



Te Tiriti o Waitangi, Tikanga Māori and the Marine Environment

A Sustainable Seas National Science Challenge Research Project

Literature Review

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The background of the page is a deep teal color with a dense, repeating pattern of small white crosses, which is a traditional Māori symbol for the Te Tiriti o Waitangi. The pattern is slightly offset and creates a textured, woven appearance. In the center of the page, the word "CONTEXT" is written in a large, bold, white, sans-serif font.

CONTEXT

This literature review has been developed as a component of Research Aim One of the Tangaroa Ararau – Te Tiriti o Waitangi, Tikanga Māori and the Marine Environment research project.

The purpose of the review is to collate relevant literature to grasp a thorough understanding of the research area, to assist in defining the focus and boundaries of the research. The review will be a key component to the development of a framework that will set the direction and guard rails for the research project and will be the starting point for the investigation into the identified research focus areas.

This review will be supplemented by discussions with tikanga and Te Tiriti experts and through wānanga, these components will be brought together. The outcomes from this process will be critical to ensure that the research approach and therefore the governance model options and transitional pathways that are to be developed are authentically and genuinely underpinned by Te Tiriti and Tikanga Māori.

The Literature Review includes a summary of the findings of relevant research conducted in Phase One of the Sustainable Seas National Science Challenge and other relevant literature. These reports and documents are organised according to the following themes:

- Tikanga
- Te Tiriti
- Policy
- Legislation
- Constitutional Matters
- Management Tools
- Governance Frameworks.

SUSTAINABLE SEAS NATIONAL SCIENCE CHALLENGE - PHASE ONE RESEARCH PROJECTS

Tangaroa

He Pou Tokomanawa: Kaitiakitanga in practice in our marine environment¹

This project gathered data and research through wānanga, interviews and hui to guide the formulation of a culturally relevant pathway for iwi in Te Tai o Aorere me Mohua (Ngāti Koata, Ngāti Rārua, Ngāti Tama and Te Ātiawa) to engage in the evaluation and development of Eco-Based Management (**EBM**) tools and processes.

The goals of the project were to:

- examine mātauranga Māori to contribute towards defining and restoring the cultural context of Te Tai o Aorere and Mohua;
- evaluate environmental frameworks from a mātauranga Māori perspective to inform the development of a kaitiakitanga framework; and
- develop a working relationship with the wider Challenge projects to initiate a marine EBM interface dialogue process, 'Te Wheke Hononga'.

One of the outcomes included the creation of a local knowledge repository, which is a user-friendly resource for mana whenua, and those working in resource management roles.

Four additional reports specific to Ngāti Koata, Ngāti Rārua, Ngāti Tama and Te Ātiawa were produced bringing together mātauranga on observations of changes to the mauri and ecological health of the moana and coastal areas throughout Te Tai o Aorere me Mohua. The reports draw attention to issues affecting kaitiakitanga in practice, including the extent to which the exercising of kaitiakitanga has been compromised due to external influences and imposed management structures, as well as the hopes of mana whenua in ensuring that the dreams and aspirations of their people are met in ways that enhance and restore the wellbeing of the moana and the life that lives in it.

Hui-te-ana-nui: Understanding kaitiakitanga in our marine environment²

This project aimed to (1) analyse mātauranga associated with the marine environment and (2) analyse the literature, reports, and frameworks relating to Māori perspectives of the marine environment. Aim (1) examined and analysed karakia, mōteatea, pēpeha, whakataukī, and pūrākau regarding the marine environment, while aim (2) examined current Māori beliefs, practices, ecology and rituals pertaining to the marine environment through an analysis of literature, reports and frameworks relating to mātauranga and kaitiakitanga.

The project's main finding is the hononga tāngaengae (unbroken connection) between Māori and the marine environment from time immemorial to today. Aim (1) found that the sources examined (e.g., karakia, mōteatea) are relevant for EBM, while the aim (2) found that the two key elements of kaitiakitanga – the metaphysical and physical – are vital and critically linked, providing insight to how the connection between Māori and the environment is fundamental to the hauora (wellbeing) of people and the environment.

The research also highlighted the need for the development of a system and framework that protects and safeguards mātauranga and kaitiakitanga of the marine environment, and enables the advancement and contribution consistent with Māori aspirations.



Tahu Matatau Te Ao Tangaroa. Empowering the kaitiaki of Ngā Whare³

This project aimed to empower kaitiaki of Tauranga Moana with environmental management approaches, frameworks and tools, via the development of a Pātaka Mātauranga (online resource center) to empower frontline kaitiaki.

The Pātaka Mātauranga was developed using 'core' Māori values to guide the digital build process, which included the 'telling of kaitiaki stories' and linking these stories via digital hyperlinks based on whakapapa / genealogical links.

Tuhonohono: Tikanga Māori me te Ture Pākehā ki Takutai Moana⁴

This project explored how laws and institutions in Aotearoa New Zealand could evolve to reflect the best Māori and European values and concepts. The report focused on analysing how tikanga Māori and EBM align and how they could apply within the resource management normative framework of Aotearoa New Zealand to stem the current trend of environmental degradation.

The report also analysed the Canadian Great Bear Initiative EMB as a comparative model of EBM in practice that could be considered further for Aotearoa New Zealand.

Overall, the project supported the adoption of an approach to EBM that acknowledges the Treaty partnership and which fully integrates mātauranga and tikanga Māori. It also supported the adoption of authentic Māori power-sharing arrangements to implement EBM through Treaty settlements, as well as the effective implementation of current mātauranga and tikanga Māori statutory provisions already included in the Resource Management Act 1991 and other important statutes. Rangatiratanga denotes not only the mana to possess resources but to also govern and manage them in accordance with one's preferences.

Whai Rawa, Whai Mana, Whai Oranga: Creating a world leading indigenous blue economy⁵

This project examined existing models and frameworks of mātauranga Māori used in the management of the marine ecosystem and economy through the analysis of hapū and iwi approaches to integrated management and by identifying the structures and operating principles of Māori marine organisations.

The report used seven case studies of Māori marine-based enterprises in Aotearoa NZ to examine aspects of their business operations that resonate with kaitiaki-centred business models. The case studies suggested that where Māori have more control, they manage things better. This in turn suggests that the Māori marine economy would benefit if kaitiaki-centred business models were recognised and formalised to allow fishers to control the quota allocation process and set their own boundaries.

Whaia te Mana Māori Whakahaere Tōtika ki Tangaroa – In pursuit of Māori governance jurisdiction model over marine resources⁶

This project aimed to co-develop and produce research on 21st century Māori governance jurisdiction models, frameworks and best practices, to support EBM for the marine environment that is consistent with Māori tikanga and mātauranga.

The report found that EBM could allow Māori to take a proactive role through co-governance and co-management of the coastal marine environment as originally envisaged in the Treaty of Waitangi. As such, the project supported the adoption of an inclusive EBM approach that enhances the principles of partnership underscored by the Treaty of Waitangi and that meets the diverse commitments to Indigenous peoples enunciated in the United Nations Declaration on the Rights of Indigenous Peoples 2007 (UNDRIP) as this provides an opportunity to normalise shared Māori-Crown co-governance and concurrent governance jurisdiction in sustainable resources.

The report also examined the Great Bear Initiative in Canada, and the Great Barrier Reef Marine Park Act 1975 in Australia, which include degrees of shared concurrent jurisdiction and consensus building among Governments, stakeholders, and Indigenous communities that were underpinned by EBM.

Overall, the report concluded that the Aotearoa New Zealand approach to any EBM initiative needs to fully acknowledge the Treaty of Waitangi partnership and to integrate mātauranga and tikanga Māori through shared co-governance with concurrent jurisdiction over the marine and coastal seascape. Importantly, mātauranga and tikanga Māori environmental perspectives deserve to be fully integrated, not treated as an afterthought or as matters placed in opposition to a dominant mainstream New Zealand Western paradigm.



Vision Mātauranga

Incorporation of indigenous approaches to guardianship in ⁷

This project evaluated how indigenous approaches have been incorporated into Canada's marine resource management policies using two cases studies of EBM in Canada. The two cases studies use EBM in a way that incorporates indigenous perspectives and aspirations.

The project identified five elements to consider when developing EBM that successfully incorporates indigenous perspectives and aspirations and which could be applied to New Zealand's marine management:

- *Power dynamics* – Canada's 'enabling' legal framework supported transformative shifts in policy making, engagement between First Nations and Government, and decision-making.
- *Jurisdiction* – Any party that has jurisdiction over the location, resource and/or activities should be involved in developing EBM otherwise there is a risk of conflict and ineffective co-governance.
- *Adaptive management* – 'Learning by doing', i.e., an iterative process that feeds back into future decision-making and adapts to uncertainty and/or changes in the ecosystem.
- *Agency* – Ensuring indigenous people can participate in decision-making.
- *Recognition* – Acknowledging indigenous knowledge as legitimate and using it alongside Western science through shared governance and participative bottom-up planning processes and monitoring.

Enabling Eco-Based Management

EBM within Aotearoa New Zealand's existing legislative framework ⁸

This project looked at how well EBM aligns with Aotearoa New Zealand's legislation, policy and governance relating to the marine environment with the aim to improve understanding of the opportunities and constraints for EBM under current legislation and in decision-making processes.

The main finding was that current policies and laws are partially consistent with most of the principles of EBM. It also considered EBM to align well with Māori customary management, as both are holistic concepts aiming to care for and sustainably use marine resources.

One aspect of the project looked at how well the current policy and legislation supports rāhui. The project found that there is limited provision for rāhui to be practiced and, even where it is provided for in law or policy, it is disconnected from the tikanga Māori on which it is based.

Our Seas

Enabling inter-agency collaboration on cumulative effects⁹

This project produced guiding principles and a decision-making tool, the Aotearoa Cumulative Effects (ACE) framework, to help decision-makers manage the cumulative effects of human activities and natural events on the marine environment.

Frameworks for achieving and maintaining social licence¹⁰

This project investigated the use of 'social licence' in public discussion about commercial operations in the marine environment and its implications for industry-community relations. The key finding was that the term is mainly used by Government and industry in a way that claims or implies social licence to operate already exists. As such, changing how the term is used could send a more empowering message to iwi and community groups about seeking their acceptance and trust.

Navigating marine social-ecological systems¹¹

This project used social science to examine key issues in the marine environment with the aim of identifying and/or improving understanding of institutional, social and cultural factors that need to be incorporated into EBM for it to be successfully used to manage Aotearoa New Zealand's marine resources.

Some highlights from one aspect of the project include:

- Long-term shared visions are needed to address cumulative effects across boundaries.
- Scenario planning encouraged key decision makers and stakeholders to connect.
- Different kinds of knowledge are needed to assess and manage cumulative effects.
- Participants desire respectful and balanced social-ecological relationships.
- Clear, cohesive standards could encourage investment in sustainable resource use.

Participatory process for marine ecosystem restoration¹²

This project examined the interactions between council and community that led to the partial re-diversion of the Kaituna River into the Maketū estuary, which was done to restore the estuarine habitats.

The main finding was that while marine science is an important aspect of developing a restoration strategy, the planning process was a social and political activity. Further, the reason the strategy was successful overall was because it allowed for multiple perspectives to be heard and fostered mutual learning among participants and the development of a common vision.

Testing participatory processes for marine management¹³

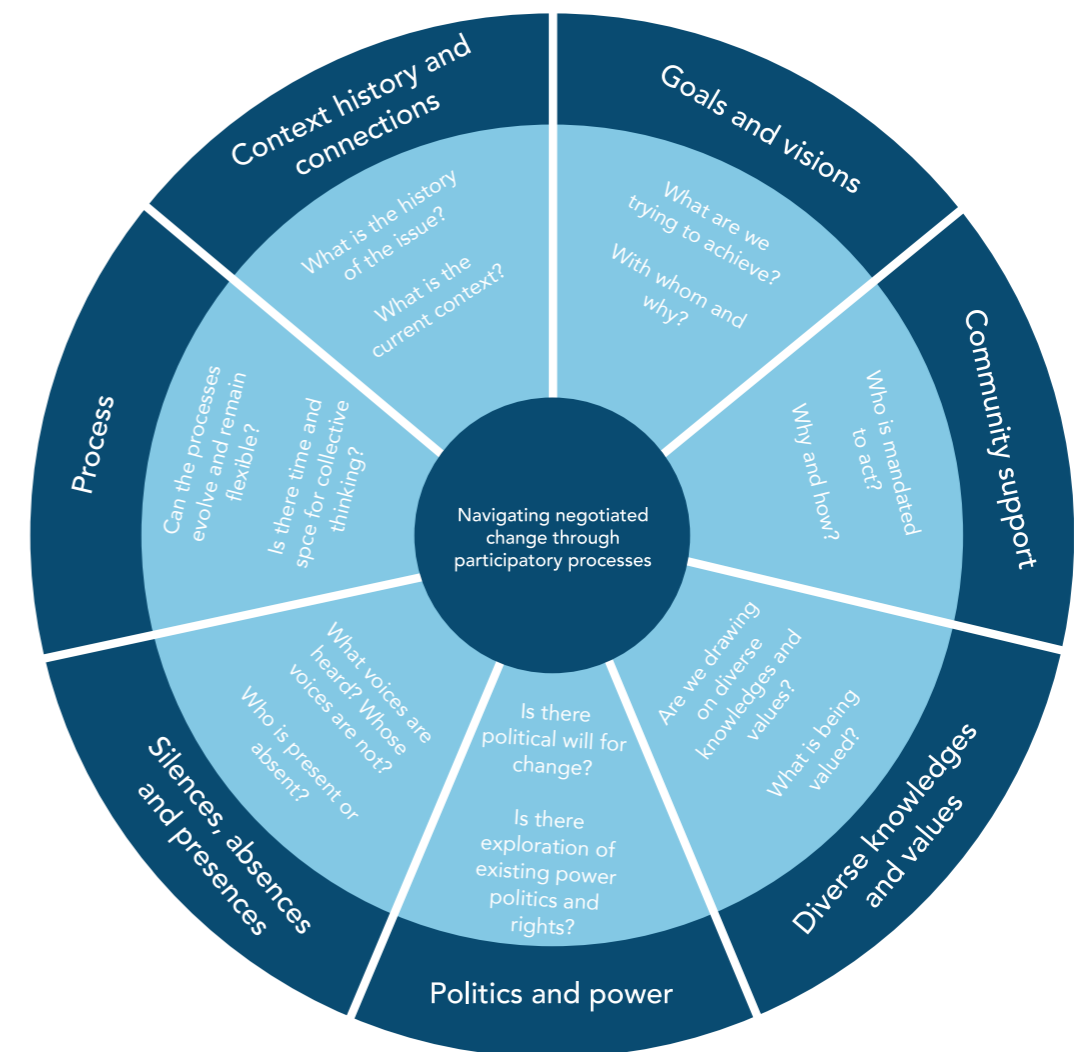
This project identified the best ways to involve interested parties in decision-making about the governance and management of marine environments.

The main finding was that people participate in decisions about the marine environment in different ways depending on the opportunities available. While there is no single way that ensures success, the project identified the following key factors:

- Encouraging co-learning/social learning within the participation process.
- Providing room for co-design and co-facilitation in any process.
- Building capacity for co-leadership throughout.
- Involving a diverse range of people.
- Recognising that participatory processes are mandated bases for action that must be constantly refreshed.
- Negotiating a vision that is transformational, then focusing on how to implement it.

The project also produced an 'ingredients tool' to be used by marine managers and other to support broad participation in marine decision-making and which help build consensus and reduce conflict.

Ingredients to catalyse participation in marine decision-making



Valuable Seas

Creating value from a blue economy¹⁴

This project studied initiatives to create economic value from sustainable marine activities that are based on healthy ecosystems. The findings of the project were used to map and model a blue economy.

Overall, the project identified the following activities as helping Aotearoa transition to a blue economy:

- Investor commitments to sustainable futures (Seafood New Zealand's 'Our Promise' campaign), consumer-oriented and community education programmes;
- the emergence of Māori enterprises with long term and kaitiakitanga approaches to blue economy;
- blue economy champions (individuals and organisations) who support participatory resource management processes; and
- a host of practices from precision seafood harvesting to harvesting of seaweed.

Development of valuation frameworks and principles¹⁵

This project engaged with 'values-holders', including iwi, regarding their experiences trying to communicate and give evidence for their values in planning processes in the Marlborough Sounds to identify frameworks and principles for recognising the multiple values of the marine environment to support eco-based management.

The project found that formal marine environment valuation and decision-making processes can alienate participants, demanding huge investments of time and personal sacrifices. Decision-makers identified that they are often constrained by legislation and would welcome a systematic way to identify and assess values. Māori resource management professionals said, among other things, that decision-making should be based on the Te Tiriti o Waitangi.

A number of principles about valuation practices and decision-making processes that would acknowledge diverse values and values-holders, and help to maintain confidence in democratic institutions were identified. Principles suggested by Māori resource management professionals included:

- Te Tiriti o Waitangi is the over-arching framework within which ecosystem-based management should sit, not the other way around.
- Decision processes should reflect the Treaty partnership – decisions should 'give effect to' and not just 'consider' iwi views. If Treaty partners do not agree, they should talk further.
- Iwi should be recognised at a governance level—kanohi ki te kanohi (face to face).
- Co-governance and co-management should be properly resourced. It is not a true partnership if one party controls all resources.
- Decisions and decision-making processes should:
 - recognise past abundance as a goal for the future
 - recognise that people are part of the food chain—if te taiao is not healthy, people are not healthy; and
 - recognise and maintain mātauranga Māori about living from the land and the sea.

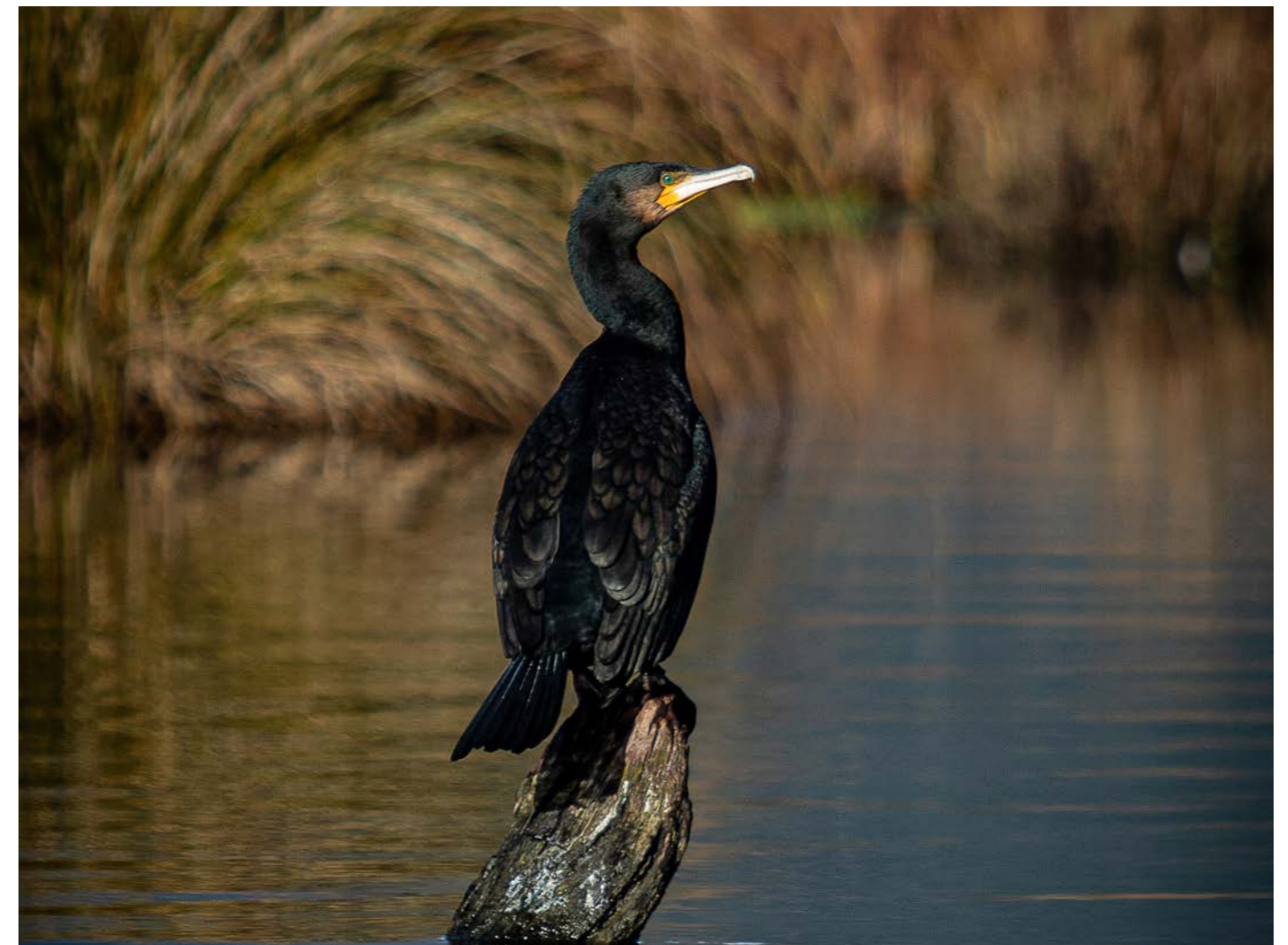
Mauri Moana, Mauri Tangata, Mauri Ora – Assessing the values New Zealanders hold for the marine environment (Te Waka Taurua model)¹⁶

This project explored ways to assess the values New Zealanders hold for the marine environment.

The project identified three key social values emerging from people's association with the sea in Aotearoa New Zealand:

- Physical benefits and recreational activities, such as surfing, swimming and fishing;
- Spiritual benefits, such as peace and tranquility;
- Communal benefits, such as social cohesiveness through shared activities or whānau gatherings at the beach.

The project proposed a Waka-Taurua model as a metaphorical framework for facilitating the development of collaborative initiatives. The model can be used to develop systems that recognise indigenous worldviews, tools and approaches equitably with EBM.



OTHER RELEVANT LITERATURE

Tikanga

*Māori methods and indicators for marine protection*¹⁷

This project worked with two Māori communities (Ngāti Konohi, Ngāti Kere) to determine whether the marine protection mechanisms provided by the Government could assist them with achieving their community goals for their rohe moana, as well as the Government's own marine protection goals.

The overall finding was that the current marine protection mechanisms have the potential to be used in an integrated way to achieve both these purposes, but that there are issues that need to be addressed to facilitate Māori understanding and implementing these measures.

While the models and plans developed by Ngāti Konohi and Ngāti Kere largely drew on existing mechanisms (i.e., Taiāpure and Mātaitai Reserves, coastal management plans), they also incorporated mātauranga Māori elements:

- One of these was to develop Māori marine indicators (tohu) that Māori could use to measure the health of the marine environment
- When used alongside western scientific monitoring methods, tohu can help to draw a more holistic picture of the marine environment
- Example of tohu used are: flowering of the kowhai and/or pohutukawa, seasonal feeding patterns, presence of predator fish, dolphins and seabirds
- Ngāti Kere and Ngāti Konohi each published separate pieces of research around developing tohu as ongoing monitoring tools – I have added these to our further research list.

The philosophies used by Ngāti Konohi and Ngāti Kere in devising marine management strategies included:

- “Te ira a Tangaroa” – describing the intrinsic value of the moana and the importance of handing something back to Tangaroa (p 47)
- Sustaining the mauri of the rohe moana (p 17)

*Noho Taiao: reclaiming Māori science with young people*¹⁸

- This article explores the impact of the Te Rārawa Noho Taiao project (a place-based learning approach for rangatahi that reimagines the way they engage with knowledge, science and understandings of the natural world) on educational and health outcomes.
- The researchers used Kaupapa Māori methodologies to assess the impact of the project. They noted that Kaupapa Māori research assumes approaches that position lived indigenous experience as more than “anecdotal” accounts. This study therefore drew on interviews and surveys of taura who participated in the Noho Taiao project.
- The main conclusion of the study is that the project contributed positively to both educational and health outcomes for taura who participated.

Māori Custom and Values in New Zealand Law¹⁹

The purpose of this paper was to examine how Māori custom and values impact on our law; and to consider ideas for future law reform projects to give effect to Māori values in the laws of New Zealand.

The paper notes that tikanga Māori survive on marae and in Māori homes with regard to the protection and utilisation of natural resources, especially those of the forest and coast (para 117).

The paper explores a number of central values that underpin tikanga, being: whanaungatanga, mana, tapu, utu, and kaitiakitanga.

- Whanaungatanga is the most pervasive and denotes that fact that relationships are everything – between people; between people and the physical world, and between people and the atua.
- Kaitiakitanga: is most often applied to the obligation of whānau, hapū and iwi to protect the spiritual wellbeing of the natural resources within their mana. It is difficult to divorce kaitiakitanga from mana or tapu (para 163)
- Kaitiakitanga requires the observance of conduct respectful to the resources in question – thus each hapū or iwi had or has clear prescriptions as to the manner in which fishing activity may be undertaken. It is common for example that the first fish is returned. It is also common that no gutting of fish or shelling of shell fish is allowed to occur below the high-water mark, which would detract from the tapu of the sea (para 166)
- Kaitiakitanga is a critical element in activities impacting on resource management and fisheries.

Indigenous Knowledge, Methodology and Mayhem: What is the Role of Methodology in Producing Indigenous insights? A Discussion from Mātauranga Māori²⁰

This article considers the role of methodology in producing indigenous insights and argues that dominant research methodologies are working to consolidate and institutionalise indigenous knowledge (IK) away from its communities and contexts.

In relation to environmental knowledge, the article notes that in many contexts indigenous knowledge is bound to place and to deep knowledge of the environment. One of the strengths of IK of the environment is accumulated observation over long periods of time and across several generations.

More generally, the article explores the nature of indigenous knowledge and how incompatible it is with mainstream research methodologies.

Mercury NZ Ltd v The Waitangi Tribunal [2021] NZHC 654²¹

This is a High Court decision overturning a preliminary determination by the Waitangi Tribunal to order that land in the central North Island (within the traditional rohe of Ngāti Raukawa and Ngāti Tūwharetoa) be returned to Ngāti Kahungunu ownership. The High Court found that to return land to Ngāti Kahungunu would not be consistent with tikanga or the Treaty of Waitangi.

The background to this was that these lands had earlier been gifted to Ngāti Kahungunu by the Crown as compensation for the loss of their own lands in Wairarapa. The Tribunal found that this did not give Wairarapa Māori tangata whenua status there, but meant they were akin to Pākehā landowners in the district. But the Tribunal did not let the mana whenua arguments influence their discretion to recommend the return of the land to Ngāti Kahungunu (see at [97]).

The High Court found that the Tribunal was not permitted to exercise the resumption powers in a way that was not consistent with the Treaty and therefore with tikanga [104].





Re Edwards (Whakatōhea) (No2) [2021] NZHC 1025- Granted Recognition Orders for Customary Marine Title²²

This was a High Court decision concerning a number of applications for orders under the Marine and Coastal Area Act in the area from Ōhiwa Harbour to Opōtiki. It resulted in a finding that a number of hapū and iwi were jointly entitled to customary marine title orders, and a number of other hapū and whānau were entitled to protected customary rights orders.

Among the key findings of the court were the following:

- In relation to the phrase “holds the specified area in accordance with tikanga” in the Act, “because of the ‘sui generis’ nature of customary marine title, the critical focus of the assessment under this element must be in tikanga, rather than on western proprietary concepts”
- In relation to the phrase “exclusive use and occupation” in the Act, “the concept of ‘share exclusivity’ taken from Canadian jurisprudence, was consistent with the purposes of the Act and could be applied in the circumstances to allow for a single customary marine title order over the claimed takutai moana area shared between the applicants.
- In relation to the phrase “substantial interruption” in the Act, “while certain physical activities allowed under resource consents and certain physical structures could amount to substantial interruption, the granting of a resource consent itself could not. Furthermore, the loss and confiscation of the applicants’ land through raupatu did not sever their connection to the takutai moana”

In terms of the tikanga involved in the proceedings,

- the Court acknowledged tikanga as the first law of Aotearoa New Zealand, and the growing intersection between tikanga and the common law. It considered a range of tikanga values put forward by the applicants, particularly the concept of whanaungatanga and the importance of whakapapa and its interconnectedness. The Court quoted the following passage:
- The point is that whanaungatanga was, in traditional Māori society, not just about emotional and social ties between people and with the environment. It was just as importantly about economic rights and obligations. Thus, rights depended on right holders remembering their own descent lines as well as the descent lines of other potential claimants to the right.

It was concluded that through their whakapapa, a number of the applicants had links to the earliest Māori settlement of the eastern Bay of Plenty, and that they had been able to establish their mana (authority, control, power) in relation to the whenua and the takutai moana

Waitangi Tribunal – Motunui-Waitara Report (1983)²³

This claim investigated degradation of coastal water and reefs within the rohe of Te Ātiawa.

Te Ātiawa gave evidence about the tikanga attaching to the harvesting and preservation of the reefs, including:

- The harvesting of seafood rotationally and in appropriate seasons;
- The preservation of the beds in their original state to the extent that even a dislodged rock is returned to its original position
- The avoidance of all forms of despoilation from rubbish and waste to human and animal excreta
- The placing of rāhui on the gathering of seafood following the loss of a body at sea or to guard against over exploitation
- The avoidance of gutting fish or shelling shellfish below the high-water mark
- A prohibition on gathering of shellfish by women during menstruation

Waitangi Tribunal – the Muriwhenua Fishing Report (1988)²⁴

As part of the inquiry, the Tribunal summarised the laws of Tangaroa (tikanga around fishing).

These included rules that were directed to the maintenance of clear water and balanced fish habitats, such as:

- It is forbidden to gut fish in the open seas, or to dispose of small fish, excess bait, food or rubbish
- Crews did not take food with them
- No drag nets were allowed because they killed the fishing ground
- The waters should not be muddied
- Sacks and baskets must be lifted, never dragged over shellfish beds
- Dislodged rocks must be returned to its exact position
- If the feeler of a crayfish is snapped off, it must be recovered before further crayfish



Māori environmental knowledge of local weather and climate change in Aotearoa-New Zealand²⁵

The ability of Māori to understand, record and forecast weather and climate has been an important factor in successfully responding to past weather and climatic change in New Zealand. Through interacting with local environments over the centuries Māori have developed a wealth of environmental knowledge, with the lessons learnt having been incorporated into traditional and modern practices of agriculture, fishing, medicine, education and conservation.

In partnership with the tribal group Te Whānau-ā-Apanui, NIWA's Māori Research and Development Unit (Te Kūwaha o Taihoro Nukurangi) initiated a pilot project to identify and document Māori environmental knowledge (MEK) of weather and climate in New Zealand. Using a Kaupapa Māori based research approach and semi-directive interviewing, an intimate understanding of local weather and climate was demonstrated by elders from Te Whānau-ā-Apanui. This knowledge includes the use of a vast indigenous nomenclature for local weather and climate phenomenon, the oral recording of weather and climate-based events and trends, and the identification of environmental indicators to forecast weather and climate. Learning from this knowledge provides an opportunity to understand what has helped Māori adapt to weather and climate variability in the past. It also provides clues on how to enhance present day Māori and western scientific understanding of local weather and climate in New Zealand.

Indigenous Knowledge of Biodiversity Conservation²⁶

Indigenous peoples with a historical continuity of resource-use practices often possess a broad knowledge base of the behaviour of complex ecological systems in their own localities. This knowledge has accumulated through a long series of observations transmitted from generation to generation. Such "diachronic" observations can be of great value and complement the "synchronic" observations on which western science is based. Where indigenous peoples have depended, for long periods of time, on local environments for the provision of a variety of resources, they have developed a stake in conserving, and in some cases, enhancing, biodiversity. They are aware that biological diversity is a crucial factor in generating the ecological services and natural resources on which they depend. Some indigenous groups manipulate the local landscape to augment its heterogeneity, and some have been found to be motivated to restore biodiversity in degraded landscapes. Their practices for the conservation of biodiversity were grounded in a series of rules of thumb which are apparently arrived at through a trial-and-error process over a long historical time period. This implies that their knowledge base is indefinite and their implementation involves an intimate relationship with the belief system. Such knowledge is difficult for western science to understand. It is vital, however, that the value of the knowledge-practice-belief complex of indigenous peoples relating to conservation of biodiversity is fully recognized if ecosystems and biodiversity are to be managed sustainably. Conserving this knowledge would be most appropriately accomplished through promoting the community-based resource-management systems of indigenous peoples.

The Role of Indigenous Communities in the Pursuit of Sustainability²⁷

The relationship between indigenous knowledge and sustainability has been increasingly applauded in recent years. Indeed, 'indigenous sustainability' has been acknowledged worldwide - not only by individual commentators, but also by NGOs and governments. The value of indigenous knowledge is again affirmed by acknowledgements contained within international agreements such as Agenda 21, the Rio Declaration, the Convention on Biological Diversity, and the Earth Charter. This paper evaluates the validity of these claims both on a general level and in a specifically New Zealand context. To this end, key principles underpinning tikanga Māori are examined in light of two highly regarded environmental ethics: the stewardship ethic and Aldo Leopold's land ethic. This analysis reveals that tikanga Māori systems of resource use and management have much to offer a world seeking sustainability. However, it must also be stressed that the integration of such concepts into the mainstream requires an informed, considerate and objective approach that both empowers and includes tangata whenua.



Te Tiriti o Waitangi

Human Rights and the Treaty of Waitangi²⁸

This document outlines the relationships and synergies between human rights and the Treaty of Waitangi. The paper identifies these synergies most strongly in relation to UNDRIP – and argues there is considerable scope for UNDRIP to be used to support, clarify and promote understandings of human rights dimensions in the Treaty.

The paper then goes on to assess whether the human rights of indigenous peoples in New Zealand are being realised, across a number of different areas. It concludes that the level of recognition and protection varies.

A Guide to the principles of the Treaty of Waitangi as expressed by the Courts and the Waitangi Tribunal²⁹

This paper provides a detailed summary of the Treaty principles as expressed in the Courts and the Waitangi Tribunal (Tribunal) reports. Some key points are as follows:

- Both the Courts and the Tribunal consider partnership entails the duty to act reasonably, honourably, and in good faith.
- Integral to the Tribunal's understanding of partnership are the status and accountability of the Treaty partners, the need for compromise and a balancing of interests (the principle of mutual benefit), the Crown's fiduciary duty, and the duty to make informed decisions (this encompasses the duty to consult on matters a reasonable Treaty partner would be expected to consult on).
- The Tribunal considers partnership describes a relationship where one party is not subordinate to the other but where each must respect the other's status and authority in all walks of life (the principle of reciprocity).
- The Tribunal has found that acting reasonably, honourably, and in good faith requires both Treaty partners to acknowledge each other's respective interests and authority over natural resources. This requires arrangements between the Treaty partners that acknowledge the wider public interest responsibilities of the Crown, but which also protect tribal tino rangatiratanga.
- The Tribunal's understanding of active protection is underpinned by its understanding of the exchange of sovereignty for the protection of rangatiratanga. It encompasses the Crown's obligation to protect Māori capacity to retain tribal authority over tribal affairs, and to live according to their cultural preferences.

A Discursive Analysis of Rangatiratanga in a Māori Fisheries Context³⁰

This paper examined the multiple meanings and understandings of rangatiratanga within the context of Māori fisheries management contained within three Te Tiriti o Waitangi translation texts and six Waitangi Tribunal texts relevant to fisheries.

The meanings and understandings of rangatiratanga identified were:

- Full possession
- Chieftainship
- Trusteeship
- Authority
- Mana
- Sovereignty
- Governance
- Self-management/tribal sovereignty

The paper concluded that:

[...]the principles of the Treaty of Waitangi ... act to limit the definitions as well as introduce new concepts for understanding such as the discourse of consultation, recognised as the principle of the duty to consult. The principle of the duty to consult, while it recognises and outlines the role of the Crown to consult with Māori on issues such as resource management, also restricts the authority of Māori because their role is limited to being only consultative. The principles of the Treaty of Waitangi, while retaining the spirit of the Treaty, in fact limit and restrict the full authority that is guaranteed under the Treaty. Furthermore, the principles of the Treaty of Waitangi could be seen as detracting from the discourses of rangatiratanga. Thus, within the context of Māori fisheries management it remains to be seen whether rangatiratanga is truly provided for other than as "window dressing" (Waitangi Tribunal, 1988, p. 85).

Māori values and perspectives to inform collaborative processes and planning for freshwater management³¹

This report is part of the Ministry for Business, Innovation and Employment funded science programme Integrated Valuation and Monitoring Framework for Improved Freshwater Outcomes (VMO), which is focused on freshwater management issues in Aotearoa. The report sought to provide Māori values and perspectives that inform collaborative processes and planning for freshwater management.

Overall, the research identified a number of useful tools that help inform the collaborative process towards achieving agreed or desired freshwater outcomes. The information collated in the study confirmed that the terms 'co-governance', 'co-management', and 'co-planning' are often used interchangeably and are not well defined, with there being many existing and emerging models of co-governance and co-management around New Zealand. The report proposed that, from a Māori perspective, co-governance, co-management and co-planning are stages in a process or collaborative cycle, with co-planning being an advanced stage that requires excellent relationships to be formed and recognition, understanding, and incorporation of mātauranga Māori and tikanga Māori as a basis for bi-cultural planning under the Treaty of Waitangi. The study reiterated the importance of the Treaty of Waitangi in forming meaningful relationships and partnerships from the start, and the role of Treaty principles to guide a collaborative process.

The report also identified a number of challenges, which highlight the issue of power sharing between Māori and Government, the role of the Treaty of Waitangi in local government, and the need to clarify the role of iwi/hapū in future collaborative processes. Further, there is disagreement regarding the way Māori view regional councils as representatives of the Crown, which requires legal opinion and discussion. The report notes that for collaborative processes to advance smoothly, there is an ongoing need to discuss and clarify indigenous rights and ownership of freshwater resources.

Policy

Cabinet Paper - Ensuring Healthy Ocean Ecosystems³²

This is a June 2021 Cabinet Paper seeking approval to create a new Oceans and Fisheries Portfolio.

The Paper notes that New Zealand's current marine management system is fragmented and cannot respond to pressures in a holistic, timely manner. The creation of a new portfolio signals a shift to a more holistic and integrated approach to managing oceans, with the following objectives:

- Promote an ecosystem-based approach to research, monitoring and management;
- Establish a spatial planning framework that optimises the protection and use of marine space and resources; and
- Support the development of a high-value marine economy that provides equitable wellbeing benefits

The Cabinet paper agreed to:

- A vision for the Oceans and Fisheries portfolio – Ensuring the long-term health and resilience of ocean and coastal ecosystems, including the role of fisheries;
- Objectives and principles to support the vision and guide portfolio work;
- An initial work programme for the portfolio;
- An assessment of how far the initial work programme will go in realising the vision and objectives, and what future longer-term work may be necessary; and
- Establishing an Oceans and Marine Ministers Group (OMMG) and an interagency Oceans Secretariat to ensure delivery of the work.

The paper developed on the above noting the following:

- The Oceans and Fisheries portfolio provides an opportunity to make stronger connections across related portfolios (particularly with Conservation and Environment). This will facilitate progress towards ecosystem-based management, i.e., a more integrated approach to managing the competing values and uses of marine resources while maintaining the ecosystems that support them.
- Key principles include:
 - Give effect to the principles of Te Tiriti o Waitangi/Treaty of Waitangi, including through fisheries and aquaculture settlements and other legislation;
 - Decision-making based on sound science and traditional knowledge;
 - Inclusive, transparent and effective public participation processes.

Pacific Islands Regional Ocean Policy and Frame for Integrated Strategic Action³³

This is a regional ocean policy for the Pacific Islands, produced by a multi-organisational working group. The Policy presents a framework for the sustainable development, management and conservation of the resources and habitats within the region.

The guiding principles of the Policy are founded in international law, and are: improving our understanding of the ocean, sustainably developing and managing the use of ocean resources, maintaining the health of the ocean, promoting the peaceful use of the ocean, and creating partnerships and promoting co-operation.

Strategic actions associated with each principle are:

- Improving understanding: identify information needs; strengthen national and regional capacity; facilitate access to information; have regard to traditional knowledge; promote further education
- Sustainably developing and managing ocean resources: implement resource management actions and regimes in accordance with a precautionary approach; encourage equitable sharing of resource access; engage local communities in decision-making; build capacity; establish and protect traditional knowledge rights
- Maintaining the health of the ocean: adopt an integrated transboundary approach to marine ecosystems; incorporate sound environmental and social practices into economic development activities; protect and conserve biological diversity at local, national and regional scales; reduce impact of pollution
- Promoting the peaceful use of the ocean: ensure activities meet all relevant international and regional standards; seek remedial action in event of non-peaceful use; encourage cooperation amongst law-enforcement agencies
- Creating partnerships and promoting cooperation: foster cooperation in areas of security, monitoring, enforcement and sustainable use; make use of regional and international partnerships; have regard to policies in adjoining ocean jurisdictions; ensure national ocean policies are consistent with this policy

Agile Project Management and Public Policy Development Projects: A case study from New Zealand³⁴

This paper investigates the application of project management concepts into the context of the policy-development process. The analysis is based on a case study of a policy development project that experimented with the Agile project management method. The purpose of this project was to investigate how to increase the value of exports.

The case study suggested that the policy development process can benefit from project management concepts and methods, as long as concepts are transferred appropriately and used correctly.



A New Marine Protected Areas Act: Consultation Document³⁵

This was a consultation document for a proposed new Marine Protected Areas Act (which was never passed into law). The proposal was to replace the current Marine Reserves Act 1971 with a new regime with four different types of marine reserves, as opposed to the current Act which provides only for no-take reserves.

The proposal included:

- Marine reserves: would be strictly protected with the purpose of conserving biodiversity (same as current Act)
- Species-specific sanctuaries: would have rules focussed on the protection needs of specific species
- Seabed reserves: would protect areas of the sea floor and would include prohibitions on mining, bottom trawl fishing and dredging
- Recreational fishing parks: would recognise areas where recreational fishing could be improved by providing a preference for non-commercial fishing for some species

Issues identified with the current system include:

- That marine protection tools are limited and spread across a number of acts, meaning that special legislation is often required.
- Provision for Māori involvement in development and management of MPAs is inconsistent and inadequate.

The proposed new Act would be designed to ensure a balance between protection and sustainable use of marine resources, and would allow for greater integration of different MPAs and a more nationally coordinated approach. A key purpose was also to recognise the Treaty of Waitangi and to strengthen Māori involvement in Marine Protected Areas establishment and management.

Culture and Economic Development: A Guide for Policy-Makers³⁶

This guide considers the relationship between economy and culture. In the paper, economics is described as a “science which studies human behaviour as a relationship between ends and scarce means which have alternative uses”; and culture as “both a knowledge system and a way of life acquired and shared by a relatively large group of people” or “a conditioning influence for individual and collective action”.

The paper suggests that economic science is changing and broadening towards more congenial consideration of culture and cultural factors.

The key message of the paper is that it is important for policy-makers to understand the economic relevance of culture. It also sets out the most common empirical methodologies for evaluating the economic consequences of culture, including both statistical and accounting methodologies.

Engaging Indigenous Peoples in Governance Processes: International Legal and Policy Frameworks for Engagement³⁷

This paper presents international and legal policy frameworks that advocate specifically for full and effective participation of indigenous peoples in matters that concern them. Human rights principles guide programming at all phases of the programming process (the Human Rights Based Approach – HRBA).

Potential frameworks include:

- *Legal* – the principle of free, prior and informed consent: FPIC is one of the fundamental emerging frameworks. Multiple human rights documents require FPIC of indigenous peoples on legislative or administrative measures, policies and programmes which concern them. Annex 1 to the paper summarises the main areas where FPIC is required, and what its essential elements are.
- *Recommendations of the UN Permanent Forum on Indigenous Issues*: include that participation by indigenous communities should be in accordance with their own systems of representation, rather than an externally-determined model; and that recommendations in relation to use of natural resources should clearly identify the “role and control by indigenous peoples of those assets being specified”
- *UN Development Program (UNDP) policy of engagement*: is a policy developed for the UNDP projects. It aims to foster an enabling environment that promotes indigenous peoples’ participation in all decision-making levels.
- *Case studies from International Fund for Agricultural Development projects*: the paper mentions several IFAD projects that provide case studies of how projects can enhance indigenous governance and capacity. Many of these projects appear to relate to natural resource management, so we will try to locate these separately and review them for this literature review.



The Breaking Wave - A Conversation about reforming the oceans management system in Aotearoa New Zealand Working Paper³⁸

The project is focused on the future of oceans management as an integrated whole. The paper is structured in three parts. Part One describes the current situation, part two considers options for reforming the system, and part three presents three or four overall alternative models for what a future oceans management system could look like. The paper also notes the following as a key matter cutting across the project:

- Te Ao Māori and tikanga Māori are not just “subjects” of the oceans management system to be protected within it. They also need to guide what the system looks like and the design choices made across all themes. Furthermore, obligations under te Tiriti (including, but not limited to, ongoing settlement processes) form part of the backdrop for reform.
- Māori matters are not simply things the system has to address or “do”. Te Tiriti needs to pervade all tiers of the system, so that Māori perspectives are fully integrated, not treated as an add-on, afterthought, or a group of matters placed in opposition to (or as grudging concessions to) a dominant Western paradigm.

The paper includes a range of appendices that provide more detail on key aspects. In particular, Appendix 3 discusses the potential for the proposed Strategic Planning Act under the new Resource Management system, to be used as a vehicle for marine spatial planning. The paper notes that the proposed approach under the Act of a joint government-Māori planning body would help ensure that relationships between mana whenua and the marine environment were better acknowledged and supported, that important values were protected, and also that there is cross-government consistency in approach. However, it may not enable stakeholders to have a hands-on role in the collaborative planning process which can help build trust and reduce conflicts within the marine environment.

Appendix four discusses international approaches to oceans governance and management such as the:

- Marine Spatial Planning Framework in Victoria Australia. This framework seeks to integrate and coordinate management and planning of the marine sector, not by replicating or duplicating existing management and planning, but by providing an overarching framework to encourage consistency across the policy landscape.

- This framework also includes specific policies designed to recognise Traditional Ownership by indigenous groups. These include embedding Traditional Owner aspirations into decision making, planning and management, for example, through recognising, referencing and giving effect to the priorities, aims and aspirations of applicable Joint Management Plans and Country plans. The policies also encourage partnership, involvement of Traditional Owners in management, and capacity-building.
- British Columbia and indigenous ocean management:
 - o “Conservancies” are one way that Indigenous nations collaborate with the state in ocean management. This protected area designation was created in response to concerns raised by Indigenous nations that existing legislation did not have the tools available to simultaneously conserve and allow for Indigenous social, ceremonial and cultural uses. Conservancies provide ecological protection while ensuring Indigenous nations can still exercise their rights. While legislation does not explicitly provide for collaboration, there is a norm of selecting conservancies based on a collaborative process between the province and individual Indigenous nations. Similarly, the parties work together to develop a management plan for the conservancy.
 - o Indigenous Protected Areas are “lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems through Indigenous laws, governance and knowledge systems.” There can be a spectrum of management objectives and governance frameworks. However, the main three elements are that these areas are Indigenous-led, represent a long-term commitment to conservation, and elevate Indigenous rights and responsibilities.

The paper provides some options for reform in Chapter 6. These options focus on legislative changes, which include:

- The Continental Shelf Act could be subsumed into the Crown Minerals Act.
- The RMA (or its replacement) and EEZ Act could be combined into a single statute. If combined, the RMA/EEZ Act could also subsume legislation for marine protected areas (whether the Marine Reserves Act or new, separate marine protected area legislation).
- The Wildlife Act and the Marine Mammals Protection Act could be combined (and updated).
- The RMA and EEZ Act could be split in a different way: a land and coastal focused piece of legislation extending out to (say) three nautical miles, and oceans focused legislation beyond that boundary.



- A Protected Species and Areas Act could subsume existing legislation like the Conservation Act, Wildlife Act, Marine Mammals Protection Act, and the Marine Reserves Act (or new marine protected area legislation).
- The boundaries of another sectoral framework, the Maritime Transport Act, could also be reconsidered. Its “environmental” components relating to discharges from ships could be shifted to the EEZ Act.
- New marine protected areas legislation could integrate (i.e., replace) the existing Marine Reserves Act, as well as the regional legislation in place such as the Hauraki Gulf Marine Park Act, the Fiordland (Te Moana o Atawhenua) Marine Management Act, legislation for the Sugar Loaf Islands, and the Kaikōura (Te Tai o Marokura) Marine Management Act.
- The boundary between the sector-focused Fisheries Act (with a purpose of sustainable utilisation) and the outcomes-focused RMA/EEZ Act (with a purpose of sustainable management) could be shifted. The RMA, rather than the Fisheries Act, could become the mechanism by which sustainability measures would be imposed to protect the marine environment from the impacts of fishing activity, with all forms of environmental “limits” imposed through the RMA/EEZ Act (including the setting of a TAC, bag and size limits and so forth). The Fisheries Act could then become a vehicle for allocative decisions (which would be made following the establishment of environmental limits under the RMA).

The paper also discusses considerations for ocean governance institutions. In terms of matters Māori, it noted the following:

- Creating a new institution to represent Māori at a national level would presuppose the level at which the system should enable Māori to partner.
- Capability and funding are essential, which includes capability in matters relating to te Tiriti o Waitangi and mātauranga Māori.
- There is a need for legislation or improved statutory definitions, processes and standards that clarifies how local government should engage with iwi. It discussed the Rūnanga Iwi Act as an example. Although the paper recognised that such processes may require sharp boundaries through new statutory definitions to be drawn which may not sit well with tikanga.
- An option includes a national Māori advisory body for oceans, which could take the form of an independent Tikanga Commission with a branch focused on te moana, or it could be a vehicle for a

more representative, national-level Māori body with which the Crown partners. The extent to which this would have decision-making power depends on a broader conversation about Māori sovereignty.

- Leadership and whole of system stewardship is important and we need a clear framework for annual reporting, decision making, future planning, and lead agency responsibility to coordinate all efforts in this space, including providing clarity around the roles of local and central government, Treaty partners and kaitiaki in fisheries and biodiversity management.
- There needs to be a deeper dive into options for implementing obligations under te Tiriti o Waitangi, including the partnership options developed through the Tangaroa stream of the Sustainable Seas National Science Challenge. While norms reflecting te Ao Māori are important, as are the deployment of tools consistent with tikanga, institutional design is really where the rubber hits the road with respect to deeper questions about te Tiriti.
- There have been calls to move beyond co-governance and instead recognise Māori sovereignty, kaitiaki responsibilities and tino rangatiratanga more directly, by transferring functions to iwi and hapū rather than creating hybrid institutions. Such models embrace Māori more as decision-makers than just as participants or the objects of decisions.

The paper also discusses the incorporation of mātauranga Māori in the system as part of a broader discussion regarding information and science in the fisheries management system. Some comments of note include:

- Mātauranga Māori cannot simply be “collected” like some other forms of information. It is sacred knowledge and understanding, often a closely guarded taonga within hapū, and has been passed down through many generations. It is a way of “knowing” as much as it is the knowledge itself. Mātauranga Māori must come from engagement with Māori who can use it to indicate if ecological systems are improving or declining.
- Māori have had relatively limited opportunities to influence the science-policy interface in fisheries management. The mainstream view draws sharp boundaries between knowledge and management action, often placing experts outside of local communities. In contrast, a te Ao Māori approach views knowledge and action as intertwined, and is more open to different forms of knowledge and expertise. As part of the Crown’s constitutional responsibilities under te Tiriti, a significant re-think of the science-policy interface may be needed to reflect te Ao Māori perspectives, aspirations and priorities. Ultimately, this needs to be led by Māori.

Ocean Governance - The New Zealand Dimension Full Report³⁹

This report aims to provide a general overview and a description of the types of principles, planning tools, and policy instruments that can be used to strengthen and improve marine governance in New Zealand.

The major findings are:

- the existing marine governance framework in New Zealand emphasises a traditional sector-by-sector approach to management and planning, and that this fragmented governance framework contributes to a number of institutional challenges, such as:
 - o a spatial and temporal overlap of human activities and their objectives, causing conflicts (user–user and user–ecosystem conflicts)
 - o a lack of connection between the various authorities responsible for individual activities
 - o a lack of connection between offshore activities and resource use and onshore communities that are dependent on them
 - o a lack of protection of culturally and ecologically sensitive marine areas.

In addition, the study identifies a number of factors that influence marine planning and decision-making in the country, including:

- a lack of institutional capacity and capability to govern marine resources and address ecosystem issues across administrative jurisdictions and management sectors
- general scientific uncertainty and a paucity of information with respect to the resources and the more general ecological features of the marine area
- the relationships between economic use of marine resources and the maintenance of marine ecosystem services and goods
- Māori interests, perspectives and treaty obligations
- increasing pressures from the use of marine areas, including the impacts of terrestrial inputs from coastal waterways on nearshore marine ecosystems and resources
- the role of international treaties and conventions
- the synergistic and cumulative impacts of multiple use and climate disturbance on marine ecosystems
- the role of scientists and science in marine planning and decision-making.

The report makes the following recommendations:

1. regional councils develop integrative marine plans regarding the territorial sea where conflict between users and users-ecosystems is likely to develop in the future; and There is also a new role for place-based collaborative decision-making and planning to address conflicts in marine areas that are likely to be developed in the future. A range of new principles of marine governance, planning tools and policy instruments are described that support a marine ecosystem-based approach to integrative planning across management sectors for the EEZ.
2. adoption of a new role for central government to support an ecosystem-based approach to integrative marine planning and decision-making. Within central government, stronger interagency coordination and new public policy are needed to address future marine resource conflicts and to support an ecosystem-based approach to integrative marine planning and collaborative decision-making for the EEZ.





The Politics of Ocean Governance Transformations⁴⁰

This paper examines the politics of ocean governance transformations through an analysis of three case studies:

- the Food and Agriculture Organisation's (FAO's) voluntary guidelines for small-scale fisheries;
- debt-for- "blue"-nature swaps in the Seychelles; and
- the United Nations' negotiations for a high seas' treaty.

The three case studies illustrate transformations toward different governance approaches (rights based, market-based, and conservation-based).

The paper concludes that ocean governance transformations are not inevitable or apolitical with politics being critical in explaining "which pathways get supported and legitimized, and which are ignored and so fail to gain traction". As such, ocean governance transformations should be understood as being driven by a range of actors with differing objectives and varying degrees of power.

Further, objectives are articulated and negotiated through interactions that may reassemble rights, access, and control. However, there is also a risk that existing conditions become further entrenched rather than transformed at all. In particular, the paper's analysis suggests that:

- efforts to transform are situated in contested, historical landscapes that bias the trajectory of transformation;
- power dynamics shape whose agendas and narratives drive transformational change; and
- transformations create uneven distributions of costs and benefits that can facilitate or stall progress toward intended goals.

The paper notes that understanding the politics of transformative change will be critical for realising equitable ocean governance.

Exploring Plausible Futures for Aquaculture and Fisheries in NZ – Climate-Related Risk Scenarios for the 2050s⁴¹

This report presents climate-related risk scenarios developed by KPMG with The Aotearoa Circle and government, iwi, corporate, and civil society. It aims to:

- Support strategic decision making about the sustainable utilisation of New Zealand's Ocean resources.
- Reduce costs and other barriers to effective climate-related risk management by stakeholders across New Zealand's marine fisheries and aquaculture sector.

Two scenarios, 'Māko' and 'Kahawai', were developed for the report to explore the nature of climate-related risks at either end of a spectrum, which are described as follows:

- The 'Māko' scenario describes a 2050 world where change is moving through the marine environment quickly. Failure to curb emissions mean the world is navigating the physical and socioeconomic consequences of significant climate disruption. Under this scenario storyline, warming is on-course to exceed 4°C by 2100.
- The 'Kahawai' scenario describes a 2050 world that has succeeded in implementing the Paris Agreement and is likely to keep total warming below 2°C over the course of the century.

The key conclusions of the report are:

- Climate-related risks are interdependent and involve more than biophysical change – there are significant climate-related risks with BAU and decarbonisation. As such, a strategic response by government, businesses, and other stakeholders is required.
- Climate-related risks and opportunities cannot be understood or addressed in isolation. The impact of climate change on natural and human systems will influence, and be influenced by, other risk factors and as such these must be considered in light of these other risk factors.
- Consumer attitudes to seafood, seafood suppliers, and supply chains could shift rapidly. A shift in how we feed the planet is required to meet the UN's Sustainable Development Goals and emissions reduction targets. The need for food providers to make credible claims about decarbonisation,

sustainability, animal welfare and societal equity will become a prerequisite for competitive participation in global marketplaces and may trigger an arms race of 'conspicuous conservation' ⁴². If this occurs, New Zealand's distance from the market grows significantly until innovative solutions to supply chain emissions are developed.

- Food security concerns could broaden consumer horizons. Climate and conflict induced scarcity resulting in low economic growth alongside food insecurity may see consumers value dependable food suppliers above all else. New Zealand's marine resources could play a crucial role in meeting this demand, but peaks and troughs of volatility in fish supplies could drive consumers towards alternative food sources, such as plant-based and synthetic proteins.
- alternatives that range from macroalgae to cultured proteins, multi-trophic marine farms to subtropical wild capture species.
- New Zealand's geographic location buys time. Compared to most parts of the world, New Zealand's climate will remain relatively benign through to 2050 (and possibly beyond). Our marine 'goldilocks zone', where warm and cold waters meet, should help to preserve New Zealand's commercial catch and aquaculture harvests while others falter. However, this outcome will also depend on increasingly careful resource management. Good science will have a crucial role to play in enabling wise management decisions.
- Multi-stakeholder collaboration is imperative. Our social, political and economic institutions will need to pivot quickly and collaboratively to avoid the worst effects of climate change. So far, New Zealand's Covid-19 response has demonstrated the value of going hard, going early, and working together to address complex risk under conditions of uncertainty. The 'Māko' and 'Kahawai' scenarios similarly demonstrate how a proactive, flexible, and collaborative approach to mitigation and adaptation, which reflects New Zealand's unique circumstances and Crown-Māori fisheries governance model, could pay dividends.
- The next decade is crucial. The next 10 years will determine whether our world tracks towards a high warming 'Māko' or strong mitigation 'Kahawai' scenario. If we haven't taken decisive action by then, feedbacks and tipping points in the climate system will choose a perilous path for us.
- 'Marine protein' could be the future. The key to a prosperous future in marine food provision may mean moving beyond current commercial concepts and embracing



*Climate Change and Natural Hazards in Northern Canada: Integrating Indigenous Perspectives with Government Policy*⁴³

A study of the relationship between natural hazards and climate change in the international context provides the background for a discussion of the expected changes. In the context of this global discussion, this paper reviews the current perspectives of those natural hazards that are likely to be influenced by climate change, using northern Canada as a regional case study. The northern implications of the United Nations Framework Convention on Climate Change are examined, including the status of climate change action by the northern territorial governments, the evolving role of indigenous people, and the responsibility for climate change impacts. The difficulties surrounding natural hazards research in remote locations, and the approaches of indigenous people to natural hazards are then presented. The paper concludes with a suggested policy approach for climate change and natural hazards in northern Canada, underscoring the need for more comprehensive adaptive strategies to complement the current tendency to focus on the mitigation of greenhouse gases produced in this region.

*"Na whenua, na Tuhoe. Ko D.o.C. te Partner" – Prospects for Co management of Te Urewera National Park*⁴⁴

Co-management is an attempt to produce better and fairer institutions of environmental management. It is applied to protected areas to reduce their social impacts, incorporate Indigenous peoples into decision making, and generate policies that reflect local ecology and culture. Yet co-management has not always reduced the conflicts between Indigenous peoples and park managers. Through evaluation of the prospects for co-management of Te Urewera National Park in New Zealand, we conclude that there is a need to identify the demand of Indigenous peoples for co-management. Historical legacies of land alienation affect present relationships between Māori (the Indigenous population of New Zealand) and conservation authorities, and it is unrealistic to assume that the former will embrace co-management when it is offered as a token resolution of land grievances. Case studies also confirm a need to acknowledge diversity within Indigenous communities and to address its impact the equity of co-management.



Coming Full Circle: Indigenous Knowledge, Environment, and Our Future⁴⁵

Traditional Ecological Knowledge (TEK) as a construct of broader society is a relatively recent phenomenon, and the field that supports the acquisition of environmental knowledge from Aboriginal people has rapidly grown over the last two decades. In part, TEK has emerged from the growing recognition that Indigenous people all over the world developed sustainable environmental knowledge and practices that can be used to address problems that face global society. David Suzuki, scientist and environmentalist, writes, "My experience with Aboriginal people convinced me ... of the power and relevance of their knowledge and worldview in a time of imminent global ecocatastrophe." The international community has also recognized the important role Indigenous people and their knowledge can play in global society. In 1987 the Report of the World Commission on Environment and Development (or the Brundtland Report) recognized the important role of Indigenous people in sustainable development. Five years later, at the United Nations Conference on Environment and Development, the Convention on Biodiversity (CBD) was signed, one of two legally binding agreements. The CBD reiterated the important role of Indigenous people and their knowledge for achieving sustainable environmental and resource management.

Canada has responded to the challenges brought forth by the Convention on Biodiversity and the Brundtland Report and is incorporating TEK into various environmental decision-making processes. The field of TEK is well on its way to becoming firmly entrenched in the discourse on environmental management and decision making in Canada, particularly in the north where it is part of public policy. The practice and application of TEK research in Canada, and the specific research methods devised to access this knowledge from Aboriginal people, are approximately two decades old. In Indigenous communities themselves, however, the practice of TEK is thousands of years old.

If one were to ask, "What is the current state of TEK practice and application in Canada?" a different response would be offered, depending on who was asked. This reflection paper explores the relationship between Indigenous Knowledge (IK) and Traditional Ecological Knowledge. I will also examine the current conception and practice of the field of TEK in Canada...There is a major dichotomy in the realm of TEK that needs to be understood: there is the Aboriginal view of TEK, which reflects an Indigenous understanding of relationships to Creation, and there is the dominant Eurocentric view of TEK, which reflects colonial attitudes toward Aboriginal people and their knowledge. In my view, to understand where TEK comes from one must start with Indigenous people and our own understanding of the world.

Therefore...I start with Creation stories or those conceptual frameworks that provide an Indigenous understanding of our own relationship to all of Creation. My view is that Indigenous understanding of our relationship to Creation did not start with the arrival of newcomers: there were already well-developed philosophies or conceptual

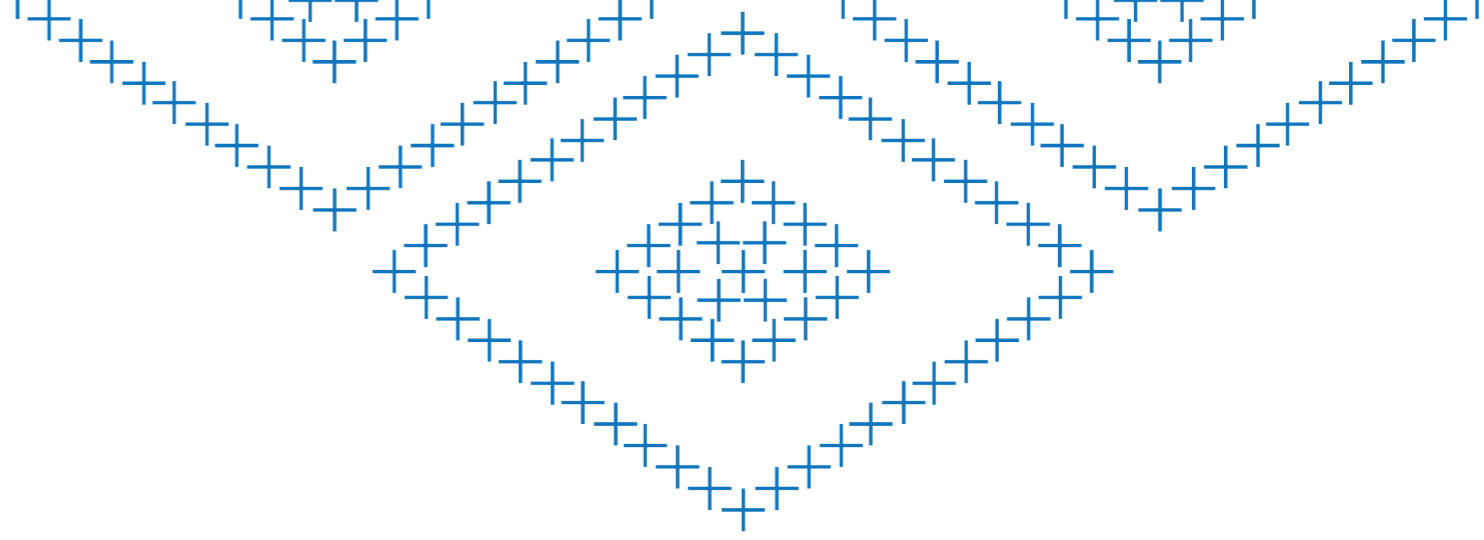
frameworks, ethics, and values that had flourished for thousands of years. I do not begin with the newcomers' understanding of us, with their theories and assertions, but instead start with our own. I believe we can then better understand how and why the field of TEK has evolved as it has.

Traditional knowledge and water governance: the ethic of responsibility⁴⁶

This paper is based on traditional knowledge policy research undertaken over the last 15 years with First Nations in Ontario. First Nations traditional knowledge-based responses to the water crisis evoke an alternative narrative to the dominant discourse. Canadian governments are focused primarily on scientific and technological approaches to resolving water quality issues. In contrast, First Nations are concerned mostly with the recognition of Aboriginal and treaty rights in relation to water. Application of such rights, as expressed by Elders and other traditional knowledge holders, leads to a much more holistic approach to water governance, one that involves fulfilling inherent responsibilities to ensuring water is protected. An overview of key elements of traditional knowledge as they relate to water governance and protection is provided. These are contrasted with highlights of Canadian government responses to water quality concerns across Canada. In order for progress to be made in the future, a nation-to-nation approach between Canadian governments and First Nations is needed.

Concepts of Indigenous Environmental Knowledge in Scientific and Development Studies Literature – A Critical Assessment⁴⁷

This is book that examines the status of, and claims made for Indigenous environmental knowledge in the rhetoric and practice of different academic disciplines. In particular, the book focuses on the transfer of these ideas between a range of actors and context and considers the role it plays in 'green' arguments and scientific and political discourse more generally.



Legislation

Erosion of Māori Fishing Rights in Customary Fisheries Management⁴⁸

This article examines the impact of fisheries legislation, specifically the fisheries settlement legislation and legislation providing for Taiāpure and Mātaitai reserves, has had on Māori customary fishing rights. It concludes that Māori customary fishing rights and management tools, as provided for in current legislation, do not come close to giving Māori tino rangatiratanga over fisheries.

Pre-European contact, Māori exercised the authority of tino rangatiratanga, under tikanga Māori. This authority included a spiritual dimension, a physical dimension, a dimension of reciprocal guardianship, a dimension of use, manaakitanga and manuhiri.

The article concludes that Taiāpure fisheries legislation purports to make provision for rangatiratanga, but in fact limits Māori fishing rights to small defined areas and is ultimately under Crown control. The requirement to take into consideration the general welfare of the community and other stakeholders during the application process – which is an example of partnership and co-management rather than rangatiratanga.

Constitutional Matters

Mātauranga Māori, tino rangatiratanga and the future of New Zealand science⁴⁹

This paper advocates for the reinstatement of mātauranga Māori as a primary knowledge system in Aotearoa, explains why revitalisation is important and outlines some steps towards this goal.

The structures of Western science (compartmentalisation into disciplines, hierarchies of organising knowledge, and inclusion/exclusion of types of knowledge) reflect Western philosophical traditions. By contrast, Mātauranga cannot be compartmentalised into science and non-science, it is its own complete system with its own organisation.

For mātauranga to flourish, the relationships between iwi, hapū and their environments needs to be restored, meaning Māori must have tino rangatiratanga and decision-making authority over those environments (p 84).

Steps to mātauranga revitalisation:

- Recognition of tino rangatiratanga and self-determination in relation to mātauranga
- Government action to recognise and protect mātauranga – revitalisation strategy
- Mātauranga Māori must be reinstated as a primary knowledge system independent of Western epistemologies

He Puapua: Report of the Working Group on a Plan to Realise the UN Declaration on the Rights of Indigenous Peoples in Aotearoa New Zealand⁵⁰

He Puapua sets out the Working Group's vision to release UNDRIP by 2040. The Group makes recommendations across five thematic areas: rangatiratanga; participation in kāwanatanga Karauna; lands, territories and resources; culture; and equity.

Recommendations and observations relevant to our project include:

Tino rangatiratanga:

- To realise UNDRIP Māori should be exercising authority over Māori matters as agreed by Māori, and including exclusive and/or shared jurisdiction over their lands, territories and resources and over matters to do with taonga tuku iho and culture;
- iwi and hapū will have agreed and established their governance structures with their authority recognised;
- territorial authority and the operation of tikanga outside of the state structure is evidenced on places like the marae, and in specific cases like:
 - Te Kawerau-a-Maki's rāhui over the Waitakere Forest in 2017 (in response to kauri dieback);
 - A rāhui set by Te Whānau a Apanui on fishing in the Motu River on Saturdays and on the 12th of every month to respect the drowning of children in 1900;
 - The Te Urewera governance body;
 - The dual governance model applied to te reo revitalisation
 - In an environmental context: co-management of the Waikato River; and the Te Urewera and Te Awa Tupua relationship models
- Examples of self-determination internationally include:
 - o Models from Canada and the USA;

- o Self-rule in Greenland;
- o Saami parliaments in Norway, Sweden and Finland

- Constitutional reform is needed to properly recognise Māori self-determination / tino rangatiratanga. The Matike Mai Aotearoa project (amongst others)
 - provides inspiration and possible models for this.
 - Māori exercise of governance power will require significant capacity building.

Lands, territories, and resources

- Immediate options for thriving rohe include:
 - o Adequately resourcing the role of kaitiaki
 - o Delegating governance powers across the resource management and conservation spectrum to Māori (RMA, conservation, fisheries etc.)
 - o Increasing the statutory weighting of iwi / hapū strategic plans
 - o Supporting iwi and hapū to develop goals, plans and long-term visions in relation to their lands, territories and resources

- Immediate options for thriving whenua include:
 - o Reform law to prioritise tikanga Māori in the case and use of Māori lands
 - o Transition Māori land regulation and adjudication to Māori jurisdiction and tikanga-based model (e.g., Māori Land Court reformed and decisions more informed by tikanga)

- Immediate options for thriving taonga include:
 - o Amending law and policy to give effect to Te Mana o te Wai
 - o Requiring FPIC of relevant iwi in relation to seabed drilling / mining
 - o Ensure national biodiversity strategy takes steps to reconcile te Ao Māori and Pākehā approaches to conservation management





Matike Mai Aotearoa – He Whakaaro Here Whakaumu mō Aotearoa⁵¹

Matike Mai Aotearoa is the report of the independent working group on constitutional transformation. The terms of reference for the project were “To develop and implement a model for an inclusive Constitution for Aotearoa based on tikanga and kawa, He Whakaputanga o te Rangatiratanga o Niu Tirenī of 1835, Te Tiriti o Waitangi of 1840, and other indigenous human rights instruments which enjoy a wide degree of international recognition”.

The paper begins by exploring the nature of constitutions within Te Ao Māori. It finds that the concept of political and constitutional power for Māori is mana; and the site of power is ariki or Rangatira, who were charged with the responsibility of making decisions.

Mana was dependent on tikanga – tikanga was a precondition for mana, and mana was always meant to be exercised in a tika way.

The Working Group identified a set of constitutional values that should underpin the new constitution. Overall, the values indicate that the new constitutional would be a conciliatory and consensual democracy rather than an adversarial and majoritarian one (p 68). These are;

- The value of tikanga: the need to incorporate core ideals
- The value of community: fair representation and facilitating good relationships
- The value of belonging: fostering a sense of belonging for everyone
- The value of place: the need to promote relationships with Papatūānuku
- The value of balance: respecting the authority of rangatiratanga and kāwanatanga within the different and relational spheres of influence
- The value of conciliation: the need to have an underlying jurisdictional base and a means of resolution to guarantee conciliatory and consensual democracy
- The value of structure: structural conventions that promote basic democratic ideals of fair representation, openness, and transparency

The Working Group proposed a number of models for constitutional transformation, informed by the foundational kaupapa that was identified as “the conciliation value”.

The Mātaatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples⁵²

The Declaration provides a number of recommendations that aim to protect the cultural and intellectual property of indigenous peoples. The recommendations include recommendations to indigenous peoples themselves, states (and international and national agencies), the United Nations, as well as recommendations concerning cultural objects, and biodiversity and customary environmental management.

The key themes within the recommendations are that existing legislation and policy does not fully recognise, protect or provide for indigenous ways of engaging and managing the natural environment, and that only indigenous people can define and control their knowledge systems. One particular recommendation of note for EBM and Māori is that current scientific environmental research is strengthened by increasing the involvement of indigenous communities and of customary environmental knowledge.

Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and identity (Wai 262)⁵³

Wai 262 concerned the recognition of rights in relation to traditional Māori knowledge, customs and relationships with the natural environment. In Chapter three, the Tribunal examined the relationship of Māori with the natural environment.

In considering kaitiakitanga in relation to the natural environment the Tribunal noted that the debate is not about who owns the taonga, but who exercises control over it and what needs to be resolved is the degree of control exercised by Māori, and their influence in decision-making.



The Tribunal did not consider that the Treaty requires Māori to have exclusive control where a taonga is identified, or where a kaitiaki relationship is established. Not all taonga will be of the same worth, with some being more important than others, and therefore more deserving of protection. While the claimants sought Māori control over Māori things, the Tribunal noted that could not and should not be the result in all situations, just as the Crown or local authority should not control all decision-making. As such, what is required is a system that allows all legitimate interests to be considered against an agreed set of principles, and balanced case by case (not a one-size-fits-all approach).

The Tribunal considered this system should be capable of delivering the following outcomes to kaitiaki:

- control by Māori of environmental management in respect of taonga, where it is found that the kaitiaki interest should be accorded priority;
- partnership models for environmental management in respect of taonga, where it is found that kaitiaki should have a say in decision-making but other voices should also be heard; and
- effective influence and appropriate priority to the kaitiaki interests in all areas of environmental management when the decisions are made by others.

Indigenous Peoples' Ownership and Management of Mountains: The Aotearoa/New Zealand Experience⁵⁴

This article examines the historic and current legislative reality for giving effect to the guarantee to Māori under Te Tiriti, the continued right to exercise tino rangatiratanga over their own taonga in the context of mountains. The article aimed to demonstrate how legislation has grappled and continues to grapple with the recognition of Māori rights to participate in the ownership and management of mountains special to this country. While significant progress has been made, the legislation overall remains piecemeal and ad hoc.

While the paper considers that the present Treaty negotiation settlement process provides a means for the ideal of partnership as envisaged under Te Tiriti to be achieved, further avenues must be explored. The paper offers the following thoughts:

- The government should take responsibility for effectively accessing or amending the current legislative management regime to better reflect the Treaty of Waitangi guarantees.
- Qualified Māori should be encouraged to work towards being appointed onto management boards and adequate resources should be made available to encourage the public education of Māori relationships with mountains.
- The National Parks Act should be amended to reflect the importance of protecting mountains within national parks as a taonga to Māori. Amendments ought to require park management bodies to give effect to the advice of Māori on any matter that involves the spiritual, historical and cultural significance of mountains within parks.
- Both Treaty partners' conservation values should be incorporated into the Conservation Act. A mandate of partial sustainability in favour of Māori may be an appropriate compromise between the Māori and Pakeha environmental ethics.
- The Conservation Act should be amended to ensure Māori have a right to sit on all conservation boards. New legislation could be enacted which is based on a partnership model where a form of self-management is given to Māori. Further exploration of internal models should be undertaken, for example, the joint management agreements operative in Australia in regard to several of its national parks

The change in ownership and management philosophy for nationally significant ancestral mountains requires a substantial mind-shift for the majority of those living in Aotearoa/New Zealand. It requires equal recognition and respect for the Māori environmental management ethic and Māori associations with mountains.



Management Tools

*Indigenous Knowledge as a Key to Sustainable Development*⁵⁵

The aim of this article is to illustrate the potential of indigenous knowledge in sustainable development process, using indigenous agricultural, education and healthcare practices in Sri Lanka as an example.

The article begins by setting out the ten characteristics of indigenous knowledge as developed by Ellen and Harris (1996). These are:

1. Indigenous knowledge is rooted to a particular place and set out experiences – transferring it to other places runs the risk of dislocating it.
2. Indigenous knowledge is orally transmitted, or transmitted through imitation and demonstrates. Writing it down changes some of its fundamental properties.
3. Indigenous knowledge is the consequence of practical engagement in everyday life, and is reinforced by experience and trial and error. It is characteristically the product of many generations of intelligent reasoning.
4. Indigenous knowledge is empirical rather than theoretical knowledge.
5. Repetition is an essential characteristic of tradition, even when new knowledge is added.
6. Indigenous knowledge is constantly changing, it is not static.
7. Indigenous knowledge is characteristically shared to a much greater degree than other forms of knowledge.
8. The distribution of indigenous knowledge is fragmentary – generally it does not exist in its totality in any one place or individual.
9. Indigenous knowledge is essentially functional.
10. Indigenous knowledge is situation within broader cultural traditions; separating the technical from the non-technical, the rational from the non-rational, is problematic.

The article then discusses some features of indigenous knowledge systems in Sri Lanka, particularly relating to agricultural practices.

Indigenous Māori Knowledge and Perspectives of Ecosystems⁵⁶

This article does three things:

1. It describes the cultural values (tikanga) that underpin the Māori worldview of the ecosystem.
2. It provides an overview of three existing cultural assessment models: the Cultural Health Index (CHI); Māori wetland indicators; and the Mauri Assessment model.
3. It presents a framework that distinguishes “cultural values” from “cultural services” and extends the definition of cultural values across the whole ecosystem services framework.

Tikanga

- Māori see the environment and all living things as being interconnected. Integral to this belief system are stories of the origins of the universe, the environment and of Māori people. From a Māori perspective, an understanding of ecosystems starts with whakapapa and te reo Māori language translation. (274-275)

The key environmental concepts are: (p 275-276)

- Whakapapa – genealogy between humans and ecosystems provides a holistic and integrated view of the environment.
- Kaitiakitanga – an active relationship of stewardship or guardianship
- Mana – having authority over the management of natural resources
- Ki uta ki tai – a whole of landscape approach.
- Taonga tuku iho – intergenerational protection.
- Te Ao Tūroa – intergenerational concept of resource sustainability.
- Mauri – an internal energy to all living and non-living things, the binding force that links the physical to the spiritual worlds; denoting a health and spirit.
- Ritenga – the area of customs, protocols and laws that regulate actions and behaviour related to the physical environment and people. Includes concepts such as tapu, noa and rāhui.
- Wairua – the spiritual dimension.

Cultural Assessment Models

Cultural Health Index (CHI):

- The CHI was developed from 1999 onwards to provide Māori with a tool to express cultural values relating to river and stream health, in a way that could be incorporated into catchment management decisions.
- It provides a scoring index for assessing streams and rivers, with three components:
 - o Site status - evaluating the relationship between the site and tangata whenua.
 - o Mahinga kai measure – evaluating the area as a mahinga kai.
 - o Stream health measure – evaluating stream health.

Māori Wetland Indicators

- These were developed as part of a large national project “Coordinated Monitoring of New Zealand Wetlands”.
- The aim was to develop a monitoring approach and set of indicators for wetlands based on mātauranga Māori. The project was carried out using participatory research.
- A final set of nine key Māori indicators including Māori, extent and abundance of taonga species, percent change in spatial area, and increases in perceived problem or exotic species, were used.

Māori assessment model

- Developed as a framework, assessment method, and decision-making tool to integrated economic, social, and cultural dimensions. These are considered part of the environment and reflect the holistic worldview.
- Impacts on mauri are assessed by factoring in economic, social, cultural and environmental considerations. Users can choose a weighting to be applied to each aspect before scoring is completed.

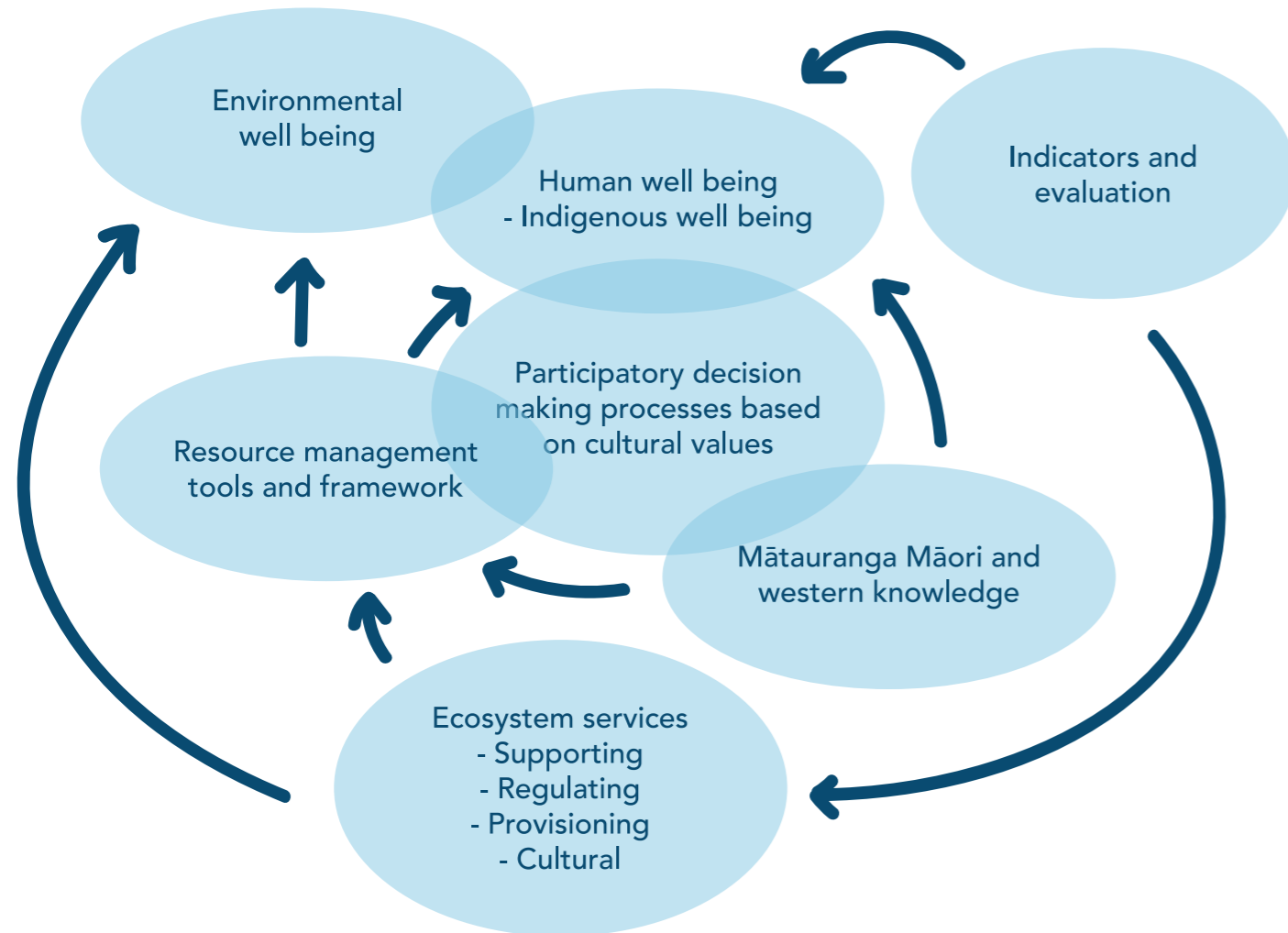
A new Māori framework for ecosystem services

The authors first describe ecosystem services as resources that humans derive benefit from: such as fresh food, water, recreational benefits, soil formation. Ecosystems services bridges the gap between ecology and economics. (p 281).

However, the traditional understanding of ecosystems services does not take account of the benefits of “non-use” – i.e., cultural, intrinsic and moral benefits that humans derive from the environment. Ecosystems services should not be insensitive to those values.

When designing ecosystems services frameworks for Māori, it must recognise that cultural values include both non-material (customary cultural, spiritual, sacred) and material values (provisioning, regulating, supporting services). These values should be considered across a range of ecosystems services (i.e., provisioning, regulating, cultural and supporting services) rather than only within the confines of cultural services.

This provides a best practice model to achieve integrated sustainability planning and management of natural resources and ecosystems, as illustrated here:



Māori methods and indicators for marine protection: a process to identify tohu (marine indicators) to measure the health of the rohe moana of Ngāti Kere ⁵⁷

This report documents the process for the development of marine tohu/indicators for Ngāti Kere to monitor the health of their rohe moana.

Early on the researchers and Ngāti Kere met and agreed on a process for developing and monitoring the tohu, as follows:

- Identify the key values that Ngāti Kere would like to be managed in their environment
- Identify the tohu that Ngāti Kere believe signify the health of these values (indicators)
- Determine how to measure tohu to detect changes over time (for monitoring purposes, tohu need to be consistent and repeatable to provide robust information)
- Measure these tohu to determine whether the environment is in good, bad or average health (establish criteria against which health will be measured)
- Develop ways to communicate the health of the rohe to other agencies.

The process to develop the tohu included working with a focus group as well as gathering information from the wider community at hui a hapū.

The project produced:

- A kete tohu (set of indicators) for monitoring
- A monitoring programme – proposed methods for monitoring
- A survey method and results for assessing the level of hapū knowledge and perceptions about the state of the rohe moana
- A number of communication tools

The list of tohu decided by Ngāti Kere are:

- Number and size of koura in shallow water
- Number size of hapuka close to the coast
- Level of Ohinemuhu Rock above sand and abundance of pipi
- Level of involvement in marine management
- Availability of native plant resources
- Number and type of customary take permits issued
- Number, size and distribution of no-take areas
- Number of prosecutions for illegal catches and takes
- Level of rohe moana knowledge within the hapū and community

Reflections from the project came up with the following set of recommendations:

- A focus group whose size is proportional to the nature of the project should be used to carry out the work. Focus group members must be financially compensated. The use of a focus group does not mean that the full hapū should not be consulted, which should also happen.
- Consistent and agreed criteria need to be made for performance and for any outputs associated with the project.
- Contingency plans should be developed to deal with risks that materialise, including in relation to extending time limits.
- Necessary resources must be provided and voluntary roles should be supplemented with payment where possible.



Foss Leach “Fishing in Pre-European New Zealand” (New Zealand Journal of Archaeology and Archaeofauna Wellington, 2006)⁵⁸

This book describes ancient fishing in pre-European New Zealand to demonstrate (among other things) its value as providing insight that could assist solving the fisheries crisis by employing past ecosystems with sustainable and clean fisheries. However, it also highlights that gathering quality information about the fishery past and present is necessary to resolve that insufficient attention given to Māori customary fishing rights.

The book is comprehensive, looking at the New Zealand fishery (e.g., Māori taxonomy, ocean current, sea temperatures), the dominant fish in pre-European catches, fishing technology and practice, regional character of fishing, chronological change in fishing, fish and other marine foods in diet and economy, modelling human predation and environmental impact, and the pre-European Māori as fisherman.

Of particular relevance, the article looks at environmental conservation models and conservation strategy with pre-European fishing. Of note the book concludes the following:

- The modern-day model of conserving resources in the marine environment is not the only approach. The present-day inshore fishery is a pale reflection of the bountiful supply of former times and the concept of imposing a minimum size limit on fish caught as an additional conservation measure may be fundamentally flawed.
- Pre-European Māori appeared to adopt a longer-term view in line with their agriculture activities, which involved shifting cultivations from time to time as soil became exhausted to leave them for a long fallow period. During this process, settlements needed to be re-located, which meant new marine patches would be exploited. In this model, the environment is constantly going through a cyclical process of depletion and recovery.
- Pre-European Māori were profoundly knowledgeable about the sea and its resources.

Māori methods and indicators for marine protection: a process for identifying tohu (marine indicators) to measure the health of the rohe moana o Ngāti Konohi⁵⁹

This report focuses on the environmental tohu identified by Ngāti Konohi as indicators of the health of the marine environment in the rohe moana of Ngāti Konohi. The report was developed for the following reasons:

- To provide a more complete total picture of the elements that have a bearing on the health of the marine environment, when used in conjunction with western scientific method. That is, environmental tohu, while important in their own right, should also be seen as complementing western scientific methods, for a fuller, more holistic view of the environment.
- To provide a specific focus and to outline possible directions for future marine management for Ngāti Konohi.
- To be of use to other hapū/iwi nationwide: its findings can be adapted, adjusted and modified to suit other marine environments in different locations throughout the motu.

The report concluded by asking a number of additional questions such as whether the environmental tohu identified in the project would be used in the implementation of marine resource management and what the challenges for implementation are (and how they will be overcome). The report noted that the answer to these questions is dependent on a range of variables. However, the report did note the following:

- tangata kaitiaki are critical to successful implementation of marine management; and
- better management of the marine environment requires a complete package, which includes marine environmental tohu linked with Ngāti Konohi goals for marine management, marine reserves, fishing regulations, mātaihai reserve and taiāpure reserve).



Aquaculture in Ancient Hawaii⁶⁰

This article is about integrated farming systems, which are farming systems that combine agriculture, aquaculture, animal husbandry, and waste treatment technologies. It also uses crop cycling and cycling of land and water use. These systems have been used for millennia and are still practiced in some areas of the world today as they respond to farming constraints and ultimately have better ecological outcomes.

The article specifically demonstrates that integrated farming systems also included aquaculture (both marine and freshwater), with a specific focus on pre-colonial Hawaii (noting that following colonisation, integrated farming systems largely disappeared).

The article demonstrates that ancient Hawaii supported a relatively high population density by managing an ecologically complex integrated farming system that connected agricultural watersheds to oceanic environments. It noted that such systems may have a much greater role in integrated rural development schemes worldwide than the high-yielding intensive aquaculture systems because they:

- can be ecologically benign and integrated into fragile natural ecosystems with no pollution impact;
- have lower capital costs, allowing entry by the poorest farmers in society; they require little management or foreign expertise; and
- frequently have higher economic returns than intensive systems.

However, the transfer and improvement of knowledge from such systems may have greater value than any technological fix applied by modern machines and methods.

Indigenous natural-resource management systems for sustainable agricultural development – A global perspective Journal of International Development⁶¹

Increasing pressure for food production due to the rapidly growing population has led to the gradual disappearance of numerous indigenous knowledge systems (IKSs) related to natural-resource management. This process exposes the earth's natural resources to constant ecological instability (such as loss of genetic diversity) and severe environmental vulnerability (such as soil degradation and soil erosion).

Recent research on indigenous natural-resource management systems indicates that they are highly sophisticated and complex, reflecting generations of careful observations of the natural and physical environment. Keeping these in view, a literature review has been conducted to identify major consequences of the disappearance of IKSs related to natural-resource management. An attempt has been made to categorize indigenous natural-resource management systems. IKSs documented from all over the globe and received at the Centre for Indigenous Knowledge for Agriculture and Rural Development (CIKARD) were used to illustrate specific instances of locally adapted and economically viable indigenous natural-resource management systems. Such examples were found in indigenous agronomic practices, agroforestry, indigenous genetic resources, and pastoral management.

An integrated natural-resource management model has been developed with an overall goal of increasing food production by small-scale farmers with a least amount of deterioration to nature's resource base. The salient features of the proposed model include promoting small-scale farmer participation, recording indigenous knowledge systems related to natural resource management, conducting diagnostic interviews, evaluating modern technologies and conducting on-farm farmer-oriented research (OFFOR) trials for integrating indigenous and modern technologies. Careful implementation of such a model could contribute to ameliorating the growing natural-resource problems of the developing world such as soil erosion, environmental degradation, and ecological destruction.



Mauri Monitoring Framework – Pilot Study on the Papanui Stream – Te Hā o Te Wai Māreparepa⁶²

This report summarises the a pilot study commissioned by the Hawke’s Bay Regional Council (HBRC), which aimed to develop a mauri monitoring framework that could have universal application for other marae and hapū. The pilot study was localised to one of the mana whenua marae and hapū ithin the Papanui stream sub-cathment.

The outcome of the study was a cultural monitoring framework – Te Hā o Te Wai Māreparepa – grounded in mātauranga, with Māori cultural values providing the mechanism, practices and approaches to support marae and hapū to achieve their goals and aspirations for enhancing and sustaining the mauri life force within freshwater management.

The framework articulated various indicators idenfitted for each of the four interlinking mauri health states:

- Te wai urutapu: refers to the natural state of water in its purest health form. The meaning and significance of the term represents the standards and benchmarks set within Te Ao Māori world views and is articulated through mātauranga. The indicators for this mauri health state will identify the key Māori cultural values of importance to marae and hapū; provide an understanding of the interconnections between the spiritual and natural world; determine benchmark standards for achieving the optimal mauri health state, and seek to develop taonga classifications.
- Parirau o te mauri: refers to the changing health state from optimal health to un-wellness or contamination. It recognises rippling shifts and changes in the health state of mauri that can equally, have a rippling effect to all related components. As a result, the whole system is likely to be affected. The transitional mauri indicators include: identifying both historical and contemporary cause-effect relationships changing and shifting the mauri health state; defining the concept of attributes and preference for enhancing mauri based on the issues that are of concern to marae and hapū. It sets the context for determining their goals and management priorities. A holistic approach must be taken to consider the effects on both people and their natural environment most at risk.
- Te mahi o haurongo: refers to the action of doing the restorative work. There will be clear and culturally appropriate measures and benchmark standards for improving and enhancing the mauri. The restorative action indicators include: integrative approaches that ensure mātauranga Māori is given equal weighting alongside western-science knowledge and practices; strategic management plans are

developed and implemented taking into consideration certain factors (i.e., resources, technology, time, specialist knowledge, skilled workforce etc.).

- Te Aroturuki Kaupapa: refers to monitoring for the direction of the programme. Reviewing progress to restore, enhance and to sustain the health state of mauri and wellbeing of people. Mana whenua may need to re-assess and recognise there are underlying factors. The monitoring indicators include: continually monitoring, reviewing and assessing progress through various integrative approaches which are working towards common goals and realistic outcomes that can be achieved at this time; monitoring and following up on health risks and any other issues arising; maintaining accurate records on data collection; and accepting new goals, measures or priorities that might require new management plans.

Review paper: Improved reporting tools – Māori cultural monitoring approaches⁶³

This paper undertook a review and evaluation of Māori cultural monitoring approaches. Cultural monitoring is an assessment method that can identify and articulate iwi/hapū values and perspectives of catchments and freshwater ecosystems spatially, which can then be used to monitor environmental-cultural changes through time from an iwi/hapū perspective.

Many cultural monitoring approaches have been developed across Aotearoa and a number of these were reviewed and evaluated. The key findings are:

- A number iwi/hapū are developing or have developed specific indicators for freshwater management, and cultural monitoring approaches and indicators are being developed and used to help measure progress towards stated goals and outcomes.
- Mātauranga Māori cultural monitoring and indicators can work alongside western science knowledge and tools to assess and measure progress and change in New Zealand’s environment and helps build meaningful long-term relationships between the Crown and iwi/hapū.



Cultural indicators, monitoring frameworks and Assessment Tools⁶⁴

This report outlines the development of cultural health monitoring tools in Aotearoa. The report noted three key challenges for tangata whenua to ensure that mātauranga informs contemporary resource management:

- it is dependent on the development of monitoring standards, methods and processes that are endorsed by tangata whenua as adequately reflecting their values, tikanga and mātauranga
- whānau, hapū and iwi need to have the capacity and capability to undertake and be involved in cultural monitoring and related resource management forums.
- the information needs to be in a format that it can inform decision making. Over the last decade, whānau hapū and iwi have been active in developing different monitoring tools that allow them to systematically record, collate and report on the cultural health and wellbeing of significant sites, natural resources and environments within their rohe. As a result, there are multiple indicators, frameworks and tools currently in use by tangata whenua across the country.

The report described a number of monitoring tools, which included:

- Ngāti Kere Methods and Indicators for marine protection⁶⁵

Ngāti Kere defined indicators to assess the health of their rohe moana.

The project found that there is a need to better understand how marine reserves and other methods of marine management contribute to meeting the objectives and interests of iwi/tribe and hapū.

A better understanding of how different methods of marine management meet both iwi-hapū and other management interests is seen to lead to more positive outcomes for the marine environment.

- Coastal Cultural Health Index for Te Taitokerau⁶⁶

This project focuses on adapting the Cultural Health Indicator (CHI) framework to coastal scenarios in Te Taitokerau. The CHI framework was preferred over western science framework due to the incorporation of cultural indicators.

- Cultural Marine Health Index

The Marine Health Index (MHI) is based on community knowledge and is a practical tool being developed by Te Tiaki Mahinga Kai (a national network of tangata kaitiaki, kaumatua, environmental managers, researchers, formed to improve management of mātauranga, taiāpure, temporary closures /rāhui) for Te Runanga o Ngāi Tahu. The MHI builds on the Cultural Health Index for streams and waterways, and applies similar methodology to the rohe moana.

The key factor to its development is that the MHI is developed for and with a particular community of people. The MHI uses science and community knowledge. The vision of the project is for the MHI to become a tool for communities to judge the state of their mātauranga and taiāpure themselves in an independent, inexpensive and scientifically robust manner. Key indicators that have been nominated include: continuation of traditional harvest practices, changes in the taste, smell and size of kai, and visual water pollution and litter.

The report provides a summary of the indicators used in the various tools as well as a number of other initiatives being used by tangata whenua to enable mātauranga Māori to inform resource management, such as the use of iwi management plans, cultural mapping, cultural values reports, and cultural impact assessments.



*E Pākihi Hakinga a Kai – An examination of pre-contact resource management practice in Southern Te Wāi Pounamu*⁶⁷

This article looks at pre-contact resource management practices in southern Te Wāi Pounamu. The article considers that resources were managed with a view to sustainable and optimal harvests in future. The research analysed a range of mahinga kai lists collected from elders early in the contact period and details of traditional practices handed down and concludes based on this material that when Captain Cook introduced European goods, southern Ngāi Tahu had effective procedures and practices for the sustainable use of renewable resources. In particular, the evidence demonstrates the existence of:

- Habitat enhancement.
- Population improvement.
- Sustainable harvest.

Importantly, the management practices adopted were unlikely to be effective on their own but required societal endorsement and enforcement. For Māori, social regulation was developed through a complex network of inter-related, hierarchical groupings, each husbanding resources within its own territory and supported by a system of reciprocal exchange of surpluses, which was in the interests of all groups. Within a group, the group's requirements always took precedence over those of an individuals and sanctions (physical and spiritual) existed to reinforce that societal regulation.

The paper also goes on to discuss and question some of the commonly held ideas about Māori regarding extinction, wastage of resources, and 'future eaters' (the indiscriminate harvest of resources leading to extinction)

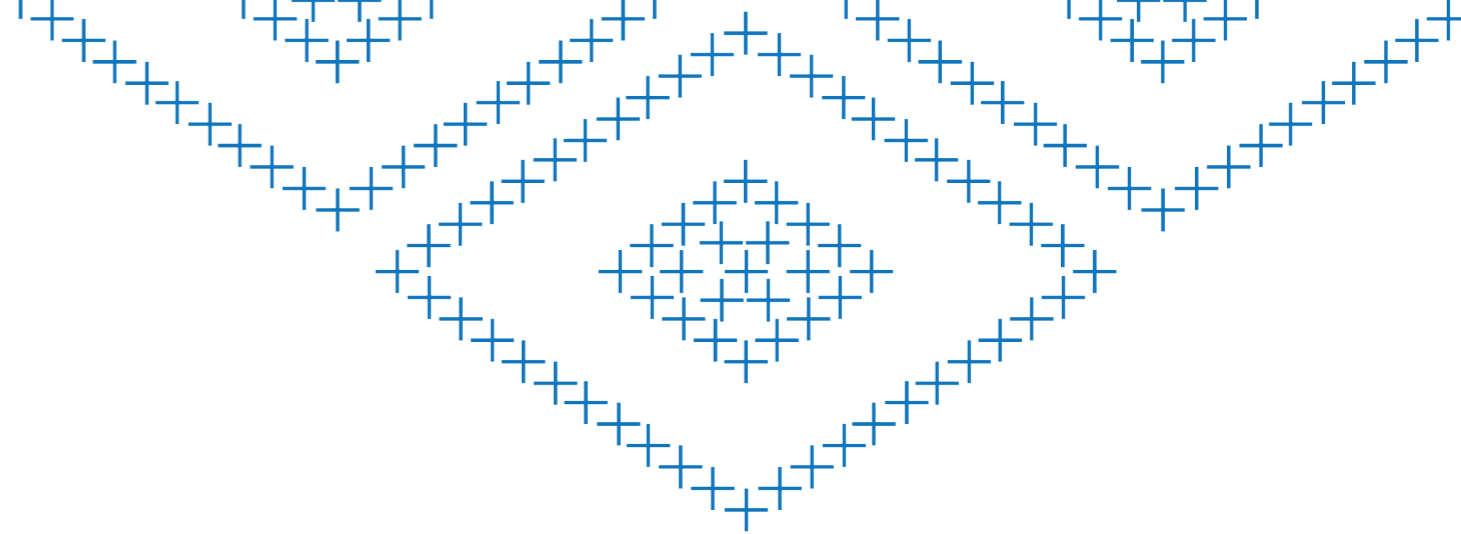
*When Two Worlds Collide: Mātauranga Māori, Science and Health of the Toreparu Wetland*⁶⁸

This project used the Wetland Cultural Health Index (WCHI) and a variety of scientific wetland survey methods to examine how scientific-based monitoring and methodologies and Māori-value based assessment methods, for monitoring wetlands, complement each other. The project worked with the people from Mōtakotako marae at the Toreparu wetland (Waikato), developing a set of site-specific cultural indicators.

The results demonstrated a range of similarities and differences between the WCHI indices and scientific parameters. The project found that as Wetland Cultural Health Measure scores increased, there was also an increase in dissolved oxygen concentration, SQMCI-sb values (a biotic index for freshwater macroinvertebrate coded abundance data), and total nitrogen concentrations. Cultural indices provided an overall indication of site health. However, the variance in contributing indicators meant that high scores for some indicators may obscure low values for others, which would result in an average site health condition. Most importantly, the WCHI provided an abundance of information that could not be captured through scientific sampling, which confirms that understanding of wetland health is enhanced by the inclusion of cultural values.

Therefore, needs to be greater recognition and understanding of cultural values and priorities. By using both scientific and Māori-value based wetland monitoring methods, Māori can articulate a range of values, goals and priorities to help inform environmental decision makers and empower iwi and hapū to have a meaningful and sustainable role in the management of wetlands.

However, capacity, and resourcing issues are key challenges to Māori successfully carrying out wetland monitoring as well as for staff in councils and other research and environmental governing bodies to build and maintain relationships with tangata whenua. As such, a foundation of mutual understanding and relationships built between environmental governing bodies and Māori are required for the future success of collaborative research and management of wetlands.



Governance Frameworks

*'Two-eyed seeing': An indigenous framework to transform fisheries research and management*¹⁶⁹

This is a Canadian article exploring how indigenous knowledge systems can be paired with mainstream knowledge systems to govern fisheries and marine environments. The article explores three examples where this approach was operationalised in Canadian aquatic and fisheries environments.

The article posits that a multiple evidence base approach (MEB) is needed in order to co-develop or co-produce management systems. The MEB approach lets each knowledge system speak for itself without assigning one dominant knowledge system the role of external validator: each way of knowing is instead assessed by internal criteria: at p 248.

The case study examples are:

- Co-developing questions in the Slave River Delta: where a collaborative author team employed a participatory modelling approach (Bayesian belief networks, BBNs) to answer three co-developed questions about the health of the ecosystem in the Slave River Delta. Key health indicators were developed along two distinct lines of inquiry: Western science and indigenous knowledge. The indicators were assessed using methods internal to each knowledge system. This allowed the research team to answer the questions using a power-neutral approach.
- Documenting and mobilising knowledge in the Saskatchewan River Delta: In this case study, researchers examined the "consilience" (congruence or agreement) of different knowledge systems (indigenous knowledge, archival records, and modern scientific data) in relation to a range of indicators of ecosystem change. They used a MEB approach and found a high degree of congruence between systems.
- Towards co-producing insights and decisions on Unama'ki / Cape Breton Island: this study identified opportunities to integrate indigenous knowledge systems into the process for declaring endangered species, particularly in relation to the example of the eel fishery in Eskasoni First Nation, Cape Breton.



*The Waka Hourua Research Framework: A dynamic approach to research with urban Māori communities*⁷⁰

This paper presents a methodological framework for research that affirms the legitimacy of Māori knowledge without dismissing Western knowledge bases (the Waka Hourua Research framework). The paper explains how the framework was developed and applied in a community setting.

Indigenous approaches to scientific inquiry identify the interconnectedness between all things and emphasise the importance of social and environmental relationships. Whakapapa is the research methodology used to understand the world, and mātauranga Māori is the theory that is generated from the whakapapa process.

A description of research that adheres to the Waka Hourua framework is:

- The kaupapa of the research will respond to research objectives that have been identified with Māori communities
- Consultation with appropriate Māori collectives and authorities that promotes whanaungatanga and that affirms mana whenua, mana tangata, and whakapapa will occur from the initiation phase of the research.
- Acknowledgment and respect of wairua, mana atua, and mana tīpuna will be evident in all stages of the research; achieved through understanding tapu, noa, and by adhering to tikanga
- The starting point of the inquiry will be based on tikanga, te reo and matauranga Māori. Where researchers need guidance on these matters, research relationships with appropriate experts will be formalised.
- The research will show awareness of the diverse realities of Māori and the socio-political and historical contexts that produce those realities
- Researchers will be cognisant of power structures that exert influence over the research process, participants, and the researchers themselves
- Researchers will show reflexive awareness, monitoring the research process and adjusting it in light of their assessments and community feedback.

*Ngā Aroturukitanga tika mō ngā Kaitiaki: Summary review of mātauranga Māori frameworks, approaches and culturally appropriate monitoring tools for management of mahinga kai*⁷¹

This paper provides a review, summary and synopsis of existing mātauranga Māori frameworks, approaches and culturally appropriate monitoring tools for freshwater monitoring and management, particularly for restoring and enhancing mahinga kai values. It is important to note that the review was limited to assessing the effectiveness of these tools within the context of the National Objectives Framework for Freshwater.

The paper canvasses some of the key Māori environmental concepts, including: Whakapapa, kaitiakitanga, mana, ki uta ki tai (whole of landscape approach), taonga tuku iho, te ao tūroa (intergenerational sustainability), mauri, ritenga, wairua. It notes that (at p 7):

Traditionally, Māori realised that shifts in mauri (life force, life spirit) of any part of the environment, for example through use, would cause shifts in the mauri of immediately related components. As a result, the whole system is eventually affected. All activities and relationships were bound and governed by mythology, tapu, and an elaborate system of ritenga or rules. The process used by Māori to guide resource use reflected this belief in the interrelationship of all parts of the environment.

Te Kōhao o te Ngira

One example of a culturally appropriate planning framework explored in the paper is To Kōhao o te Ngira, which is a framework designed to guide decision-makers in Auckland in responding to regional changes. The framework provides for:

- Ngā Wawata (Aspirations) of mana whenua, underpinned by their relationships with land, people and environment
- He Matakite (Vision) of an abundant and prosperous region
- Ngā Pou Herenga (Values) that underpin and drives the framework
- Ngā Matāpono (Guiding Principles) that guide decision-making and underpin relationships
- Ngā Ara Matua (Key Directions) that identify priority areas for mana whenua
- Ngā Uaratanga (Long-term goals) that support Mana whenua and government to develop responses
- Ngā Inenga (Indicators and measures) to monitor progress against priority areas and goals
- Nga Huanga (Outcomes) inclusive of the four areas of wellbeing

Mauri of Waterways Kete

The paper also discusses the Mauri of Waterways Kete developed as part of the FRST programme. The aim of this project is to develop mātauranga Māori-based planning tools for uptake by iwi/hapū within a RM planning regime. The indicators used in this framework are the extent to which different bodies (local authorities, tangata whenua, other agencies, the wider communities) protect the mauri of mahinga kai.

Mauri model

This model was initially developed for engineering purposes, but has wide application. The method demonstrates how the principle of mauri can be used to understand the interconnectedness of all living things, and to measure sustainability and wellbeing. The method assesses the impact of certain activities or practices on mauri, by giving scores and weightings for each of the 4 key areas, being: mauri of the whānau (family, economic); mauri of the community (social); mauri of hapū (cultural); mauri of the environment (environment).

The ratings of mauri are:

- Highly sustainable – 5
- Viable practice enhancing the mauri – 4
- Contributing to mauri – 3
- Neutral – 2
- Diminishing the mauri – 1
- Significantly diminishing the mauri and the resource – 0

Culturally appropriate indicators

Underpinning Māori planning frameworks are measures or indicators used to assess progress towards or away from shared outcomes. The paper suggests that data associated with indicators are often qualitative, meaning they are difficult to generalise and apply elsewhere. While this may be contrary to expectations of those concerned with universalism and generality, it is consistent with the context-specific nature of indigenous knowledge.

Co-planning framework for mahinga kai

The second half of the paper outlines a suggested co-planning framework for Mahinga kai. The key elements of that framework are:

1. Mana Whakahaere: A Treaty-based planning framework is used for engagement and policy development
2. Whakamāramatia ngā Pou Herenga: Tangata whenua values (metaphysical and physical) e.g., Whakapapa, Kaitiakitanga, Mahinga Kai and Manaakitanga are defined and reflected in engagement processes
3. Whakamāramatia ngā Huanga: Shared outcomes are defined at the beginning of the engagement process
4. Whakamāramatia ngā Uaratanga: Goals and objectives are established
5. Whakamāramatia ngā Mahi: Actions on the ground that demonstrate kaitiakitanga and progress iwi/hapū towards their goals/objectives/aspirations through tangible projects
6. Whakamāramatia ngā Aroturukitanga: Implement a monitoring programme
7. Whakamāramatia ngā Ritenga: Setting limits for mahinga kai

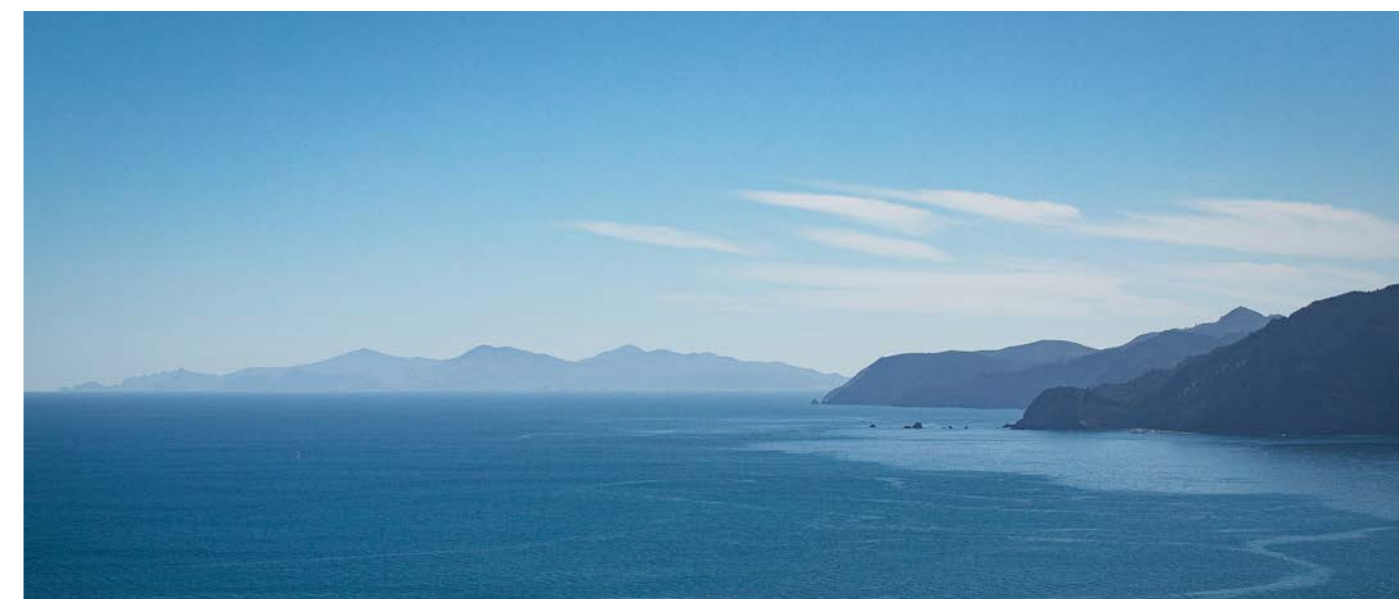
Giving effect to holistic integrated ocean management through regional delivery of global standards, obligations and commitments⁷²

This is a submission to the Division for Ocean Affairs and the Law of the Sea regarding the development of an international legally binding instrument under the United Nations Convention on the Law of the Sea (UNCLOS) on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction.

WWF (among other things) suggests that giving effect to the 'ecosystem approach' principle by establishing regional integrated, ecosystem-based oceans management committees (or other arrangements) is the most appropriate way to give effect to States' expressed desire for holistic oceans management.

Some key points regarding EBM from the submission include:

- EBM is best organised at the regional scale.
- Holistic ocean management requires significant institutions that have the authority to devolve its decision-making powers, to the extent it deems prudent, to regional committees.
- States and competent bodies would have significant reporting obligations to ensure they did so in a manner consistent with meeting their obligations and commitments to the wider international community.
- Marine spatial planning is a critical cross-sectoral area-based management tool for facilitating, securing and maintaining comprehensive and holistic regional management arrangements.
- Effective holistic integrated EBM requires a lot of investment in information management (e.g., with regards to marine spatial planning, cumulative impact management, marine research, baseline studies, impact assessments, use/activity monitoring, etc.).





Indigenous perspectives of ecosystem-based management and co-governance in the Pacific Northwest: lessons for Aotearoa ⁷³

This project focused on developing practical mechanisms for Māori and Mātauranga Māori to be incorporated within the decision-making and management of marine resources. It recommends a draft framework and process for EBM practice in New Zealand, that meets and empowers State and Māori aspirations for natural resource management and economic development.

The project focuses on an example of EBM in Canada, specifically the Marine Plan Partnership for the North Pacific Coast (MAPP) partnership in respect of marine governance and management, and Coast Funds (CF) as an example of EBM design and practice that incorporates indigenous values and knowledges.

CF is a co-governance arrangement between First Nations and the provincial government for distribution of a conservation endowment fund for First Nations to protect and manage ecosystems, and an economic development fund to create sustainable business ventures in First Nations' territories, and to build economic capacities in their communities.

MAPP is an integrated management approach over natural resources. It is a co-led partnership between 18 member First Nations and the Government of the Province of British Columbia that plans for marine uses on British Columbia's North Pacific Coast.

The EBM concept that emerged from discussions included three key components: ecological values, cultural values and human wellbeing. Implementation of the EBM approach included a focus on rebuilding economies to protect them from the impact of the policy shift toward conservation rather than consumption. CF emerged as a mechanism for First Nations to rebuild their local economies consistent with EBM principles. Land use planning was a central part of managing economic activity, and was a condition of funding applications to CF.

The MAPP EBM framework is built on principles of ecological integrity, human wellbeing, governance and collaborative management. It uses science and traditional ecological knowledge (TEK) to advance EBM for healthy ecosystems, sustainable uses and delivery of ecosystem services to human communities addressing a set of issues and challenges identified by First Nations, the provincial government and stakeholders.

Based on the learnings from the case study, and the various elements of the New Zealand process, they proposed the following key elements:

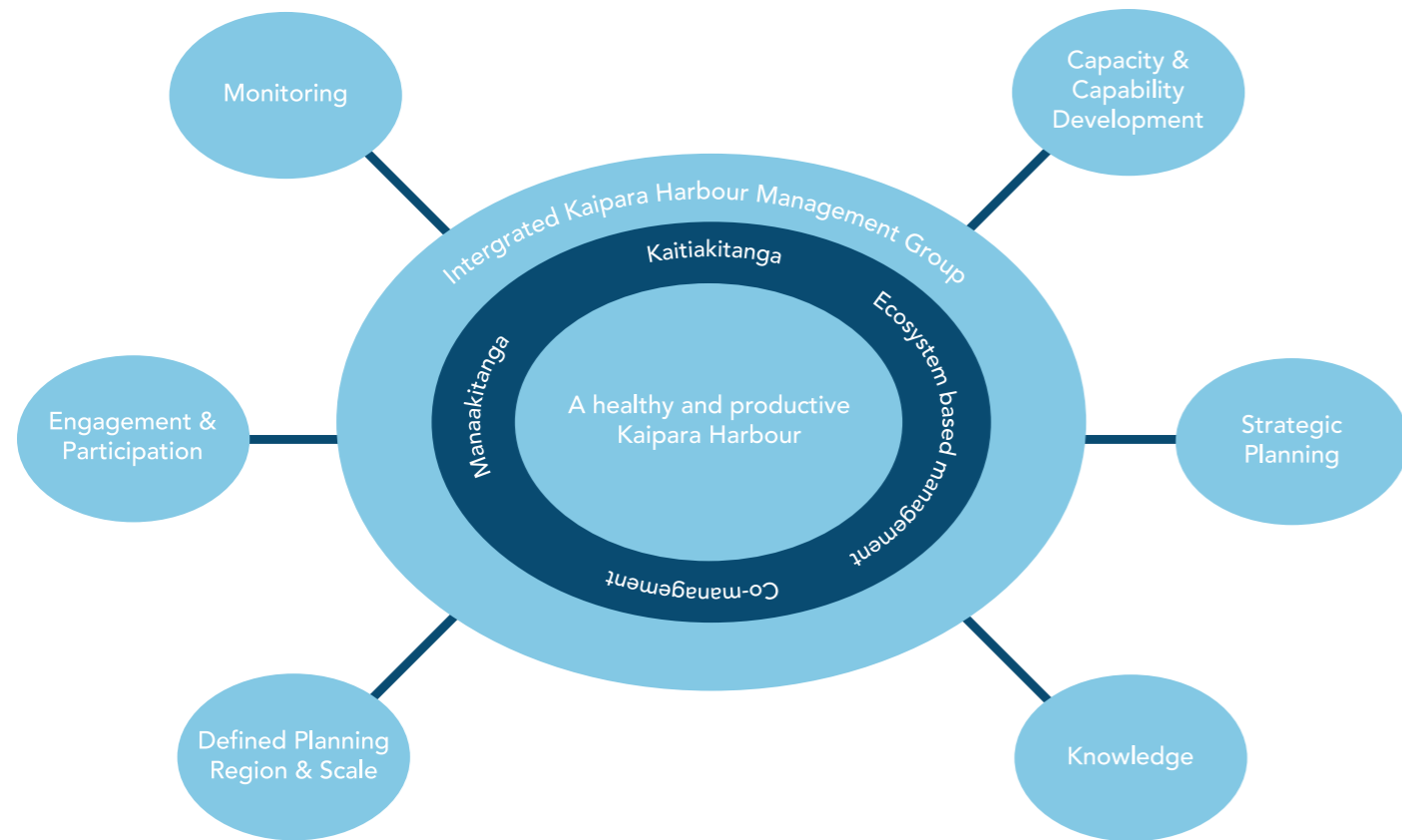
- a co-governance and co-design structure that recognises the Māori constitutional relationship;
- a bottom-up approach that provides local communities with agency;
- a multi-region approach to cater for the varying physical and community dynamics along the New Zealand coastline;
- a hapū approach (or delegated to iwi) that ensures that mana whenua are recognised in each of those regions in the regional infrastructure;
- harmonisation of local needs and priorities from local level plans, to regional plans to a national plan;
- that all jurisdiction issues are mitigated, i.e., that all agencies that represent each aspect of marine (or integrated) governance and management are included in the implementation of the EBM model;
- that EBM is defined at the outset in a way that:
 - o includes Māori input from the outset, consistent with the principle of co-design above;
 - o is adaptive and able to adequately include multiple perspectives on what EBM is for different parties;
- the EBM Model:
 - o recognises the stewardship role that hapū have along the coastline;
 - o initiates or empowers existing stewardship activity that can feed TEK or Mātauranga Māori into marine monitoring and decision-making processes;
 - o asserts that TEK or Mātauranga Māori has equivalent importance when considering the state of the ecosystem;
 - o has a data capability building component that enables data-driven governance of marine environments for hapū and communities (and that this acknowledges principles of data sovereignty);
 - o facilitates collaborative governance to assist streamlining of regional governance structures;
- that adaptive management processes are included in the model to acknowledge that dynamics change and relationships evolve.

He Mahere Pāhekoheko Mō Kaipara Moana—Integrated Ecosystem-Based Management for Kaipara Harbour, Aotearoa New Zealand ⁷⁴

This paper discusses He Mahere Pāhekoheko Mō Kaipara Moana – Integrated Kaipara harbour management, which is a co-management framework that aims to connect and utilise indigenous Māori values and knowledge alongside principles of ecosystem-based management.

Kaipara hapū led the establishment of the co-management platform the Integrated Kaipara Harbour Management Group (the Group) in response to concerns about the ecosystem health of the Kaipara harbour. The Group is a key aspect of the framework and is the means to implement obligations between Kaipara hapū and Memorandum of Understanding partners (such as government agencies) under settlement legislation, in particular giving effect to kaitiakitanga and hapū management plans.

He Mahere:



He Mahere strengthens the position of hapū/iwi as partners in the management of Kaipara. At the core of the integrated framework is the vision (a healthy and productive Kaipara Harbour).

There are four guiding principles that help achieve the vision: (1) kaitiakitanga (2) integrated EBM, (3) manaakitanga, and (4) co-management.

Six core components are essential for successful implementation of the integrated framework: knowledge, strategic planning, defined planning region and scale, engagement and participation, monitoring and capacity, and capability development.

Implementation of kaitiakitanga means kaitiaki are actively engaging in meaningful environmental decision-making, which ensures reciprocal whakapapa relationships maintain balance within the ecosystem and maintain individual and community identities.

The Group recognises kaitiakitanga as one essential management tool amongst many and support kaitiaki using various practices to aid them in achieving their aspirations. For example, the management of wāhi tapu to protect and conserve important historical sites; applying traditional fisheries management processes such as rāhui to protect, regenerate, and manage fisheries; and the development of monitoring programs that utilise indigenous concepts of value such as mauri.

The paper concluded that realising the Group’s potential requires the continued support of Treaty-based governance and co-management arrangements and active implementation of indigenous knowledge in co-planning and co-action.

An integrated framework supports indigenous aspirations, (w)holistic ecosystem understanding, multi-agency co-operation, multi-scalar interactions, strategic vision, good science, and action on the ground. The Group is a useful means for indigenous groups to provide leadership with a (w)holistic approach to integrated management.





Navigating towards marine co-management with Indigenous communities onboard the Waka-Taurua ⁷⁵

This paper proposed a framework for the management of marine spaces. The model encompassed a double-hulled canoe (waka taurua) as a metaphor for promoting the implementation of values (indigenous and societal values) in a balanced way into management and policy for the marine environment. One waka represents Indigenous/Māori world views and the other waka represents Pākehā (non-indigenous) world views.

Research demonstrates that governance institutions grounded in partnership models with indigenous peoples are essential starting points to effectively implement and manage for Māori and societal values and accounting for Māori and broader societal values is fundamental for the successful implementation of EBM within NZ, particularly within institutional arrangements that encourage collective decision-making and power sharing.

The paper notes that a strength in the proposed waka taurua configuration is that while a single canoe/waka may falter and flip at times, by lashing together into a waka taurua/double hulled canoe, the vessel will be far more stable and able to withstand the mountainous seas of challenge and change ahead of us.

He waka eke noa/we 2 are all in the same boat: A framework for co-governance from Aotearoa New Zealand ⁷⁶

This paper identified how Māori values are catered for within planning approaches and institutions for Tauranga Moana and presents insights into the challenges and opportunities for integrating Māori values into a NZ marine management system like EBM.

The research centred on interviews. The participants acknowledged that engaging with Treaty of Waitangi partners regarding marine management is fraught with numerous challenges. For Kaitiaki this included lack of resources to participate effectively in marine management, stretched capacity to engage with government agencies, and capability shortages to provide technical advice. For planning participants, some key challenges included under-resourcing and excessive workloads.

The research enabled the further development of the Waka Taurua framework by identifying the characteristics of each component of the framework from: the whaingā (common purpose) usually focused on restoring the well-being of marine spaces, the shared values of Māori and broader society (hiwi/hulls); the diverse planning tools and

approaches used by kaitiaki and planners (hoe/paddles); its flexibility for application to a multitude of contextual issues (moana/sea) such as disaster recovery or polluted waterways; and the deck/papa noho where two parties reconcile power sharing, world views and developing capacity.

The paper concluded that despite the challenges, it is accepted that values play a role in marine management and understanding cultural and societal values is fundamental for the successful implementation of EBM within NZ, particularly within institutional arrangements that encourage collective decision-making and power sharing.

He Waka Taurua provides an equitable solution for co-management in the marine space, as it represents the worldviews, values and even knowledge systems of each party as valid in its own right and provides a process for how diverse worldviews can function independently but come together for achieving a common purpose. He Waka Taurua serves as a guide for understanding what information needs to be included in a joint decision-making approach for groups wishing to appropriately embark on such ventures such as the co-management of NZ's marine ecosystems.

Co-management of Natural Resources: Issues of Definition from an Indigenous Community Perspective ⁷⁷

The beliefs and practices of indigenous groups are increasingly recognized as being of value for resource management. But engagement in co-management has proved problematic for indigenous communities. The authors argue that this results from different interpretations of what is meant by co-management. Three interpretations are proffered, presenting different perspectives on the state-community duality: cooperative management, collaboration in management, and management by community. Referring to a New Zealand study of the potential for joint management of freshwater resources, the authors argue collaboration between state and indigenous people (and mutual engagement of their knowledges) promises to maximize indigenous input into resource management decision making. Negotiation of such collaborative arrangements is made difficult however by the need for the state to (a) differentiate between traditional resource management knowledge and nonindigenous community-based knowledge and (b) incorporate the latter within a state perspective on resource management while specifically identifying and engaging with the former.

Conclusion

The literature review has provided a thorough overview of the research area and will assist in developing the framework that will guide the direction of the research project and provide a platform from which to undertake further investigation into key research areas.

A number of key themes arose from the review, which largely centre around Māori being able to exercise rangatiratanga in substance and encompass the following:

- Recognition of rangatiratanga in both the use and control of Māori resources in accordance with traditional culture and customs and any necessary modern extensions of them.
- Recognition and incorporation of Mātauranga Māori and tikanga. This requires Māori understanding to be re-weighted and given equal, or greater consideration alongside non-Māori understanding and to frame and form part of policy and legislation and governance of resources.
- Resourcing and funding of iwi, hapū and Māori to enable and resource Māori to be active Treaty partners in the full co-design of policy and practices as well as to actively govern and make decisions for their land, resources and territories. Such funding should be devolved to Māori to be used as Māori see fit rather than restrictive or prescriptive.
- Capacity building to enable Māori to exercise rangatiratanga and kaitiakitanga substantively.
- Delegation and devolution of government powers across the resource management and conservation spectrum to Māori (resource management, conservation, fisheries etc.).
- Recognising and resourcing the role of kaitiaki and tikanga / mātauranga based tools such as rāhui and culturally based monitoring and indices.
- Protection of Māori rights and interests in taonga species and biodiversity management.
- True partnership which reflects shared power and decision-making and devolution of funding to enable Māori to exercise rangatiratanga.

The review also demonstrates that mātauranga Māori and tikanga Māori not only enhance our understanding of te taiao but are necessary to solve many of the crises we are facing globally and domestically. As such, its inclusion is integral to responding to environmental degradation.

These themes and the review as a whole, will inform and help frame the discussion with tikanga and Te Tiriti experts, which will ensure that the research approach and therefore the governance model options and transitional pathways that are to be developed are authentically and genuinely underpinned by Te Tiriti and Tikanga Māori.



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