# Māori understanding of the ‘damage’ of climate change

## Māori CLIMATE COSMOLOGY

Fundamentally, Māori understanding of what ‘damage’ to the climate means comes from cosmology or worldview. The environmental insights and wisdom contained in and explained by **te ao Māori** or the Māori worldview and **matauranga Māori** or Māori knowledge are presented in a narrative heuristic. This is not a statement on their objective fact but rather an inference that they should be approached for their ability to provide environmental insight and wisdom and do not require complete acceptance to deliver these outcomes. As Henare (2016, 130) explains:

“[The Māori] myth and legends are neither fables nor fireside stores; rather they are deliberate constructs employed by the ancient seers and sages to encapsulate and condense their views into easily assimilated forms of the world, of ultimate reality, and of the relationship between Creator, the universe and humanity. Worldview, then, lies at the heart of Māori culture, touching, interacting with, and strongly influencing every aspect of the culture”.

The Māori worldview can be understood as a cognitive metaphor, a conceptual model of reality understood and expressed through narrative, one that helps Māori comprehend and communicate their sense of ‘being in the world’ (Rout and Reid 2020). As Roberts et al. (1995, 8) explain, “the personification of natural phenomena… combined with metaphorical language enabled Maori to clothe explanations and meanings in poetic imagery”.

An understanding of the **atua** or gods is critical, from which a number of other key concepts will emerge. Atua are “the progenitors and personifications of all known phenomena, both living and non-living” (Roberts et al. 2004, 3). They “act as both spiritual and spatially defined signposts of the environmental realm or territory within which the information coded in the whakapapa is located” (Roberts 2012, 749). Māori “conceive of the universe as a two-world system in which the material proceeds from and interacts with the spiritual. Primacy, however, rests in the spiritual sphere” (Henare 2016, 131). Critically, there is “no distinction or break in this cosmogony, and hence in the whakapapa between supernatural and natural. Both are part of a unified whole” (Roberts et al. 1995, 9).

The Māori worldview is that all the elements of the natural world – the land seas, sky, forests and birds, winds, rain and storms, volcanic activity, as well as people – are descended from a common **tipuna** or ancestor (Hodges 1994). This means everything including humanity shares **whakapapa**, often glossed as genealogy but more accurately as ‘to place in layers’. Whakapapa “exists as a genealogical narrative, a story told layer upon layer, ancestor upon ancestor up to the present day” (Te Rito 2007, 10). As Roberts (2012, 741) explains:

“In common with other oral societies, New Zealand Maori constructed mental maps by means of which they made sense of their phenomenological world. Their cognitive template, called whakapapa, consists of a genealogical framework upon which spiritual, spatial, temporal and biophysical information about a particular place is located”.

Roberts and Wills (1998, 45) have referred to whakapapa as a “taxonomy of the universe”. It is “an analytical tool used to understand phenomena and their connections and relationships to other phenomena, locating phenomena in space and time” (Shearer 2018, 17). Whakapapa has a clear analogue in phylogeny and taxonomy, and can be seen to express the shared DNA of all living things in a narrative form.

While atua is usually translated as ‘god’ they can be better understood as the super/natural primary ancestors who personify particular environmental domains. As Toia (quoted in Tunks 1997, 73) explains, the “whanau relations between the gods are actually the way to describe the energy relationships [dynamism] between the energy sources”. Taken with the stories that cover their origins, temperaments and life histories, the atua and the whakapapa that leads from them to humans and the natural world around them provide a comprehensive understanding of reality (Rire 2012; Roberts 2012; Roberts and Wills 1998; Rout and Reid 2020). Of course, this information is encoded in a way that is foreign to the reductionist scientific worldview and contains ‘narrative tropes’, e.g. the personification of elements and environmental systems, that are considered outré by most scientists. However, when understood as a narrative heuristic the utility and accuracy of the Māori conceptual model of reality is clear.

The entwinned spiritual and natural worlds and the energy relationships can be best understood through the interrelated “metaphysical powers” of **mauri, tapu** and **mana** (Royal 2007). In a gross simplification these three can be understood respectively as the life essence, the sacredness of this essence, and the manifestation of this life essence and sacredness (Henare 2001, 208). These concepts encapsulate a two-world system of vital dynamism or unfolding creation, of an interconnected reality that has both material and metaphysical aspects which emerge out of and are embedded in mauri, tapu and mana. The can also be understood as injecting knowledge and wisdom into the data and information that make up the conceptual model (Lyver et al. 2009).

Mauri is “an interactive life force” (Henare 2001, 207) . As Tau et al. (1991, 3-4) explain, “all things are considered to have a mauri (life force) and to be living, and to have a genealogical relationship with each other” (Tau et al. 1991, 3-4). Mauri “unifies all aspects of creation, and is not without differentiation, but unity appreciative of the intrinsic spiritual worth, and difference, of each… Māori continue to see themselves as agents in an evolving cosmological community, and use whakapapa [genealogies] to actively interpret relationships in order to bring the sacred to the centre of being’” (Spiller et al. 2011, 158-159). In a glib sense, mauri is a form of ‘cosmic accounting’. It not only provides a comprehensive objective and subjective way of understanding vitality but it also creates a ledger of sorts that allows for environmental interactions to be assessed.

Tapu “means sacred, holy, sanctified, pertaining to the gods”, with Buck (1910, 21) emphasising the last component as fundamental. “Tapu is something that teaches you to respect the whole of nature” (Pēwhairangi 1975, 10). It is a “cosmic power imbued in all things at the time of creation” by the atua (Henare 2001, 207) and denotes the “intersection between the human and the divine” (Benton et al. 2012, 404). Each of Papa and Rangi’s children were conceived with their tapu and in turn they are the source of tapu for all things in creation (Henare 2001). If mauri is a form of cosmic accounting, tapu provides the ‘cosmic security’. It is the fundamental ‘asset’ upon which all transactions are based.

Tapu is also linked to mana, tapu “expresses the understanding that once a thing is, it has within itself a real potency, *mana*” (Henare 2001, 207). “All things possess *tapu* on their creation” Shirres (quoted in Beaton 2007, 23-24) explains, “and the source of the *tapu* comes from the *mana* (power/authority) of the *atua*… All things too have *mana* on their creation, however unlike *tapu* it is a power that is realised over time therefore, ‘the child who is of chiefly line has not yet the mana, the power, of a chief, but has already the tapu of a chief’”. Mana can be understood as a form ‘cosmic currency’, it is the manifestation of tapu’s cosmic security and the transactional medium of mauri's cosmic accounting.

In Māori cosmology, reality – including mauri, tapu and mana – emerged out of Te Kore or the void – with some tribes locating a supreme atua called Io in Te Kore (Roberts 2012; Royal 2007). Barlow (quoted in Royal 2007) “suggested that Te Kore means chaos – a state which has always existed and which contains ‘unlimited potential for being’”. From Te Kore arose Te Po or the night realm. These transitions represent something deeply embedded in the Māori cosmology. Māori “perceived the universe as a ‘process’, comprised of a series of interconnected realms separated by aeons of time from which there eventually emerged the natural world” (Marsden quoted in King et al. 2008, 390). A single being came into existence in Te Po, who was then separated into two primal atua, Papatūānuku (Papa), the Earth Mother, and Ranganui (Rangi), the Sky Father (Roberts et al. 1995). Papa and Rangi had numerous children who each personify and empower certain elements. Papa and Rangi’s children imbue their realms with the mauri generated from Te Kore. Patterson (1998, 71) explains that:

“[T]he mauri of all creatures are interconnected. If one creature suffers unnecessarily, that causes unnecessary harm to many others. After all, all creatures are regarded as kin, related through the whakapapa or genealogical tables that trace all beings back to Papa and Rangi, Earth and Sky. The life force or mauri of each creature descends through these genealogical chains, and so is related to that of all other creatures”.

Papa and Rangi were once too close, cloaking their children in darkness and inhibiting their vitality; some of their children wanted to push them apart while others opposed this separation. Eventually they were pushed apart, bringing forth te ao Marama or the world of light and in the process all the siblings received dominion over their environmental realms (Royal 2005). The “sundering of the parents and the concomitant burst of light into the cosmos was the spark that started life for plants, fish, birds and people” (Henare 2001, 203). This origin story shares obvious parallels with the big bang theory, both involving the creation of the universe from a void with both an expansion and the generation of light (Cheung 2008, 4). This conflict between the siblings is “the basis of the ongoing environmental struggle. The rationale for the Earth’s climatic elements and weather patterns are based on the Maori understanding of these relationships and the perpetual sibling conflict that exists” (Tunks 1997, 73). The mana of the atua is the source of the climate in the Earth’s atmosphere. (Fraser 1991; Tunks 1997).

Atua are the elemental origin of the weather and climate and “[c]hanges in weather and climate are considered the result of disagreement among the offspring over the separation” (Finucane 2009, 3). All atua are responsible for ‘the climate’ in some way, though some are considered more influential. The atua of the forest, Tane Mahuta, who pushed his parents apart is understood as the energy source responsible for the light, heat, fertility, growth and creation of all life (Tunks 1997). Tawhiri Matea, atua of weather, who opposed his parents’ severance, produces storms, rain, lightning, thunder, hurricanes, hail stones and tidal waves as a sign of his displeasure at the initial pushing apart as well as Rangi’s depletion by humanity. The Ra Ririki or stars are also understood to help control weather conditions and plant life, with Rehua (Canopus) responsible for summer heat, drought and the parching of Papa (Tunks 1997).

To be clear, the information embedded in the narratives are not just interesting stories but provide a guide to natural resource use and have a predictive capacity for weather, which is why indigenous knowledge is often referred to as ‘environmental knowledge’. Many of the narratives provide key information about critical flora and fauna cycles that help inform hunting, gathering and horticulture. Likewise, the atua narratives help with weather, seasonal and climatic predictions, often with these species’ lifecycles providing some of the critical information to inform these predictions (King et al. 2008). Māori had numerous narrative taxonomies that combined astronomy, biological lifecycles, and cloud and wind patterns, amongst others, to predict the weather, determine the shift in seasons and map climatic changes, with these narratives embedded into the environment through places names and interpreted using stories that connect them into meaningful and memorable narrative heuristics (King et al. 2008; Williams 2013). As Skipper (referenced in Goodall 2019), an expert in Māori weather prediction, explains, Māori “weather forecasting once could predict flooding months ahead with such accuracy that it makes European meteorology look error-prone. But since Europeans arrived, much of that knowledge has been lost, along with many indicators – such as trees that have been cut down”.

The mauri of the atua was strongest when the world was **utu** or in balance, before the natural processes where interfered with by humanity, who are influenced by the atua Aitua, the destructive nature of humanity, and Tu Mata Uenga, the warlike nature of humanity (Tunks 1997). Critically, in Māori cosmology it is understood that “human actions can affect climate and that all things in the environment (past, present and future) have a distinct meaning and relevance” (King et al. 2008, 391). Māori see “a natural order to the universe, a balance or equilibrium, and that when part of this system shifts, the entire system is put out of balance” (Harmsworth and Awatere 2013, 274). As Hēnare (2016, 132) notes, in the traditional Māori worldview, “people and the natural world are in a state of harmony, or balanced equilibrium towards each other”. Climate change damages the utu of the atua’s mauri in a range of ways. There are “an array of symptoms that show interlinked living systems moving away from a state of *ora* (health, well-being and abundance) towards a state of *mate* (ill-health, dysfunction, degradation and failure) (Salmond 2018, 158).

Atmospheric pollution tilts the balance and depletes mauri, forcing the atua to absorb the excess emissions. Several atua are most particularly impacted by a build-up of atmospheric heat, including Rangi Whakataka, the Earth’s atmosphere, and Tiritiri o Matarangi, the pole of light that supports Rangi Whakataka. In turn, Rangi Whakataka protects Papatuanuku and her children from the damaging heat of Tama Nui te Ra, the sun, and depletion of Rangi Whakataka exposes them to the greenhouse effect. The Hau atua, who are responsible for air, oxygen and gentle breezes, which is the **hau** or life breath, are also depleted by the increased heat in the Earth’s atmosphere. Hau is “a cosmic power and vital essence embodied in all persons and things and often described as the very essence of vitality” (Henare 2001, 211). Rising sea levels caused by global warming will interfere with the ability of the atua responsible for protecting Papa, Kiwa Mata Papango and Kiwa Parauri, to prevent the erosion of coastal lands. Even the loss of a single taonga species is critical. As Fraser (1991, 90) notes, the loss of the kauri could have a dramatic impact upon the Māori culture as the “kauri is a manifestation of Tane Mahuta (the atua, or god of the Forest). It was Tane who was responsible for prising apart Ranginui (the sky father) and Papatuanuku (the earth mother) hence allowing the profusion of life within the biosphere (Marsden, 1989). The loss or change to kauri could cause immeasurable cultural and spiritual damage to Māori”.

Humans are direct descendants of the atua, imbued with mauri at the time of their conception by hau ora (Henare 2001). They are bound together by whakapapa and this generates **whānaungatanga**. While “[o]ften translated as ‘kinship’, whanaungatanga does not refer only to family ties between living people, but rather to a much broader web of relationships between people (living and dead), land, water, flora and fauna, and the spiritual world of atua (gods)” (Waitangi Tribunal quoted in Magallanes 2015, 280). Humans are a part of and belong to the Earth, which nurtures human existence (Henare 2001). Humanity has an obligation to nurture the mauri of the atua, just as the atua nurture the mauri of humanity. “Any kinship bond implies a set of reciprocal obligations, and these are encompassed in the concept of *kaitiakitanga* - the obligation to nurture and provide care” (Waitangi Tribunal quoted in Magallanes 2015, 281). They need to act as the **kaitiaki** or guardians because they share kinship with the atua and because atua sustain humanity. Williams (2016, 319) explains that kaitiakanga is reciprocal, “[o]n the metaphysical level it refers to the various ways in which atua are manifest to support the present generation; each atua being seen to have its own area of concern. On the practical level, the practice of kaitiakitanga requires the Manawhenua [‘authority’ over the land] linked with resources in a particular locality, to mirror the kaitiakitanga of atua for the good of the entire descent group”. Natural resources are a **taonga** or treasure given to humanity, and the other flora and fauna. As Henare (2001, 206) explains, “[w]ith the idea of land and environment as gifts… go duties and responsibilities”. The Māori word for land is **whenua**, which also means placenta, representing this nurturing: the “land as the system of ecological interactions is a placenta that nurtures and sustains humanity. Humans reciprocate in special obligatory roles both the source of life and to the ‘placenta’ or ecology that nourishes them” (Henare 2001, 207). Climate change impacts humanity’s ability to act as kaitiaki of atua, reducing their capacity to ensure the utu of the mauri (Tunk 1997). As Kawharu (2000, 349-350) explains, “[a]bove all, it is through a whakapapa 'genealogical layering' paradigm, where all elements within the universe are ordered in linear (descent-time) and lateral (kinship-space) layers, that kaitiakitanga finds its rationale”. She (2000, 352) goes on to explain that kaitiakitanga is also:

“[A]bout putting resource use, development or protection in context within an historical framework of how rights to exercise kaitiakitanga are justified. This means, for example, considering the relevance of ancestral association with lands and resources, and thus the rights and responsibilities descendants today now find themselves upholding. That is, kaitiakitanga is equally about the past and managing sets of relationships that transcend time and space: between atua 'gods, spiritual beings' and ancestors on one hand, and their living kaitiaki on the other”.

Kaitiakitanga is not just focused on managing relationships between the environment and humans but also about managing the relationships between past, present and future generations.

While kaitiakitanga is motivated by love, self interest and obligation to protect and enhance the mauri of the atua it is empowered and actualised by mana – though in the post-colonial era the term rangatiratanga has come to encapsulate this aspect of mana – or more specifically their mana whenua or customary authority over and of land (Kawharu 2000). To be kaitiaki of the whenua requires having authority over the relationship with that land, kaitiakitanga requires mana/rangatiratanga. As Kawharu (2000, 353) explains, “*kaitiakitanga* is both an expression and affirmation of *rangatiratanga*… *Rangatiratanga* is the authority for *kaitiakitanga* to be exercised”. However, the traditional understanding of this authority is far more nuanced and reciprocal than the term ‘authority’ implies. The hau of “tribal land and forests is their vitality and fertility, which are also signs of their *mana*” (Henare 2001, 211). Mana is not only required to take care of the environment but taking care of the environment increases mana.

Cosmologically speaking, the damage of climate change is a disturbance of the utu of mauri caused by humanity, which in turn sees the atua move from a state of ora to a state of mate.

## Contemporary MĀORI Perspectives

The cosmological perspective is the fundamental shaper of Māori understanding regarding the damage of climate change. However, in the current era, Māori have to navigate Pākēha and wider international influences and inputs, balancing their traditional positions with contemporary practices. This is not to say that the core cosmology is undermined but rather is often adapted or operationalised to suit the exigencies of daily existence. For example, most iwi have developed environmental management plans (EMP) as part of their responsibility under the RMA. This has required ensuring a workable interface between matauranga Māori, and Western technocracy and science. This work is a useful source of a more detailed outlining of what climate change ‘damage’ is from a Māori perspective, though the majority of the work is focused on protecting the environment so generally the inferences are taken in reverse. This section will utilise Ngāi Tahu EMPs to further outline climate change damage, starting with from the cosmological perspective and drilling down into the more practical manifestations of this perspective.

Many of the plans start with a focus on the centrality of the cosmological perspective, and the relationships and responsibilities between the people and nature emerges out of this perspective. In a Te Poha o Toho Raumati (Henceforth Te Poha, 2007) produced by the Ngāi Tahu rūnanga in Kaikōura it is explained that:

Natural resources are ngā taonga tuku iho – treasures of the people handed down by our ancestors. The air, mountains, forests, lakes, rivers, coast, sea, and indigenous biodiversity have been left by our ancestors to sustain life for the generations that follow. It is the responsibility of the present generation, the kaitiaki, to ensure that such resources are protected, mō tātou, ā, mō kā uri ā muri ake nei, for us and our children after us… The kaupapa of the plan is Ki Uta Ki Tai – from the Mountains to the Sea. The philosophy of ki uta ki tai is used by Ngāi Tahu Whānui to describe an overall approach to natural resource and environmental management. It is about an indigenous understanding of the environment that can be used to help address the wide range of issues Rūnanga face with regards to environmental management. Ki uta ki tai is based on the idea that if the realms of Tāwhirimatea, Tāne, Papatūānuku and Tangaroa are sustained, then the people will be sustained. The kaupapa reflects the knowledge that resources are connected, from the mountains to the sea, and must be managed as such… Tangata whenua perspectives on natural resource and environmental management are based on a series of cultural values. Such values are the foundation of everyday management and decision making for Te Rūnanga o Kaikōura. They relate to recognising and protecting the mauri, or life supporting capacity, of air, land and water, and to ensuring that the relationship between people and the environment is characterised by respect and reciprocity.

Similarly, in another EMP produced by Ngāi Tahu ki Murihiku called Te Tangi a Tauira (Henceforth Te Tangi 2008) explains that:

Ki Uta Ki Tai is based on the idea that if the realms of Tāwhirimatea (god of the winds), Tāne Mahuta (god of all living things), Papatūānuku (mother earth) and Tangaroa (god of the sea) are sustained, then the people will be sustained… The central component of the Māori perspective on the environment is the recognition of Mauri, the life principal in all objects, animate and inanimate. The presence of Mauri in all things entrusts people to appreciate and respect that resource. In this way, overuse, depletion or desecration of natural resources is not an accepted practice. Tikanga regulate activities concerning the conservation and sustainable use of natural resources in order to protect the Mauri. Tapu is the status accorded to all elements of the natural world in recognition of the Mauri that exists in them. Tapu involves the appreciation of, and respect for another life force, and life in general. Tapu is also used as a protective measure, a means of social control for understanding and awareness of the spirituality of all things. Resource management is undertaken through the Kaitiaki (guardian) role. Kaitiaki entails those principals as they apply to specific resources within a defined tribal area. Kaitiaki is the interface between the spiritual and the physical dimensions of natural resource management. The regulatory function is derived from mana – the exercise of power… Whakapapa establishes links that maintain relationships between our people, language and their environment. All things whether animate or inanimate are connected and have Mauri, a life force. Therefore the welfare of any part of our environment determines the welfare of our people.

A third Ngāi Tahu EMP, Te Whakatau Kaupapa (1991) explains that:

Like other Maori Tribes, Ngai Tahu claim the same whakapapa through Rakinui and Papatuanuku and see themselves as connected to the other descendants of Raki and his wives. Whakapapa then, binds Ngai Tahu to the mountains, forests and waters, and the life supported by them. In this way, all things are considered to have a mauri (life force) and to be living, and to have a genealogical relationship with each other. People are therefore related to the natural world. This shared whakapapa, uniting all things, reinforces the tribal philosophy that all things are from the same origin and that the welfare of any part of the environment determines the welfare of people… As all living creatures are born from Papatuanuku (mother earth), and all return to her on their death, Maori consider that they belong to the land and not vice versa… As well as reciting their genealogical relationship with each other and with other tribal groups, Ngai Tahu also recite the whakapapa which links humankind to the atua (deities) and to the earth, to the waters, forests, animals and birds.

Across these three documents the centrality of mauri is clear, as is the interconnected nature of the environment including humanity, the spiritual, genealogical and practical relationships humanity have with the environment and the importance of acting as kaitiaki to ensure these relationships are maintained for future generations. Climate change damage is, at a fundamental level, damage to these aspects.

The EMPs blend the metaphysical and practical as they chart the spiritual underpinnings of this reciprocal relationship whilst also seeking to delineate and define the actual ways in which this manifests in relationships with the environment and its resources. Te Whakatau Kaupapa explains that:

Ngai Tahu concepts involving land, water and resources are determined by a very complex system of inter-relationships. While free to utilise the available resources, Ngai Tahu are also restrained by a system of controls… A combination of pragmatism and concepts concerning the environment provide the guidelines for resource management and control, and sustainability the over-riding consideration… The Maori system of traditional rights to, and attitudes towards land, water and natural resources evolved over time to incorporate a unique blend of religious belief, societal structure, the nature of the surrounding environment and people's reliance on that environment… The traditional Ngai Tahu system of resource allocation and control contained and reflected all of those beliefs and practices which were important to society's welfare and identity. In this way, the physical environment and the Ngai Tahu interaction with it was an unbroken combination of the past, the present and the unfolding future.

The spiritual and practical are often combined and can be located in core Māori concepts such as wahi tapu, sacred places, mahinga kai, or food gathering areas and key food species, or other taonga. These are both deeply sacred and also fundamentally useful. As Te Tāhū o Te Whāriki (henceforth Te Whāriki 2018) notes:

We will manage tribal resources wisely, continuing to protect wāhi tapu, mahinga kai and other taonga tuku iho where possible, focussing on strategic restoration activities, while actively investing in places and species of likely future abundance… Ngāi Tahu are effective kaitiaki for our taonga species and takiwā. We all understand the impacts of climate change on the natural environment, and are contributing to minimising those impacts. Ngāi Tahu Whānui are able to maintain a meaningful relationship with their tūrangawaewae and taonga species, and can continue their customary practices.

The relationship between kaitiakitanga and rangatiratanga are expressed in the documents, often in connection with wahi tapu, mahinga kai and other taonga, with Te Poha explaining:

Kaitiakitanga is inextricably linked to rangatiratanga and independence. Rangatiratanga and independence, as core values, are about the ability of tangata whenua to exercise customary authority over things Māori: over mahinga kai, wāhi tapu and other taonga tuku iho.

The intergenerational nature of kaitiakitanga was also expressed across the documents. Te Poha outlines how:

Thinking ahead for future generations is central to managing natural resources. Policies must reflect values that consider the future, as our tamariki and mokopuna are our greatest resource. It is about asking the question, “what will the impact of this activity be on those that come after us?

Similarly Te Tangi explains:

The traditional Ngāi Tahu system of resource allocation and control contained and reflected all of those beliefs and practices which were important to society’s welfare and identity. In this way, the physical environment and the Ngāi Tahu interaction with it was an unbroken combination of the past, the present and the unfolding future… [W]e belong to the environment and are only borrowing the resources from our generations that are yet to come. It is considered our duty to leave the environment in as good or even better condition than received from our tūpuna.

After outlining the cosmological groundings the EMPs move on to the ways in which colonisation impacted Māori relationships with the environment. Te Poha explains how the relationship between tangata whenua and nature has been negatively impacted by colonisation:

The relationship between Ngāti Kuri and the natural environment is crucial to cultural identity, historically and in contemporary times… The dispossession of land that followed the signing of the Treaty of Waitangi and the Kaikōura Purchase had a profound effect on the spiritual, cultural and mahinga kai relationship between Ngāti Kuri and the environment. With settlement and agriculture came land clearance, habitat loss, drainage and diversions of natural waterways, and the introduction of exotic species. As the physical landscape changed, so did the ability of Ngāti Kuri to access manage resources upon which they depended. Customary management practices, based on the principle of kaitiakitanga, once allowed tangata whenua to sustainably harvest and conserve natural resources. Over time, external management structures marginalised tangata whenua from decision making processes pertaining the lands and waters of Te Waipounamu.

The importance of the natural environment to cultural identity is a more modern emergence, not because it did not matter historically but rather that it was only following colonisation and the impacts to the environment and identity that this had that it has become salient.

The EMPs then move on to examining the contemporary environmental issues, including climate change. In Te Tangi the impacts of climate change are outlined through an expression of Māori cosmology, particularly on the need for utu in both human-environment relations as well as the practical need to use resources for commercial and social purposes:

From an environmental and spiritual perspective, Māori see the world as a unified whole, where all elements, including tangata whenua, are connected. Emphasis is placed on maintaining the balance of cultural and spiritual values in the environment while using resources for commercial and social purposes. The changes brought on by a warming climate caused by human interference directly affect this balance.

This reinforces the cosmological position that climate change is, fundamentally, a change in the balance of mauri and the cascading impacts this has on the environment, humanity and the relationships within and between. It also emphasises that resources are to be used but this use should be guided by the need to retain mauri. Te Tangi goes on to specify ways in which this damage or imbalance may manifest:

Recurring reports of the effects of global climate change highlight notable changes in seasons, fluctuating weather patterns and the frequency and insurgence of storm-like events. Although climate change is essentially global in nature, the effects of these changes are felt even more at regional and local levels. With an increase in greenhouse gas discharge at the global scale and the subsequent depletion of the ozone layer, local sources of emissions contribute further to global impacts. The effects of such in turn impact on the Southland environment. Local sources of emissions include industrial point sources, domestic and agricultural sources, burning and refuse disposal sites. These emission sources are increasingly of concern to Ngāi Tahu ki Murihiku as they essentially affect the mauri of all things, animate or inanimate at local, regional and global scales. Understanding the cumulative effects that localised emissions have on the global environment is integral when promoting the need to prevent further deterioration of our environment… The Māori world view requires higher level status in policy making given that it necessitates the need for all aspects of the environment to be considered during any activity. Ngāi Tahu ki Murihiku raise some concerns with respect to the implications on economy and industry from climate change and the associated national policies that are directed to curb such implications.

Te Whāriki places the importance of rangatiratanga and mana whenua at the heart of its approach to climate change:

ANCHORING THE FOUNDATION: Seven generations of Ngāi Tahu tūpuna fought for resolution of Te Kerēme, enabling all the opportunities we now have to lift and strengthen our people. We now have a new set of challenges, and we will do all we can to create a legacy for those whānau to come in response to the effects of climate change. We stand strong in the belief that amidst change and loss there is also hope, and opportunities to thrive.

Before outlining some of the most critical impacts of climate change:

Projected increases in the average temperature across the takiwā [territory/rohe] by up to 3ºC by the end of the century, with some areas experiencing a significant amount of additional hot days (days over 25ºC). For example, Aoraki is projected to have 80 more hot days by the end of the century under the worst case scenario.

Projected variation in rainfall across the takiwā, with some areas experiencing drought while others extreme rainfall and flooding. For example, the West Coast can expect 70% higher rainfall by 2100 under the worst case scenario.

Increases in storm intensity and frequency.

Changes to the ocean including increased temperatures, changes in currents, wave height and productivity. A significant concern is the increasing acidification of the ocean, which will have a number of flow on effects to ecosystems including key kaimoana species.

Sea level rise, which is a key concern for our coastal populations, with 2m by the end of the century being a realistic increase.

The EMPs go into great detail covering a wide range environmental issues and strategies across key ecosystems across their rohe as well as flora and fauna and elements, including air, water, indigenous species – all of which provide a detailed insight into how damage is conceived. While there is not space to cover the many hundreds of pages, the coverage of ō te hau or air from Te Tangi is insightful. First it outlines how air is viewed from a Māori perspective:

Air is a taonga, valued for its life supporting capacity for all things. As with other taonga, the life supporting capacity of air must be maintained and enhanced, used with respect and passed on to the next generation in a healthy state. For Ngāi Tahu, the sky is Ranginui, father of the earthy progeny of Papatūānuku. Ranginui is adorned by celestial bodies such as the moon and the stars, and is associated with life and light. Following the separation of Ranginui and Papatūānuku (the sky and the earth), their child Tāwhirimatea fled with his father to the sky. From there, he presided over the elements, including the rain, wind, breezes, mist, dew and snow.

It then provides a range of indicators for air and atmosphere:

* Visibility
* View of specific landmarks
* Natural quiet
* Celestial darkness
* Ability for sound to carry naturally
* Darkness, unimpeded by light
* Ability to breathe uncontaminated air
* Ability to hear the sea
* Purity of air (smell, taste)
* Clean rain
* Ability to smell the sea

After covering local air issues it provides an outline of global air and atmosphere:

Discharges to air at a global scale and the depletion of the ozone layer are issues of concern for Ngāti Kuri. Such issues can manifest in global changes to temperature (climate), sea level, and the frequency, intensity of weather events such as storms.

And key issues at this level:

* Cumulative impacts of farming practices on global air quality
* Cumulative impacts of deforestation on carbon dioxide levels
* Cumulative impacts of vehicle emissions from increased population and development
* Health effects of increased solar radiation
* Sea level rise and impact on coastal areas

Across these the influence of the Māori cosmological view is clear whilst the more specific components of what damage means are also provided.

Climate change damage has nested meanings: first the damage is to both parts of the ecosystem, specifically to its mauri, and, consequently, to the mauri of the ecosystem as a whole. The next level is damage to the spiritual, cultural and practical relationships Māori have with the ecosystems, including Māori capacity to protect and care for nature as kaitiaki, enabled by rangatiratanga. The third level of damage is to current and future Māori wellbeing. Furthermore, climate damage means that each of these levels independently and interconnectedly lose their balance

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