and environmental degradation remains a concern, particularly for Māori as well as the Māori economy which remains heavily dependent on climate-sensitive resources [10]. Regulating these industries is likely to be a significant challenge for Taranaki, given the fact that energy and food agriculture (dairy, food cultivation and processing) represent a significant proportion of regional economic output (at 28% and 12.5% respectively) [29]. Dairy farming, in particular, is also central to the local economy with Fonterra’s Whareroa processing plant in Hāwera reported to produce the largest volume of dairy products from a single factory worldwide [30]. Regional status as the nation’s energy capital [31] is likely to impede transition efforts further bringing to question the applicability of this recommendation in the immediate future. Increasing pressures for sustainability from both local and central governments can increase the need to retrain people working in climate change contributing industries. Agricultural change is also proposed, with one highlighted example in Taranaki being New Zealand Quinoa; shifting from dairy to quinoa; much less depletive and pollutive of natural resources in comparison. One review stressed the crop’s capacity to adapt to diverse agroecological conditions worldwide; its tolerance to drought and salinity and status as an exceptionally nutritious food source [32] highlighting the potential for transition towards sustainable farming and industry in Taranaki. Employing the expertise of these established sustainable businesses to assist in retraining may aid in accelerating its implementation across the region.

Promoting Health Equity – District Health Board:

Most stakeholders made at least one recommendation around fortifying existing measures for inequity reduction. Majority of the recommendations under this theme were targeted calls for action from the

¹¹ Contributing industries, in this project, is used to define industries in Taranaki that, from the perspective of stakeholders interviewed, contribute significantly to either release of greenhouse gas emissions or release of toxic wastes that pollute the natural environment.

DHB. This represents a broader theme with wide-ranging possibilities for recommendations whose individual comprehensive implications would perhaps be more suitable for separate analysis. Those specifically collated from stakeholders in this project, however, are discussed here. The main finding from the interviews conducted, under this theme, was the discrepancy in perception of recommendations that are equity-based between stakeholders. This underscores the potential for work from the DHB around clarifying public and organisational understanding, if we are to ensure that work done by regional agencies considers those that are most vulnerable in Taranaki. Other recommendations call for redirected funding and resources, more preferably towards public and preventative health to assist inequity elimination initiatives. Discussions at the Taranaki TPAP workshops for health and wellbeing highlighted the potential for the establishment of a multi-organisational working group which, if put forward, may provide the DHB with the opportunity to ensure equitable measures are maintained through government action plans. The applicability of these changes, however, may well depend on final prioritisations made in the DHB's Annual Plan and Planning Priorities Guidance, dictating its implementation across the regional health sector.

The implications of promoting health equity are profound and carry the potential to improve climate change resilience and secure the adaptive capacity of Māori and other marginalised peoples [33]. The premise of directing Taranaki interventions specifically towards Māori are threefold: (1) Obligation as partners under Te Tiriti o Waitangi (2) Māori forming a majority within listed marginalised groups – youth and low-income (3) Pākehā (though higher proportion elderly) having more climate resilience than Māori in Taranaki [5]. Important to note is the fact that Pasifika are very much susceptible and experience similar if not greater experience of health inequity to those of Māori across several parameters [10]. The Pacific diaspora in Taranaki, however, represents 1.2% of the regional population, much smaller in contrast to the national 6.5% [19]. The need to develop strategies to mitigate these impacts for Pacific peoples in Taranaki will depend on demographic projections as well as on potential for added influx of climate change refugees into New Zealand from the Pacific region.

Strengths and limitations of the project:

A major limitation of this project was the limited number of stakeholders interviewed, with very limited input attained from individual members of the community. An issue with implications on health as expansive as that of climate change also requires more comprehensive research and analysis, which in this case was not achieved given the time constraints of this project. The need to develop more robust frameworks on which to assess the applicability of recommendations within our region is also recognised, and should assess the financial, environmental and equitable sustainability and capacity of interventions for self-perpetuity so as to ensure its ongoing implementation across the region.

Conclusion:

This project outlines several recommendations around ways to facilitate a “***just transition to healthy people living in a healthy climate***” for Taranaki. The project highlights a sound awareness of climate change impacts from stakeholders but recognises the need to conduct more research in both gauging and enhancing levels of awareness and understanding of health equity across Taranaki communities. The recommendations collated highlight the potential to enhance the resilience of those particularly marginalised through the promotion of sustainable practices, elevation of environmental mana, regulation of contributing industries as well as ongoing measures to eliminate persisting inequities. Ultimately, the hope is that these recommendations contribute both to the promotion of health equity, but also in securing the future adaptive capacity and resilience of marginalised groups in Taranaki;

within which Māori, Pasifika, elderly, young and low-income people are unfairly and unjustly impacted.

Concluding Recommendations for Public Health Unit/DHB:

- Resourcing/Funding of existing Maara Kai, Pātaka and Community Garden Initiatives as well as the promotion of establishing new initiatives within Taranaki.
- Set up a multi-organisational ‘Climate Change and Health Equity’ working group for Taranaki between DHB, Iwi, regional and district councils to draft a Taranaki Iwi Climate Change Strategy.
- Public Health Unit to:
 - Facilitate promotion and awareness initiatives towards sustainability particularly around Iwi, Hapū and whānau circles. This should include:
 - Awareness of current climate change impacts on health and ensuring understanding of health equity
 - Indigenous farming and community garden practices
 - Education on indigenous principles of sustainability e.g. Kaitiakitanga
 - Employ the expertise of existing drivers in sustainability to promote regional change in industry e.g. New Zealand Quinoa.
- Assist and engage with Iwi in drafting legal proposals:
 - Bill under the Te Anga Pūtakerongo agreement to explicitly include waterways outside of the mountain reserve boundaries.
 - Implementation of Climate Change and Health / Health Equity in school curriculum.

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Appendix 1: Email sent to stakeholders

Kia ora and Mālō e lelei,

My name is Ha'ano Fonua, one of the Yr. 5 Medical Students currently based with the Public Health unit at the Taranaki District Health Board. The Public Health Unit at TDHB are undertaking a project, which they've tasked me with, alongside Dr Jonathan Jarman (Medical Officer of Health, TDHB),

titled: *What does Taranaki need to do to have a “just transition to healthy people living in a healthy climate”?*

Climate change is increasingly considered a threat to health and health equity, cited as a “medical emergency” and requiring an urgent response.

Your work has helped identify you as a key contact, and so your input would be invaluable in helping us identify strategies to help reduce the impacts of climate change on health in Taranaki. The conclusions drawn from this project must be pro-equity, incorporate the principles of Te Tiriti o Waitangi and be the easiest to implement in Taranaki.

This will involve me asking you five key questions which should take around 15 minutes of your time. I will be happy to arrange a meeting or contact through phone, email, or video chat; or whichever medium suits your convenience best. I can be reached by email: ha’ano.fonua@tdhb.org.nz or by mobile.

Please phone me or my supervisor Dr Jonathan Jarman if you have any questions about the project. All the results will be anonymised and no one will be identifiable in the final report. I will send out a draft for comments prior to finalisation of the report.

Looking forward to hearing from you!

Mālō mo e talamonū,

Ha’ano Fonua.

Appendix 2: Questions asked from stakeholders.

1. What impact do you think climate change will have on the health of people in Taranaki?
2. Do you think that some groups of people in Taranaki will be more affected than others because of climate change? If so, who?
3. What can we do to reduce these health impacts particularly those most likely to be affected?
4. What do you think are the main things we need to do now to make sure we have a just transition to healthy people living in a healthy climate?
5. If you had to rank these, what would be the three most important and easy to implement?

Appendix 3: Glossary - all definitions from *Māori Dictionary Online*[34]

hauora: (**noun**) health, vigour.

kaimoana: (**noun**) seafood, shellfish

karakia: (**noun**) prayer, grace, blessing, service, church service - an extension of the traditional term for introduced religions, especially Christianity.

māra: (**noun**) garden, cultivation

Māramataka: (**noun**) almanac, Māori lunar calendar, calendar - a planting and fishing monthly almanac. For most tribes the lunar months began with the new moon, but for some with the full moon (Rākaunui). The start of each month was aligned to the morning rising of particular stars. The maramataka names are similar for most tribes, but the order may vary from tribe to tribe.

mauri: (**noun**) life principle, life force, vital essence, special nature, a material symbol of a life principle, source of emotions - the essential quality and vitality of a being or entity. Also used for a physical object, individual, ecosystem or social group in which this essence is located.

pā: (**noun**) fortified village, fort, stockade, screen, blockade, city (especially a fortified one).

Papatūānuku: (**personal name**) Earth, Earth mother and wife of Rangi-nui - all living things originate from them.

pātaka kai: (**noun**) pantry, food storage.

pepeha: (**noun**) tribal saying, tribal motto, proverb (especially about a tribe), set form of words, formulaic expression, saying of the ancestors, figure of speech, motto, slogan - set sayings known for their economy of words and metaphor and encapsulating many Māori values and human characteristics.

Ranginui: (**personal name**) *atua* of the sky and husband of Papa-tū-ā-nuku, from which union originate all living things.

raranga: (**verb**) (rangā,rānga) to weave, plait (mats, baskets, etc.).

rongoā: (**noun**) remedy, medicine, drug, cure, medication, treatment, solution (to a problem), tonic.

takutai moana: (**noun**) coast, foreshore and seabed

Te Taiao: (**noun**) world, Earth, natural world, environment, nature, country

Tūrangawaewae: (**noun**) domicile, standing, place where one has the right to stand - place where one has rights of residence and belonging through kinship and *whakapapa*

Urupā: (**noun**) burial ground, cemetery, graveyard

Wāhi tapu: (**noun**) sacred place, sacred site - a place subject to long-term ritual restrictions on access or use, e.g. a burial ground, a battle site or a place where tapu objects were placed.

Waiora: (**noun**) health, soundness.

Wairua: (**noun**) spirit, soul - spirit of a person which exists beyond death. It is the non-physical spirit, distinct from the body and the *mauri*.

Whakataukī: (**noun**) proverb, significant saying, formulaic saying, cryptic saying, aphorism. Like *whakataukī* and *pepeha* they are essential ingredients in *whaikōrero*.

Whanaungatanga: (**noun**) relationship, kinship, sense of family connection - a relationship through shared experiences and working together which provides people with a sense of belonging. It develops as a result of kinship rights and obligations, which also serve to strengthen each member of the kin group. It also extends to others to whom one develops a close familial, friendship or reciprocal relationship.

Appendix 4 - Table 1: Direct and Indirect Impacts of Climate Change on Health

Direct Impacts	Increased rates of injury, illness or death due to increasing frequency of extreme weather events.
	Increased rates of cardiorespiratory disease as a result of environmental pollution and contamination
	Increased prevalence of vector-borne and zoonotic disease e.g. malaria, dengue fever.
	Coastal erosion and sea level rise – loss of whenua impacting on health and cultural identity of tangata whenua <ul style="list-style-type: none"> • Impact on whenua directly impacting health • Dispossession of homeland and destruction of sacred sites likely to worsen mental health outcomes for Māori.
Indirect Impacts	Loss of food security and sovereignty can impact on community nutrition: malnutrition
	Increasing housing constraints will increase the rates of diseases associated with homelessness and overcrowding
	Increased rates of skin cancer due to increasing UV exposure
	Younger generations likely to experience more mental health problems and anxiety
	Impacts on social capital likely to worsen deprivation statistics along with associated health impacts.