

ENHANCING MĀORI AGRIBUSINESS THROUGH KAITIAKITANGA TOOLS

Authored by: Dr Jessica Hutchings, Dr Jo Smith, Dr Nick Roskruge, Dr Charlotte Severne with Dr Jason Mika and Dr Joy Panoho – for the Our Land and Water, National Science Challenge, July, 2017.

Abstract:

Māori approaches to lands and waterways assume an indivisible relationship between human and non-human entities, hence the common term *tangata whenua* (people of the land) used to refer to Indigenous peoples of Aotearoa/New Zealand. This article provides an overview of Māori conceptual underpinnings related to land, water and people from Māori agribusinesses, as well as environmental and resource management sectors. In particular, we focus on Māori agribusinesses and their dynamic and holistic approach to natural resources that seek to balance commercial and cultural imperatives. We draw on secondary sources to provide an overview of the Māori agribusiness sector, as well as Kaitiakitanga (guardianship) Tools operating in the Māori environmental and resource management sectors. We argue that the dual aims of the Māori agribusiness sector could be enhanced and strengthened by the uptake of Māori science and knowledge systems applied in environment and resource management contexts. We explore the potential adaptability, scalability and transferability of these tools to the Māori agribusiness sector with prioritised suggestions for future developments to realise the potential of proactively engaging with Māori knowledge and science. Yet, a more robust knowledge transfer system that makes research relevant to the end user is needed, along with more innovative research agendas based on the needs of diverse Māori communities and capability development that can support the transformation of Māori agribusiness initiatives.

Keywords: Land, water, Māori agribusiness; Kaitiakitanga Tools, Mātauranga.

Introduction

In July 2016 the *New York Times* ran a story about New Zealand's 2014 Te Urewera Act featuring the headline "In New Zealand, Lands and Rivers can be People (Legally Speaking)" (Rousseau, 2016). Asking, "Can a stretch of land be a person in the eyes of the law? Can a body of water?" The article reported shifts in the status of Ngāi Tūhoe homelands from a National Park (named so by the New Zealand Crown in 1954) to "a legal entity" and the forthcoming similar shift in status of the Whanganui River (a bill eventually passed in 2017). Both legislative shifts reflect the value systems and world views of Māori, also known as *tāngata whenua* (literally, people of the land). What seemed newsworthy to the journalist, and the *New York Times* editor who agreed to run the story, was the seemingly incongruous approach taken in New Zealand, to something usually framed as a resource to be used by people, rather than an entity with rights of its own. Instead, as Māori legal expert Jacinta Ruru has argued, the shifts are, "about honouring the uniqueness, the essence, and the inherent value of nature. It's a model centred on a Māori world view; that of a people who see themselves as

being part of nature, and their own welfare and health being reflected back by that of their environment” (Mitchell, 2016, para. 14).

As Pita Sharples, then Minister of Māori Affairs in 2014, argued, “[t]he [Tūhoe] settlement is a profound alternative to the human presumption of sovereignty over the natural world” (Rosseau, 2016, para. 6). As such, this legal revolution not only represents the increasing recognition of Māori ways of thinking and doing in the life of a settler colonial nation, it shifts the ways of relating to the natural world and represents an opportunity to rethink existing norms attached to land and water. In the wake of this legal revolution, what are the lessons that can be learnt from a Māori world view that acknowledges the indivisible relationship between people, landscapes and waterways? In particular, how might this shift in conservation management offer opportunities to rethink the norms of other aspects of New Zealand society dealing with land and water issues, such as the agribusiness sector? How might a relational approach to these, more-than-human geographies (Panetti, 2010) inform farm and water business practices that are increasingly under pressure to protect limited natural resources? This article provides an overview of Māori conceptual underpinnings related to land, water and people. We then offer a snapshot of Māori agribusiness enterprises shaped by these worldviews, enterprises that strive to find a balance between economic and cultural imperatives. We seek to understand the contribution that Māori knowledge and science can make to realising both commercial and cultural outcomes. To do this we examine literature in both the Māori agribusiness sector and the environment sector to understand the uptake of Māori knowledge and science tools that support the kaitiakitanga (guardianship) aspirations of diverse Māori entities. Our review, based on secondary sources, reveals that there is a very small body of literature in the Māori agribusiness space and little evidence of the consumption and uptake of Māori knowledge and science tools to support this sector. Our investigation offers a range of existing Kaitiakitanga Tools that indicates development and uptake of Māori knowledge and science in the environment and resource sector. We explore the potential adaptability, scalability and transferability of these tools to the Māori agribusiness sector with prioritised suggestions for future developments to realise the potential of proactively engaging with Māori knowledge and science.

Land and Water as Treasures Passed Down Through Generations

The term *tāngata whenua* captures the geopolitical and spiritual dimensions of Māori relationships with landscapes and waterways. Merata Kawharu uses the term “ancestral landscapes” to describe “the centrality of ancestors as original trustees” as well as “the centrality of trusteeship values guiding present and future generations” (Kawharu, 2009, p. 322). That is to say, many Māori are raised in the knowledge of their *tūpuna* (ancestors); where they lived, cultivated, fought, worked, played and where they interred their deceased. This is therefore *whakapapa* (kinship ties), the history of the people including the genealogical process. For the most part, Māori have been raised secure in the knowledge that the *whenua* (land), along with other resources, had sustained each generation throughout the seasons, provided material for their shelter, weapons, tools and clothing and most importantly, ensured the continuity of *whakapapa* for the tribe, from their origins to the present time. This now includes the political relationship of generations of people promoting and maintaining the resource and vice versa (Roskrug, 2007). This reciprocal relationship between land and people is a fundamental aspect of Māori cultural identity and gives rise to a complex and interconnecting value system, part of what Reverend Māori Marsden has called, a woven universe (Marsden, 2003). Māori retention of lands ensures ongoing *whakapapa* relationships between *whānau*, *hapū* (sub-tribe) and *iwi* (tribe), and includes a responsibility to act as *kaitiaki* (guardians) of natural resources for the generations to come. *Kaitiakitanga* flips the instrumentalist logic of capitalism around to ask, what can we do for our lands and waters? Rather than, what can these natural resources do for us? (Harmsworth, per. comm.). Another aspect of this woven universe that links lands, waters and peoples is the whole of landscape approach encapsulated in the phrase “*ki uta ki tai*” (from the mountains to the sea) which privileges the interconnection of resources and ecosystems, an approach that governed pre-colonial practices and much of current Māori catchment management approaches (Roskrug, 2007; Awatere and Harmsworth, 2014; Reid, J., Barr, T., & Lambert, S. 2013; Tanner et. al., 2017).

The processes of colonial settlement that fundamentally undermined *kaitiaki* capacities and the primary links between *tāngata* and *whenua* now find redress through Treaty reparation processes derived from the 1975 Waitangi Tribunal, established to address breaches of the 1840 Treaty of Waitangi. Some refer to current relationships between the Crown and Māori as part of a, post-settlement era (Royal, 2007). Describing the relationship between the southern-

most tribe Ngāi Tahu and the Crown, since the 1996 resolution of a more than 140 years grievance process, iwi rangatira (leader) Sir Tipene O'Regan has stated:

Peace has now broken out—relatively speaking. The Crown and local government now increasingly talk of ‘partnering’ with our tribal structures on everything from marine reserves to the Christchurch re-build. We are now ‘consulted’ on place-names, irrigation projects and all manner of regional plans and schemes. (O'Regan, 2014, para. 11).

O'Regan's comments refer to the shifts in policy inaugurated by the Crown that now require local authorities and state entities to acknowledge the long abiding rights of tangata whenua as protected by the Treaty of Waitangi. Legislative changes include, among others, the 1991 Resource and Management Act (RMA), which promotes the sustainable management of natural and physical resources and recognises Māori values and traditions as a matter of national importance (RMA, 1991; Matunga, 1998; Harmsworth, Awatere and Robb, 2015); Te Ture Whenua Māori Act (the Māori Land Act currently under review) of 1993 that “facilitates and promotes the retention, use, development, and control of Māori land as taonga tuku iho (a treasure passed down through generations) by Māori owners, their whānau [family], their hapū, and their descendants, and that protects wahi tapu [sacred places]” (Section 2, Te Ture Whenua Act 1993 – under reform); the 2002 Local Government Act (LGA) designed to recognise the diversity of local communities (Harmsworth, Awatere and Robb, 2015) and the 2011 National Policy Statement on freshwater management that requires local authorities to ensure that tāngata whenua values and interests are reflected in the management of freshwater (Harmsworth and Awatere, 2013). While these legislative shifts are significant, how they play out in specific contexts is still a work in progress within the colonial present of Aotearoa/New Zealand (Gregory, 2004).

Values Underpinning Land, Water and People in the Māori Agribusiness Sector

Where once Māori were able to enact a “whole of landscape” approach to their responsibilities as kaitiaki of lands and waters, colonial settlement processes (including land confiscations and enforced individualization of land titles) fundamentally fractured the norms of kaitiakitanga, collective ownership and capacities to enact tino rangatiratanga (sovereignty) (Kingi, 2008; Hutchings, 2012; 2015; Smith and Turner, 2013). Working within a post-settlement context, Māori increasingly find innovative ways to express cultural ways of being and knowing

through frameworks shaped and honed by Crown norms (Jones, 2000; Bargh, 2007; Smith and Ruckstuhl, 2010). Yet the distinctiveness of Māori freehold land ownership structures and the values underpinning the relationships between land, water and tangata whenua pose significant challenges to existing primary industry norms, particularly the balance that must be found between economic productivity and kaitiaki responsibilities.

Māori freehold land ownership structures are distinctively collective and intergenerational, and constitute 5 percent of the total area of Aotearoa/New Zealand (Kingi, 2013), mostly concentrated in the North Island (Harmsworth and Mackay, 2010). The majority of Māori land under management are Ahuwhenua Trusts and Incorporations which have governance structures set up to meet the requirement of Te Ture Whenua Māori Act of 1993:

5,000-Ahuwhenua Trusts	750,000 hectares
166-Māori Incorporations	210,000 hectares

Table 1: High level summary of Māori Land under management (Kingi, 2013, p. 1900).

According to Tanira Kingi “the vast majority of structures are small in scale” with approximately 2,000 trusts managing less than 5 hectares, raising the issue of how these interests can be amalgamated into larger economic units (2013, p. 1900). Kingi identifies two trends in the sector in recent times: “the aggregation of smaller land titles into larger farming units, and the formation of multiple farm units into farming collectives” (2013, p. 1898). Many trusts and incorporations operate successfully within the sector, expressing cultural ways of being and knowing that are distinctly Māori, and offering examples of good practice that could provide lessons for others. The snapshot of a few enterprises below demonstrates how Māori cultural values can be woven into the practices of agribusiness. The question we ask is, how best can these values be supported through the uptake of Māori knowledge and science?

The Wakatū Incorporation is an example of a commercially successful Māori agribusiness entity. It was established in 1977, under the Māori Affairs Amendment Act 1967, for the purpose of administering 1,400 hectares of Māori reserved lands. The core owners of the Wakatū Incorporation are descendents of the Māori landowners of the Nelson, Tasman and Golden Bay Regions and are from the tribes of Ngāti Rārua, Ngāti Koata, Ngāti Tama and Te Ātiawa that are also known as Te Tau Ihu. In 1977 the land was valued at \$11 million and in

2017 the value of Wakatū through its commercial activities is now at \$260 million. It describes itself as, *A Business of Land and Sea*, and has a diversity of commercial portfolios that include; marine farms, vineyards, orchards, residential properties, large scale retail development, office buildings and global marketing. They aim “to preserve and enhance our taonga for the benefit of current and future generations” (<http://www.wakatū.org/#about-about>). Their guiding objectives of 1) development and innovation and 2) identity and integrity are defined as vital for their success. Four values guide the Incorporation: rangatiratanga (which they define as leading by example), whanaungatanga (framed as family connected by a powerful common purpose, enriched by each other and bound by mutual respect), manaakitanga (thoughtful and generous in their dealings with others) and kaitiakitanga (entrusted with the wellbeing of their people, their lands, their waters and honor-bound to protect them for the next generation). Recently Wakatū re-branded their Kono, food and drinks business with a new look which encapsulates the power of four: four corners of beautifully woven harakeke kono (small flax basket), four iwi to whom the owners whakapapa to, and ngā wāhanga e whā o te tau, (our four seasons). They have cemented this rebrand with a strong K, icon and are inviting people to wear this pin to share in their belief of kaitiaki.

Ngāti Parewahawaha is a hapū of Ngāti Raukawa within the Tainui federation of tribes. The block is 0.4ha (1 acre) of land and it lies directly beside Parewahawaha marae on its northern boundary, near Bulls township in the North Island. The Parewahawaha marae trustees have been informally leasing the block from the whānau owners for the last ten years, paying the rates and other costs as appropriate and grazing or cropping as feasible. The whānau owners are absentee owners, almost entirely domiciled in the Auckland region and not actively involved in marae or land related affairs (Roskruge, 2007).

The long term objectives for land use assessment of the block include: ensuring the continuation of whakapapa associations between whenua and whānau, maintenance and application of tikanga-ā-iwi (tribal protocols), economic development of the block, profitability of the block through commercial crop production/horticulture and the creation of employment opportunities through alternative land uses. The trustees have been looking to achieve these objectives by considering alternative land management options and through diversifying risk management. Their practices are based on an interconnected set of values including: whakapapa; recognising whanaungatanga (the relationship between the people and the resource and all other components of the physical world which contributes to the continued

well-being), manaakitanga (defined by the hapū as contribution to hospitality within the whānau and hapū group and external groups), a contribution to tikanga-ā-iwi (recognising specific tikanga or processes appropriate to the hapū and iwi aligned to the resource and the whānau as recognised owners of the land), kotahitanga (unity among all hapū and iwi alike), wairuatanga (spirituality in all its forms, a recognition of a higher being and the relationship it has in our daily lives), kaitiakitanga (the responsibility to manage the resources for the benefit of all who may draw on them for their well being and their identity – not just for present generations but for those to come), rangatiratanga (the ability to take control of the inputs and influences on their people and to make pertinent decisions which affect Ngāti Parewahawaha and all iwi – self determination and mana whenua), retention of mana (or status) over land resources which contribute to the identity and sustenance of the hapū (Roskrug, 2007).

Atihau Whanganui Incorporation (AWHI) was established in 1970 following an order of the Māori Land Court to take back, resume and manage 101,000 acres of land vested into the Aotea Māori Land Council by Whanganui Māori in 1903. Over the past 30 years AWHI has had an active resumption programme progressively resumming land as money and opportunity became available. Prior to 2002 land resumptions were financed by profit and investments but more recently due to a fear in rising land and livestock prices AWHI was compelled to finance resumed lands by way of bankloans. In 2016 resumption was placed on hold due to concerns about current high levels of debt. AWHI farms has 83 percent of the land in sheep and cattle with some dairy and forestry interests. Their agribusiness philosophy is to farm in a “sustainable” manner with an integrated 1 farm framework, whereby the blocks work together to maximise synergies and economies of scale. The incorporation’s website describes the notion of the blocks working together as reflecting their natural affinity and close connection as Māori to the land. AWHI describes sustainable farming as, “integrating environmental stewardship with farm profitability. In essence, it is the ability to produce profitability from the land without causing irreversible damage to the ecosystems” (<http://www.atihau.com/our-story.html>).

AWHI describe their purpose as Toitū te Whenua - productive land, Toitū te Tāngata - prosperous people, Toitū te Mana - passionate customers (2016 Annual Report). Their priorities are: people, environment, profitability, value, diversification and shareholder connectivity. The notion of “one farm, one team” is their leading values statement and is underpinned by; providing manaaki for land, animals, resources and people; seeking

continuous improvement, delivering customer value, acting with integrity and shaping a better future for mokopuna (grandchildren).

These three entities are examples of the diversity that exists within Māori organisations engaging in agribusiness. Each trust has a unique story of reconciling and healing the legacy of colonial trauma in the resumption of their lands and the ongoing use of their resources in ways that balance their cultural, environmental and economic imperatives. The size of the land and water resources that these organisations have relationships with and manage varies greatly between the different entities as does the agricultural and horticultural initiatives given the variables of; land, soil and water feasibility, human resources, skills and finance. Yet all enterprises base their existence on whakapapa, a connectedness that exists between both the land and the owners that cannot be taken away. This whakapapa relationship is situated within a Māori cultural framework and knowledge system and underpins the relationship between land, water and people. While the larger commercial trusts may measure success against standard commercial indicators it is clear that cultural imperatives and values of their ancestors are also at the forefront. What contribution can Māori knowledge and science make to support these culturally-driven outcomes?

A key challenge when discussing Māori land is the scant existing research and environmental information available to produce a finely grained understanding of the use of land and options for enhancement (Harmsworth & Mackay, 2010). In his study of tribal agriculture, Tanira Kingi takes issue with state-funded research to do with the Māori agribusiness sector that fails to take into account specifically Māori approaches to land. Kingi cites a 2013 commissioned report for the Ministry of Primary Industries that found of approximately 1.5 million hectares of Māori freehold land, only 20 percent was considered to be operating productively. While these findings were based on, “relevant industry benchmarks derived from the norms of dairy production or sheep and beef farming” (Pricewaterhouse Coopers, 2013, p. 5), Tanira argues that this obtuse conclusion:

doesn't account for an alternative view that reframes this seemingly 'negative' characteristic to one where tribal agriculture in NZ has several advantages relative to the wider sector, namely, (1) the significant potential for smaller affiliated entities to collaborate and leverage their collective scale; (2) multiple layers of decision making within these entities that require input from expert consultants, thus providing reporting

and monitoring disciplines not often found in typical family farms; (3) conservatism and risk aversion (because of intergenerational stewardship) that has led to low levels of debt and strong balance sheets; and (4) an underlying influence of (traditional knowledge) and *tikanga* (cultural constructs, values and protocols) that are captured within a unique cultural bastion (Kingi, 2013, p. 1898).

Here Kingi highlights four interweaving aspects of the existing Māori agribusiness sector that underscores innovations in terms of collaboration, communication, and future-oriented management of resources as well as the overall value of traditional knowledges and cultural protocols. As such, Kingi's critique demonstrates the siloed approach taken by the Ministry of Primary Industries when dealing with Māori matters. Further arguing that more accurate (and presumably Māori-centred) research needs to be conducted to inform solid policy development in the Māori agribusiness sector, Kingi's critique of the paradigm of productivity (and we could also include, success here too), not only shines light on the innovations underpinning Māori agribusiness practices, he highlights the valuable role that *mātauranga Māori* (knowledge and science) has to play in challenging prevailing economic norms of the primary production sector. *Mātauranga Māori* is a highly localised knowledge system that has many definitions but can be broadly defined as, "the knowledge, comprehension or understanding of everything visible and invisible existing in the universe" and involves "observing, experiencing, studying, and understanding the world from an indigenous cultural perspective" (Awatere & Harmsworth, 2014, p. 3). Crucially, *mātauranga Māori* should be understood in all its interwoven complexities. With this "ki uta ki tai" (or whole of landscape) approach to knowledge production in mind, we now turn to some existing research to do with traditional knowledge and cultural protocols in relation to Māori land, and then research in the fields of environment and resource management that uncovers, the potential adaptability of existing tools to support Kaitiakitanga imperatives the Māori agribusiness sector.

Māori Science and Mātauranga Within Environment and Resource Management Sectors

In what follows we describe existing tools that could benefit the Māori agribusiness sector's key challenge to balance economic productivity with cultural imperatives. We call these, Kaitiakitanga Tools, and a key feature is their ability to take a "ki uta ki tai" (or whole of landscape) approach (Harmsworth & Awatere, 2013). They include the: Mauri (life force)

Compass; Mauri model; Cultural Impact Assessments (CIA); Environmental Report Cards; a Cultural Health Index (CHI); a NZ Sustainability Dashboard System and collaborative models. As is clear from the naming strategies attached to these tools, (dashboards, report cards, indexes) clear and easily-understood communication principles underpin the logic of their development. The impetus on Māori agribusiness entities to share environmental management objectives with local and regional authorities over land and water resources, is rationale for ensuring clear communication is enhanced through the uptake of any, Kaitiakitanga Tools. Furthermore, in a post-settlement era where negotiation with local, regional and Crown authorities is an ever-present reality, and in light of the ongoing impacts of a persisting colonial present on tangata whenua who have had to actively work to regain cultural knowledges, conveying the value and importance of the indivisible relationship between land, waters and peoples is a key priority. Some call this a form of environmental communication (Tipa et al., 2017), which we argue is an important aspect in the development and application of Māori knowledge and science tools for the agribusiness sector.

Mauri Compass Tool – An effective way to understand the waterbody of a resource.

The Mauri Compass is an environmental tool designed by Turanganui a Kiwa and Gisborne Council to assess and restore the mauri (or life force) of the region's waterways. It works at the interface of Māori science and knowledge and western science. The tool assesses the mauri of a waterbody using 12 Compass Points (Parameters). A value of 1 to 5 is assigned to each compass point using a set of standardised tests. The first four compass points of tangata whenua, wairua, mahinga kai, and cultural can only be assigned by tangata whenua. The other eight compass points draw on western science and include: habitat, biodiversity, water biology, water chemistry, tuna growth rates, tuna species, tuna abundance and population and tuna biological health. Lead designer of the tool, Ian Ruru (Ruru, 2015), describes the tool as a simple, effective way to understand the mauri of a waterbody and its interconnected realities. For if a resource is well, then the people can be well and can participate in the life of their community.

Te Mauri Model Decision Making Framework

Te Mauri Model was developed by Kepa Morgan (2007) in an engineering context and has had wide application to other situations. At the core of the mauri model is the ability to understand

the interconnectedness of all living things and to measure sustainability and wellbeing in a holistic manner. One could describe it as an eco-cultural tool that can be applied by Indigenous communities across a range of well-being domains. These include ecosystems (environmental), hapū (cultural), whānau (economic) and communities (social). The model assesses the impact of practices or activities on the mauri of a resource and attributes scores and weightings to each. These include; mauri of the whānau (family, economic), mauri of the community (social), mauri of the hapū (cultural) and mauri of the ecosystems (environment). These wellbeing factors are crucially interrelated, collective in nature and provide a model of wealth well beyond that of capitalist gain.

Cultural Impact Assessment - Giving an Account of Māori Relational Values

Cultural Impact Assessment (CIA) are a part of the Māori resource management landscape under the RMA and constitutes a seachange from previous legislation such as the Town and Country Planning Act (1977) which provided no provision for other forms of environmental knowledge outside of a western framework. CIAs need to be considered as a primary tool to consolidate a partnership approach to a proposal that affects both parties – for example iwi, hapū, whānau and a territorial authority (Roskrug, 2017). Generally a CIA will assist in determining the effect of any proposal on the environment, culture or values as they might be understood by Māori interests. They provide pathways for iwi, hapū, whānau to present their association with the resource and the promotion of tikanga and kawa as they apply to a particular rohe or region. Tangata whenua need not fully present nor justify these perceived relations. Furthermore, a CIA does not have to teach values but simply illuminates the application of cultural values underpinning a resource and its potential or actual use (Roskrug, 2017). Any information that a CIA gives should be over and above what already exists in the public domain, thereby contributing to the extension of the mātauranga continuum and the building of new Māori environmental knowledges. Conveying cultural value is also an enactment of tino rangatiratanga and holds pedagogical potential for non-Māori as well to learn different ways of interacting with natural resources.

Environmental Report Cards - The Importance of Clear Communication

Behind the development of Environmental Report Cards is the underlying value of effective communication which Tupa et. al. argue, “is critical to convey the breadth of values and the

state of water systems to decision-makers if they are to make meaningful decisions” (2017, p. 21). There is growing international uptake of Environmental Reports Cards as an integrated tool to convey monitoring results and support management and restoration strategies of freshwater bodies. Report Cards are an “engagement tool” designed to “galvanise commitment and action” by getting communities to walk their lands, observe their waters and debate the state of their environment (Tipa et al., 2017, p. 21). Findings from two cases investigating the adaptability of environmental report cards in partnership with local iwi and hapū for the Waikato and Waitaki rivers emphasised the importance of developing, designing and applying the Report Cards to address specific needs and practices of a community and thus communicate the cultural health of a catchment to not only tribal members but also to “residents stakeholders and decision-makers” (2017, p. 37).

Cultural Health Index (CHI)

The Cultural Health Index is a Māori-led and developed tool to monitor change in an environmental locality (Tipa, 1999). It contains three components; 1) a dichotomous variable (yes/no) of whether the site has significance to Māori, 2) a mahinga kai index comprised of qualitative ordinal rankings and 3) a stream health index made up of qualitative ordinal rankings. This tool was originally developed for streams and rivers and has had strong end user uptake with recent adaptations seeing it used to measure environmental change in: coastal areas, kauri systems, estuaries, wetlands, marine ecosystems and state of the takiwa (tribal regional) reporting. Given the proven adaptability of this tool in other environmental domains it has real potential for adaptability and use in the Māori agribusiness sector. It could also be applied to Māori agribusiness in its original development form as a way of measuring the mauri of a waterbody and consuming Māori science and knowledge in the environmental management of Maori agribusiness water resources.

NZ Sustainability Dashboard

A 2013 NZ Sustainability Dashboard Research Report provides a useful synthesis of key success factors in Māori Land enterprises, framing success in Māori terms, with the underlying recognition that most Māori land blocks are too small to be understood simply in commercial farming terms (Reid, Barr & Lambert, 2013). The report first identifies what it is that Māori might want to “sustain”, and argues that, “the Māori worldview encourages the building of

mauri (life and well-being sustaining capacity) within environment and society. This worldview puts premium on relational values” (2013, p. 1). Drawing on earlier research by Spiller et al. the report states, “well-being is dependent on positive mana-enhancing relationships within human communities, and between human communities and non-human communities (i.e., ‘the environment’) (p. 4). When values such as kaitiakitanga, kotahitanga, manaakitanga and whanaungatanga are enacted, “the *mauri* of both human and non-human people are more likely to be maintained and, in turn, the life-generating capacities of these entities ensured” (p. 4). A crucial aspect of sustaining these relational values is the leadership capacities underpinning the concept of tino rangatiratanga (sovereignty). These are the building blocks for fostering the social wealth of a people (p. 6).

Collaborative Models

Dealing with lands and waters requires healthy collaborative processes between Māori and councils when decision-making, planning, and managing these natural resources (Harmsworth, Awatere & Robb, 2015). As such, “Maori values, perspectives and Māori knowledge systems (mātauranga Māori) are being increasingly used to inform collaborative processes” (Harmsworth, Awatere & Robb, 2015, p. 1). Given this shift, there may be benefit, where appropriate, for Māori agribusiness to consider models of co-governance, co-management and co-planning to realise the application of Māori science and knowledge to the management of land and water resources. Harmsworth, Awatere and Robb (2015) explain that the function of the terms - co-governance, co-management and co-planning - are often used interchangeably as they are not well defined. They define co-governance as a formal arrangement to share decision making and as essential early on in the collaboration process. Co-planning can occur under a co-governance arrangement, which are discussed as a shared process where iwi/hapū/tangata whenua interests and values, and the use and understanding of mātauranga Māori are incorporated into local or regional planning, including the development of policies, goals and objectives in council, regional and district plans, and or urban design (ibid). Co-management refers to actions and responsibilities implemented by joint parties, for example deciding how a desired goal, objective or outcome is best achieved. This could include catchment, wetland, and farm plans, consents, riparian planting, river clean-ups, restoration, etc. Co-management is about iwi, hapū and Māori entities working together with partner agencies.

A range of kaupapa (Māori-based assessment tools and frameworks), are available to support these collaborative processes. These tools support Māori articulation of ‘values’ for decision-making. Tool uptake varies across Aotearoa/New Zealand to inform local and regional collaborative processes and enhance understanding and mātauranga Māori usage. Examples of these tools include: taonga species monitoring and harvesting, CHI for rivers and streams, cultural indicators for wetlands, linking science and cultural indicators, state of the takiwā (district or area) toolbox, mauri of waterways kete and framework, significance assessment method for tangata whenua river values, kaitiaki tools and an iwi estuarine monitoring toolkit (Harmsworth, Awatere & Robb, 2015). The use of these tools is important in forging collaborative processes that are increasingly being promoted across the country to enhance freshwater management. We suggest that strengthening Māori agribusinesses in partnerships with local and central government could see a faster uptake and consumption of Māori knowledge and science in the Māori agribusiness sector. Yet it is still unknown how effectively Māori agribusiness entities are engaging with local and central government to support the consumption of Māori knowledge and science in the management of their ancestral lands and waters.

From Mātauranga to Māramatanga

Earlier we defined mātauranga as “the knowledge, comprehension or understanding of everything visible and invisible existing in the universe” (Awatere & Harmsworth, 2014, p. 3). The Kaitiakitanga Tools described above seek to extend the mātauranga continuum and make visible - and communicable – the worldviews and relationships underpinning lands, waters and tangata whenua. Indeed, Kaitiakitanga Tools encourage the *enactment* of mātauranga in ways that strengthen the bonds between lands, waters and peoples, fostering care for surrounding elements and agents, and deepening understandings of the interrelatedness of all things. The mātauranga embedded in these tools have the potential to mobilise a form of māramatanga (insight and enlightenment or active knowing) that grows with each seasonal cycle, and spans an immense stretch of time (Hutchings, et al., 2010). Māramatanga is a multi-dimensional kaupapa, and part of an interconnected Māori knowledge framework. In its application to food growing, Māori organics expert Jessica Hutchings describes her experience of māramatanga in the following manner:

I experience this kaupapa in many different ways in the māra [food garden]: it is not something I can force, but rather a matter of opening my awareness to the insight and enlightenment that comes from being connected to the whenua through growing kai [food]. I feel this kaupapa at work when my energy and that of the māra are in unison. (Hutchings, 2015, p. 25).

Māramatanga, as a form of capacity building, has the potential to flow in other directions beyond environmental ones. Our review has shown steady development by hapū and whānau of Māori science and knowledge-based tools, frameworks and models in the environment and resource management space. Kaitiakitanga Tools connect peoples with landscapes and waterways - and with one another - to build capacity for workers, trustees, beneficiaries and whānau leaders. Drawing on mātauranga Māori in ways that empower diverse Māori communities, Kaitiakitanga Tools have the potential to extend the wellbeing of these communities in social, economic and cultural ways.

We contend that many Māori farmers also work in a space of māramatanga, actively linking cultural values with the commercial objectives of industry to maintain and extend Māori community wellbeing. The review we have conducted above highlights the importance of being able to make visible, communicate, and give names to, the practices, skills, knowledge and science underpinning diverse Māori worlds and entities. It is also important to make visible, and to acknowledge, the dual labour of Māori farmers and Māori communities who have been delivering on both commercial and cultural imperatives in their engagement with lands and waterways. Yet māramatanga is a continuous process of ongoing improvement, and we suggest that there is a strong case to be made for examining the scalability and transferability of Kaitiakitanga Tools from the environment and resource management sector to enhance the Māori agribusiness sector's key challenge of balancing economic productivity with cultural imperatives.

The transfer and adaptability of these already existing models to Māori agribusiness will require at least three interrelated steps.

1. The development of knowledge translation practices that can proactively move research information in ways that are relevant to Māori agribusiness end users. There are two aspects of this translation process, a) that expert and scientific knowledge is made useful and

understandable to Māori entities, and b) that the needs of Māori entities drive the development of future research, translating local needs into future research agendas.

2. Innovations in research methods, including participatory action research, kaupapa Māori approaches that deeply involve diverse Māori entities, as well as prototyping and fail fast methods that test concepts or tool adaptability in short time frames.

3. Strong functioning relationships not only within whānau, hapū and iwi but between Māori and non-Māori at local, regional and national levels. Functioning relationships require leadership capacities and people with the vision to drive innovations and mobilise māramatanga.

Indigenous-led research tells us that;

Knowledge transfer science offers little direction in terms of ‘gold’ standards or evidence-based best practices leading to increased research use. Conversely there is also little empirical evidence of the effectiveness of knowledge transfer practices on the basis of their ability to inform and assist people in their decision making. Effectively determining which knowledge transfer practices are most appropriate requires an understanding of particular decision-makers needs and the decision making environment (Clark & Yukon, 2008, p. 3).

Further research into identifying success factors of knowledge translation and end user uptake amongst Māori entities could provide a valuable body of knowledge to assist in this regard.

The development of Kaitiakitanga Tools for the Māori agribusiness sector, with strong knowledge transfer plans, could support diverse agribusiness’s to manage their resources and activities in ways that account for their core ancestral values around kaitakitanga. We believe that Kaitiakitanga Tools such as Report Cards and Dashboards could have immediate reporting benefits for Māori agribusiness entities and should be prioritised for development. This chimes with the notion of environmental communication and the importance of clear flows of information for a range of contexts including the interpersonal, organisational, group, public and political (Tipa, et al., 2017)

Conclusions

In a post-settlement era where “peace” may have ostensibly “broken out” (to recall the words of Tipene O’Regan) expressions of Māori sovereignty over lands and waters more often, than not, require a persisting negotiation with local and regional entities and ultimately, State authorities. Communicating diverse Māori values and worldviews underpinning the relationship between lands, waters and peoples is a key priority when engaging with non-Māori decision makers. It is also important to shine light on existing good Kaitiakitanga practices within both the Māori agribusiness and resource management sectors.

This article has engaged the method of literature review to communicate the unique contribution that Māori science and knowledge systems can make to enhance Māori agribusiness and people capability while maintaining and improving land and water quality. While Māori agribusiness entities operate via Māori values, we suggest that more research into how these values are measured, with particular regard to land, water and people, could foster innovations in the sector while also providing a pathway for telling a kaupapa Māori agribusiness story. We suggest there could be benefit in undertaking a mixed method research approach such as surveying and interviewing Māori agribusinesses to bring some primary research data to the question. What we do know from this review, is that there is an opportunity for existing Kaitiakitanga Tools to add value to the Māori agribusiness sector with an emphasis on; existing knowledge translation, the development of Māori knowledge and science tools that can support the sector to deliver on both its commercial and cultural imperatives, and partnership and relationship building capacities.

Reference List

Atihau Whanganui Incorporation Annual Report. (2016). Retrieved from https://issuu.com/deputy_editor/docs/atihau_whanganui_incorporation_2016

Awatere, S., & Harmsworth, G. (2014). *Ngā Aroturukitanga Tika mō ngā Kaitiaki: Summary Review of Mātauranga Māori Frameworks, Approaches, and Culturally Appropriate Monitoring Tools for Management of Mahinga Kai*. Prepared for University of Waikato, Hamilton.

Bargh, M. (2007). *Resistance: an Indigenous response to neoliberalism*. Wellington: Huia Press.

Clark, G., & Yukon, W. (2008). *Promising Practices in Knowledge Translation for Research Users*. Yukon: Arctic Health Research Network.

Gregory, D. (2004) *The Colonial Present: Afghanistan, Palestine, Iraq*. Oxford: Blackwell.

Harmsworth, G. R., & Awatere, S. (2013). *Using Mātauranga Māori to Inform Freshwater Management*. Policy Brief No. 7. Palmerston North, Manaaki Whenua-Landcare Research.

Harmsworth, G. & Awatere, S. (2013). Indigenous Māori knowledge and perspectives of ecosystems. In J.R. Dymond (Ed.), *Ecosystem Services in New Zealand – Conditions and Trends* (pp. 274-286). Lincoln, New Zealand: Manaaki Whenua Press.

Harmsworth, G., & Awatere, S., Robb, M. (2015). *Māori Values and Perspectives to Inform Collaborative Processes and Planning for Freshwater Management*. Policy Brief No. 14. Palmerston North: Manaaki Whenua-Landcare Research.

Harmsworth, G., & Mackay, A. (2010). Land Resource Assessment and Evaluation on Māori Land. *Whenua Sustainable Futures with Māori Land Conference*, Rotorua, New Zealand, 21-23 July.

Hutchings, J. (2012). Our Lands Our Water Our People. Guest Editorial. Special Indigenous Edition, *New Genetics and Society*, 31(1): 1-9.

Hutchings, J. (2015). *Te Mahi Māra Hua Parakore – a Māori Food Sovereignty Handbook*. Te Tākupu. Otaki, N.Z: Te Wānanga o Raukawa.

Hutchings, J., Tipene, P., Carney, G., Greensill, A., Skelton, P., & Baker, M. (2010). Hua Parakore: an Indigenous Food Sovereignty Initiative and Hallmark of Excellence for Food and Product Production. *MAI Journal*, 1(2), 131-145.

Jones, S. (2000). Development and Māori Society: Building from the Centre or the Edge? In A. Hooper (Ed.), *Culture and Sustainable Development in the Pacific* (pp. 159–173). Canberra: Asia Pacific Press.

Kawharu, M. (2009). Ancestral Landscapes and World Heritage from a Māori Viewpoint. *Journal of the Polynesian Society* 118 (4), 317-338.

- Kingi, T. (2008). Ahuwhenua – Māori land and agriculture, *Te Ara - the Encyclopedia of New Zealand*. Retrieved from <http://www.TeAra.govt.nz/en/ahuwhenua-maori-land-and-agriculture/print>.
- Kingi, T. (2013). Cultural Bastions, Farm Optimisation, and Tribal Agriculture in Aotearoa (New Zealand). *Conference Proceedings of the 22nd International Grassland Congress*, Sydney. 1898-1904.
- Love, M. (2001). *Ten Years of the Resource Management Act for Maori*. Retrieved from http://www.rmla.org.nz/wp-content/uploads/2016/09/ten_years_of_the_resource_management_act_for_maori.pdf
- Marsden, M. (2003). *The Woven Universe: selected writings of Rev. Māori Marsden*. Te Ahukaramū Charles Royal (Ed.), Otaki, N.Z: Estate of Rev. Māori Marsden.
- Matunga, H. (1998). *Kaitiakitanga and Local Government: Tangata Whenua Participation in Environmental Management*. Wellington: Parliamentary Commissioner for the Environment.
- Mitchell, T. (2016). In New Zealand, the Land Can Be a Person. Meanwhile in Australia ... *New Matilda.com* Retrieved from <https://newmatilda.com/2016/09/08/new-zealand-land-can-person-meanwhile-australia/>
- Morgan, K. (2007). Waiora and Cultural Identity: Water Quality Assessment using the Mauri Model. *Alternative: An International Journal of Indigenous Scholarship*, 3(1), 42-67.
- O'Regan, T. (2014). The Economics of Indigenous Survival. *ABC Radio National*. Retrieved from <http://www.abc.net.au/radionational/programs/bigideas/the-economics-of-indigenous-survival/5832918>
- Pricewaterhouse Coopers. (2013) *Growing the Productive Base for Māori Freehold Land*. Ministry for Primary Industries. Wellington.
- Reid, J., Barr, T., & Lambert, S. (2013). Indigenous Sustainability Indicators for Māori Farming and Fishing Enterprises. A Theoretical Framework. *The NZ Sustainability Dashboard Research Report 13/06*. Published by ARGOS. Retrieved from www.nzdashboard.org.nz.
- Royal, C. (2007). Some Speculations on Māori Identity in the New Zealand of Tomorrow. Paper presented at *Concepts of Nationhood: Marking 100 years Since the Proclamation of Dominion Status for New Zealand*, September 26, in the Legislative Council Chamber, Parliament Buildings, Wellington.
- Roskruge, N. (2007). *Hokia ki te Whenua*. PhD Thesis. Palmerston North: Massey University.
- Roskruge, N. (2017). *Peer Review of the Gisborne Managed Aquifer Recharge Cultural Impact Assessment*. Palmerston North: Land Management Group.

Rousseau, B. (2016). In New Zealand, Lands and Rivers can be People (Legally Speaking). *The New York Times*. Retrieved from <https://www.nytimes.com/2016/07/14/world/what-in-the-world/in-new-zealand-lands-and-rivers-can-be-people-legally-speaking.html>

Ruru, I. (2015). *The Mauri Compass. A concept paper showing mauri compass as an evaluation tool in a RMA Freshwater context*. Gisborne: Te Rūnanga o Turanganui a Kiwa.

Ruru, J. (2014). Tūhoe-Crown settlement – Te Urewera Act 2014. *Māori Law Review*. October. Retrieved from <http://maorilawreview.co.nz/2014/10/tuhoe-crown-settlement-te-urewera-act-2014/>

Saunders, C., Dalziel, P., Wilson, M., McIntyre, T., Collier, H., Kaye-Blake, W., Mowat, A., Olsen, T., & Reid, J. (2016). *How Value Chains Can Share Value and Incentivise Land Use Practices: A White Paper*. Prepared for Our Land and Water National Science Challenge. Christchurch: Agribusiness and Economics Research Unit.

Smith, J. & Ruckstuhl, K. (2010). The Case of Te Karaka: Ngāi Tahu Print Media Before and After Settlement. *AlterNative: an International Journal of Indigenous Peoples*. 6.1, 25-37.

Smith, J. & Turner, S. (2013). Indigenous Inhabitations and the Colonial Present. In G. Huggan (Ed.), *The Oxford Handbook of Postcolonial Studies* (pp. 271-288). Oxford and New York: Oxford University Press.

Tanner, C. Muirhead, R., Burger, D., Carrick, S., Close, M., Monaghan, R. Singh, S. Srinivasan, M.S., Stenger R., & Tipa, G. (2017). A Framework for Understanding the Linkages Between Land and Water Quality Impacts. In L.D. Currie & M.J. Hedley. (Eds.), *Science and Policy: Nutrient Management Challenges for the Next Generation* (pp. 1-10). Occasional Report No. 30. Fertilizer and Lime Research Centre, Palmerston North, New Zealand: Massey University.

Tapsell, P. and M. Kawharu. (2016). Rangahau Roundup. Te Tumu Research, University of Otago. Retrieved from <https://blogs.otago.ac.nz/tetumuresearch/tag/merata-kawharu/>

Te Puni Kōkiri. (1997). *A Guide to the Māori Reserved Land Amendment Act 1997*, Wellington: Publ., Author. 16pp.

Tipa, G, Williams, E, Van Schravendijk-Goodman, Nelson, K Dalton, R, & Home, M. (2017). Using Environmental Report Cards to Monitor Implementation of Iwi Plans and Strategies, including Restoration Plans. *New Zealand Journal of Marine and Freshwater Management*. 51(1), 21-43.