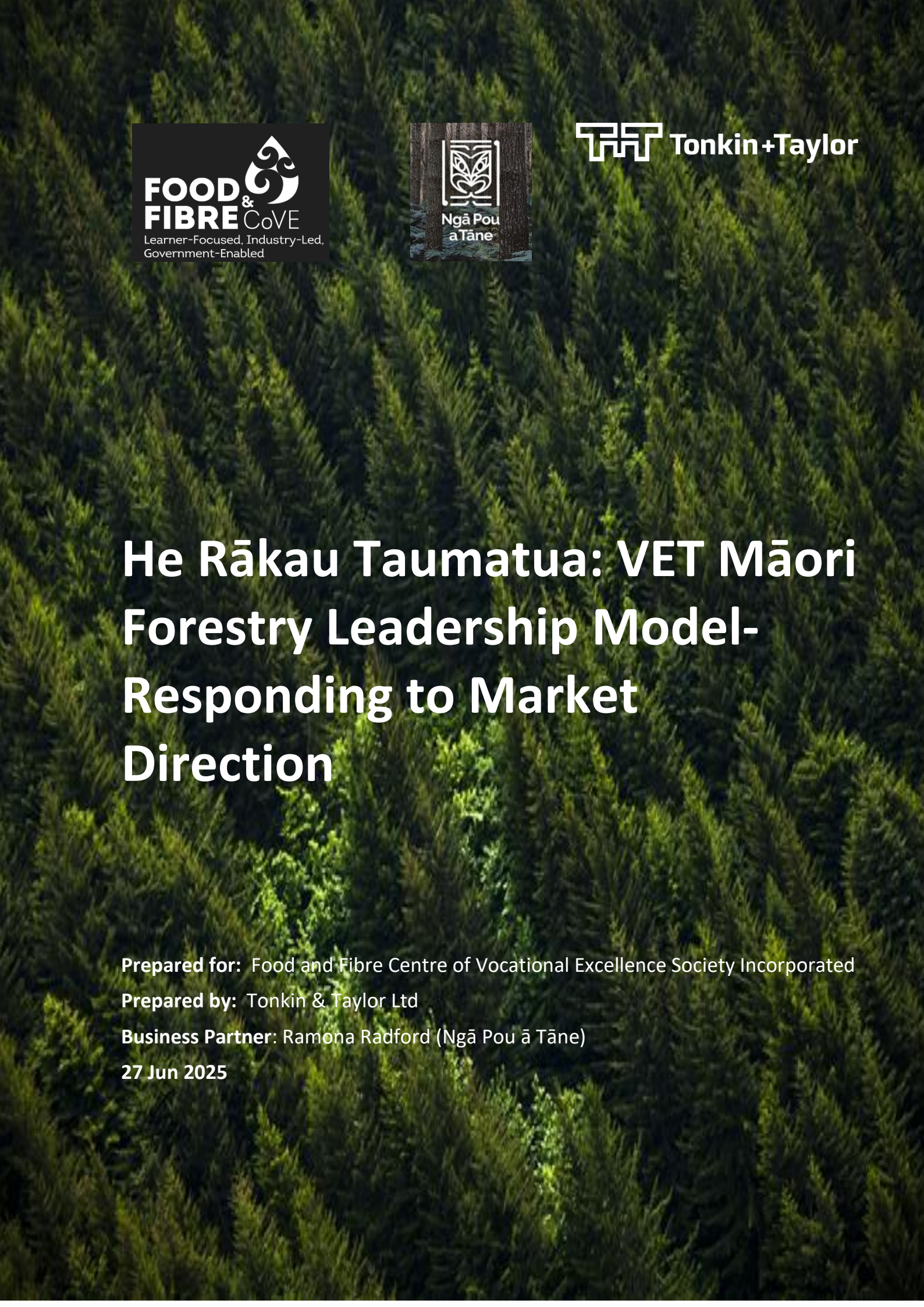

He Rākau Taumatua: VET Māori Forestry Leadership Model- Responding to Market Direction

Prepared for: Food and Fibre Centre of Vocational Excellence Society Incorporated

Prepared by: Tonkin & Taylor Ltd

Business Partner: Ramona Radford (Ngā Pou ā Tāne)

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He Rākau Taumatua – NPAT VET Māori Forestry

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Ngā Pou a Tāne

Tonkin+Taylor

FOOD & FIBRE CoVE
Learner-Focused, Industry-Led, Government-Enabled

Contents

Quick Read: Report Overview

Project Overview

The Food and Fibre CoVE is committed to honouring and giving effect to the Treaty of Waitangi in all activities. Critically, this involves supporting the advancement of Māori-led and mātauranga Māori informed workforce development solutions in the Food and Fibre sector while recognising the importance of Te Ao Māori, especially te reo and tikanga in the everyday life of Māori communities. This commitment is particularly important in the implementation of changes across the Food and Fibre sector through developed programmes of work.

This project seeks to address a gap in the Vocational Education and Training (VET) system by developing a Ngā Pou ā Tāne (NPAT) VET Māori Forestry Leadership Model, in addition to preliminary testing the Māori Leadership Development Framework (Tautoko Toolkit), commissioned by Muka Tangata and co-funded by Food and Fibre CoVE. The key objective of the initiative is to access the potential of the Tautoko Toolkit in supporting the development of an appropriate range of Māori forestry leadership study programmes.

Importantly, the NPAT VET Māori Forestry Leadership Model is responsive to market changes in the global and indigenous forestry sector as outlined in the recent release of *He Rākau Ngahere Māori 2040* - the new strategic direction developed by NPAT.

This project will help build a robust pipeline of Māori leaders equipped to guide tikanga-led sustainable forests that grow the economic, environmental, social and cultural value of Māori forests.

Report Structure

Part One presents He Rākau Taumatua, the newly developed NPAT VET Māori Leadership Model, a collaboratively developed intervention model created in partnership with Ngā Pou ā Tāne (NPAT) representatives. The model offers a culturally specific framework that prioritises Māori values and aspirations for forestry leadership development, design, and implementation. The model comprises of three interconnected components:

- Foundational Elements (part 1)
- Applying the Framing (part 2)
- Guiding Principles: NPAT's education and training direction (part 3)

Workshop with Māori forestry experts provided key insights related to Māori forestry leadership archetypes, with a focus on priorities for Māori forests. The wide scope of leaders identified, illustrated that leader archetypes for Māori forests, extend across many tiers within forestry business and te ao Māori domains. Leaders not often recognised in te ao Pakeha were identified and considered to be pivotal to advance the new Māori forest direction.

The final section provides a preliminary evaluation of the Tautoko Toolkit utilising the NPAT VET Māori Leadership Model - He Rākau Taumatua.

Part Two: This section presents the foundational research that informed the development of the He Rākau Taumatua model and influenced key thinking pertaining to the future direction of Māori leadership development for Māori forests within the global context.

A comprehensive literature review starts with an overview of traditional and contemporary Māori leadership, where the changing nature of Māori leadership has been discussed. Māori leadership roles in this contemporary context are wide and varied. Notably, Māori leadership is often characterised by anchoring te reo me ōna tikanga in ways of operating and being. A key focus within Māori forestry is

associated with advancing the value of Māori forests, adopting tikanga-led sustainable action, kaitiakitanga, and ensuring decision making that focuses on future generations.

The literature review explores insights around global indigenous leadership educator qualities, forestry ecology and management from an indigenous view. The report extends to presenting information around Traditional Ecological Knowledge (TEK), Indigenous Knowledge Systems (IKS) and western science approaches to environmental management and forests managed by indigenous communities and indigenous leadership course delivery. The research highlights similarities with other indigenous worldviews where forests are viewed as living systems with spiritual, cultural and ecological value, guiding management practices that ensure intergenerational wellbeing for both people and the environment.

Models and frameworks such as Two-eyed thinking (USA), Braiding Sweetgrass (USA), Wayapa (Australian) and Mauri Compass (Aotearoa), investigate how TEK can be integrated with western science to help advance the development of environmental, social, cultural or economic systems.

Notably, indigenous-led forestry management focuses on achieving balance—between people and the environment, between past and future, the physical and spirit worlds and diverse knowledge systems. This key characteristic sets an indigenous approach aside from western forestry management practices.

Global indigenous leadership programmes reinforce the value of culturally grounded, community-led education. A review of 30 leadership programmes provides insights into content, delivery style and breadth of courses on offer. Interviews with leaders from Sápmi, Hawai'i, Pueblo and Menominee nations illustrate that indigenous leadership is diverse, context-specific, and driven by tribal cultural imperatives and priorities – with strong spiritual connections to land, forests and more broadly the natural world.

Key Takeouts

This research affirms the importance of VET Māori Forestry Leadership programmes grounded in tikanga Māori, mātauranga Māori, relational accountability, and intergenerational stewardship.

- **He Rākau Taumatua (NPAT VET Māori Forestry Leadership Model)** presented in this report is market responsive providing VET (and higher education) an opportunity to pivot and align with 'He Rautaki Ngahere Māori 2040', the new strategic direction of Ngā Pou ā Tāne: National Māori Forestry Association.
- **Māori Forestry VET Training and Education and Beyond:** Currently there is a gap in the education sector between the new Māori forestry direction and education and training courses on offer. There is an opportunity to develop a NPAT aligned Māori forestry education and training package.
- **Māori Leadership Archetypes:** Key Māori leadership archetypes for forestry are wide and varied, across various domains. Certain forms are often unrecognised in domains outside of te ao Māori but hold high priority for Māori forestry. All leadership archetypes were anchored by te reo me ōna tikanga.
- **Indigenous Led Forestry Practice:** Indigenous led forest practitioners prioritise and centre Traditional Ecological Knowledge (TEK) and cultural ways of doing and being to achieve sustainable development, integrating where appropriate western science for greater understanding of the natural environment.
- **Forests as Living Systems**: Indigenous frameworks view forests living entities with spiritual, ecological, and cultural significance. Leadership is about maintaining balance—between people and nature, past and future, and diverse knowledge systems. Integrating such perspectives into forestry management can foster more adaptive, equitable, and resilient approaches to ensure

the protection and longevity of a forest system.

- **Quadruple Bottom Line:** For indigenous forest keepers, indigenous forest management balances economic goals with environmental, cultural, and social imperatives—ensuring holistic and sustainable outcomes. Sustainability within a culturally centred paradigm is prioritised. Growing an economic base is not viewed as counteract to sustainable goals.
- **Culturally Grounded Leadership**: Contemporary Māori leadership is often characterised as relational, spiritual, and anchored by whakapapa. These roles emphasise stewardship, responsibility, and intergenerational knowledge transfer, forming the foundation for wholistic leadership models.
- **Indigenous Experts**: Indigenous Forest Keepers are invested in culturally centred and led forestry management systems. Leaders are required across all tiers of development. Indigenous rights and interests are a high agenda item. The preferred qualities of an indigenous leader are bound by their own cultural base.
- **Shift away from Purely Extractive Forms of Forestry**: Purely extractive forms of forestry management and practice are oppositional in nature to indigenous led and centred forestry approaches including the new direction of Ngā Pou ā Tāne.
- **Global Indigenous Forestry Leadership Programmes**: International examples reinforce the importance of indigenous led, culturally embedded education and training. These programmes build leadership capacity by grounding learning in 'at place' values, identity, and connection to land and community.

1.0 Purpose and Approach

1.1 Māori Forestry Leadership VET Framework

Context: Overall, within forestry there is a lack of leadership development. This is particularly true for Māori forestry. Māori forestry is undergoing a significant transformation, with substantial implications for vocational education and training (VET).

This project seeks to address a gap in the VET system by a) developing a NPAT VET Māori Forestry Leadership Model to provide focus to future VET developments b) and test the Māori Leadership Development Framework (Tautoko Toolkit).

Project Vision: The overarching vision of this project is to contribute to the creation of a Māori forestry leadership training model, through a VET framework (the vehicle that will be used to execute the model). The primary goal is to advance the direction of VET training to better meet the needs of the Māori forestry sector.

This Deliverable:

This deliverable specifically focuses on:

1. Key findings and insights from the international experts' interviews.
2. Desktop literature review.
3. Development of a Māori Forestry VET Framework: Intervention Model.

Approach to the Deliverable:

Literature Review: The resource/literature collection (review) has undertaken a desk top review of key literary works in the field of forestry, leadership and related areas to better understand the direction that Ngā Pou ā Tāne (NPAT) intend. The literature review focusses on Māori and indigenous literature, international indigenous insights, and indigenous model co-design.

The key research questions that guided the literature review were as follows:

- What type of leaders are required to forge pathways for indigenous owned and controlled forests?
- What types of institutional arrangements have been established and/or are being established by tribal nations and others in relation to leadership training? What are the key learnings?
- What kind of skills and expertise are required to be a Māori/indigenous forestry leader?

These questions consider information from Māori and other indigenous nations both within forestry and other primary industries (such as fisheries, agriculture etc).

Resource Kit: The resource kit is a collection of online resources. The kit will be useful for future leadership development pathways.

(i) Key resources include: An annotated bibliography of indigenous-led leadership programmes and programmes with indigenous content (content, types of leaders, emphasis, institutional arrangements, potentially core competencies, conceptual models/frameworks).
(ii) A collated library set of resources comprised of key articles, guidelines, tools, learning models, videos, etc.

International Experts: a set of interviews was undertaken with Indigenous experts (forest-keepers) and thought leaders from overseas. The interviews have contributed to:

(i) Comparative insights tested the transferability of key ideas, and helped challenge and extend thinking around what effective Māori leadership might look like in a global context.
(ii) Validating the direction of NPAT and the development of He Rākau Taumatua model within the global space.
(iii) Confirming the place of indigeneity across economic, social, cultural and environmental global markets.

NPAT VET Māori Forestry Leadership Model
Informed by the literature, international perspectives and Māori forestry experts, an intervention model has been developed that provides specific framing and priorities for Māori Forestry Leadership development, design and implementation.

1.2 Ngā Pou ā Tāne Strategic Imperatives

Forestry management in New Zealand presently pursues singular outputs from forests, by forest-type, pine for timber, native for conservation. Ngā Pou ā Tāne envisage a holistic system to enhance, sustain and regenerate the reciprocal relationship tangata whenua and mana whenua have with the life force and provisions of the forests on lands (Ngā Pou ā Tane, 2024).

Figure 1.1: Strategic Imperatives of Ngā Pou ā Tāne (Ngā Pou ā Tāne, 2024).

Te mana o te wao tapu nui a Tāne

- Mana ōrite relationship for Aotearoa New Zealand forests
- Forestry adaptation plans for climate risk zones – business model climate scenarios.
- Grow public awareness of our native forest whakapapa including duty of care and responsibilities
- Exemplary forest on pre-1990 eroidible lands.
- Climate and nature smart supply chains (proof of origin).
- Close-to-Nature Continuous Cover Forestry Management.
- Transition Forestry Management.
- Native Seed Improvement Initiative.

Own the forests on our land

- Forge strategic partnerships with forest owners.
- Total Economic Value Framework for Māori Forests.
- Added protection for special nature Māori property rights in national forestry and landuse change decisions.

Grow our people

- Māori Forest Professionals' Industry Partnership - developing our leaders.
- National programme of vocational excellence enhances delivery by hapū/Iwi and Māori SMEs
- Tautoko and value our kaimahi - training, leadership and safety pathways.
- Equitable contracting and monitoring framework for kaimahi.
- National enhancement of forestry operations - strengthening relationships with landowners and tikanga.
- Māori Forestry 101 workshops

Optimise the national Māori forest inventory

- Strengthen ngā kaupapa-a-rōhe business models.
- Māori Nature Positive and Carbon Commodity.
- Māori forestry data managed like a strategic asset
- Transition to diversified (resilient) national Māori forestry portfolio.
- Grow new investment - vertical integration, value optimisation, R&D.
- Māori forest service.
- Ecosystem services register and payments for whenua Māori provisions to the public.
- Total Economic Value Māori Forest financing options.

Te tū a Ngā Pou a Tāne, hei māngai

- Membership services and benefits.
- Resource to develop effective delivery and engagement model.
- National forestry sector leadership and advocacy.

PART ONE

He Rākau Taumatua: NPAT VET Māori Forestry Leadership Model: Rationale and Structure

2.0 He Rākau Taumatua: NPAT VET Māori Forestry Leadership Model

He Rākau Taumatua refers to prominent trees within the forest where birds flock – a place of attraction, a place where knowledge is exchanged, debated and shared. The concept also refers to a person, occasion and/or a place to which people flock (Te Aka, 2025) – In terms of leadership the concept acknowledges the importance of leadership growth and development and the need to create and enable occasions and/or people and/or a place for ngā manu korero (talking birds) to emerge, develop and thrive.

The He Rākau Taumatua model is a Maori forestry leadership conceptual model developed collaboratively with the sector. The overarching purpose of the model is to provide a template that will guide and support VET's direction in growing forest leaders.

The model is anchored by the Ngā Pou ā Tāne new strategy - *He Rautaki Ngahere Māori 2040.* While the model is VET focussed, the intervention model has purposefully been developed to be agile, having applicability across higher educational levels.

Rationale for the Model

The Food and Fibre CoVE is committed to honouring and giving effect to the Treaty of Waitangi in all of its activities. Critically, this involves supporting the advancement of Māori-led and mātauranga Māori informed workforce development solutions in the food and fibre sector.

For the purposes of this project, the NPAT VET Māori Forestry Leadership Model has been developed in response to the identified need to grow more Māori forestry leaders to forge new business and enterprise pathways for Māori forests.

Growth and Enterprise

Ngā Pou ā Tāne (NPAT) has developed a forward-looking 15-year strategy in response to evolving market conditions. This strategy carries significant implications for the forestry sector, particularly in the areas of training and education. To ensure the industry remains competitive and future-ready, there is a pressing need to align educational pathways with emerging market demands and to produce graduates who are truly industry-fit.

A cornerstone of this strategic shift is the development of the model. This model addresses critical gaps in leadership development and course content, ensuring that future leaders are equipped with the skills and knowledge required to navigate the sector's new direction.

Māori forestry continues to be one of New Zealand's highest-earning sectors, making a substantial contribution to the Māori economy. He Rākau Taumatua presents a unique opportunity to realign course content and delivery methods, while also opening doors to new markets. It is a call to action for education providers and industry stakeholders to collaborate in shaping a workforce that is resilient, skilled, and aligned with the aspirations of Māori forestry.

Photograph 2-1:New Zealand forest. Photo credit Shuttershock

2.1 Changing Direction and Being Market Responsive

Figure 2.1 outlines the key drivers behind the development of the He Rākau Taumatua model. The infographic below illustrates that there are several key market drivers, that are instrumental in the development of the model. The new strategic business direction promoted by Ngā Pou ā Tāne provides opportunity for business growth and enterprise, of which this model assists in advancing. This project reflects Food and Fibre CoVE commitment to supporting Māori forestry to ensure industry and market fit student outcomes.

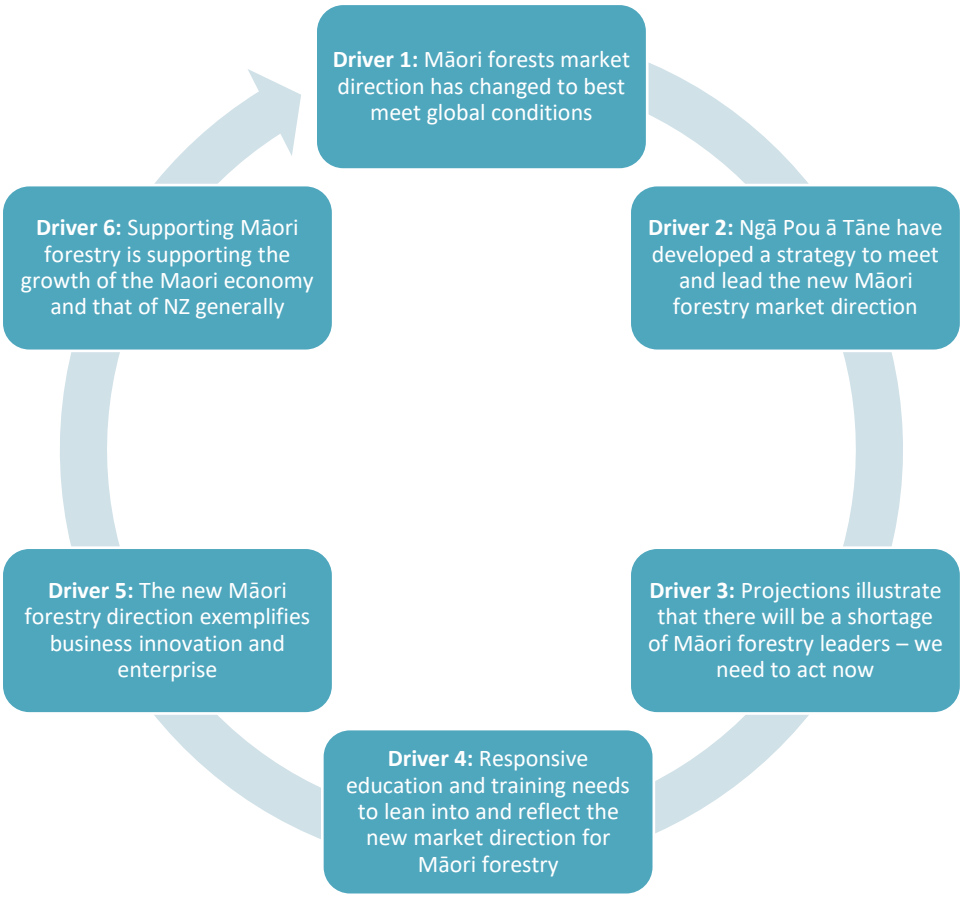


Figure 2.1: He Rākau Taumatua – Changing Direction and Being Market Responsive

He Rākau Taumatua

(Part 1 - An Outline)

Key Cultural Framing

Māori Forest

He Rākau Taumatua

Mai ki te rangi ki te whenua, mai ki te whenua ki te rangi, Ko Tanē Mahuta i waenganui, hei tiaki i ngā tangata katoa, Ko Papatuānuku ke. From the sacred spiritual skies to the earth, the physicality, from the earth to the sacred spiritual skies, in-between are the expressions of Tāne Mahuta. Pou Tangata and Pou Ngahere the guardians of the people and forests. In the Māori creation narrative, the balance between masculine and feminine elements, brings harmony among and within the natural and spiritual worlds. Tāne separated his parents Ranginui (Sky Father) and Papatūānuku (Mother Earth) to enable light to embrace the earth. From Hineahuone the first female was created.

Te Whakatakoto i te Whāinga

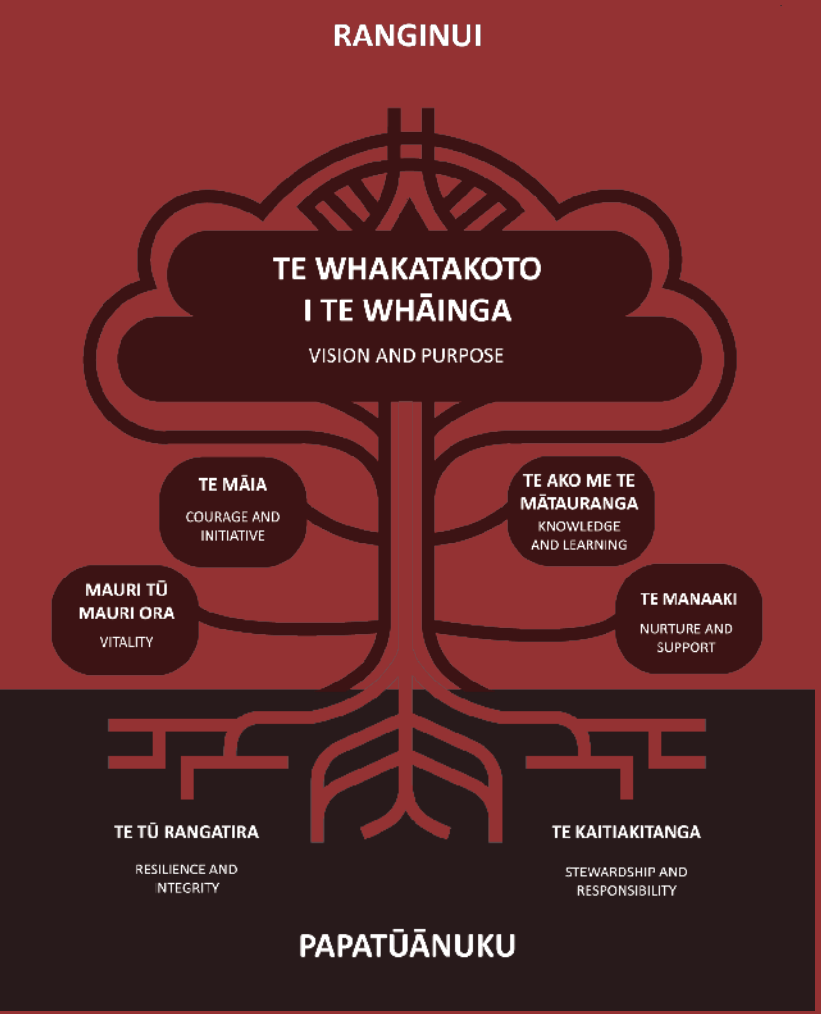
(Vision + Purpose)

Reflects Tāne's bold act to separate earth and sky and Hineahuone strategic approach to create the first woman to ensure the continuity of whakapapa, of life, mātauranga and protectors of those gifts Tāne/Tawhaki bestowed and obtained. Leaders set a clear direction for collective uplift, grounded in whakapapa and long-term inter-generational outcomes. Leaders set a clear direction for collective uplift, grounded in whakapapa and long-term inter-generational outcomes, with the goal to grow the economic, cultural, social and environmental value of Māori forests.

Te Tū Rangatira

(Resilience and Integrity)

Like Tāne and Hineahuone standing firm, leaders remain grounded, consistent and principled.



Te Kaitiakitanga

(Stewardship and Responsibility)

Pou Tangata, Pou Ngahere as guardians of people and the forests. The in-between space protected by Ranginui and Papatuānuku. Leaders act as guardians of people, knowledge, and environment, maintaining balance and honouring their role within whakapapa and te taiao.

Te Manaaki

(Nurture and Support)

Leadership provides shelter and sustenance—like a great tree—for people to grow. Emphasises relational leadership, care, and wellbeing.

Te Ako me Te Mātauranga

(Knowledge and Learning)

Knowledge as depicted in Tāne's pursuit to obtain the ngā kete o te wānanga and as expressed thorugh the cloaking of Papatuānuku and the life-giving power of Hineahuone. Knowledge is both divine and earthly. Leaders pursue knowledge with courage, humility, care and respect.

Mauri Tū Mauri Ora

(Vitality)

Protect the life force of the forest systems and te taiao. Uphold the mana of Tāne and Hineahuone – Leaders are actively working towards ensuring the mauri of the forests and all things related are in order.

Te Māia

(Courage and Initiative)

Embodying Tāne and Hineahuone's willingness to act when others would not. Leaders step forward with strength and determination, especially in uncertain or complex situations

He Rākau Taumatua

(Part 1 - An Explanation)

Te Whakatakoto i te Whāinga

Vision + Purpose

Reflects Tāne's bold act to separate earth and sky and Hineahuone's strategic approach to create the first woman to ensure the continuity of whakapapa, of life, mātauranga and protectors of those gifts Tāne/Tawhaki bestowed and obtained.

Leaders set a clear direction for collective uplift, grounded in whakapapa and long-term inter-generational outcomes, with the goal to grow the economic, cultural, social and environmental value of Māori forests. The following ten strategic objectives define the NPAT new direction.

1. Builds foundational ancestral knowledge and ecological wisdom
2. Integrated landscapes and forest eco-system diversity
3. Grow the total economic value of our national Māori forest
4. Scaling for visibility and cooperation
5. Native positive forestry
6. Market and non-market related activities in native bush categories on Māori lands
7. A new Māori forest service
8. Māori forestry paradigm at the heart of national forestry skills, education and professionalism
9. Forest exchange – national integrated forestry data management systems
10. Resource Ngā Pou ā Tāne as the advocacy and delivery model of the Māori Forestry Association

Te Tū te Rangatira

Resilience + Integrity

Like Tāne and Hineahuone standing firm, leaders remain grounded, consistent and principled.

Leaders hold tikanga and demonstrate strength through adversity. Leaders are supported by wairuatanga, as the foundational pou that guides direction.

Acknowledging the strengths, feats and approaches of traditional Māori leaders, Māori leaders in this contemporary context are characterised by holding fast to, and championing and advocating te reo me ōna tikanga and ngā mataapono. Using these tools as a guideline Māori leaders drive processes, procedures and outcomes.

Māori leaders are multi-faceted, they are agile and responsive to multiple and at times conflicting scenarios.

Te Mātauranga me Te Ako

Knowledge + Learning

Knowledge as depicted in Tāne's pursuit to obtain the ngā kete o te wānanga and as expressed through the cloaking of Papatuānuku and the life-giving power of Hineahuone. Knowledge is both divine and earthly, sought with courage, humility, care and respect.

Te Mātauranga: The model acknowledges the importance of the mātauranga tuku iho, the ancestral wisdom that sets Māori forests aside from other forests and indeed other indigenous nations. The interconnectedness of all things is understood in relation to whakapapa (kinship), with complementary roles for all. The cultural lores provide a template from which to guide responsiveness, to guide leadership, the processes, the procedures and all interactions. These lores include mana, mauri, tapu/noa and utu. Whānaungatanga as the process of collective planning and decision making facilitates processes where there is opportunity to capitalise on high levels of innovation and enterprise. The overarching goal is to advance mana motuhake for Māori, where there are high levels of wellbeing and increased

resilience for Māori owned forests and their whānau, hapū and iwi. Te Mātauranga also includes other forms of knowledge that are derived for example from technology, western science, tools and machinery. As complementary forms of knowledge, the approach is to prioritise mātauranga tuku iho and adopt where relevant those knowledge bodies that are useful within defined contexts.

Te Ako as a concept prioritises and centres cultural understandings of how best to transfer mātauranga tuku iho, other forms of knowledge and information. This model acknowledges that there are various culturally informed teaching and learning methods (Te Ako) that best suit the content and the types of leaders that need to be grown and nurtured.

Te Kaitiakitanga

Stewardship + Responsibility

Pou Tangata, Pou Ngahere as guardians of people and the forests. The in-between space protected by Ranginui and Papatuānuku. Leaders act as guardians of people, knowledge, and environment, maintaining balance and honouring their role and responsibilities within the structures of whakapapa.

Kaitiakitanga is integral to Māori Forestry leadership positions. The concept acknowledges tangata whenua and their traditional role as caretakers of the natural world, guided by ancestral knowledge, spiritual values, and a responsibility to preserve ecosystems for future generations.

Te Māia

Courage + Initiative

Embodying Tāne's and Hineahuone's willingness to act when others would not.

Leaders step forward with strength and determination, especially in uncertain or complex situations. Leaders have courage to make bold decisions while remaining grounded in values and purpose. Leaders are confident even when the pathway ahead is uncertain.
By taking initiative leaders make change rather than waiting for change happen. They speak up for what is tika, even when it is difficult or unpopular. Leaders build resilience for whānau, hapū, iwi and their forest businesses. They balance aptly humility, action and reflection. They support and actively advocate for inter-generational outcomes, and they express their leadership style through the use of te reo me ōna tikanga.

Te Manaaki

Nurture + Support

Leadership provides shelter and sustenance—like a great tree—for people to grow. Emphasises relational leadership, care, and wellbeing.

Te Manaaki as concerned with upholding tikanga – the capacity to show care and support. Leaders support and reflect Te Manaaki in their ways of doing and being. Upholding Te Manaaki as a core cultural value is intricately linked to upholding the mana of a group, whether as demonstrated in hosting visitors and/or the capacity of the group to care for the forests and environment.

Learning and teaching support systems are critical for VET students. Te Manaaki acknowledges the importance of pastoral care, whereby students with supportive relations, are more likely to be successful.

Mauri Tū Mauri Ora

Life Force + Vitality

Protect the life force of the forest systems and te taiao. Uphold the mana of Tāne and Hineahuone – Leaders are actively working towards ensuring the mauri of the forests and all things related are in order.

Leaders uphold mauri through purposeful planning and actions that ensure the regeneration, enhancement and maintenance of the mauri of the forest system. Reflected in tikanga-led practices, supported by Kaitiaki approaches and maintained through intergenerational involvement.

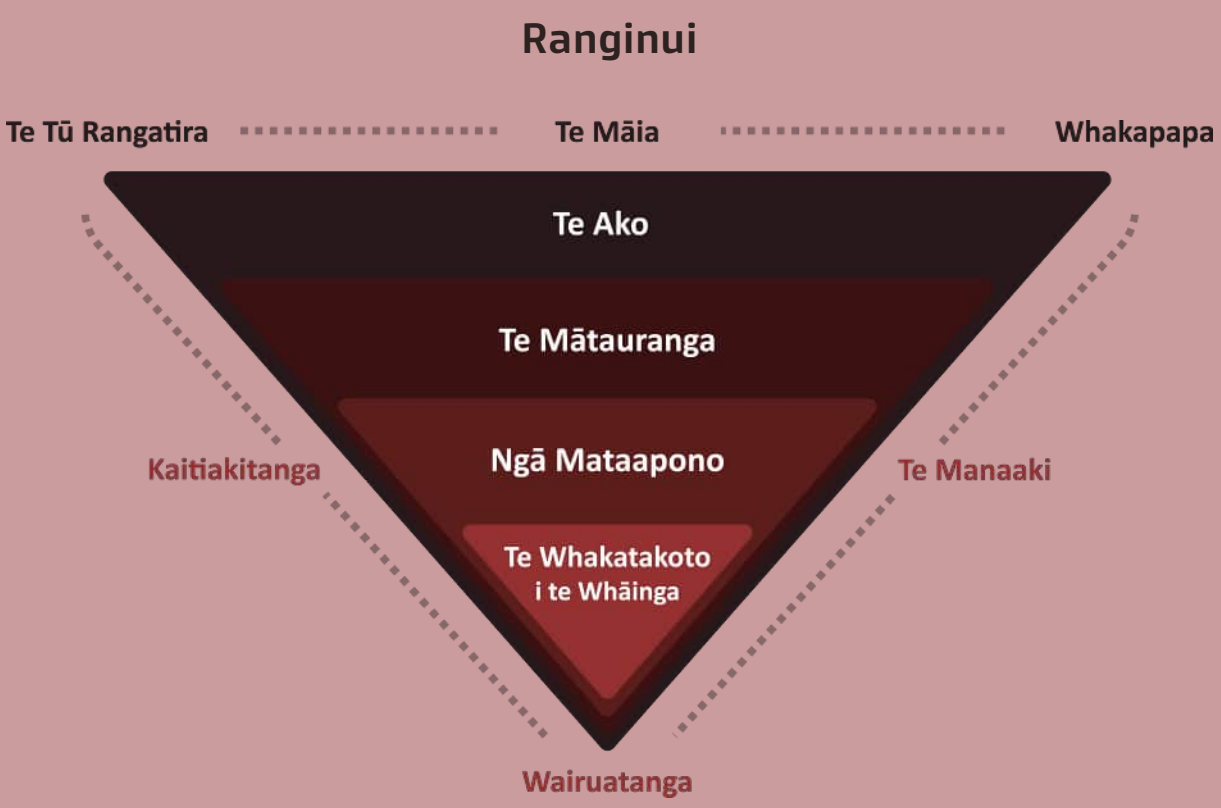
He Rākau Taumatua

(Part 2 - An Outline)

Applying the Framing

At the heart of this framework lies a triangular structure that symbolically connects Ranginui (Sky Father) above and Papatūānuku (Mother Earth) below, grounding the vision and purpose of forest leadership within a spiritual and ecological context (Te Whakatakoto i te Whāinga). Key elements include Ngā Mataapono (values), Te Mātauranga (Knowledge) and Te Ako (pedagogy).

The triangle is supported by six interconnected concepts that link He Rākau Taumatua (part 2) to part 1 of the model. Applying the framework requires an approach that takes account of both the inner and outer concepts of the framing.



He Pou Tangata/Pou Ngahere
Guardians of the people + forests

Te Whakatakoto i te Whāinga (Vision + Purpose)
Leaders reflects Tāne's bold act to separate earth and sky and Hineahuone's strategic approach to create the first women to ensure the continuity of whakapapa, of life, mātauranga and protectors of those gifts Tāna/Tawhaki bestowed and optained.

Ngā Mataapono
Shared cultural values and concepts that underpin leaders ways of operating and being include kotahitanga, whānaungatanga, rangatiratanga, utu, mana, tapu/noa and mauri. These values are supported by He Rākau Taumatua part 1.

Te Mātauranga
Foundational course content areas examples include: NPAT Forestry Transition, Tikanga-led Forestry Practices,' At Place' approaches, Māori Leadership, Digital + Data + Technology, Growing Economic Value of Forest Systems, Globalisation + Current Issues, Communications and Marketing, Māori Rights and Interests, Māori Governance and Management.

Te Ako
Te Ako includes: Interactive, practical and relevant approaches, manaakitanga, kotahitanga, whānaungatanga, rangatiratanga, utu, mana, tapu/noa, hui/wananga, Te Pa concept, story-telling, scenario, korero tuku iho, case studies

He Rākau Taumatua

(Part 2 - An Explanation)

The Outer Concepts

The triangle is supported by six inter-linked concepts that reflect a Māori worldview, each anchored within sustainability and tikanga-led forest management approaches. **Wairuatanga**, the principle of spirituality, acknowledges that every element within the forest holds mauri, or life force, which must be respected and protected. This concept is intimately tied to **whakapapa**, the genealogical connection that links people to Ranginui and Papatūānuku, affirming our identity and role as descendants and guardians of the land.

From this inherited responsibility emerges **Te Māia**, the courage required by leaders to make bold, values-driven decisions that prioritise ecological integrity, even when faced with economic or political challenges. Such leadership is shaped by **Tū Rangatira**, an approach to leadership that is grounded in humility and integrity, ensuring that decisions reflect the collective values of people for the taiao.

This commitment is further expressed through **Kaitiakitanga**, the cultural obligation to care for and restore the forest, preserving biodiversity and ecological balance for future generations. Finally, **Te Manaaki** weaves through all these elements, emphasising care and reciprocity—not only among whānau, hapū, and iwi, but also between people and the land—so that the benefits of the forest are shared and sustained by all.

Te Whakatakoto i te Whāinga

Purpose + Vision

Te Whakatakoto Whāinga sits at the apex of the triangle, this refers to the purpose and direction of the model. From this point all other elements of the model influence the outcomes intended.

P**urpose and Vision**: Leaders set a clear direction for collective uplift, grounded in whakapapa and long-term inter-generational outcomes, with the goal to grow the economic, cultural, social and environmental value of Māori forests.

Ngā Mataapono

Key Cultural Values + Concepts

The key cultural values and concepts that anchor the model include:

- Wairuatanga
- Kaitiakitanga
- Tū Rangatira
- Te Māia
- Whakapapa
- Te Manaaki
- Kotahitanga
- Whanaungatanga
- Rangatiratanga
- Utu
- Mana
- Tapu/noa
- Mauri

Te Mātauranga

Knowledge

Knowledge includes mātauranga Māori, ngā korero tuku iho and western knowledge including technology, data, and digital etc. The underlying assumption of the model is that Māori leadership is characterised by cultural ways of doing and being (te reo me ōna tikanga). The key focus areas for curriculum development are aligned with ‘He Rautaki Ngahere Māori 2040’, NPAT new strategy. There are three main bodies of knowledge that have been identified a) leaders understanding the new strategic direction of Māori forests (transition) b) leaders developing in ways that are aligned to tikanga-led forest knowledge and practices c) leaders growing the economic, cultural, social and environmental value of Māori forests through tikanga-led forest knowledge and practices.

Key Curriculum Areas

Ngā Pou ā Tāne Transition

The suggested curriculum area provides an overview of the new direction that NPAT strategy intends. There are ten new strategic areas that inform the direction of Māori forests (see He Rākau Taumatua (part 1)

.

Tikanga-led forest knowledge and practices

Leaders will be anchored in understandings related to tikanga-led forest knowledge and practices. Learner will be equipped with practical and culturally grounded understandings of tikanga-led stewardship (Kaitiakitanga). This includes for example: tikanga in practice within the forests; tikanga-led management, growing value, culturally responsive leadership; strategic and ethical decision-making; applied forest practice; and reflective practice and transformation.

At Place

'At place' learning immerses Māori forestry leaders in the living landscapes of their tīpuna (ancestors), allowing them to engage directly with the whenua (land), ngahere (forest), and local narratives that shape their cultural and ecological responsibilities. This approach strengthens leadership by grounding governance and management practices in the specific histories, values, and environmental realities of each rohe (region), reinforcing a place-based connection to stewardship.

Unique Māori leadership approaches

Leaders will develop understandings associates with whakapapa-driven decision-making where inter-generational long term approaches are prioritised. This could for example include: mana-enhancing leadership approaches; collective and distributed leaders; kaitiaki leadership; adaptive and contextual leadership; and reflective and transformative practice.

Māori decision-making approaches

Leaders will develop an understanding of Māori governance models including marae-based governance, Post-Settlement Entities and Trust Boards. Comparative approaches to understanding western-based framework and Māori based approaches will be explored.

Digital, Data and Technology

Māori leaders will learn to harness digital tools, data systems, and emerging technologies in ways that uphold tikanga Māori, enhance kaitiakitanga, and support mana motuhake in forestry. For example, culturally grounded digital literacy, integration of mātauranga Māori with digital technologies, data governance and sovereignty, and innovation and future focused leadership for kaupapa Māori forestry initiatives.

Growing the economic value of the forest

Māori leaders will explore kaupapa Māori economic thinking (whai rawa, mana motuhake, oranga whānui); forestry business and investment acumen; tikanga-led commercial strategy; governance and financial literacy; market, engagement and partnerships; applied economic development projects; kaupapa Māori leadership (comparative between Māori and western leadership styles).

Globalisation and Current Issues

Leaders will explore and investigate key global issues and trends as related to Māori forests with a focus on local impacts on economic, environmental, social and cultural wellbeing. Key areas include: engaging international forums; developing partnerships and markets; developing strategic responses to current issues; identifying and strengthening relations with indigenous networks; and understanding ethical future-focussed leadership (tikanga based).

Communication Skills

Leaders will investigate kaupapa Māori communication foundations (whakawhānaungatanga, manaakitanga, wānanga, hui, tikanga based protocols), strategic communication skills underpinned by Māori values, cross-cultural and cross sector communications, digital and visual communications, and Māori informed conflict resolution processes.

Māori Governance + Management

Leaders will investigate and explore how traditional values form ethical foundations for governance, connecting people and decision-making processes. They would examine leadership through the lens Tū Rangatira and Te Māia, emphasising integrity, humility and the courage to uphold environmental and cultural responsibilities. Key governance and management activities should be prioritised.

Māori Business Skills

Leaders will investigate business skills required to forge new economic pathways.

Māori rights and interests

Leaders will explore policies and legislation that are foundational to rights and interest under Te Tiriti and International Law.

Te Ako

Learning + Teaching

Te Ako refers to culturally aligned pedagogical approaches (teaching and learning).
Ngā mataapono inform the basis of Te Ako shaping how knowledge is shared, relationships are built, and learning is experienced. Tikanga-led approaches are embedded in the ways in which knowledge is shared and experienced.

Key practical approaches include whānaungatanga (developing a sense of belonging), manaakitanga (care), kotahitanga (collective responsiveness), ako (reciprocal learning), tuakana/teina approaches akin to mentoring, storytelling, scenario and case study approaches (at place), prioritising the use of pūrakau, whakatauaki, Māori histories and alike.

He Rākau Taumatua
(Part 3)

Principles that guide NPAT's education and training direction

The following key principles underpin the development of NPAT VET Māori Forestry Leadership Model Framework. The principles provide a set of shared understandings, clarity of focus, and are designed to ensure consistency in future education and training approaches adopted. This is particularly important as NPAT move
into considering future options for course development and delivery where there are inter-dependencies between the new NPAT strategic direction and the extent to which Māori forests can be market responsive through innovation and enterprise.

1. Course content and delivery style can illustrate strong alignment with the new Ngā Pou ā Tāne strategy – He Rautaki Ngahere Māori 2040.
2. Exploring all options for that which works best for Māori forests
3. Multi-level approach
4. Position quality inputs for quality outputs
5. Ensure fit for purpose approach
6. Expect standards and monitoring to exceed expectations
7. Grow Māori forests economic, social, cultural and environmental value for future generations
8. Lead global market responsiveness
9. Grow industry fit leaders to forge new pathways and re-build old pathways through innovation and enterprise
10. Partner globally with aligned forests owners (indigenous)

3.0 Māori Leadership Archetypes

Māori leadership archetypes, particularly within the context of forestry management, are grounded in traditional values and cultural principles that prioritise collective well-being, environmental guardianship, and intergenerational responsibility. The following key archetypes illustrate diverse forms of Māori leadership as recognised and upheld through Māori forestry processes. While not an exhaustive list, the following table (Table 3.1) offers valuable insights into the leadership roles that guide and sustain Māori approaches to land and resource management (see appendices for full version).

Table 3.1: Māori Leader Archetypes

Archetype Type	Māori Forestry Leader Archetypes
The Quietly Influential Leader (Rangatira Āta Noho)	A respected leader who adapts their role—leading from behind, beside teammates, or in front—based on the situation. They inspire action through calm presence, wise words, and efficient decision-making.
The Intuitive Leader (Mātau Wairua)	Emotionally and spiritually attuned, this leader fosters harmony between people and the environment, guiding with empathy and deep connection to land and community.
The Mana Achieved Leader (Te Amorangi)	A decisive leader whose mana is earned through integrity, wisdom, and consistent action. Usually at the forefront of development. They lead with strength and inspire trust. A leader that is well recognised by the group – considered as having mana.
The Cultural Conduit Leader (Pou Tikanga / Amokura)	Grounded in te reo and tikanga, this leader weaves cultural knowledge into practice, guiding others through ancestral wisdom and upholding Māori identity and values.
The Kaupapa-Driven Leader (Kaiārahi Kaupapa)	Purpose-led and deeply knowledgeable, this leader unites people around shared goals—especially in kaupapa like for example climate resilience and intergenerational equity.
The Thought Leader (Kaiwhakaaro Matua)	Innovative and future-focused, this leader is likely to bring technical expertise and strategic insight to complex challenges like sustainable land use and carbon markets.
The Strategic Leader (Kaiwhakatakoto Rautaki)	A policy-savvy leader who drives systemic change, embeds Māori rights in industry standards, and advocates for equity and long-term transformation.
The Doer Leader (Kaiwhakatūtuki)	Hands-on and action-oriented, this leader leads by doing—mobilising teams, building networks, and delivering results through practical mahi.
The Pā Leader (Rangatira Hau Kāinga)	A guardian of tikanga and whakapapa, this leader protects cultural identity, guides collective decisions, and advocates for Māori futures at both local and regional levels. Sometimes is also present at national levels.

4.0 Preliminary Analysis: Tautoko Toolkit

A preliminary analysis of the Tautoko Kit has adopted the following methods. Key elements from He Rākau Taumatua (part 1) were compared against the key course components outlined in the Tautoko Toolkit. The Toolkit was analysed in relation to the extent to which key outcomes would meet the NPAT direction. Key evaluative criteria included relevancy, alignment and preferred emphasis. Key questions included:

1. To what extent was the course content applicable to NPAT leadership direction?
2. In ways does the Tautoko Toolkit alignment with the direction NPAT considers for future leaders?
3. Is the emphasis as outlined in the Tautoko Toolkit relevant to NPAT's direction?

In total, the Tautoko Toolkit has identified three key focus areas:

1. Past - Understanding Māori values in leadership
2. Present - Living your values
3. Future - Recording your journey

For the purposes of this preliminary exercise, the key elements of He Rākau Taumatua (part 1) were extracted to form an evaluation matrix. This matrix was then applied to the three sections of the Tautoko Toolkit.

Notably, the NPAT Leadership Model has an emphasis and focus on growing leaders in the intersecting space between Sustainable Forest Management and Indigenous Forest Keepers' Knowledge and Practice Figure 4.1. This influences the focus of what may count as applicable and/or alignment and/or where preferred emphasis in relation to course content may reside.

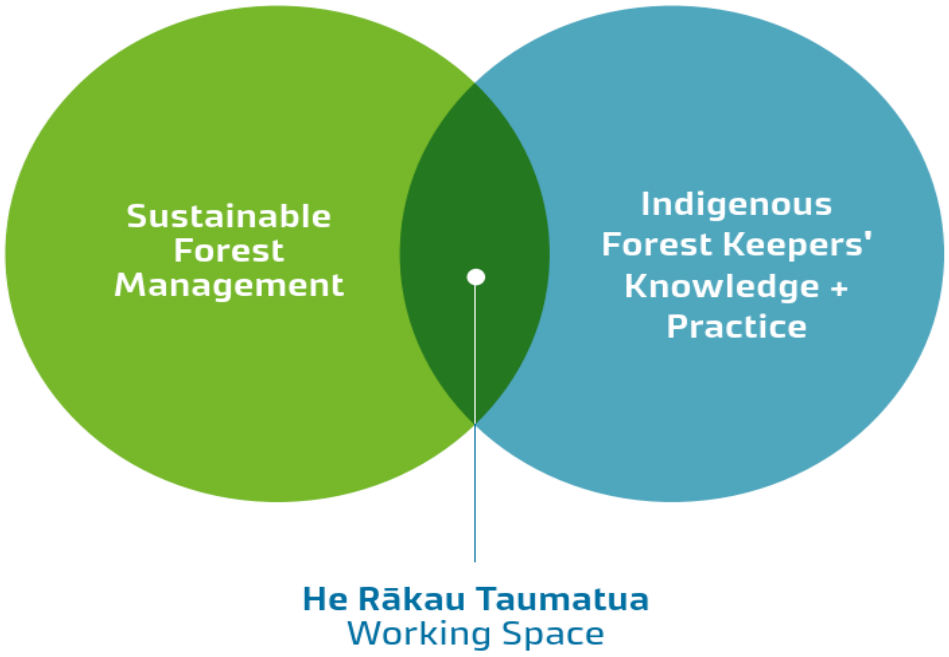
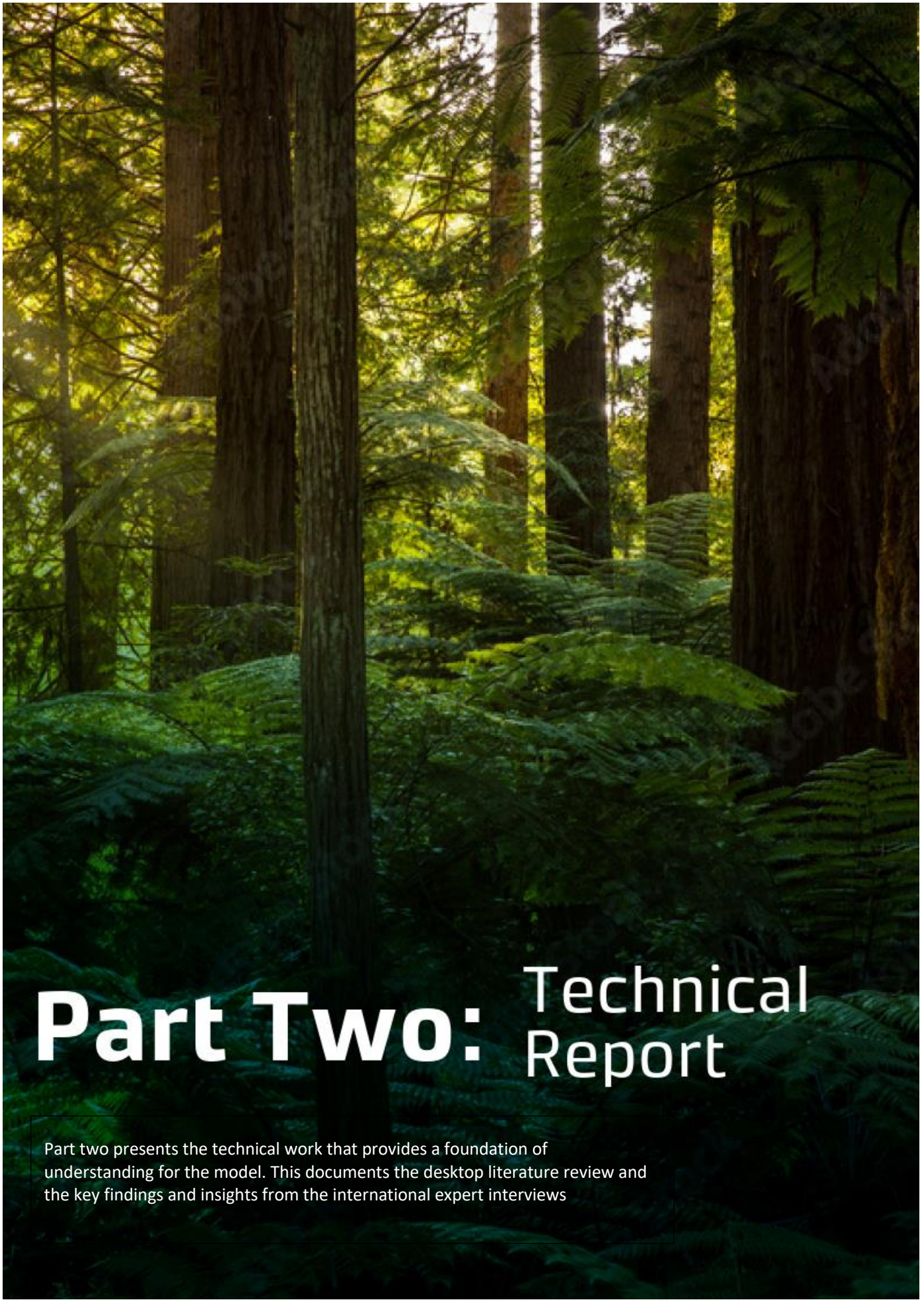


Figure 4.1 Defining Education and Training Content and Delivery Space (Ngā Pou ā Tāne, 2025)

Table 4.1: Evaluating Te Tautoko Toolkit Against NPAT VET Māori Leadership Model

He Rākau Taumatua Element	Past- Understanding Māori Values in Leadership	Present- Living Your Values	Future- Recording Your Journey	
Te Whakatakoto i te Whāinga (Vision & Purpose) Leaders set a clear direction for collective uplift, grounded in whakapapa and long-term inter-generational outcomes	• Opportunity to extend the learner with more challenging exercises that require research, critical thinking, at place-based observations etc. • Explanations seems basic. For example, embedding tikanga informs the what, when, how and why of leadership. More solid examples required. What does tikanga-led decision-making look like? How does tikanga-led decision making impact processes? • Assessments/tasks could be more challenging			✓ ✓ ✓
Te Tū Rangatira (Resilience and Integrity) Like Tāne and Hineahuone standing firm, leaders remain grounded, consistent and principled.	• Basic coverage. How does an emerging leader build resilience and integrity? What are the strategies? What are the key approaches? • Building networks as a key element – inferred, needs stronger emphasis. NPAT has a focus on ensuring that students build an understanding of legislation – this could potentially be added? • What are the key types of Māori leaders? What type of leader do you aspire to be? • Key values identified aligned with NPAT.			✓ ✓ ✓ ✓
Te Kaitiakitanga (Stewardship and Responsibility) Leaders act as guardians of people, knowledge, and environment, maintaining balance and honouring their role within whakapapa and te taiao	• Initial response is to build this component in more strongly. Sustainability is central to the direction of all FFCoVE industries. What are the links between social, cultural, economic and environmental imperatives and Kaitiakitanga? • Set a task that challenges the learner to critically analyse kaitiakitanga with links back to their relevant industry. What are industries doing? What are whānau/hapū/iwi doing? What is the marae doing? What is happening in the global space that requires more than ever to be enacting Kaitiakitanga? How tikanga informs ethical based decision-making?			✓ ✓
Te Manaaki (Nurture and Support) Emphasises relational leadership, care, and wellbeing.	• Key value aligns with NPAT • Manaakitanga is closely interrelated to mana. Upholding the mana of the group. Explain this link. How does manaakitanga influence decision-making?			✓ ✓
Te Ako me Te Mātauranga (Knowledge and Learning) Knowledge is both divine and earthly. Leaders pursue knowledge with courage, humility, care and respect.	• Mātauranga Māori and western forms of knowledge- dualistic knowledge approach is not covered. What are the key differences between the knowledge bodies? How does story-telling fit? Could build in scenario learning/task/exercise? • Table outlining daily, weekly, monthly/year is useful. Key comment relates to the connection between understanding what leaders do, critically analysing a situation and potential future action. Problem solving approach. • Te Ako – key focus for NPAT is learning and teaching pedagogies. Some of these strategies include scenario based, more emphasis on place based (pūrakau, whakatauaki, histories etc), storytelling etc.			✓ ✓ ✓
Te Māia (Courage and Initiative) Leaders show strength and determination, especially in uncertain or complex situations	• Not identified in document			✓
General comment	• More resource material such as videos, articles, templates etc could be integrated into the Toolkit. Employ strategies such as scenarios, case studies, storytelling etc. Explanations seem basic, but this may be commensurate with level. Challenging learners to think critically is missing, leaders are critical thinkers. Develop exercises that require critical thinking. Example: Read and/or listen to person x discussing flooding in their area – what are the key forms of information that drive his/her responses as a leader? What could be added to the commentary?			



Part Two: Technical Report

Part two presents the technical work that provides a foundation of understanding for the model. This documents the desktop literature review and the key findings and insights from the international expert interviews

5.0 Part 2: Introduction

This section outlines the research underpinning the He Rākau Taumatua model and its vision for Māori leadership in forestry within a global indigenous context. The section begins with a review of traditional and contemporary Māori leadership, highlighting the evolving roles of Māori leaders and the centrality of te reo me ōna tikanga. In forestry, Māori leadership emphasises sustainable, tikanga-led practices, kaitiakitanga, and intergenerational decision-making.

The research also explores indigenous leadership educator qualities, ecological knowledge, and forest management from an indigenous perspective. Traditional Ecological Knowledge (TEK), Indigenous Knowledge Systems (IKS), and western science is discussed, showcasing models such as the Two-Eyed Seeing, Braiding Sweetgrass, Wayapa, and the Mauri Compass. These models demonstrate how indigenous and western approaches can work together to support environmental, cultural, and economic wellbeing.

Global indigenous leadership programmes further reinforce the importance of culturally grounded, community-led education. Insights from 30 programmes and interviews with leaders from Sápmi, Hawai'i, Pueblo, and Menominee nations reveal that indigenous leadership is spiritually driven, place-based, and characterised by forging cultural priorities.

6.0 Traditional and Contemporary Māori Leadership: An Overview

Traditional Māori leadership includes two main categories ariki/rangatira and tohunga (Katene, 2010). Both classes included heredity and ascribed roles, that were characterized by political, spiritual and professional facets (Durie 1994, 17). Rangatira were often political leaders within traditional Māori society. Leadership positions were often determined by chiefly genealogical ties (mana atua), alongside other cultural criteria such as kinship relations (whakapapa), alliances with other tribes, specialist knowledge and spiritual stamina (Katene, 2010). Ariki was referred to as the supreme form of leadership. Ariki had direct responsibility for the destiny of the entire tribe, working in various capacities working as an 'arbitrator, persuader, advisor and supervisor' (Te Rito, 2006).

A Māori philosophy articulates a position that all power and authority originated from atua. An ariki was elected based on high born genealogical status (whakapapa) and viewed as having a direct connection to atua. This differed to having a common genealogy and more distanced in genealogical terms from atua (Katene, 2010). There are variations to this, as with some teina (younger cousin and/or sibling) assuming rangatira status when an older sibling lacked capacity to lead and/or when a new group formed under the leadership of a younger sibling (Taiapa, 1980; Katene, 2010; Mahuika, 2019;).

Tohunga were designated leadership positions that were defined as ritual leaders or professional experts (Katene, 2020). Tohunga as spiritual leaders were well-regarded within traditional Māori society. Best (1924) highlights the importance of this position noting that all spheres of Māori life were governed by the spiritual realm. Tohunga were charged with undertaking the various cultural rituals and ceremonies to ensure the safety and wellbeing of the people and space. A tohunga often worked closely with rangatira.

The whare wānanga was the school of learning that was reserved for aspiring chiefs and tohunga. At an early age, individuals were selected based on high born whakapapa rights to be trained within these schools. Curriculum included for example, the intricacies of tribal history, culture and whakapapa (Durie, 1994)

Traditional leadership was fluid, with leaders fulfilling multiple roles and responsibilities, from building strategic alliances between iwi, planning for hosting visitors to strategic political planning (Taiapa, 1980; Katene, 2010;).

Kaumātua were also viewed as leaders amongst their own whānau group. Assigned leadership status was allocated not through birthright but because of their age, connection to Māori values and work undertaken throughout their lifetime. This form of leadership was interdependent on the whānau, hapū and iwi recognizing and supporting the roles and responsibilities of the individuals (Taiapa, 1980; Te Rito, 2006; Katene, 2013).

Throughout the early literature, there are several accounts of Māori women as traditional leaders, however, these are outweighed by writings highlighting males. Criticism in relation to the invisibility of Māori women is positioned in relation to a non-Māori patriarchal lens adopted by early writers who in the main were European ethnographers (Waitangi Tribunal: Wai 2700, 2025). In more recent years, there is evidence of a growing number of unpublished oral accounts that challenge early European writers, making visible the leadership roles that women held (Waitangi Tribunal: Wai 2700, 2025).

Key Te Ao Māori considerations that are foundational to traditional leadership, are based on a leader's capacity to navigate and uphold respectful relations regarding:

- Mana (a religious power, authority and ancestral efficacy)
- Tapu (the essential potency of those things held to be sacred)
- Wairua the spiritual component of all things
- Mauri the energy that animates all living things
- Hau the totalising system of exchange between the gods, creation and social relations

6.1 The Changing Nature of Māori Leadership

Traditional Māori leadership was meet with challenges with the onset of colonisation (Taiapa, 1980). Common challenges include the loss of people and resources because of land wars and managing the fast changing political and socio-cultural landscapes with the introduction of Te Tiriti o Waitangi (1840) and other key legislations that sought to fractionalise hapū and make easier for the crown to acquire land and embed new crown structures.

Katene (2010) refers to a new form of leadership that developed in relation to the arrival of Europeans, with reference to religio-military/charismatic leaders and religio-political leaders. Well renowned for garnering significant support amongst their own, the most significant primary driver was to ensure the safety of their land, people and resources through strategic political and/or militant approaches.

By the 20th century, Māori leadership was responsive to land and resource dispossession, introduced diseases and disestablishment of Māori social systems (Taiapa, 1980; Katene, 2010). European ways of operating were dominating in certain regions and propped up by supporting western structures such as schools, law, legislation and government.

Key Māori leaders during this period emerged in response to poor social conditions, with many leaders presenting in the health sector and law. Tohunga as leaders were less visible and often undermined based on reduced capacity to be responsive to newly introduced diseases (Katene, 2010). The decline of tohunga was also facilitated by the introduction of the Tohunga Suppression Act 1907, that sought to actively prohibit their activities. At this time, Ariki are reported as having reduced in numbers, whereas Rangatira were still operating in various regions (Katene, 2010).

6.2 Contemporary Māori Leadership

Kō te reo karanga o te rā, te wero, te wero o te takina, ko tāu rourou, ko taku rourou, ka ora ai te iwi e. The call of today, the challenge to leaders, bring together your basket and my basket there lies the wellbeing of the people

Te Ao Māori, the Māori world locates an approach to Māori leadership that is driven by a Māori worldview and underpinned by te reo me ōna tikanga. Tikanga provides the overarching template which is supported by kawa and cultural values. Key cultural values provide the foundation for leadership thinking and practice (Marsden, 2003).

Today, Māori leaders are described as living in two worlds, moving and negotiating both worlds through sets of protocols as established within those worlds (Winiata, 1967). As a consequence of such, Māori leaders are reported as often challenged by sets of protocols that conflict with each other, navigating differing ethics and accepted ways of doing and being (Winiata, 1967, Bean, 2018).

Changes to Māori socio-cultural and socio-political structures within contemporary society has affected the types of leaders that have evolved. Leadership positions exist across a variety of domains, as opposed to solely based within the confines of the marae including whānau, hapū, iwi businesses and affairs. Māori leadership positions include for example positions within the government sector, industry, private sector, sporting

arena, business, academia, research and science, and beyond across international terrains as representatives in global circles and forums. The space is highly diverse and varied.

Photograph 6-1: NZ Forest. (Photo credit Shuttershock)

6.3 Key Themes

The following table outlines key themes as related to Māori leadership that present in the literature.

Table 6.1: Key Māori Leadership Themes

Theme	Summary
Tikanga-Centred	Tikanga and kawa provide a moral and ethical framework for behaviour in te ao Māori and guide leadership practices (Kruger 2004 in Hemara, nd; Bean, 2018). Leaders are expected to advocate for te reo me ōna tikanga even in non-Māori contexts (Bean, 2018). Effective leaders bring the group along the journey.
Mana-Based	Mana is a spiritual force that underpins leadership authority and must be protected through appropriate behaviour (Mead, 2003).
Service	Māori leaders prioritise serving their communities through consensus, transparency, and long-term collective wellbeing over democratic or laissez-faire styles (Tuara, 1992; Katene, 2010; Wikitera, 2011).
Historically Informed	Decision-making reflects historical awareness, using whakapapa, pūrakau and land-based histories to inform present-day leadership (Hohepa & Robinson, 2008; Katene, 2010, 2013).
Critical Consciousness & Decolonisation	Leaders are described as critically conscious and decolonial thinkers who inspire resistance to oppression and promote Māori worldviews (Freire, 1972; Walker, 1990; Lee, 2008; Pihama, 2001; Hutchings & Lee-Morgan, 2016).
Business Experience	Māori leaders need business acumen—such as finance, credit access, and proposal writing—especially in land trust and economic development contexts (Kingi, 2008).
Globalisation & Climate Change	Māori leaders must navigate opportunities and threats of globalisation while leading adaptive, climate-resilient strategies that maintain cultural integrity (Dayman et al., 2024).
Technology & Data	Proficiency in data and technology is essential, with attention to sovereignty, ethics, and future workforce demands in sectors like forestry.
Long-term Orientation	Māori leadership tends to prioritise intergenerational outcomes, focusing on long-term environmental and cultural sustainability over short-term gain (Kawana, 2025).
Integrated Goals	Māori leaders often balance multiple roles, meeting cultural and organisational goals simultaneously (Harmsworth, 2002a; Mead, 2003).
Quadruple Bottom Line	Leadership decisions consider social, cultural, environmental and economic wellbeing, reflecting holistic Māori values and meeting community needs.
Alliances & Partnerships	Strategic partnerships with iwi, hapū, and other groups are key tools for Māori leaders, especially when responding to political or economic pressures.

6.4 Ngā Mataapono

Key cultural values inform the how, what, why and when of leadership. Cultural values provide meaning and inform practice and influences all aspects of relationship development and decision-making processes. How cultural values are embraced and then implemented defines a leader.

While Māori values are not necessarily unique, as similar values are also held by other indigenous nations, the expression of cultural values through leadership styles differs between countries and different tribal nations.

Values are the underlying foundations of a culture. As such leaders are influenced by the values they hold. This is defining factor between what leadership looks like between and amongst various nations.

Acknowledging that there is variation between various whānau/hapū/iwi and between organisations as to how values are prioritised and expressed, there are commonalities within the literature.

6.5 Contemporary Māori Leadership: Common Key Values

Several key values have been identified as common to various Māori leadership positions (Scarletti et al, 2024; Muka Tangata, 2025).

- Wairuatanga (spiritual provenance)

  This concept acknowledges the spiritual dimension of life and the importance of maintaining spiritual balance and connection with ancestors and the natural world (Mead, 2006; Taiapa, et al., 2024; Muka Tangata, 2025).

- Rangatiratanga (autonomy, self-determination and independence)

  Rangatiratanga refers to the exercise of leadership, autonomy, and authority, particularly in the context of Māori sovereignty and self-governance (Mead, H. M., Stevens, S., Third, J., Jackson, B., Pfeifer, D. 2006, Katene, 2010; Muka Tangata, 2025).

- Whanaungatanga (kinship, relations)

  This concept refers to the importance of relationships and kinship ties. It emphasizes collective responsibility, support, and the interconnectedness of individuals within whānau, hapū, and iwi (Mead, 2006; Taiapa et al., 2024; Ruwhiu & Elkin, 2016).

- Manaakitanga (care and support)

  A core value of tikanga Māori that emphasizes hospitality, kindness, generosity, and the process of showing respect and care for others. Facilitates social harmony and social cohesion and is demonstrative of the group's mana (Mead, 2006; Katene, 2010; Taiapa et al., 2024; Muka Tangata, 2025).

- Kotahitanga (togetherness, unity)

  Emphasises unity, togetherness, and collective action. Demonstrates a unity of purpose, and solidarity (Mead, 2006; Taiapa et al., 2024; Muka Tangata, 2025).

- Kaitiakitanga (stewardship)

  This refers to the responsibility of caring for and protecting the environment, resources, and taonga (treasures), often passed down through generations. The concept spans intersecting cultural understandings related to spirituality, the environment and the human domain. Key cultural constructs involve self-determination (rangatiratanga) over resources (place, people, mana), the authority (mana) to undertake the task and the protection and/or regeneration of the life force (mauri) of a space (Mead, 2006; Mead, H. M., Stevens, S., Third, J., Jackson, B., Pfeifer, D. 2006; Taiapa et al., 2024).

- Utu (reciprocity, restoring balance)

  Utu is primarily about restoring balance in relationships and society. When an action—whether good or bad—occurs, there is an expectation that it will be responded to in a way that maintains or restores equilibrium (Mead, 2006; Mead, H. M., Stevens, S., Third, J., Jackson, B., Pfeifer, D. 2006).

The following table outlines the ways in which tikanga and mataapono facilitates Māori leadership approaches and styles.

Table 6.2: Key Elements Facilitating Māori Leadership Approaches and Styles

Key Element	Description of Māori Leadership Approaches and Styles
Shared Understanding	Tikanga (customs), kawa and ngā mataapono creates forms of common understanding amongst groups. In terms of leadership, the broader group would expect leaders to embed those values that are important to the group into leadership practices and approaches. A shared understanding formed through culture, creates a space for leaders where there exists a template of accepted rules and procedures (Mead, 2009).
Leadership Style	Cultural values influence how leaders behave, how they perceive their role, and how they interpret the actions of others. For example, some cultures may value collectivism over individualism, and this will impact the leadership style, promoting more collaborative and team-oriented leadership.
Ethical Standards and Integrity	Cultural values often dictate the ethical standards that leaders should adhere to. These values outline what is considered right or wrong in a given culture. Leaders who respect and align with the cultural values of the group are often seen as connected to the dynamics of the group and their ways of being. One example is the shared understanding of the concept of tapu (sacredness of restriction) and noa (state of normalcy and/or balance). What may count as ethical is linked to these understandings (Mead, H. M., Stevens, S., Third, J., Jackson, B., Pfeifer, D. 2006).
Decision Making	Tikanga/kawa and cultural values influence how decisions are made within an organisation. For example, in cultures that value hierarchy and respect for authority, decisions might be more centralized. In contrast, in cultures that value equality and participation, decision-making might be more democratic. Another example is the cultural understanding of utu (reciprocity and balance) where actions (both positive and negative) are balanced to ensure harmony and justice.
Group Dynamics	Tikanga/kawa and cultural values affect how individuals in a group interact with each other and with leaders, their expectations from a leader, and their willingness to conform to group norms. For example, whanaungatanga forms the basis of how relations are viewed, established, nurtured and maintained.
Helps to Determine Priorities	What may be viewed as a priority is informed by cultural values. Priorities are formed for example in relation to what the group may view to be of value and how this value is expressed. The cultural value of manaakitanga for example is expressed by ensuring that as a host your visitors are well feed. Budgets often reflect this priority in organisations, to allow staff to ensure that visitors are well cared for (Mead, 2009).
Strategic Vision	A good leader has an identifiable vision, and has the capacity to motivate, encourage and support people to follow them to fulfil mutually beneficial outcomes for the broader group, organisation, company and/or whānau/hapū/iwi. A strategic vision is underpinned by a key set of mataapono that inform how the vision will be implemented. Inter-generation outcomes and a focus on the quadruple bottom line is often considered a priority.
Wholistic Approach	A Te Ao Māori worldview is wholistic in nature and subsequently such is reflected and anchored in pūrakau, whakatauaki, kiwaha, histories, moteatea, waiata and more. A shared understanding of cultural values facilitates processes that lean into a holistic approach to Māori ways of doing and being.

7.0 Indigenous Leadership Education and Educator Qualities

Indigenous leadership approaches are often location and community specific and vary around the world. Notably, there are multiple forms of leadership, with some forms as clearly defined roles and other roles more fluid.

This section explores examples of indigenous leadership courses that are available around the world; how these are delivered; the values that contribute to a successful leadership course; the topics that the courses cover; attributes that contribute to a good leader; an example of a leadership model (Te Pā Harakeke Tapatoru, Aotearoa); and the challenges in integrating indigenous knowledge into VET.

7.1 Indigenous Leadership Education Courses and Values

Thirty indigenous leadership courses were reviewed from across New Zealand, Australia, Pacific Islands, United States of America, Canada, South America and Central Africa (Table 7.1; supplementary literature sources spreadsheet). Each course offers both theoretical and practical learning experiences. Some courses offer accreditations such as certificates or degrees, while others are aimed at professional development. Generally, the courses are delivered by or in conjunction with educational institutions such as universities, polytechnics, or tribal colleges. However, there are instances where courses are specially developed and run independently of an educational institution.

Indigenous industry leadership (forestry, fisheries, climate change, communication, health, business, community) based courses vary with the amount of content delivered. Most courses are primarily designed for indigenous people, but there are also offerings for those working with indigenous people or communities, or within related industries. The duration of courses ranged from one week (workshops/casual course/online modules) to three to five years (degree/master's level), depending on the level of certification or engagement desired.

Courses are typically delivered through a combination of online content and face-to-face teaching. Delivery methods include online block courses, self-directed online learning, week-long workshops, on-site industry training, university-level papers, face-to-face learning, and laboratory-style teaching.

Many of the courses provided the opportunity for individualised coaching and support for personal and business development.

The key values emphasised within each course were reviewed, and are grouped into the five following themes:

- **Cultural Practices and Spirituality:** including values of connectedness, tikanga, language, traditional practices and history.
- **Partnerships and Self**: including values of reciprocity, partnership (within indigenous people and with mainstream industry), community, communication, respect, self-awareness, and empowerment (decision making, breaking barriers).
- **Environmental Stewardship:** including values of native ecosystems (biodiversity, ecology, biosecurity), sustainability, restoration, and future preservation of nature/resources.
- **Governance Structures:** including values of tribal governance, national legislation, and country governance.
- **Business Administration:** including values of business function, and management.

Table 7.1: Primary Industry Leadership Courses Considered for this Review (Refer to Resource Kit for further details).

Industry	Canada	USA	NZ	Australia	Other Countries
Forestry	• Indigenous relations training for forest sector organisations. • Indigenous rights and relationship building in the forest sector – eUnits. • Master of urban forestry leadership.	• No courses found	• No courses found	• No courses found	• Indigenous Leadership Workshop for Forest Management (Cameroon). • La Escuela Viva de la Amazonia (EVA): Living School of the Amazon (Ecuador).
Other Industries	• Governance and relationality in indigenous fisheries. • Indigenous leadership skills. • Climate leadership program. • Indigenous leadership certificate.	• Indigenous Leadership. • Indigenous Public Health Leadership Program. • Indigenous Leadership Academy. • Traditional Ecological Knowledge Lab.	• Master of Māori and Indigenous Leadership. • Kanuka Wellbeing and Leadership. • Manu Taiko – Toro Parirau: NZ Certificate in Māori Governance. • Resource Management –Tiaki te taiaro: Hapū Plans, Decision Making and Māori Leadership. • Bachelor of Mātauranga Māori. • Bachelor of Mātauranga Māori. • Wai Ora – Water resource management and sustainability. • Bachelor of Environmental Studies: Te Aho Pūtaiao	• National Seafood Industry Leadership Programme. • Executive Indigenous Leaders Program. • Certificate in Leadership and Mentoring, Indigenous Leadership. • Aboriginal Fisheries Business Development Program. • Certificate in Conservation and Ecosystem Management (Indigenous Land Management). • Aboriginal and Torres Strait Islander in Marine Science.	• Pacific Fisheries Leadership Programme (Pacific Islands).

7.2 Indigenous Leadership Attributes

Indigenous leadership skills are anchored by cultural values and community orientated principles. Several key authors (Young, 2006; Katene, 2013; Wolfgramm et al., 2016; Parsons, 2023; West, 2023; Collins, 2024; Scarletti, 2024;) outline the following key attributes of an indigenous leader:

1. **Community Focus:** Indigenous leaders prioritise the well-being of the community over individual needs. They aim to leave a legacy that benefits everyone and is future-oriented.
2. **Cultural and Spiritual Identity**: Effective leaders are strong in their cultural and spiritual identity. They respect and incorporate traditional practices, ceremonies, and histories into their leadership.
3. **Inclusive Decision-Making**: Indigenous leadership often involves making decisions by consensus, ensuring that all voices are heard and valued.
4. **Respect and Relationship Building**: Leaders maintain respectful relationships with people and the natural world. They are inclusive, welcoming, and value the perspectives of others.
5. **Visionary and Accountable:** Indigenous leaders are visionary, thinking about the future generations. They are accountable to their people and continuously work to fulfil their responsibilities.
6. **Transformational Leadership:** This style of leadership inspires positive changes, increases group morale, and fosters a sense of ownership among team members.

These skills and traits help indigenous leaders to effectively guide their communities while preserving their cultural heritage and adapting to modern challenges.

With respect to forests managed by indigenous communities, the dualistic knowledge approach as represented in the use of Traditional Ecological Knowledge (TEK), western science and technology is often adopted to sustainably manage forest ecosystems (Kaiser, 2024; Kaurashima et al., 2019; Nelson, 2008; Ntityix Resources, 2025). Key examples include:

1. **Traditional Ecological Knowledge (TEK) Approaches:** Indigenous communities have an in-depth understanding of their local ecosystems, developed over centuries. Practices include controlled burns, which prevent larger wildfires and promote new growth, purposeful planting for growth, and replacing within indigenous forests like for like.
2. **Sustainable Harvesting**: Indigenous methods often involve sustainable harvesting techniques that ensure resources are not depleted. This includes selective logging and seasonal harvesting, which maintain the ecological balance.
3. **Biodiversity Conservation:** Indigenous practices help preserve biodiversity. For example, agroforestry systems integrate trees with crops, enhancing habitat diversity and soil health.
4. **Cultural and Spiritual Values:** Forest management is often intertwined with cultural and spiritual values, emphasising respect for the land and all living things. Sacred sites within forests are protected, and traditional ceremonies may be conducted to honour the forest.
5. **Community Involvement:** Indigenous forestry management involves the community in decision-making processes, ensuring that the benefits of forest resources are shared equitably.
6. **Climate Change Mitigation:** Indigenous practices contribute to climate change mitigation by maintaining forest cover and enhancing carbon sequestration. These practices are increasingly recognised as vital in global efforts to combat climate change.

7.3 Leadership attributes: Aotearoa Case Study - Principles Centred Leadership Model

The Principles Centred Leadership Model developed for Aotearoa New Zealand's Food and Fibre sector is built on three interconnected elements (Figure 7.1):

1. **Context** – Leaders must be grounded in the sector's entrepreneurial, environmental, cultural, and community realities.
2. **Principles** – Leadership is based on understanding people, serving with accountability, and building strong teams.
3. **Dimensions** – True leadership integrates physical, psychological, and spiritual dimensions, requiring deep self-awareness and purpose-driven action.

The model illustrates the concept of a reciprocal relationship of industry and nature, fusing both culture and biology. The model shapes symbolise resilience and life, using colours (blue, green, red brown) that represent the oceans, plants and earth.

Together, these elements empower leaders to unlock their own potential and that of others, creating exponential impact across the sector. The symbology within the model illustrates the interwoven concepts of leadership and the path a leader needs to navigate as they seek to positively impact their environment and those they lead (Parsons et al, 2024).

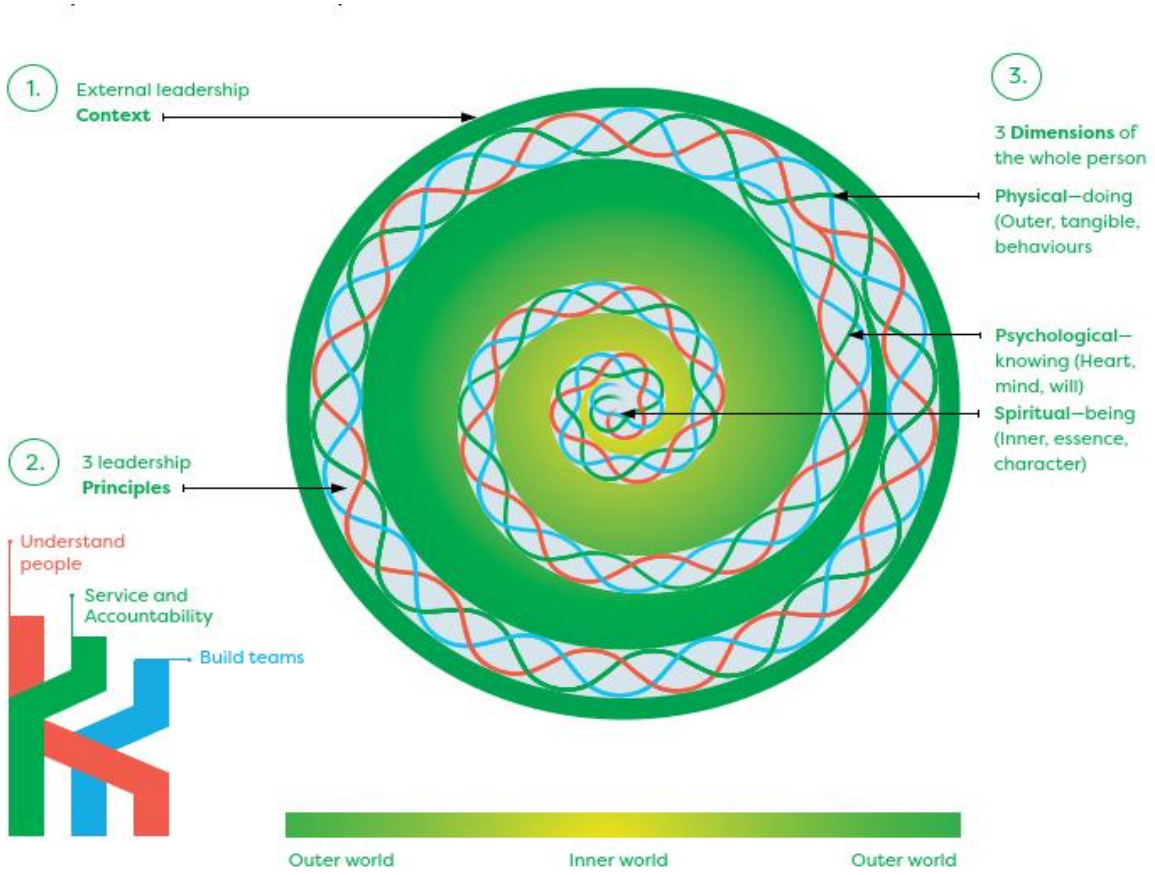


Figure 7.1: Principals Centred Leadership Model (Parsons et al., 2024)

7.4 Indigenous Leadership Course Delivery

Traditional education processes can be successful when carefully constructed around observing natural processes, adapting modes of survival, obtaining sustenance from the plant and animal world and using natural material to make their tools and implements (Barnhardt and Kawagley, 2005). An indigenous way of understanding is also described as having an unequivocal relationship to survival or extinction, i.e. If you fail as a caribou hunter, then your whole family may go without food (Barnhardt and Kawagley, 2005). These way of learning needs to be considered when delivering and assessing indigenous course content and the selection of pedagogical approaches.

The avenues through which knowledge is taught differs between TEK and Western Science. TEK is generally delivered verbally and passed down from elders, or others within family/village group. In comparison, western science is delivered in a formal education setting such as a school or university (see Section 9.0 for further detail).

The delivery of education in a conventional form, can be alienating to indigenous learners, and results in a lack of enthusiasm. Batisse (2002) reports that indigenous learners within the conventional education system experience a mismatch between learner style and delivery methods.

The review of indigenous leadership courses found that most prioritised experiential learning, and often took place on the land, in community settings or through hybrid models that blend in-person and digital platforms.

The type of institution administering the courses also varied, often dependent on the length of the course, or intended purpose or focus of the course (i.e. community knowledge, university degree, industrial business development support). Within each of the reviewed courses, there were common themes and pillars which were incorporated as the foundational pillars of the course, and which in many instances encompassed land-bases learning, storytelling, and intergenerational mentorship, fostering leadership that is relational, reciprocal and based in indigenous worldviews (Table 7.2). The creation of these courses tended to sit with indigenous educators, elders and knowledge holders (refer to the resource kit for further information).

Table 7.2: Leadership Course Delivery Method, Institution Type, Course Pillars and Content Developers

Delivery method	Institution	Pillars of Leadership Course Content	Content Development
Face to face Online modules Workshops – in person (1-day up to 2 weeks) Workshops – full day online up to 4-week online coaching Practical sessions Lectures Self-directed learning	University Polytechnic / College Centre Government department Private company Indigenous group/ institute	Language Culture Principals Governance Relationships Sustainability Nature	Elders Knowledge holders Indigenous educators

The design of indigenous focused education considers the relevance of cultural content, national program standards, best practices across the industry and how the course will be assessed. These details are outlined within the box below (Figure 7.2) (Stephens, 2003).

Cultural Relevance	*Standards Based*
Examines topics of cultural significance, involves cultural experts, addresses cultural standards and provides adequate opportunity for reaching deeper cultural understanding.	Identifies an appropriate number of state science standards; describes specifically what is to be learned about those standards; and provides an adequate number of properly sequenced opportunities that lead students to a deeper understanding of the standards.
Best Practices	*Assessment*
Incorporates strategies which are culturally appropriate; focuses on student understanding and use of knowledge, ideas and inquiry process; guides students in active and extended inquiry; and supports a classroom community with cooperation, shared responsibility and respect.	Engages in ongoing assessment of student: understanding of highly valued, well-structured knowledge; skill development and reasoning; and ability to apply knowledge to the real world. Allows for diverse demonstrations of understanding.

Figure 7.2: Designing Indigenous Focused Education Curriculum (Stephens, 2003)

One of the central challenges for Indigenous course developers is navigating the balance between embedding indigenous content and operating within the constraints of a western education system. While western models often emphasize structured assessments and written outputs, indigenous approaches to education prioritise relational, holistic, and culturally grounded learning experiences.

Course developers must consider the purpose of the course, the intended audience, and the trade-offs required to meet regulatory standards—particularly in areas such as assessment. A key decision is whether, and to what extent, the course should align with western educational frameworks.

Many of the courses reviewed in this context are delivered and assessed in culturally specific ways. Pedagogies such as narrative-based learning, oral traditions, and community engagement are central. Learners are supported as whole beings, and assessments often focus on knowledge demonstrated through action and conversation, rather than written tests or assignments typical of western systems.

7.5 Indigenous Leadership Course Content

Many of the thirty courses reviewed presented commonalities in course content, notably, a key focus across most courses prioritised developing students that were culturally apt in their own ways of knowing and being and establishing a connectedness to their tribal roots, extended families and the environment. Key course content includes:

- Culture (spirituality, rituals, tikanga, whānau, mana, language)
- Cultural management.
- Mainstream industry management (how is the industry managed).
- Holistic industry/forestry management (movement away from traditional single species forestry).
- Ecology (ecosystem, biodiversity, biosecurity, endangered species).
- Taonga / culturally important species[1].
- Sustainability.
- Climate change (carbon friendly).
- Forest restoration – how to restore the mauri or life force of the forest while still being able to productively harvest (i.e. harvest 1 tree, plant 3 trees).

[1] A taonga species is a species that was present in New Zealand prior to the first European contact with Māori in 1642 (Abel Tasman's Dutch East India Company expedition) and the descendants of those species who have a whakapapa that can be traced back to Ranginui and Papatūānuku, Tangaroa, the Māori spirit world deities. Information retrieved from https://www.taiuru.co.nz/what-is-a-taonga-species/

7.6 Challenges for the Inclusion of Indigenous Knowledge in Formal Institutions

Research carried out by Chhatria et al., (2024) highlights the positive outcomes of indigenous education in promoting social equity and empowerment of indigenous individuals and communities. The research advocates for the adoption of culturally responsive approaches and the provision of resources to ensure equitable access to quality education for indigenous learners.

Delivering indigenous education presents a range of challenges, many of which stem from historical, cultural, institutional, and epistemological differences between indigenous and western knowledge systems (Batisse, 2002; Canadian Council on Learning, Cajete, 2023; 2007; Chhatria et al., 2024; Kimmerer, 2013; Stephens, 2003).

The list below highlights some of these challenges:

1. **Epistemological Differences**

- *Different worldviews:* Indigenous knowledge is often holistic, relational, and place based, while Western education tends to be compartmentalised and analytical.

  Oral traditions vs written systems: Much of the indigenous knowledge is transmitted orally, through storytelling, ceremonies and lived experience, this is often de-prioritised in western settings

2. **Cultural Sensitivity and Appropriation**

- *Risk of misrepresentation:* Often TEK is misrepresented and/or distorted and/or over-simplified.
- *Cultural appropriation:* the use of sacred or sensitive knowledge without permission can be disrespectful and harmful
- *Ownership and control:* Indigenous communities may be reluctant to share knowledge without assurance of control over how it is used and taught.

3. **Institutional Barriers**

- *Curriculum constraints:* Standardised curricula often leave little room for indigenous perspectives.
- *Assessment challenges:* Different emphasis on assessment methods can create a disadvantage for indigenous learners when oral tradition and learning through observation has been prioritised.
- *Lack of trained teachers:* Navigating the need for traditional teachers within systems that do not necessarily recognise cultural experts may be difficult to navigate.

4. **Historical and Ongoing Colonisation**

- *Mistrust of institutions:* due to histories of colonisation, forced assimilation and residential schools,
- *Language loss:* Many indigenous languages are near close levels of loss. Language is a key carrier of cultural knowledge.

5. **Resource Limitations**

- *Funding and support:* there may be a lack of adequate funding and institutional support for programs that incorporate Indigenous knowledge.
- *Access to elders and knowledge keepers:* these individuals are central to transmitting knowledge but may be few and/or overburdened

6. **Contextual Relevance**

- *Placed-based knowledge:* Indigenous knowledge is often specific to a particular land or community, making it difficult to generalise or standardise across regions.

7.7 Summary of Indigenous Leadership Education Review

This section explores types of indigenous leadership courses that are available around the world, how these are delivered, the values that contribute to a successful leadership course, the topics that they cover, and the attributes identified as contributing to good

leaders, an example of a leadership model (Te Pā Harakeke Tapatoru, Aotearoa), and what challenges there are in integrating indigenous knowledge into VET.

Of the courses reviewed, cultural values emphasised in the programmes related to cultural practices and spirituality, partnerships and the self, environmental stewardship, governance structures, and business administration.

Indigenous leadership courses aim to deliver a course that provides a holistic view of leadership, with emphasis on language, culture, sustainability and nature. They aimed to integrate cultural values and community orientated principles including community, culture, spiritual identify, decision making, respect, relationships, visionary, accountable, transformational.

Forestry focussed courses aimed to integrate key attributes of indigenous forestry leadership and management including traditional ecological knowledge, sustainable harvesting, biodiversity, conservation, culture, spiritual values, community, climate changes

The delivery of indigenous leadership courses focusses on the learner and their collective well-being and strengths, rather than just delivering course content. Teaching is thought to be more effective when delivered verbally and passed down from elders, or others within family/village group education. The review of courses found that most prioritised experiential learning, and often took place on the land, in community settings or through hybrid models that blend in-person and digital platforms.

When developing course content, elders and knowledge holders are key to the successful creation of content, with many indigenous communities holding inter-generational knowledge of high importance.

Challenges lie with how courses are assessed as the measure of retained knowledge is assessed different in indigenous ways compared to western “testing”.

Photograph 7-1 Indigenous man in Canadian Forest (Photo credit: University of British Columbia, indigenous land stewardship degree)

8.0 Forest Ecosystems and Forests Managed by Indigenous Communities

Before large scale human settlement and agriculture (approximately 10,000 years ago), it is estimated that forests covered about 5.9 to 6.2 billion hectares of the Earth's surface. Since this time the world has lost approximately one-third of its forest cover (Ritchie, 2021). As of 2024, forests cover roughly 4.06 billion hectares which equates to approximately 31% of the world's land surface (Symington, 2023). Globally, deforestation has rapidly increased, with half of the global forest loss occurring in this last century alone (Ritchie, 2021). Human settlement within New Zealand has similarly reduced the once extensive indigenous forest cover across New Zealand from 82% to 24% (Figure 8.1) (Ewers et al., 2006).

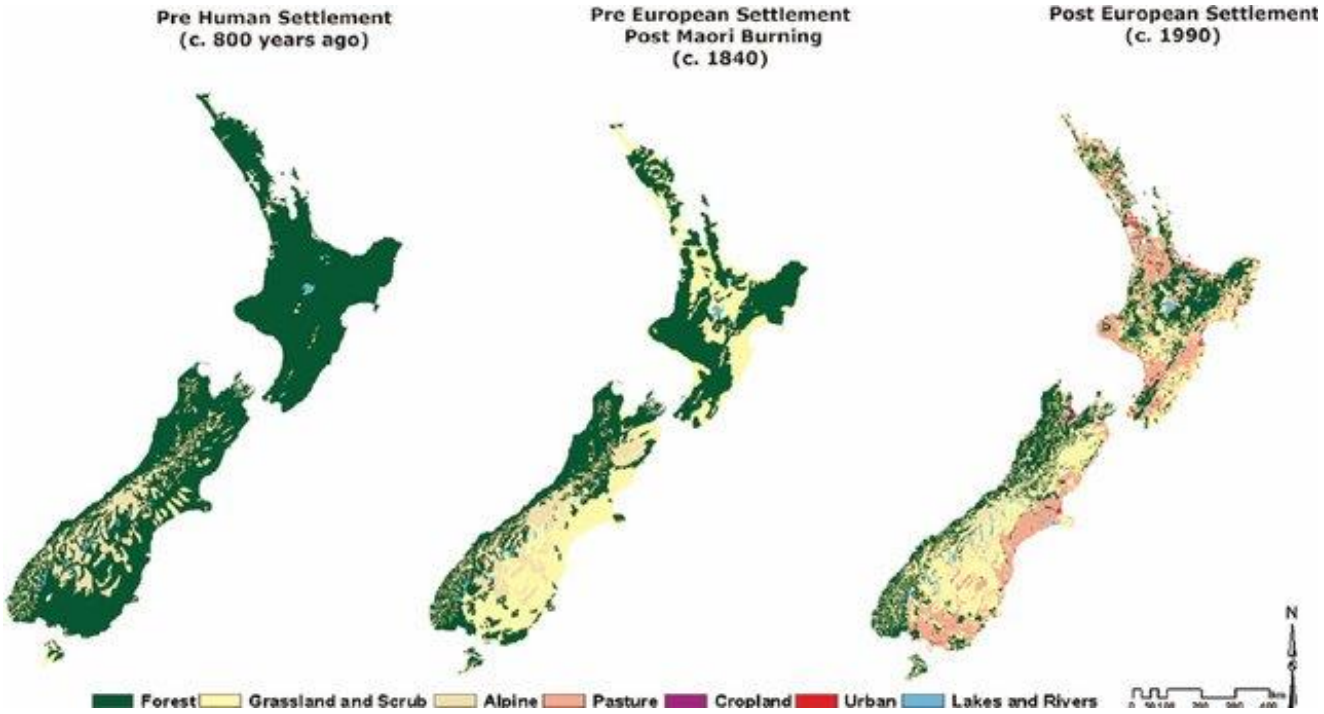


Figure 8.1: Evidence of Land Cover Change in New Zealand Over Time (Weeks et al., 2012).

Indigenous people of the world hold cultural and spiritual connection with forests, and around a third of the current forest cover of the world is managed by Indigenous people (Galey, 2020). As of 2017, only 14.4% (from a summary of 58 countries) was owned (12.2%) or designated (2.2%) for Indigenous people and local communities (see Figure 8.2) (Rights and Resources, 2018).

Conversely, over 40% of the Earth's biologically intact landscapes are managed by Indigenous people (Garnett et al., 2018). Indigenous managed lands host equal or greater biodiversity than protected areas around the world (Schuster et al., 2019). The high biodiversity is in many places directly attributable to ongoing Indigenous stewardship (Heckenberger et al. 2007, Cook-Patton et al. 2014, Armstrong et al. 2020).

Colonised methods of forestry and land use have shifted perspectives and dulled the depth of understanding, and application of traditional knowledge. However, as iwi, hapu and whānau carry out their roles as kaitiaki, they are innovating knowledge and practice by blending traditional practices with science,

technology, marketing and applied forestry methods to strengthen resilience across generations.

The global gap between forests managed by indigenous communities and ownership reflect Aotearoa's own history, reinforcing the need for Māori leadership in forestry to support both environmental and cultural wellbeing (Netah, 2021; New Zealand Institute of Forestry, 2023; Rights and Resources, 2018; Wehi et al., 2019).

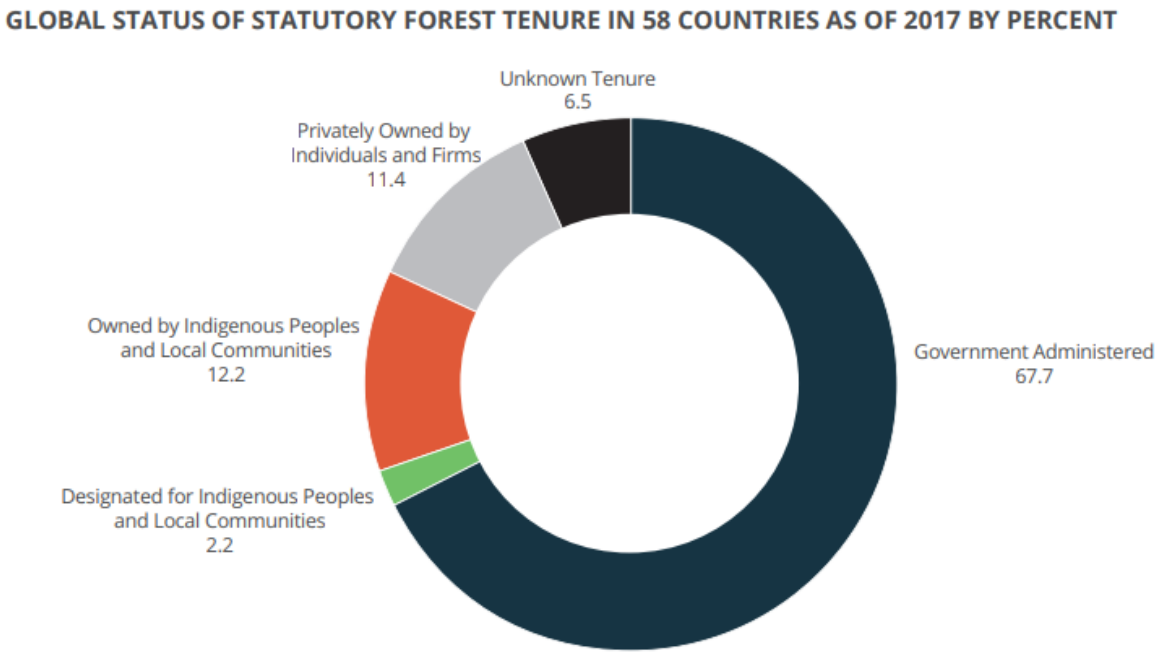


Figure 8.2: Proportion of forest tenure in 58 countries in 2017 (Rights and Resources, 2018).

8.1 An Indigenous Forest vs a Forest Managed by Indigenous Communities

An indigenous forest refers to a forest composed of native plant and tree species and a forest managed by indigenous communities includes a forest inhabited, owned, and managed by indigenous peoples of the country.

Indigenous forests and forests managed by indigenous communities are found in many countries across the world, each with varying levels of maintained connectedness or inhabitancy. More than a third of the world's forests are managed by indigenous peoples and hold an important place in the protection against climate change and biodiversity loss worldwide (Galey, 2020).

Indigenous forests have many values including those of flora, fauna, soil, water, amenities and commercial values (Te Uru Rākau – New Zealand Forest Service 2024). Indigenous forests are often rich in biodiversity and cultural heritage and play a crucial role in a countries' climate regulation, ecosystem health, and the preservation of indigenous identities and livelihoods. Forests managed by indigenous communities encompass areas of sacred importance, managed wild species and areas of plantation for food provision (Wiersum, 1997).

Photograph 8-1 Forest on Haida Gwaii Island, Canada. Photo credit: M. Tupe

Photograph 8-2 – Reindeer Husbandry. Photo credit Shuttershock

Indigenous people practice various forms of forest management, protecting, regeneration and selective resource use. These forests often exist along a nature-culture continuum shaped by centuries of indigenous spiritual interaction and are often characterised by a worldview that prioritises the spiritual relationship between people and the forest and all living things. Forestry management approaches tend to be culturally centred with a strong emphasis on TEK and associated cultural practices.

From indigenous perspectives, the forest system is in genealogical terms viewed as a relative to humankind. This view informs the way the forest is considered, engaged with and planned for. For example, the way forest is managed by indigenous communities is often effective in balancing conservation and use, with a focus on the future provisions for generations to come (Wiersum, 1997).

For Māori, there are congruences with this worldview, specifically in relation to the value between humankind and the natural world.

Within Māori forest ecosystems TEK approaches are in some areas still practiced, with a strong emphasis on sustainability to ensure long term forest health. Examples of traditional Māori forestry management include hua parakoe or hāpai tū, which involves small, controlled fires to clear underbrush to promote new vegetation growth (more specifically for edible and medicinal plants), and selective harvesting to allow other trees to continue to grow. Such practices have allowed for the regeneration and maintenance of the health and biodiversity of the forest (New Zealand Institute of Forestry, 2023).

8.2 Fundamental Components of Indigenous-led Forestry Management

Indigenous communities that manage forests are anchored by an indigenous worldview, from which key cultural imperatives govern the way in which the forest as a host for wildlife and the supporting flora and fauna is viewed, treated and engaged with. Indigenous way of knowing and being is informed by the knowledge and a balanced relationship between the physical and spiritual realms. Within this, the physical realm includes managing economic, social, political and environmental imperatives, and the spiritual realm is viewed to influence all components of the physical realm. The capacity to form connections and relationships are important, whether with the self, extended family, the tribe, the forest and natural world and beyond (Cajete, 1994).

Relationships are pivotal to all components of indigenous forestry practice. This includes the types of relationships, the nature of those relations, and how relationships are formed and maintained.

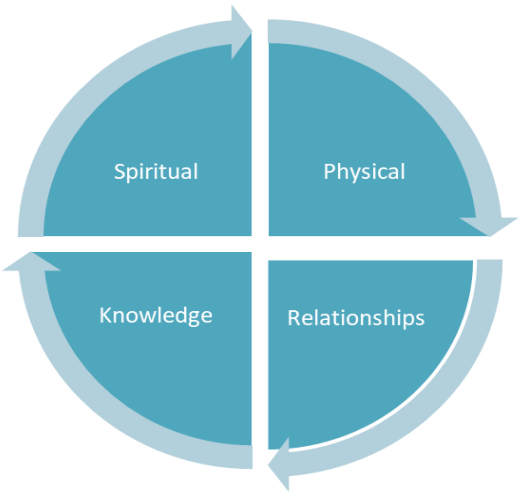


Figure 8.3: Indigenous-led Forestry Management – Key Foundational Element (T+T)

Forests managed by indigenous communities are diverse, dynamic and determined by the relationships that have been developed with both the spiritual and physical domains.

The following key factors characterise forests managed by Indigenous communities:

1. **Worldview Informed and Spirituality:** Forestry management for indigenous peoples is informed by a worldview that centralises the genealogical relations between the natural world and that of humans (Cajete, 1994; Pearce et al., 2023). The natural world exists as an important component within the genealogical hierarchy, within which humankind also exists. For example, Māori refer to earth as Papatūānuku (Mother Earth), whereas First Nations in Canada refer to earth as Mother Earth or Nimaamaa Aki (Anishinaabemowin – Ojibwe/Anishinaabe), or Grandmother Earth, or Unci Maka (Lakota/Dakota). In this way, approaches to how you view the natural environment is embraced within a notion that all things are related. The ways in which we behave and treat the natural world is viewed within this paradigm.

   Within this worldview, spiritual and physical relationships are established and maintained based on notions of creating balance, of reciprocity, respecting the interconnectedness between all things, respect, harmony and applying a wholistic approach to the practices adopted. Interconnectedness is expressed in a variety of ways, including maintaining a spiritual connection with the forest, connectedness with the community, and the reliance on the health and wellbeing of the forest for people to survive. This differs to an approach where the natural world is viewed as a resource from which to extract from at the expense of regeneration and regard for the direct and indirect impacts on species, flora, fauna and all other livings things.

2. **Socio-cultural Imperative:** All indigenous nations have a worldview that is informed by a set of cultural values which steer and guide the relationship that human beings should have with the environment and beyond with the spirit world (Cajete, 1994). This includes forestry management approaches where communities live alongside and within the forest systems. Indigenous forestry management is inextricably linked to the local indigenous community (owners). The forest is integral to their way of life and their survival. Interactions with the forest systems are guided by key cultural values and expressed through indigenous languages, traditional stories, narratives and knowledge systems that prioritises living in harmony with the forest. Forests systems are viewed as the provider of gifts as represented for example in shelter, income, protection, medicine and food. Socio-cultural approaches to indigenous forestry management are to ensure through informal and formal learning that the present and future generations are versed in traditional worldview and continue to advance traditional practices. Guardianship over the management of the forest system is viewed to be the rights and responsibility of the indigenous owners.

3. **Economic Imperatives**: Different approaches are taken around the world to advancing the forest for economic gain. In countries such as Canada, timber forestry practices are run by indigenous owned companies, however, they are managed with a cultural lens to ensure the sustainability of the forest and the ensured economic gain for future generations to come. The following clips explore indigenous forestry businesses In Canada, in Squamish, British Columbia Stewards of the Forest: Indigenous Leadership in Forestry Part 1; and in Meadow Lake

Saskatchewan Stewards of the Forest: Indigenous Leadership in Forestry Part 2.

The economics of forests managed by indigenous communities are not always about the monetary profit from timber, other sustainable economic return activities are also undertaken. For example, the growing of maple trees for syrup is of significant cultural importance valued for providing sustenance, medicine and spiritual countenance and connection to the Creator. Beyond, economic gain, and in some cases more highly prioritised are the gains made to strengthening cultural practices of ritual, stories and ceremony. The concept of 'ecosystem services' places value on the economic benefit that ecosystems can bring to the wider system, such as the co-benefits to societal wellbeing achieved to having healthy forests for recreational use.

4. **Political Imperative:** Indigenous forests hold profound political significance, serving as vital ecosystems and cultural strongholds for indigenous peoples. Their protection is a political imperative because they embody notions of indigenous sovereignty, environmental justice, and climate resilience within a highly politicised conflicted spaces where extraction and development for profit are prioritised. These forests are often threatened by extractive industries and land grabs, making their defence a matter of indigenous rights and self-determination. Politically, safeguarding these forests means honouring treaties, respecting traditional knowledge, and ensuring indigenous communities have authority over their ancestral lands. Moreover, preserving these ecosystems contributes to global biodiversity and carbon sequestration, aligning local struggles with international climate goals. Thus, indigenous forests are both ecological treasures and political battlegrounds.

5. **Environmental Imperative Sustainable Practices:** Sustainable forestry practices are culturally centred and informed by traditional ecological knowledge systems. Sustainable forests are tightly linked to mutual benefits to both the community and the natural environment. Recognised cultural leaders guide and steer these practices, through a set of cultural rules that are often expressed through various cultural ceremonies and rituals. indigenous forestry practices can include controlled burns, seasonal harvesting, and agroforestry. These methods help maintain ecological balance, promote biodiversity, enhance soil health, and increase resilience to climate change.

6. **Indigenous Language, Stories, Narrative, Songs**: Native language is central to indigenous forestry management. Embedded in culture are the stories, songs and narratives which holds forms of tradition and history and provide a lens through which the world is interpreted. Language is central to the identity of a tribal nation, within which explanation regarding the relationships between living things are expressed. This includes for example, the relationships between certain forest animals, why certain plants grow well in certain places, predictive weather patterns, best times to harvest, when to plant and much more.

7. **Customary Activities**: Indigenous peoples around the world engage in diverse cultural practices and ceremonies within forests, which are deeply tied to their spiritual, ecological, and ancestral connections to the land. These ceremonies often include offerings, songs, dances, and storytelling that honour forest spirit guardians, ancestors, and the cycles of nature. Forests serve as sacred spaces for rites of passage, healing rituals, and seasonal celebrations. Traditional knowledge passed down through generations is shared during these gatherings, reinforcing community

bonds and ecological stewardship. These practices not only sustain cultural identity but also embody a reciprocal relationship with the forest, emphasizing respect, balance, and interdependence with the natural world.

8. **Traditional Ecological Knowledge:** Traditional Ecological Knowledge (TEK) centres indigenous forestry management. TEK is defined as the cumulative, place-based knowledge and practices developed by indigenous and local communities through generations of interaction with the natural environment, emphasizing a holistic and respectful relationship with nature. TEK is handed down through generations and typically held by certain families. Various examples include the use of TEK in forest felling and planting, the growing, harvesting and distribution of herbal medicines and the selection of planting for under-growth regeneration. In addition to TEK, many indigenous nations also utilise western knowledge systems. This is evident for example in the dual use of TEK and digital technology such as drones in forestry management practices. The relationship between TEK and Western Science is explored in Section 5.

9. **Barriers and Challenges:** Indigenous forestry confront a range of key challenges including the recognition of indigenous rights, overcoming historical marginalisation, and ensuring that indigenous communities and their leaders are actively involved in decision-making processes across various tiers. Big corporate interests are often in opposition to indigenous people aspirations for their forest systems, which brings several key challenges which include for example legal battles over indigenous rights and interests, poaching, political lobbying and in some cases the destruction of in-forest settlements.

Photograph 8-1: Reindeer Husbandry. Photo credit Shuttershock

9.0 Traditional Ecological Knowledge and Western Science

9.1 Introduction

Earlier literature on IKS and education was largely written from non-indigenous perspectives, focused on assimilating indigenous peoples into Western scientific worldviews (Darnell, 1972; Orvik & Barnhardt, 1974, in Barnhardt & Kawagley, 2005). One of the major impacts on IKS has been the re-definition of what counts as scientific knowledge. Specifically, the promotion of western science as 'proven, the truth, evidenced, and rigorous' while IKS were demoted to 'myths and legends', wife's tales and unsubstantiated evidence (Smith, 2021).

Indigenous leadership is anchored by indigenous knowledge systems. Indigenous Knowledge Systems (IKS) are tribally and geographically specific, encompassing Traditional Ecological Knowledge (TEK). TEK includes generations of observations, stories, practices, and understandings that guide how to live in accordance with the natural laws of a particular place. Often encoded in oral traditions, songs, rituals, and daily practices, TEK represents a holistic and relational approach to environmental stewardship (Nelson, 2008).

The **United Nations Educational, Scientific and Cultural Organisation (UNESCO)** and **Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)** define IKS as:

"*Indigenous and local knowledge systems are social and ecological knowledge practices and beliefs pertaining to the relationship of living beings, including people, with one another and with their environments. Such knowledge can provide information, methods, theory and practice for sustainable ecosystem management*."

IKS is integral to a cultural complex that also encompasses language, systems of classification, resource use practices, food systems, social structure, community institutions and systems of intergenerational transmission, including ancient histories, expressed through storytelling, performances, rituals and spirituality. These knowledge systems are not static or frozen in time. IKS informs decision-making processes based on inter-generational knowledge which is constantly being modified by changing conditions (climate change) and new information.

IKS or TEK and western science represent distinct yet potentially complementary systems of understanding the natural world, both have value in solution making and decision-making processes, when utilised as dualistic systems (Harmsworth and Awatere (nd).

Photograph 9-1 –Indigenous Forest. Photo credit Shuttershock

For example, indigenous fire management practices in Australia and North America have informed modern wildfire prevention strategies. Similarly, TEK has contributed to sustainably managing primary industries such as fisheries management and conservation efforts worldwide.

The maramataka as a decision-making tool provides another example. Maramataka refers to the traditional Māori lunar calendar, used for generations to guide daily life, environmental practices, and spiritual wellbeing. Based in mātauranga Māori (Māori knowledge) observations through centuries, the maramataka aligns human activity with the phases of the moon, recognising that each phase influences energy levels, environmental rhythms, and optimal times for specific tasks.

Rereata Makiha - Maramataka and the science of living by the moon

Other examples are also found in work undertaken by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, with a range of case studies about indigenous and local knowledge in relation to biodiversity and ecosystem services in the Americas, Asia, Europe and Central Asia and Africa.

- Knowing our Lands and Resources: Indigenous and Local Knowledge of Biodiversity and Ecosystem Services in the Americas
- Knowing our Lands and Resources: Indigenous and Local Knowledge and Practices related to Biodiversity and Ecosystem Services in Asia
- Knowing our Lands and Resources: Indigenous and Local Knowledge of Biodiversity and Ecosystem Services in Europe and Central Asia (ECA)
- Knowing our Lands and Resources: Indigenous and Local Knowledge of Biodiversity and Ecosystem Services in Africa

9.2 Examples of Dual Application of TEK and Western Science

This section provides examples a dual application approach utilising Traditional Ecological Knowledge (TEK) and western science. The examples have the purpose of leaning into the direction NPAT intends in relation to content development of courses. The examples investigated include wholistic health and wellbeing, ecological health and wellbeing, education and training generally and the adoption of processes that centre mātauranga Māori. The following four examples are outlined.

The **Two-Eyed Seeing** model exemplifies this integration of world views, encouraging the use of both indigenous and Western perspectives to foster deeper understanding, collaboration, and holistic solutions (Oregan State University, 2022). Similarly, **Braiding Sweetgrass** illustrates the blending of indigenous wisdom and scientific knowledge through stories that honour nature, reciprocity, and healing (Kimmerer, 2013).

The **Wayapa Wuurrk** conceptual model further supports this integration by combining Aboriginal wisdom with Western psychology. It emphasizes connection to Earth, holistic wellbeing, and cultural safety through movement, storytelling, and relational awareness (O'Shea et al., 2024).

The Mauri Compass integrates mātauranga Māori with western science in examples of applying indigenous knowledge in environmental monitoring in Aotearoa (Kanz et al., 2020; Harmsworth, 2016; Morgan, 2004).

9.3 Two-eyed Seeing/Etuaptmumk: Indigenous Knowledge and Western Science – (Mi'kmaw Nation, Canada)

Etuaptmumk/Two-eyed seeing emphasises the integration of IKS and Western scientific knowledge to create a more holistic understanding of the natural world (Shaw et al., 2010). Two-eyed seeing is learning to 'see' utilising the strengths of indigenous and western knowledge systems, as opposed to adopting an oppositional view, where difference outweighs the benefits. The following table adapted from Marshall (2014) provides an overview of the re-positioning of difference between western and indigenous knowledge. The following is outlined:

Table 9.1: Comparative Strengths of Indigenous Knowledge and Western Knowledge (adapted from Marshall, 2014)

Indigenous Knowledge	Western Knowledge
Weaving of nature's patterns via creative relationships and reciprocities among love, land and life, constantly reinforced by Aboriginal languages	Un-weaving of nature's patterns to cognitively reconstruct them
Methods of respect, reverence, reciprocity, ritual, repetition, responsibility.	Methods of hypothesis, data collection, model and theory construction.
Interconnective.	Parts and wholes.
Beings are animate with spirit, energy and matter in constant change	Objects are comprised of energy and matter in evolution.

The concept of Etuaptmumk/Two-eyed seeing was integrated into **Oregan State University's** Traditional Ecological Knowledge (TEK) Forestry Lab. The Lab has the following aims and activities based on the two-eyed seeing concepts.

- **Integration of Knowledge Systems:** Braiding together the empirical strengths and logic of Western Science with the insights and wisdom of TEK
- **Cultural and Ecological Restoration:** Combining ecological restoration with the revitalisation of cultural practices to create ecosystems that are more resilient to climate change and other environmental stressors, such as severe wildfires.
- **Collaborative Partnerships:** Emphasising the importance of intercultural collaborative partnerships between indigenous peoples, universities, federal agencies, and conservation non-profits.

An example of Etuaptmumk/Two-eyed seeing is the dual explanation of the tidal change in the Bay of Fundy, Canada. A tidal model developed by Shaw et al., 2010, depicts the rapid tidal change at the mouth of the Minas Basin, transitioning it from a lagoonal mesotidal estuary to a macrotidal basin (Shaw et al., 2010).

From an indigenous perspective the following ancient story explains the rapid tidal change in in relation to the legend of Mi'kmaw of Glooscap and the conflict between a Beaver and a Whale within the Minas Basin. Glooscap, wanting to take a bath, orders Beaver to build a dam across the mouth of the bay to hold the ocean water. Beaver does so, but Whale becomes unhappy as now water does not flow as before. Glooscap, hearing Whale instructs Beaver to break the dam and release the water. Beaver liked the dam he built and was slow to take it apart. Getting impatient Whale uses his great tail to break the dam causing water to flow with such a force that it continues to do so today.

This oral legend reaffirms and aligns with the tidal models collected from empirical data. The knowledge combined exhibits how the Mi'kmaw people observed environmental changes and preserved this knowledge passing it down through story telling over 3400 years (Shaw et al., 2010).

Table 9.2: Two Eyed Seeing - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	Acknowledgement and integration of multiple forms of knowledge for holistic understanding and solutions building
Key values	Reflection, understanding, cooperation, solutions-oriented, integration and learning from diverse knowledge systems (where relevant)
Applicability to the NPAT VET Māori Forestry Leadership Model	Propose that existing indigenous knowledge be acknowledged and considered as equal value to that of scientific knowledge. Particularly within educational philosophy and training module development. Emphasizing the value of stories within educational modules. Furthermore, the model used by Oregon university operationalizes the use of both knowledge and interaction with both indigenous and scientific institutions for collaboration.
Limitation	No road map for exploring indigenous knowledge.

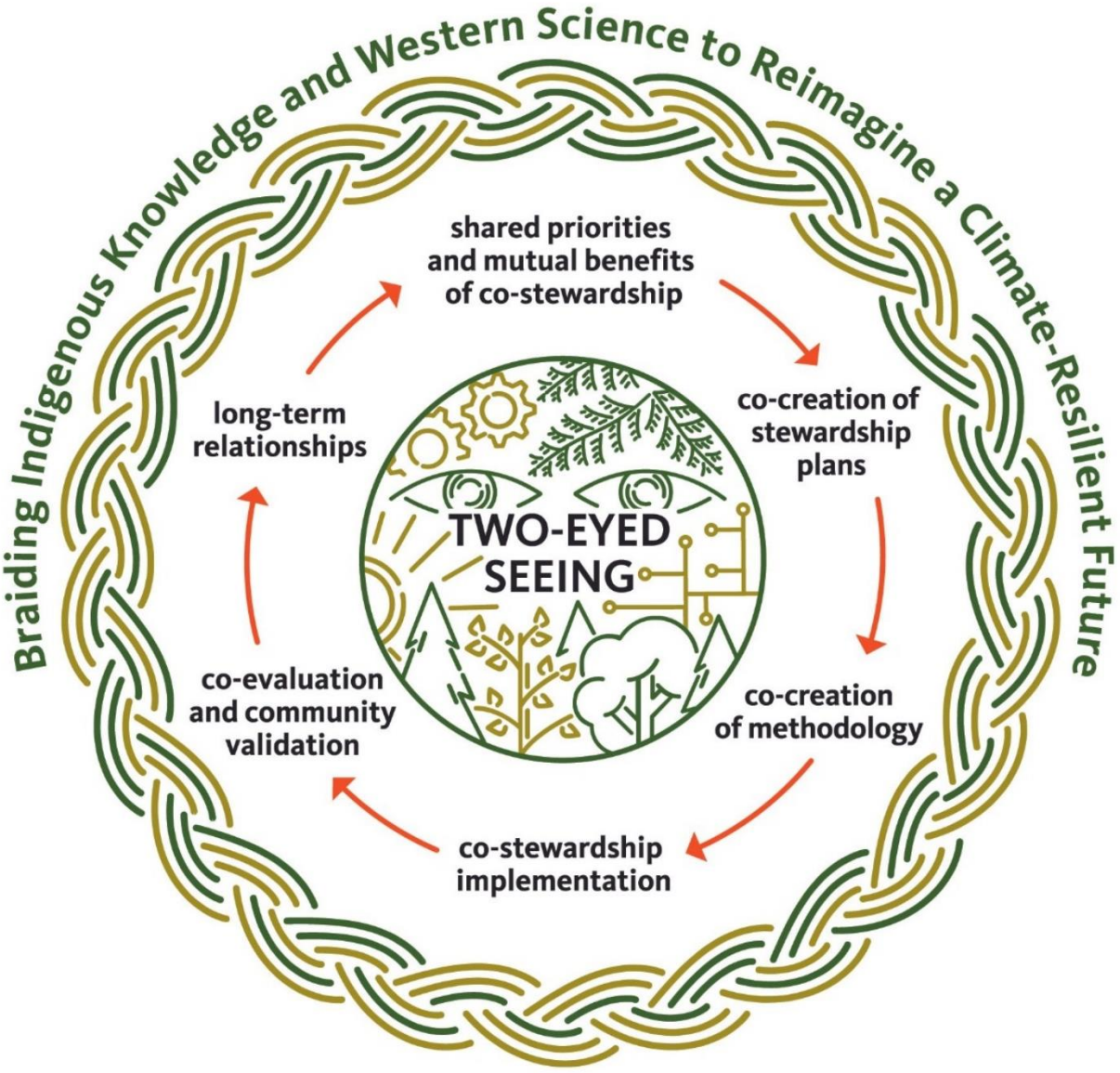


Figure 9.1 Two-Eyed Seeing Model (Oregon State University, 2022)

9.4 Braiding Sweetgrass - A Book by Robin Wall Kimmerer (USA)

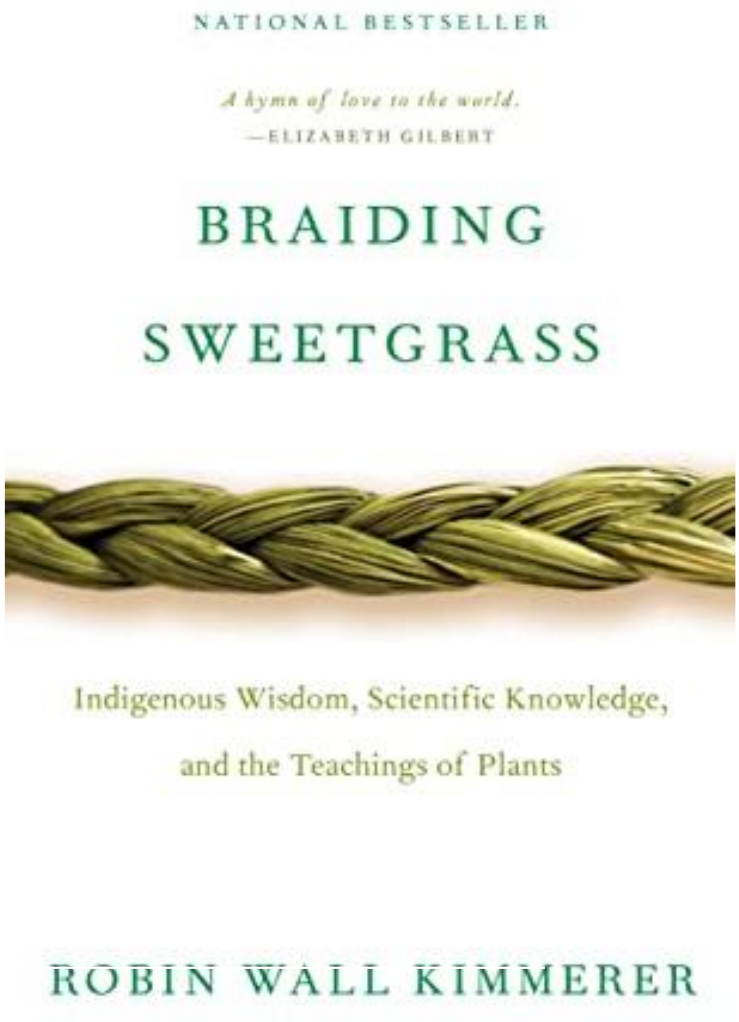
The book explores the intersection of indigenous knowledge and western scientific methodologies, emphasizing the reciprocal relationships between humans and the natural world (Kimmerer, 2013). The book follows three parts: “science, spirit, and story” and is intended to inspire a different kind of relationship between people and the earth. The themes in Braiding Sweetgrass refer to a rich tapestry of ideas that blend indigenous wisdom, ecological science and personal reflection. The core themes are outlined below:

- **Reciprocity and Communalism:** This illustrates that people and nature are part of the same communal system. that mutually flourish when working together
- **Indigenous Knowledge and Scientific Understanding:** Weaving together indigenous wisdom and scientific understanding, acknowledging that each complement and enriches each other.
- **Gifts, Gratitude, and Responsibility:** Suggesting that gifts form a web of reciprocity that is not just about an equal exchange of commodities, but about a relationship of generosity and gratitude.
- **Motherhood and Teaching:** Connects the caring aspect of motherhood to the idea of teacher, particularly as she describes indigenous traditions regarding women’s roles in a community. There is the affirmation of the values of mothers and teachers as crucial to the wellbeing of any healthy community, and as essential for maintaining hope for the future.
- **Animacy and Value:** Braiding sweetgrass challenges the thought of humans as equal partners in a community of nature, giving animacy to other things and thus seeing them as having value and deserving of respect.
- **The Indigenous Past and Future:** Indigenous people have endured incredible hardships, the very idea of being indigenous to the land, seeing it as one’s true home and not a place to be owned, borrowed or visited, which is crucial to saving humanity's future.

An example of integrating Braiding Sweetgrass into an indigenous Studies program across all grade levels can be found at the Cottonwood School of Civics and Science in Portland, Oregon. The school has observed several benefits, including students developing a stronger ecological identity and sense of responsibility. The program also fosters critical thinking, collaboration, emotional resilience, and supports mental health by increasing students’ time spent in nature (Winiker, 2025).

Table 9.3: Braiding Sweetgrass - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	Braiding Sweetgrass explores the harmony between indigenous wisdom and science, emphasising gratitude, reciprocity, and storytelling to inspire a respectful, sustainable relationship with nature and all living beings.
Key Values	Reciprocity, gratitude, respect for indigenous knowledge, integration of knowledge systems, stewardship and responsibility, storytelling and language
Applicability to the NPAT VET Māori Forestry Leadership Model	The application of the themes through Braiding Sweetgrass into VET educational models, encourages connectedness and immersion of students within the natural environment. This allows for a deeper understanding and ecological identity, encouraging deeper thinking, teamwork and a sense of responsibility.
What is Missing	When applying Braiding Sweetgrass to VET models gaps or limitations can emerge due to differences in educational goals, structures and pedagogical approaches. These include alignment with industry focused outcomes, integration into curriculum frameworks, time and resource constraints, educator preparedness and cultural context and relevance.



Photograph 9.1 Book Cover of Braiding Sweetgrass (Kimmerer, 2013)

9.5 Comparing Western Well-being Practice with Wayapa (An Australian Aboriginal Well-being Practice)

Wayapa Wuurrk (or Wayapa) is an Aboriginal well-being practice co-founded by Jamie Thomas (GunaiKurnai Maara) and Sara Jones (non-aboriginal). Wayapa recognises that the health and wellbeing of the individual is a constant and dynamic relationship with the health and wellbeing of the natural environment and community. The Wayapa honours 14 elements related to the earth, kinship and spirituality. The elements connect to strengthen indigenous social and emotional wellbeing (O'Shea et al., 2024). Wayapa is an earth connection practice that starts with taking care of the earth as a starting point for mind, body and spiritual wellbeing. The model recognises that most people have become disconnected from the environment, from the tribe, from food source and spirit. The overarching aim is to create a lifestyle of wellbeing based on the key principles.

Table 9.4: Weaving Wayapa and Western well-being- Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	This model comprises of 17 key elements. The creator is centralised, all elements within nature form the outer circle including the hunter, gatherer and child. Cultural, social and political spheres are highlighted with an emphasis on connection to spirit, family, wellbeing, ancestors, land and culture.
Key Values	Relationality, mutual respect, holism, collaboration, connection, wellbeing
Applicability to the NPAT VET Māori Forestry Leadership Model	Embedding indigenous perspectives and practices into curriculum design and delivery fosters a learning space where students feel respected, valued, and culturally affirmed. By challenging eurocentric teaching models and incorporating indigenous knowledge systems into pedagogical approaches, learners are encouraged to think critically and expand their worldviews. Emphasising the importance of relationships, mutual respect, and collaboration promotes active participation, builds trust, and empowers learners. Adopting a holistic approach supports the development of the whole person—not just technical competencies, but also emotional, cultural, and social well-being.
Limitation	Culturally located, context specific

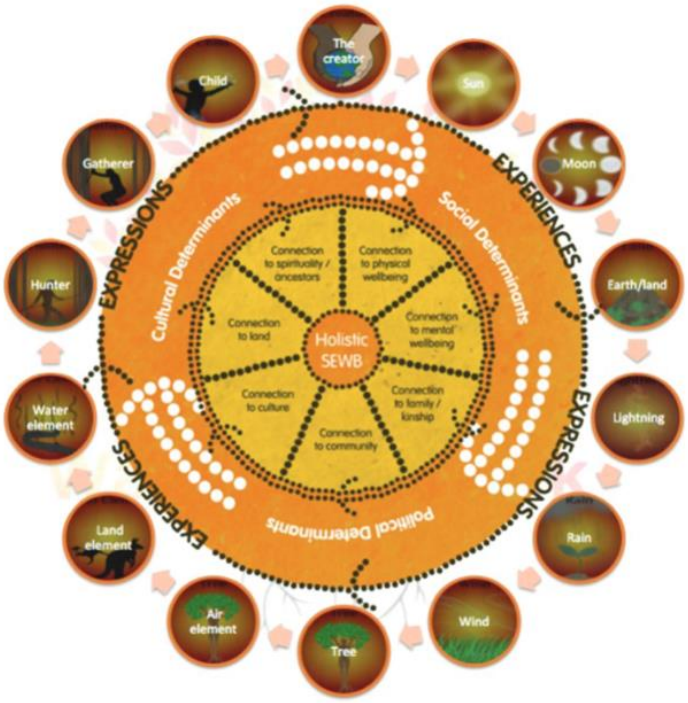


Figure 9.2: Conceptual Model of Wayapa Wuurk - Connection to Elements Strengthening Social and Emotional Wellbeing (O'Shea et al., 2024)

9.6 Environmental Assessments – Mauri Compass

Ka ora te wai, ka ora te whenua, ka ora ngā tāngata.

If the water is healthy, and the land is healthy, the people are healthy.

The Mauri Compass (Ruru, 2020) focuses on community led environmental assessments, to evaluate and enhance the health of ecosystems and communities, especially of water bodies (Kanz et al., 2020). The model combines community engagement, mātauranga Māori, and western science to assess the current, historical and desired states of mauri. The model is used in environmental planning, stormwater management, and iwi engagement processes (Kanz et al., 2020). It is designed to help whānau, hapū, iwi, and landowners assess the impact of various factors on the **mauri**—the life force or vitality—of ecosystems such as forests, rivers, and marine environments

Key Features of the Mauri Compass Model

- **Holistic Assessment**: The model considers multiple dimensions of wellbeing, including **taonga richness**, **abundance**, and **health**—especially of culturally significant species.
- **Cultural Integration**: Developed through wānanga (gatherings) on marae, it incorporates **mātauranga-a-hapū** (local Māori knowledge) alongside scientific data.
- **Community Empowerment**: It supports kaitiaki (guardians) in making informed decisions about environmental stewardship and resource management.
- **Educational Component**: A curriculum has been developed to train accredited Mauri Compass assessors and tauira (students), ensuring the model's integrity and long-term use.
- **Applications:** Initially used in freshwater and terrestrial environments, the model has been **calibrated for marine ecosystems**, including species like kina, pāua, and koura.

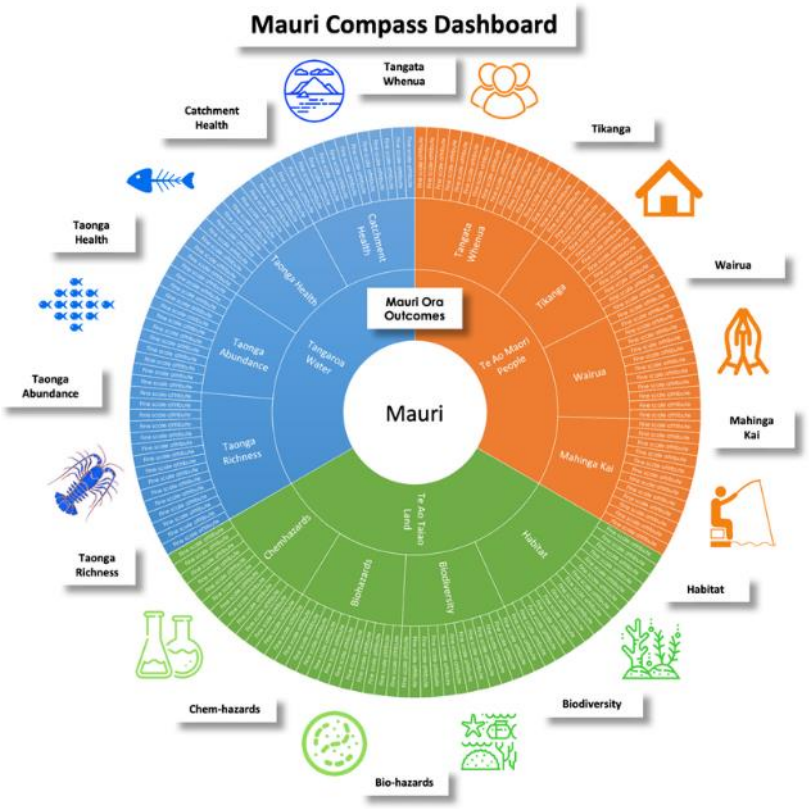


Figure 9.3: The Mauri Compass Dashboard

Table 9.5: Mauri Compass - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	The Mauri Compass is an assessment tool and decision-making tool, with the primary purpose to evaluate the health and wellbeing of water and marine spaces. Developed for use by whānau, hapū and iwi seeking to better understand water quality through an assessment of mauri. The assessment process integrates western science mechanisms alongside mātauranga Māori forms of understanding.
Key Values	Mauri, whakapapa, kaitiakitanga, manaakitanga, rangatiratanga
Applicability to the NPAT VET Māori Forestry Leadership Model	The Mauri Compass provides a broader example of tools in use that could be adopted in the assessment of forest wellbeing (water). The tool promotes holistic wellbeing, community engagement, and cultural relevance, aligning training with environmental stewardship, social responsibility, and indigenous worldviews. Applying these values fosters inclusive, place-based learning that empowers learners, especially Māori, to thrive in both cultural and vocational contexts. The tool support co-design with iwi/hapū, seeks to advance local aspirations and contribute to sustainable futures.
Limitation	Inter-dependencies on a local iwi expert to assist in the development and implementation.

9.7 Summary of Review of TEK Applications

Review of applications of TEK and Western Science has undertaken through an analysis of the Two-eyed seeing Model (USA), Braiding Sweetgrass (USA), Wayapa (Australian), and Mauri Compass (Aotearoa),

All models focus on achieving balance within the environment and drawing on complementary strengths between indigenous wisdom and science. The models seek to inspire a respectful, sustainable relationship with nature and all living beings, and many strive toward culturally centred, holistic understanding to support decision-making or solutions building.

Key values identified within these studies are summarised into broad themes:

- Mauri (life force)

  Balance and vitality, relational value

  Relational ethics and values: Reciprocity, gratitude, respect for indigenous knowledge, relationality, manaakitanga (care and respect), kaitiakitanga, whakapapa (genealogy/connection).

- Knowledge and ways of knowing:

  Respect for indigenous knowledge, rangatiratanga integration of knowledge systems, storytelling and language.

- Responsibility and action:

  Stewardship and responsibility, cultural safety, decolonisation, solutions-oriented, manaakitanga, kaitiakitanga.

Each has potential benefit in applicability to NPAT VET model development, with main findings summarised below.

However, within each there is the potential for models gaps or limitations to emerge due to differences in educational goals, structures and pedagogical approaches. Difference in focus regarding context, technical, or vocational competencies, and difference in mode of delivery.

Table 9.6: Summary of Examples of TEK and Western Science Models and the Applicability to NPAT VET Model Development

Case Study	Applicability to NPAT VET Model Development
Braiding Sweetgrass (USA),	Encourages connectedness and immersion of students within the natural environment. Allows for a deeper understanding and ecological identity, encouraging deeper thinking, teamwork and a sense of responsibility.
Two-eyed Seeing (USA),	Propose that existing indigenous knowledge be acknowledged and considered as equal value to that of scientific knowledge. Particularly within educational philosophy and training module development. Emphasizing the value of stories within educational modules. Furthermore, the model used by Oregon university operationalizes the use of both knowledge and interaction with both indigenous and scientific institutions for collaboration.
Wayapa (Australia)	By relating the values from the Wayapa-CBT study to VET programme development, can enrich training environments. By embedding indigenous perspectives and practices into curriculum design and delivery, this creates a learning environment where students feel respected and valued. By challenging Eurocentric teaching models by integrating indigenous knowledge systems into pedagogies, this encourages critical thinking and broadens the learner's worldview. When you include the importance of fostering relationships, mutual respect and collaboration, you are encouraging participations and engagement and build trust and empowers learners. The holism approach supports whole person development, not just technical skills.
Mauri Compass (Aotearoa),	The Mauri Compass is an example of a mātauranga Māori environmental assessment and decision-making tool. For VET leadership education (Māori forestry) the tool demonstrates a way in which dualistic knowledge system can be adopted and implemented to advance environmental health and wellbeing. The tool promotes holistic wellbeing, community engagement, and cultural relevance, aligning training with environmental stewardship, social responsibility, and indigenous worldviews. Applying these values fosters inclusive, place-based learning that empowers learners, to thrive in both cultural and vocational contexts.

10.0 Indigenous Conceptual Frameworks: Culturally Informing Strategic Approaches

Indigenous conceptual frameworks offer holistic, place-based approaches to forest management informed by cultural imperatives such as reciprocity, interdependence and long-term intergenerational stewardship. These frameworks emphasise the importance of spiritual and cultural significance of forests, integrating ecological and cultural knowledge which is passed down from the elders through generations of storytelling. By valuing relational accountability, the responsibility to care for the land, water and all living beings approaches to forest management are developed. The management encompasses sustainable harvesting, biodiversity conservation and climate resilience (although this is a more recently acknowledged benefit of cultural sustainable management).

Incorporating frameworks into strategic forestry planning encourages collaborative governance, respect for indigenous rights and fosters adaptive management practices that align with both ecological and community well-being. This approach ensures that forests are managed not just as resources, but as living systems with intrinsic values.

Photograph 10-1 Brazil's Amazon Forest and Indigenous Woman (Photo credit: Roxanne Hoorn).

This section presents the main findings from a review of approaches to indigenous forestry management across the globe. It summarises the values, principles and applicability to incorporation into Vocational Education Training (VET), and how these might add content, structure, and desired outputs to the pregame development. The examples include those of leadership, education and forestry management. The frameworks and models include, with further detail on each contained in Appendix B: Indigenous Conceptual Framework.

Table 10.1: Indigenous Conceptual Frameworks and Models Reviewed

Leadership	Education	Forestry management
• Sacred Circle of Life (Canada)	• First Nations Holistics Lifelong Learning model (Canada). • Umeek Narratives (Canada). • Indigenous Stages of Developmental Learning (USA).	• Whitefeather forest initiative (Canada). • Non-timber forest product management and sustainability, Missanabie Cree First Nation (USA).

10.1 Indigenous Program Model: Sacred Circle of Life (Canada)

The Indigenous Program Model: Sacred Circle of Life model was developed by the Banff Centre for Arts and Creativity as part of its indigenous Leadership Program. While the exact date of its formal introduction is not specified, the model reflects nearly 50 years of evolving leadership development grounded in indigenous knowledge systems (Banff Centre for Arts and Creation, n.d.). The table below (Table 10.2) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.2: Description of the Indigenous Program Model: Sacred Circle of Life (Banff Centre for Arts and Creation, n.d.) - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	This model has a focus on indigenous leadership and management for educational programme design.
Key Values	Courage, wisdom, honesty, truth, love, respect, humility.
Applicability to NPAT VET Māori Forestry Leadership Model	The Sacred Circle of Life has a circular approach to model development, allowing for links and interconnectedness between facets to be readily realised. Values are centred and articulated in relation to the importance of relationships. The course outlines are developed and delivered around these Seven Wise Practices to give the students a holistic approach towards strategic planning and leadership. The Seven Wise Practices include identity and culture, leadership, governance and management, accountability and stewardship, performance evaluation, collaborations, partnerships and external relationships.
Limitations	There are no references to the types of providers and/or pastoral care. Although these could be developed utilising the values that have been identified.

Figure10.1: Indigenous Program Model: Sacred Circle of Life (Banff Centre for Arts and Creativity, n.d.)

10.2 First Nations Holistic Lifelong Learning Model (Canada)

The First Nations Holistic Lifelong Learning Model is a framework that illustrates the interconnectedness of lifelong learning and community well-being for First Nations people, where experiences and relationships are circular, cumulative and holistic. The table below (Table 10.3) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.3 Description of the First Nations Holistic Lifelong Learning Model (Canadian Council on Learning, 2007) - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	The First Nations Holistic Lifelong Learning model emphasises lifelong, experiential learning rooted in indigenous knowledge, culture and community. Represented as a tree, it highlights interconnectedness, spiritual and emotional growth, and the importance of relationships with land, people and ancestors in shaping meaningful, culturally grounded education across all life stages.
Key values	Holistic learning, lifelong and experiential learning, culture, language, community, relationships, blending indigenous and Western knowledge.
Applicability to NPAT VET Māori Forestry Leadership Model	The First Nations Holistic Lifelong Learning model can enhance VET education by embedding indigenous values into training. The model promotes lifelong, experiential and intergenerational learning rooted in community, culture and land. Applied to VET, it supports learner wellbeing across spiritual, emotional, physical and mental dimensions. It encourages co-learning with elders, validates diverse knowledge systems and fosters culturally relevant, place-based education. This approach broadens success beyond qualifications, aligning training with indigenous aspirations and sustainable development. By integrating this model into VET can create inclusive, empowering pathways that honour indigenous identifies while building practical, future ready skills.
Limitation	The model lacks explicit focus on technical skills, workplace readiness, digital literacy, standardised assessments and alignment with industry needs, which are all key elements for VET.

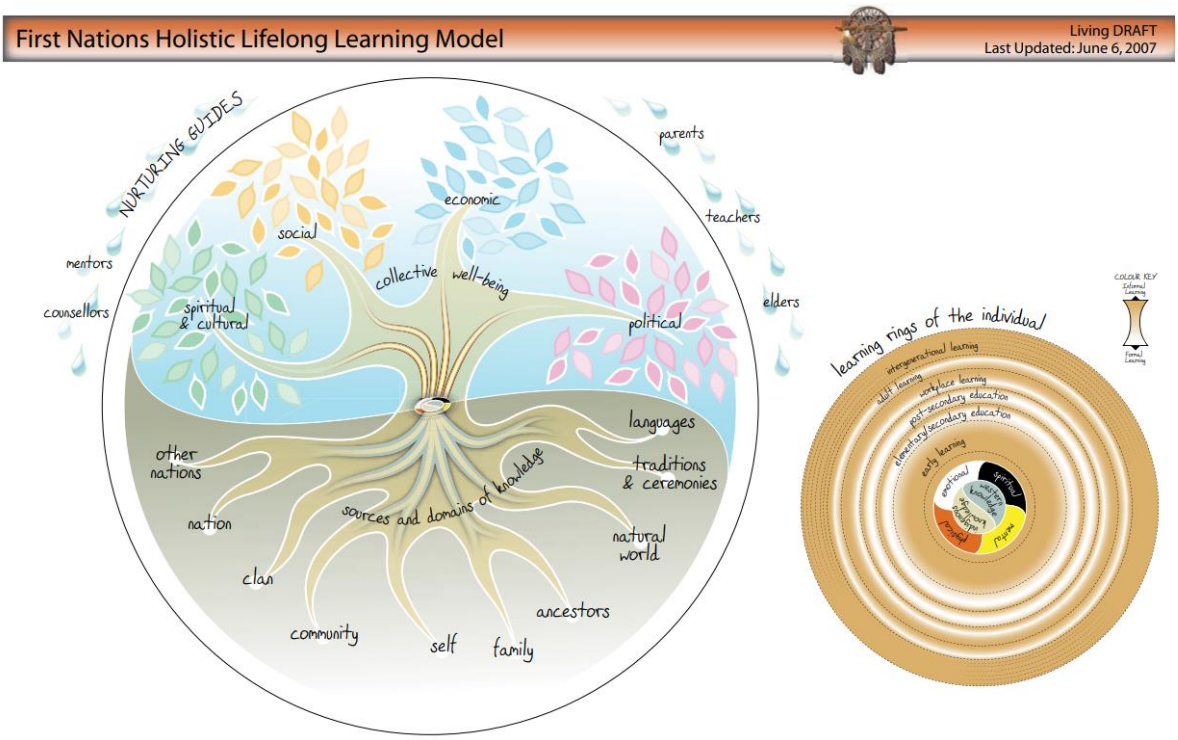


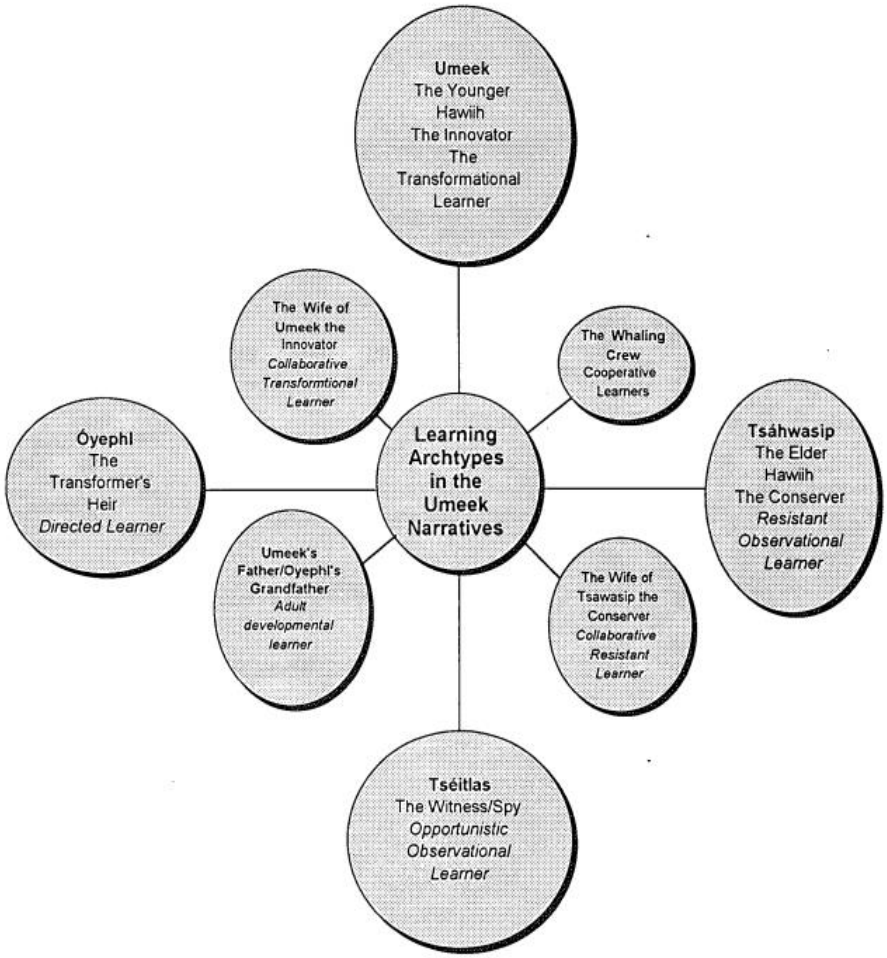
Figure 10.2: First Nations Holistic Lifelong Learning Model (Canadian Council on Learning, 2007).

10.3 Umeek Narratives (Canada)

The Umeek Narratives Learning Model (Atleo, 2001) draws on Nuu-chah-nulth story work to reveal indigenous learning principles. The Nuu-chah-nulth Nation is located on the west coast of Vancouver Island in Canada. The model creates and understanding the Umeek learning orientations and archetypes emerged balancing innovation and conservation. The table below (Table 10.4) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.4: Description of the Umeek Narratives Learning Model (Atleo, 2001)- Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	This model has a focus on indigenous storytelling as a method of teaching, which puts emphasis on relational, place-based, and transformational learning. It highlights diverse learner roles and integrates cultural, spiritual, and community knowledge for holistic education.
Key Values	Relationality, respect, responsibility, reciprocity, holism, transformation, place-based knowledge
Applicability to NPAT VET Māori Forestry Leadership Model	The Umeek indigenous Learner model is highly applicable to VET as it values experiential, relational and community-based learning. It supports diverse learner identities and emphasises responsibilities, transformation and cultural relevance. All of these align with VET's focus on hands-on skills, mentorship and real-world application.
Limitation	When considering the application of Umeek Learner model into to VET, the model lacks alignment with standardised assessments, digital tools and the outlines of career pathways, making this challenging to see the outcome and benefits of the learning for workplace readiness.



Umeek, the *y?uk*^{w}*iiqsu:* Innovator and Transformational Learner

Figure 10.3: Learning Archetypes of the Umeek Narratives (Atleo, 2001).

10.4 Indigenous Stages of Developmental Learning (USA)

The work undertaken by Gregory Cajete emphasises the relevance of holistic, relational and life centred approach to learning, rooted in indigenous worldviews that honour the interconnectedness of all life and reciprocal relationships between individuals, communities and the natural world (Cajete, 2023). The table below (Table 10.5) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.5: Description of Indigenous Stages of Developmental Learning (Cajete, 1994; Cajete, 2023) - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	The Indigenous Stages of Developmental Learning focus on a holistic, spiritual journey of growth. Rooted in Indigenous worldview, the model puts emphasis on balance, cultural identify and learning through interconnected life stages.
Key Values	Spirituality, wholeness, interconnectedness, cultural identity, respect, responsibility, transformation.
Applicability to NPAT VET Māori Forestry Leadership Model	The Indigenous Stages of Developmental Learning model can enrich VET by embedding holistic, culturally grounded approaches. The model supports learner growth through spiritual, emotional, physical and intellectual dimensions. The model brings the notion of learning pathways as flexible and personalised, reflecting indigenous rights of passage and identity formation. The model supports assessment through reflection and community input, rather than standardised testing. This approach fosters deeper engagement, cultural relevance, and meaningful skill development, aligning VET with indigenous worldviews and community needs.
Limitation	The model is missing alignment with VET standardised assessments, and the requirement for digital literacy to develop learners to be ready for workplace integration.

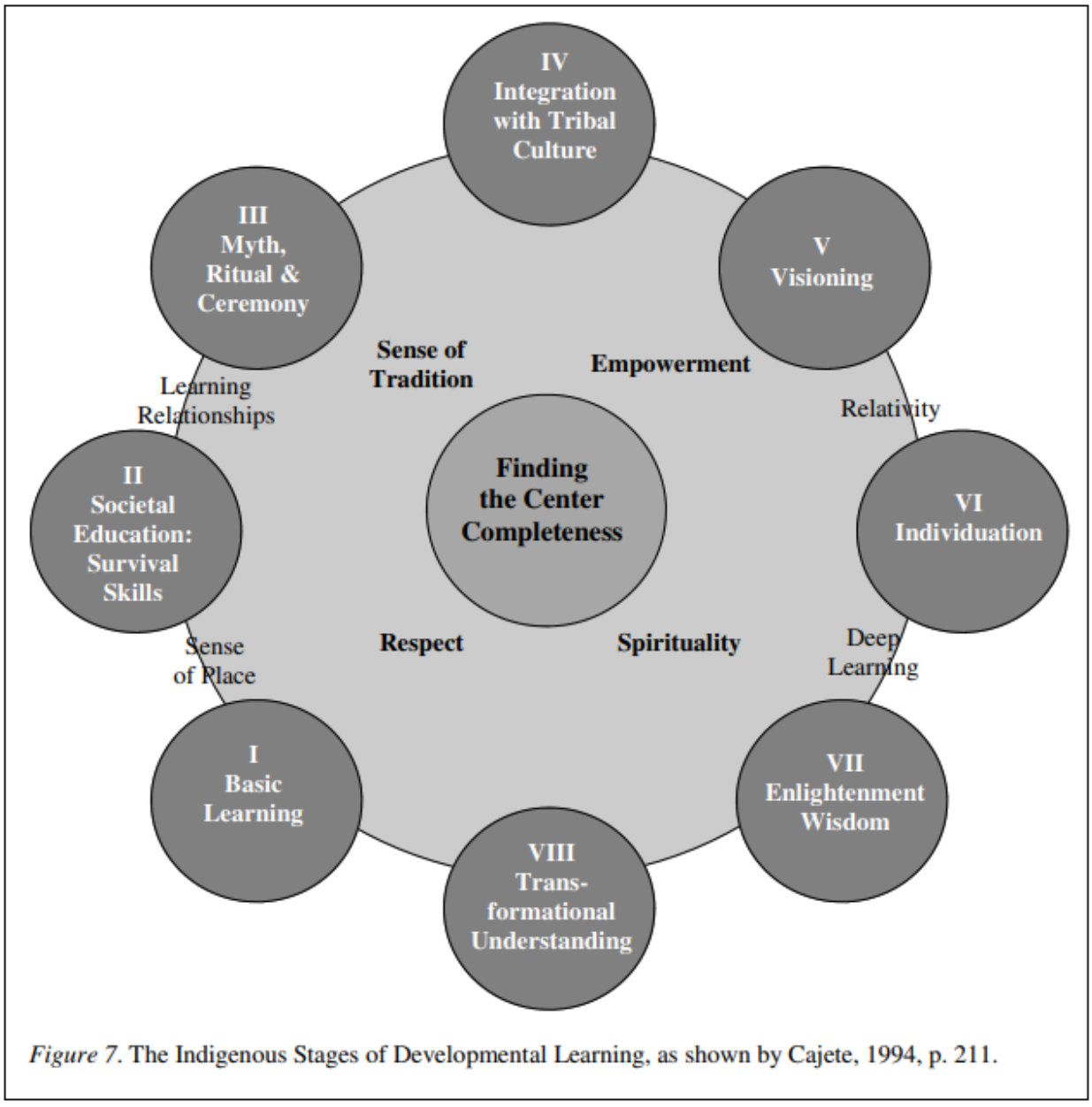


Figure 7. The Indigenous Stages of Developmental Learning, as shown by Cajete, 1994, p. 211.

Figure 10.4: The Indigenous Stages of Developmental Learning, (Cajete, 1994)

10.5 Whitefeather Forest Initiative (Canada)

The Whitefeather Forest Initiative is an economic renewal initiative created by the elders of Pikangikum First Nation. The forest is based on the ancestral lands of the people of Pikangikum in Northwestern Ontario and includes boreal forest and extensive wetlands. The table below (Table 10.6) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.6: Description of Whitefeather Forest Initiative (AborVitae Environmental Services Ltd, 2018) - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	The Whitefeather Forest Initiative is an economic renewal initiative created by the elders of Pikangikum First Nation.
Key Values	Respect, cultural continuity, elder guidance, youth empowerment, Indigenous stewardship, self-determination, sustainable land use, economic renewal, respectful resource use, conservation and protection.
Applicability to NPAT VET Māori Forestry Leadership Model	This model is deeply connected and supports VET by offering culturally grounded, community based learning tied to sustainable land stewardship. The initiative equips Pikangikum youth with practical skills in forestry, conservation and eco-tourism, guided by Elders and traditional knowledge. The training programmes are designed to create employment pathways and foster local entrepreneurship, aligning with the community's vision of self-determination and ecological responsibility. The program is delivered in-community and often in partnership with external institutions, this ensures accessibility and relevance. Through the integration of indigenous values with vocational learning, the Whitefeather Forest Initiative empowers the community to manage their lands while building long-term economic and cultural resilience.
Limitation	Like other indigenous courses, this initiative doesn't provide formal accreditation and there is no monitoring or evaluation of the data collection and evaluation.

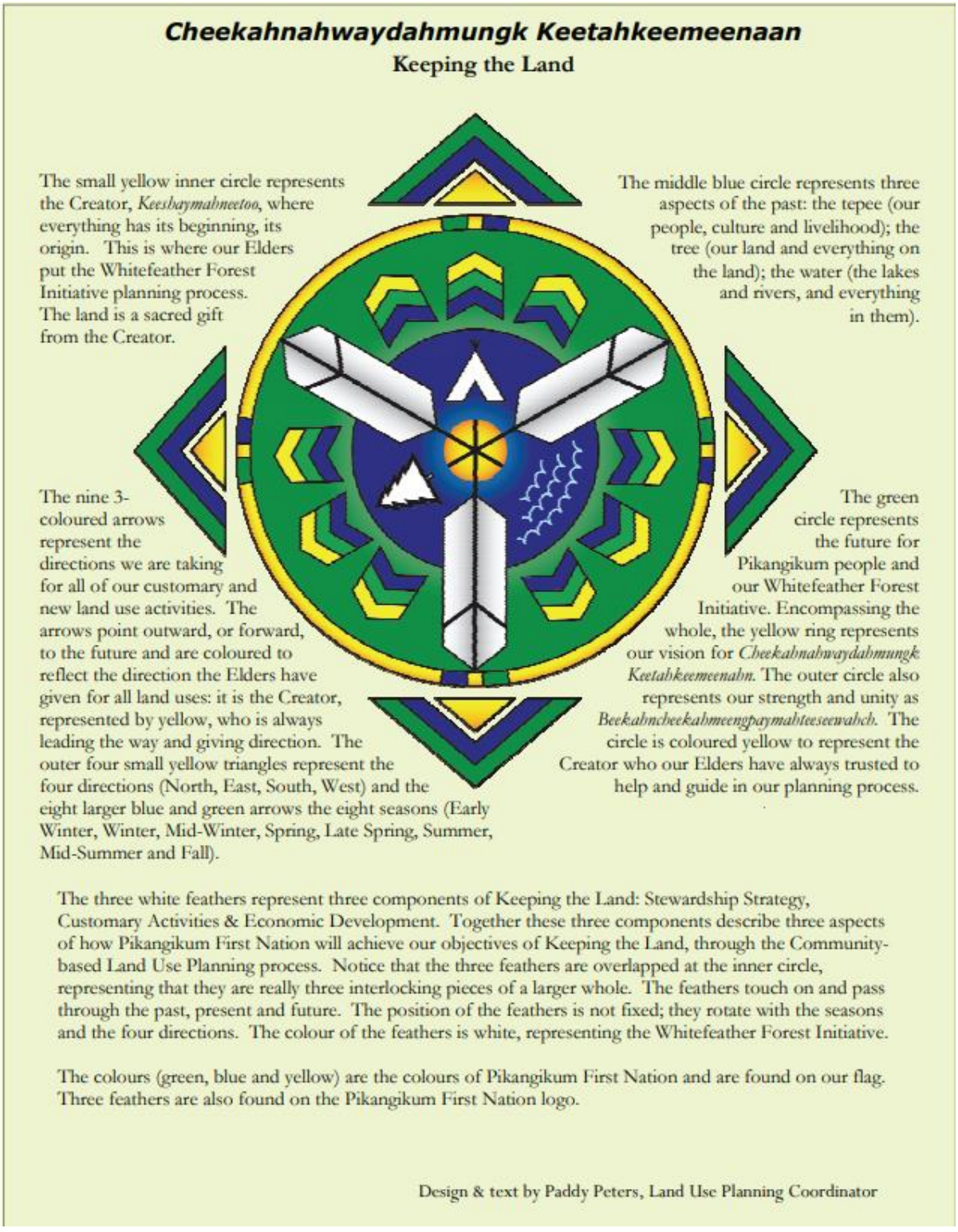


Figure 10.5 Cheekahnahwaydahmungk Keetahkeemeenaan, Keeping the Land, Whitefeather Forest Initiative (AborVitae Environmental Services Ltd, 2018)

10.6 Non-timber Forest Product Management and Sustainability, Missanabie Cree First Nation (USA)

Non-timber forest products (NFTPs) are crucial to the spiritual and cultural identity of indigenous communities, while playing a significant role in traditional economies (Palaschuk, et al. 2024). The importance of community based criterial and critical local values has allowed for MCFN to overcome the reductionist tendencies of conventional methodologies. Six criteria (productive capacity, health, conservation and protection, long-term management benefits, community participation, capacity of institutions), 18 associated elements and 239 critical local values which span the maintenance and enhancement of NTDPs are captured in a circular model (Palaschuk et al., 2024).

The table below (Table 10.7) outlines the key focus area and key values of the Sacred Circle of Life, and the applicability of the model when designing NPAT VET Māori Forestry Leadership Model, and incorporation into VET courses.

Table 10.7: Non-timber Forest Product Management and Sustainability, Missanabie Cree First Nation (Palaschuk, 2018; Palaschuk et al., 2024) - Applicability to the NPAT VET Māori Forestry Leadership Model

Key Areas	Description
Focus	The focus of the Missanabie Cree First Nation on forestry management and the sustainability criteria for the production of non-timber forest products (NTFPs).
Key Values	Indigenous knowledge, forestry management, community leadership, ecological stewardship, sustainable economic opportunities.
Applicability to NPAT VET Māori Forestry Leadership Model	Applying the approach by the Missanabie Cree First Nation to forestry management to VET education development would include designing the programme to reflect community values, traditional knowledge and sustainable practices. Ideally the programme would be co-created with indigenous communities, integrating land-based learning and cultural teachings. This approach will help support long term community and learner wellbeing, not just employment opportunities. The inclusion of the approach would emphasis ecological stewardship, intergenerational knowledge transfer, and local empowerment.
What is Missing	The model and approach is missing alignment with VET standardised assessments, and the requirement for digital literacy to develop learners to be ready for workplace integration.

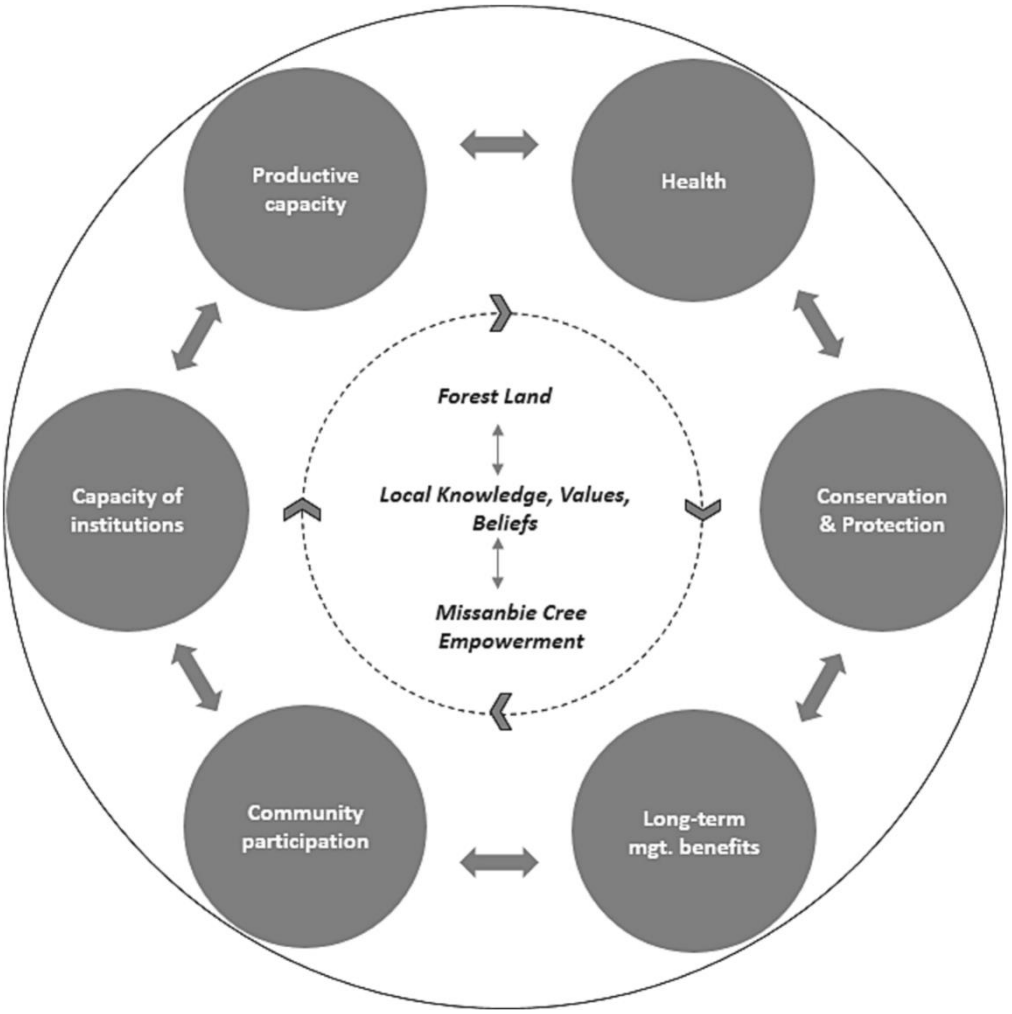


Figure 10.6: Circular Model Capturing Elements and Values of NTFPs (Palaschuk et al., 2024).

10.7 Summary of Conceptual Frameworks Review

The main themes across the models reviewed, identified cultural values of leadership, education and forestry management, all centred around the importance of a holistic, spiritual, community approach.

The values embedded within the models sit across five major themes:

1. **Core Ethical Values:** These are foundational human values that guide behaviour and relationships including courage, wisdom, honesty, truth, love, respect, and humility
2. **Ways of Knowing and Learning:** This theme emphasizes holistic, lifelong, and culturally grounded learning rooted in holistic, lifelong, and experiential learning, culture, language, community, relationships, and the blending of indigenous and western knowledge. These are guided by elders and value the empowerment of youth.
3. **Relational and Ethical Principles:** These principles guide how people relate to each other, the land, and knowledge systems such as respect, responsibility, reciprocity, holism, transformation, place-based knowledge, spirituality, wholeness, interconnectedness, cultural identity, and cultural continuity.
4. **Indigenous Sovereignty and Stewardship:** Focused on indigenous leadership, respectful resource use, conservation, and protection, and sustainable economic opportunities for indigenous communities. These concepts are founded on indigenous knowledge, ecological stewardship and self-determination.
5. **Sustainable Development and Social Justice:** These concepts reflect broader goals of equity, sustainability, and participatory governance incorporating grassroots development, gender equity, democratic governance, biodiversity conservation, and sustainable livelihoods.

Each model has the potential to provide different concepts and benefits to the NPaT model development. The following themes are noted across most of the models that were reviewed, and would merit consideration in the NPaT model development:

Holistic and Interconnected Learning:

- Learning that is circular, relational, and lifelong, encompassing spiritual, emotional, physical, and intellectual dimensions.
- Emphasising intergenerational learning, community involvement, and place-based education.
- Models such as the Sacred Circle of Life and First Nations Holistic Lifelong Learning promote wholeness and interconnectedness.

Indigenous Values and Identity:

- Central values within the model to include identity, culture, responsibility, stewardship, and transformation.
- Promoting learning that is grounded in cultural relevance, traditional knowledge, and respect for indigenous identities.
- Supporting self-determination, cultural continuity, and customary law.

Experiential and Community-based Learning:

- Emphasis on hands-on, real-world learning that reflects community needs and aspirations.
- Elders and local leaders empowered to play key roles in guiding learning and validating knowledge.
- Models such as Umeek and Whitefeather Forest Initiative integrate mentorship, land-based learning, and local entrepreneurship.

Strategic Leadership and Governance:

- Supporting leadership development through: identity and culture, governance and management, accountability and stewardship,

performance evaluation, collaborations and partnerships

- Encouraging strategic planning that is values-based and community-driven.

Sustainable Development and Stewardship

- Models promote ecological responsibility, sustainable land use, and biodiversity conservation.
- Training aligns with economic renewal, local empowerment, and landscape-scale autonomy.
- Examples like the Missanabie Cree forestry model focus on designing a VET programme that reflects community values and sustainable practices and places an emphasis on ecological stewardship and local empowerment.

Inclusive and Empowering Education:

- VET programs co-created with indigenous communities ensure accessibility, relevance, and cultural safety.
- Success is defined not just by qualifications, but by wellbeing, identity formation, and community impact.
- Assessment is reflective and community-informed, rather than standardised.

11.0 International Experts Interviews

To support the research aims of the project, a series of interviews were conducted with four international experts who are leading indigenous forestry management practices within their own nation. These international experts were:

- A Sámi Forest Keeper, Sápmi University of Applied Sciences (Kautokeino, Norway) with a long and impactful career. In addition to being a reindeer keeper, he has developed a broad range of expertise in advocacy, legislation, and the rights of indigenous people. Much of his career has been spent influencing legislation and policy at a range of levels including tribal, organizational, national, and political.
- A member of the Ohkay Owingeh tribe, New Mexico, USA with a technical background in applied science and is also on a journey of learning her language and culture. She is working alongside community contributing knowledge related to her technical skill area.
- A practitioner in forestry services in Kilauea, Hawai'i, USA. He works with farmers, providing agroforestry technical support. This work is designed to promote the development of food forests and multi-story cropping and promotes a shift away from conventional cropping.
- A cultural leader within the Menominee Tribe, Wisconsin, USA. She has taken up the cultural post of forest-keeper, once held by her grandfather.

Each interview was structured around leadership models of relevance in their lives and work, leadership styles, modes of leadership development and success indicators. Summaries of the discussions held online with each of these leaders in early May 2025 are contained in Appendix C. The main themes of each discussion with relevance to the Nga Pou a Tane are summarised below.

Photo reference Menominee Forest (Photo credit Shuttershock)

11.1 Leadership Models

While there were different models referred to across all interviews, most acknowledged the 'Two eyed seeing' model as being relevant, and identified values relating to place, culture & spirituality, wholistic health and balance.

Table 11.1: Expert Interviews Summary of Leadership Models

	Interviewee 1	Interviewee 2	Interviewee 3	Interviewee 4	Major Themes
Main Model Referenced	'the Sápmi wheel of existence'.	Gregory Cajete regarding the Pueblo world view	Two eyed seeing	The Forest Keepers' Book1	While there were different models referred to across all interviews, most acknowledged the 'Two eyed seeing' model as being relevant.
Values/ Considerations	The land Culture Language Time The spirit and the self Wholistic health (family, environment, herd) Harmony Balance Resilience	Love The place, the world around Balance Harmony Spirituality Culture Family	Mind, body, and spirit. Land Kuleana (responsibility) relationship with land and its healing preservation	Forest Economy Community: not just the people but all beings that are with us, the trees, animals, people. Culture	The forest, land, place, environment, world around Culture & language Spirituality, the spirit and the self Wholistic health Family and community Balance

11.2 Leadership Styles

Within the interviews, it was apparent that indigenous leaders often face universal issues. They must deal with conflict and challenges, and it is often these challenges that shape the leader. They must respond to environmental, technological, political, and cultural challenges (especially historical loss of language and culture). In response, these leaders need to be multitalented and hold diverse skills across indigenous and western worlds.

Main trends in leadership styles that were discussed are grouped into four styles of leadership. These are discussed in the table below (Table 11.2).

Table 11.2: Leadership Styles Discussed During Expert Interviews

Style	Tier of Influence	Function / Role	Knowledge / Characteristic
Cultural	Community, sometimes regional or national	These leaders provide a connection to place and culture. Guide traditional forestry practices and protocol.	Know language and tradition.
Political 'The Strategist'	International, national, regional and/or local community level	These leaders are likely to be representatives for indigenous people and/or country, not always linked with community (sometimes those sitting at international level become divorced from community). These leaders must establish broad network across regions and countries.	Knowledge of indigenous rights and legislation. Pushing indigenous rights at regional, national and global table. Likely to have worked their way up the ranks.
The Activist / Youth	Community	These leaders represent the future. They must be bold and are likely to be challenging the Western Science way and indigenous rights and interests. Respond to the challenges and threats facing the tribe Embrace language, cultural traditions and indigenous knowledge Often the young generation leaders are comfortable raising their voices more than previous generations Lead and guide others in technology changes	Show respect for traditional ways, and love for the land Be on a learning journey - from their elders, from schools. Be healthy and nurtured by the tribe. Understand and adopt shifts in technology
Indigenous Technical Practitioner	Community	These leaders practice forestry management, they carry out the traditional methods and tasks. Merging Western Science with indigenous knowledge. Advocate for their community and preserve the way of life.	Require professional training and indigenous knowledge Knowledge of the people and the land, Know roles and responsibilities and show respect

11.3 Leadership Development

Most interviewees described that indigenous leaders are chosen, not made. It is often the challenges that define the leader. Future leaders are likely to be those that help the people to adapt to change.

Main themes relating to the development of leaders across recruitment, training, and retention are summarized in the table below.

Table 11.3: Leadership Development Themes Discussed During Expert Interviews

Recruitment	Training	Retention
Indigenous leaders are chosen, not made. Leaders need both professional training, as well as indigenous knowledge. Potential leaders are nurtured by teaching responsibility of the land and care for the forest from an early age, building a sense of responsibility to the land. Recruitment of youth may need to respond to their interests, for example the use of advanced technology. Targeted programs are established to encourage emerging leaders to invest in their tribal nation. Young emerging leaders are allocated roles and responsibilities by tribal leaders.	It is often the challenges that define the leader. Future leaders are those that help the people to adapt to change. Many leaders undergo formal indigenous training e.g. reindeer husbandry schools, Sápmi Allaskuvla, University programs (Stevens Point 'Leaf' programme) An individual's upbringing within the cultural fold is also an important contributing factor. Cultural lessons can be woven into a range of contexts, which then contribute to the knowledge of the leader as they grow. Within training, it is important to build trust, support, and love for environment. "It is one thing to develop knowledge, and another to develop belonging." – Sativa All interviewees were supportive of an indigenous training program – This is a valuable way of building a network. It enables the sharing of views, contrasts and commonalities, and fosters the building of relationships.	People tend to stay because of a sense of belonging and pride in their culture and place. Showing care and sharing knowledge is a way to foster the sense of belonging. The beauty of trees and need to nurture them over their whole lifespan fosters a sense of responsibility that retains forest leaders. Young emerging leaders are mentored and looked after by elders. Alignment between cultural understandings of the place of forests in the cosmos alongside human nature creates a sense of responsibility

11.4 Success Indicators

Interviewees shared their perspectives on what success looked like in leadership, notable quotes for the discussions are shared:

"The first, most important success indicator is celebration and joy. It is important to make time to celebrate and have joy in your life and reflect and celebrate overcoming obstacles. Smile wrinkles, to become old and to have smile wrinkles, that is success". – Sativa

"We need multi-faceted leaders who hold knowledge across all areas. A good leader needs to fulfil each touch point in the

existential wheel; political, social, environmental, health, self, reindeer, and land." - Anders

Additionally, interviewees shared the following measures of success:

- Wellbeing, the wellbeing of the group, the tribe, and the surrounding cousins.
- Species and biodiversity: a measure of higher biodiversity in forest spaces is a strong indicator of successful forestry management.
- Waterways returning to their natural flow.
- Connectedness of tribal members to forests and nature as 'relatives'.
- Number of tribal members employed

- Being able to fend their own rights and interests as indigenous people
- Attendance and support at tribal events
- Language: the number of people with fluency in indigenous language is a strong indicator of success.
- Number of students graduating.
- How much land are we reclaiming, converting, healing.
- Land area and food produced.
- Number of graduates still in agroforestry.
- How much water in the hydrological cycle are we cleaning, healing?
- How is the community affected / benefitting? (measured qualitatively through survey, community meetings, or quantitatively through health / wellness studies).
- Research coming out of the system.

11.5 Summary of Main Themes and Findings from Expert Interviews

This document summarizes interviews with four international leaders, across four themes regarding indigenous forestry leadership.

Leadership Models: While there were different models referred to across all interviews, most acknowledged the '**Two eyed seeing**' model as being relevant. Additional major themes identified were:

- The forest, land, place, environment, world around.
- Culture & language.
- Spirituality, the spirit and the self.
- Wholistic health.
- Family and community.
- Balance.

Leadership Styles: Many spoke of the idea that indigenous leaders are chosen, not made and that it is often the challenges that define the leader. Future leaders were often identified to be those that help the people to adapt to change. Common types of leaders identified were:

- Cultural.
- Political 'The Strategist' (regional, national & international)
- The activist / youth.
- Indigenous technical practitioner.
- Local development
- Practitioner – leading on the ground

Leadership Development: When developing leaders, a balance of traditional and western knowledge was valued, and many described the importance of showing care and building a sense of belonging in recruitment and retention.

The concept of an indigenous leadership training program was endorsed by all. This was seen as a valuable method of sharing knowledge.

Success Indicators: Notably, the idea of 'smile wrinkles' and the sharing of joy in a lifetime was identified as an indicator of success. Additionally, interviewees shared the following measures of success:

- Wellbeing, the wellbeing of the group, the tribe, and the surrounding cousins
- Species and biodiversity: a measure of higher biodiversity in forest spaces is a strong indicator of successful forestry management
- A range of quantitative and biometric indicators.
- Forging economic pathways

12.0 Conclusions

This project responds to a gap in the vocational education and training (VET) system by developing a Māori Forestry Leadership VET Framework that, in addition to testing the Māori Leadership Development Framework (Tautoko Toolkit), would support development of an appropriate range of Māori forestry leadership study programmes.

The **literature review** highlights the depth and diversity of indigenous leadership systems, with a strong focus on traditional Māori models and their continued relevance in contemporary forest and environmental management. Māori leadership, as exemplified through the roles of ariki, rangatira, tohunga, and kaumātua, is relational, spiritual, and deeply grounded in whakapapa. These roles are not just hierarchical positions, but expressions of responsibility, stewardship, and intergenerational knowledge transfer.

Traditional Ecological Knowledge (TEK), and Indigenous Knowledge Systems (IKS) more broadly, offer holistic frameworks for environmental management that are increasingly recognised for their value in addressing biodiversity loss, climate change, and sustainability challenges. However, these systems remain underrepresented in mainstream science and policy. Decolonising science and leadership education is essential to allow indigenous worldviews to be fully expressed, validated, and centred in decision-making.

Indigenous conceptual frameworks position forests not merely as economic resources but as living systems with cultural, spiritual, and ecological value. Leadership within these frameworks is about maintaining balance—between people and the environment, between past and future, and between diverse knowledge systems. Integrating such perspectives into forestry management can foster more adaptive, equitable, and resilient approaches.

Global examples of indigenous leadership development programmes reinforce the importance of community-led, culturally grounded education. These programmes build leadership capacity by embedding local values, supporting identity, and connecting learners to land and community.

The **international interviews** with leaders from Sápmi, Hawai'i, Aotearoa, and Turtle Island (North America) also show that indigenous leadership is not monolithic—it is responsive, diverse, and rooted in context.

Taken together, the research affirms the significance of culturally informed leadership development in the forestry and environmental sectors. It also provides a strong foundation for the design and implementation of the Ngā Pou ā Tāne Māori leadership model, which should be grounded in mātauranga Māori, relational accountability, and the principles of intergenerational stewardship.

NPAT VET Intervention Model: Informed by both the literature and international perspectives, an intervention model is developed that provides specific framing and priorities for Māori Forestry Leadership development, design and implementation. The model is comprised of three parts:

- Key Cultural Leadership Framing: Māori Forests
- Applying the Framing: Concepts of Te Whakatakoto I te Whāinga, which outlines the key strategic vision and purpose of the NPAT VET Māori Forestry Leadership Programme, Ngā Mataapono (cultural values), Te Mātauranga (prioritised knowledge bodies) and Te Ako (Learning and Teaching Methods).
- Key Guiding Principles: Forging New Educational and Training Pathways for Māori Forestry

A preliminary analysis of the Tautoko Kit has compared key course components of the Tautoko Toolkit (past present and future) with the six key elements from the NPAT VET Māori Leadership Framework Cultural framing.

The above deliverables contribute to phase two of the project which focuses specifically on testing the Tautoko Tool Kit with a range of Māori forestry leaders and emerging leaders.

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Supporting documents

Appendix A: TEK Case study links

Examples of TEK and Scientific Ecological Knowledge (SEK) include those listed below, and selected case studies are explored further in the following slides.

- Two-Eyed Seeing (short video)
- Linking Traditional Ecological Knowledge and Western Science
- The Three Sisters (chapter from Braiding Sweetgrass)
- The Fortress, The River, and The Garden
- Allies of Indigenous Science
- The Menominee Forest Management
- Using Traditional Ecological Knowledge in Science: Methods and Applications
- Traditional Ecological Knowledge: The Third Alternative (Commentary)
- Rediscovering the Potential of Indigenous Storytelling for Conservation Practice
- Watchers of the Pleiades: Ethnoastronomy among Native Cultivators in Northeastern North America
- The Politics of Tek: Power and the "Integration" of Knowledge
- TEK reveals the extent of sympatric lake trout diversity and habitat preferences
- Sacred Land Film Project
- Tending the Wild
- Reclaiming the Honorable Harvest: Robin Kimmerer at TEDxSitka
- Robin Kimmerer - Mishkos Kenomagwen: The Teachings of Grass | Bioneers
- A Record of Change: Science and Tribal Elders
- What Indigenous Communities are Teaching Scientists about Nature
- Native Perspectives on Sustainability
- Cultural Keystone Species: Implications for Ecological Conservation and Restoration
- Native Knowledge for Native Ecosystems
- Research Review Checklist for American Indian and Alaska Native Communities
- Guideline for respecting cultural knowledge

Appendix B: Indigenous Conceptual Framework Descriptions

14.1 Indigenous Leadership – Sacred Circle of Life (Canada)

The Sacred Circle of Life model was developed by the Banff Centre for Arts and Creativity as part of its Indigenous Leadership Program. While the exact date of its formal introduction is not specified, the model reflects nearly 50 years of evolving leadership development grounded in Indigenous knowledge systems. It draws particularly from the Seven Grandfather Teachings and the Wise Practices model. Integrating traditional Indigenous values with contemporary leadership practices, the model offers a culturally relevant framework for building leadership capacity, managing resources, and supporting sustainable development. It emphasises interconnectedness, respect, and the cyclical nature of life (Banff Centre for Arts and Creativity, n.d).

The Sacred Circle of Life model is structured around several concentric circles, each representing different aspects of Indigenous knowledge and practice.

1. **Inner Circle: Right Relations**

This circle embodies the foundational principles that underpin all activities within the model. It mirrors the Seven Grandfather Teachings, which include wisdom, love, respect, bravery, honesty, humility, and truth. These teachings guide interactions and relationships, ensuring they are conducted with integrity and respect (Banff Centre for Arts and Creativity, n.d).

2. **Middle Circle: Wise Practices**

The middle circle outlines the seven elements of success. These elements are derived from best practices in Indigenous leadership and governance.

- Identity and culture
- Leadership
- Strategic vision and planning
- Governance and management
- Accountability and stewardship
- Performance evaluation
- Collaborations, partnerships and external relationships

3. **Outer Circle: Program Implementation**

The outer circle lists various certificate level programmes and species initiatives designed to implement the principles and practices outlined in the inner circles.

Figure B.1 Indigenous Program Model: Sacred Circle of Life (Banff Centre for Arts and Creativity, n.d.)

14.2 Indigenous Education – First Nations Holistic Lifelong Learning Model (Canada)

The First Nations Holistic Lifelong Learning Model is a framework that illustrates the interconnectedness of lifelong learning and community well-being for First Nations people, where experiences and relationships are circular, cumulative and holistic. The model was developed through collaboration and conversations with First Nations, Inuit and Métis learning professionals and researchers. This model is depicted as a living tree, symbolizing the growth and development of individuals through various stages of life, supported by their community and environment (The Assembly of First Nations, 2007; Canadian Council on Learning, 2007).

1. **Sources and Domains of Knowledge**: The roots of the tree represent the foundational sources of knowledge, including Indigenous knowledge, languages, traditions, ceremonies, and the natural world. These roots nourish the learner and are essential for balanced growth.
2. **Learning Rings**: The trunk of the tree is composed of concentric rings, each representing different stages of learning from early childhood to adulthood. These rings highlight that learning is a continuous, lifelong process that evolves over time.
3. **Social and Physical Environments**: The branches and leaves of the tree symbolize the social and physical environments that influence learning. This includes family, community, Elders, mentors, and the broader societal context. These elements provide support, guidance, and opportunities for learning.
4. **Holistic Approach**: The model emphasizes a holistic approach to learning, integrating spiritual, emotional, physical, and mental dimensions. This approach ensures that learning is not just about acquiring knowledge but also about achieving overall well-being and balance in life.
5. **Intergenerational Learning:** The model underscores the importance of intergenerational learning, where knowledge and wisdom are passed down from Elders to younger generations. This process strengthens cultural continuity and community bonds.
6. **Community Well-being**: The ultimate goal of the model is to enhance community well-being. By fostering lifelong learning, individuals contribute to the health, prosperity, and resilience of their communities.

First Nations Holistic Lifelong Learning Model provides a comprehensive and culturally relevant framework for understanding and supporting lifelong learning within First Nations communities. It highlights the importance of integrating traditional knowledge with formal education to create a balanced and meaningful learning experience (Canadian Council on Learning, 2007).

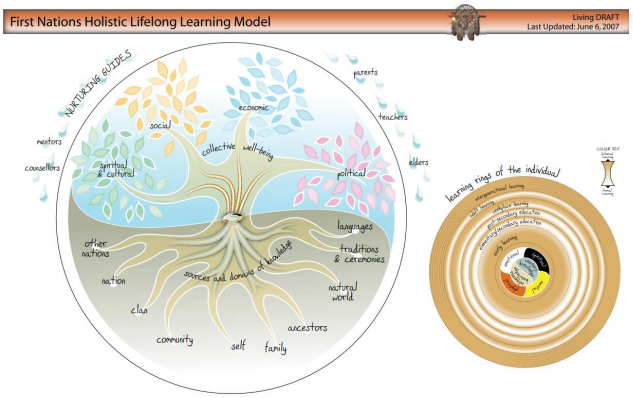


Figure B.2 First Nations Holistic Lifelong Learning Model (Canadian Council on Learning, 2007).

Indigenous Education – Métis Holistic Lifelong Learning Model (Canada)

Like the First Nations Holistic Lifelong Learning Model, the Métis Holistic Lifelong Learning Model is a framework that represents the interconnectedness of lifelong learning and community well-being for the Métis people. The Métis people live in the prairie provinces including those of Manitoba, Saskatchewan and Alberta. This model is visualised as a living tree, symbolising the growth and development of individuals through various stages of life, supported by their community and environment (Canadian Council on Learning, 2007).

The model emphasizes the importance of both formal and informal learning. Formal learning includes structured education systems such as early childhood education, elementary, secondary, and post-secondary education. Informal learning encompasses traditional practices, knowledge of languages, and cultural activities that are passed down through generations (Canadian Council on Learning, 2007).

Key components of the model include:

1. **Sources of Knowledge & Knowing:** This encompasses Indigenous knowledge, values, and the natural environment. It highlights the importance of learning from the land, traditional practices, and the wisdom of Elders.
2. **Learning Rings:** These rings represent different stages of learning, from early childhood to adulthood. Each ring is interconnected, showing that learning is a continuous process throughout life.
3. **Social and Physical Environments**: The model acknowledges the role of family, community, and the broader social and physical environments in supporting lifelong learning. It emphasizes the need for a supportive and nurturing environment for optimal learning and growth.
4. **Balance & Harmony:** The model stresses the importance of maintaining balance and harmony in all aspects of life, including spiritual, emotional, physical, and mental well-being. This holistic approach ensures that learning is not just about acquiring knowledge but also about living a good life.
5. **Economic and Political Environments:** These elements recognize the impact of economic and political factors on learning opportunities and outcomes. The model advocates for equitable access to learning resources and opportunities for all members of the Métis community.

Overall, the Métis Holistic Lifelong Learning Model is a model which provides comprehensive and culturally relevant framework for understanding and supporting lifelong learning within the Métis community. It underscores the importance of integrating traditional knowledge and practices with formal education to foster a well-rounded and meaningful learning experience (Canadian Council on Learning, 2007).

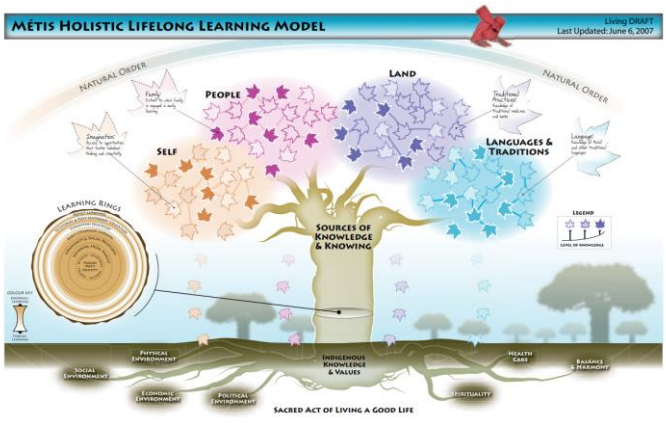


Figure B.3 Métis Holistic Lifelong Learning Model (Canadian Council on Learning, 2007).

14.3 Indigenous Education – Umeek Narratives (Canada)

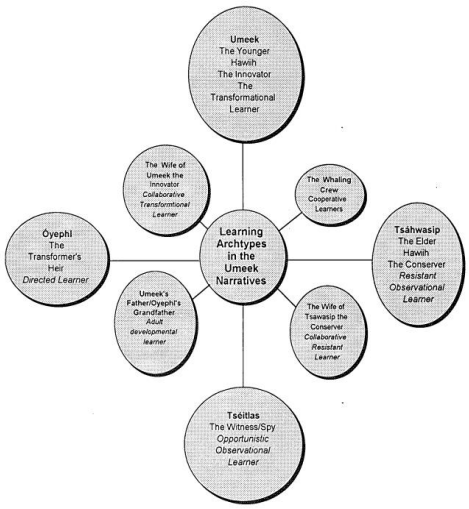
The Umeek Narratives Learning Model (Atleo, 2001) draws on Nuu-chah-nulth storywork to reveal Indigenous learning principles. The Nuu-chah-nulth Nation is located on the west coast of Vancouver Island in Canada. The model creates and understanding the Umeek learning orientations and archetypes emerged balancing innovation and conservation. Eight archetypal learners are identified which balance innovation and tradition. The learning is rooted in relationships, ritual, place and ancestral knowledge, emphasising transformation, collaboration and cultural continuity within a holistic, community-centred educational framework (Atleo, 2001).

This model draws on Umeek traditional stories to develop key leadership archetypes that are relevant to their own nation. The eight archetypal learning models are:

1. **Innovation Transformational Learner:** embrace change and innovation
2. **Collaborative Transformational Learner:** works with others to bring about change
3. **Directed Lineage Learner:** follows traditional paths and guidance from ancestors
4. **Developmental learner:** focusses on personal growth and development
5. **Cooperative learner:** values teamwork and collective effort
6. **Resistance observational learner:** learns by observing and sometimes resisting change
7. **Collaborative resistant learner:** works with others while maintaining a critical perspective
8. **Opportunistic observational learner:** seizes learning opportunities through observation.

The Umeek narratives place importance on intergenerational learning, with the involvement of grandparents (foundation of learning), ancestors and partnerships with the learning emphasising the importance of cultural practices and beliefs. These cultural practices include oosumch (ritual bathing) and sacred sites. Partnerships provide the opportunities for collaboration.

Current and future education benefit from First Nations educational theory and learning models that are operating in communities. Umeek narratives are important in de-colonising First Nations sensibilities in the process of self-determination in education, consulting, life career development and healing (Atleo, 2001).



Umeek, the *y?uk"iiqsu:* Innovator and Transformational Learner

Figure B.4 Learning Archetypes of the Umeek Narratives (Atleo, 2001).

14.4 Indigenous Based Learning – Gregory Cajete (USA)

The work undertaken by Gregory Cajete emphasises the relevance of holistic, relational and life centred approach to learning, rooted in Indigenous worldviews that honour the interconnectedness of all life and reciprocal relationships between individuals, communities and the natural world (Cajete, 2023).

Indigenous education is approached with a holistic, relational and life centred approach. Learning is for Indigenous communities is creative, continuous and spiritually rooted in community, nature, historical awareness, ancestral traditions and cultural identity. Education is more than learning, it is about participating in life, fostering relationships and sustaining cultural continuity (Cajete, 2023).

In his article "*American Education from a Tribal Perspective*" encourages the return to Indigenous principles, in that they offer powerful models for addressing the ecological, social and spiritual crises of the 21st century (Cajete, 2023).

Indigenous thought is becoming more relevant as the world faces different challenges to the environment and sustainability. Indigenous thought includes:

- **Axiology:** values lies in balance of relations
- **Epistemology:** observing, doing, making, symbolising, rhythm, ritual and ceremony
- **Logic:** all elements and beings of the multiverse are linked together
- **Process:** working with the understanding that all things are dependently interrelated in the harmony and balance of the multiverse

Indigenous science and Indigenous knowledge are deeply rooted in a holistic, relational worldview that contrasts sharply with Western scientific paradigms. Cajete explores these works in his book *Native Science: Natural Laws of Interdependence* and describes these as:

Indigenous Science: A "multi-contextual" system of thought, action and orientation applied by an Indigenous people through which they interpret how Nature works in their "place"

Indigenous Knowledge: the "high-context" body of knowledge built up over many generations by a cultural distinct people living in close contact with a "place", for example its plants, animals, waters, mountains, deserts.

Cajete's work uses the metaphor of Mayan pyramids – structures built upon older foundations, to illustrate how Indigenous education evolves by honouring ancestral knowledge while adapting to contemporary realities. His influences on an Indigenous education, offers a visionary framework that bridges traditional knowledge with modern education challenges, with a goal of education "for life's sake" (Cajete, 2023).

Cajete outlines 24 foundational elements of Indigenous education, including the reverence for nature, the sacredness of language, learning through ritual and community and the use of story and art as teaching tools. These elements reflect a worldview where education is a lifelong journey of growth, transformation and service (Cajete, 2023).

"**What kind of ancestor do you want to be?" - Gregory Cajete.**

Within this presentation at the Centre for Global Humanities, Gregory Cajete explores Native Science and Indigenous knowledge

Indigenous Education – Indigenous Stages of Developmental Learning Model - Gregory Cajete (USA)

The Indigenous Stages of Developmental Learning model as described by Greg Cajete in 1994, reflects a lifelong, cyclical process of learning that integrates personal, communal and ecological dimensions. The model is rooted in tribal American educational traditions, particularly those of Pueblo and other Indigenous communities of North America, including Cajete's own Tewa heritage from Santa Clara Pueblo, New

Mexico (Cajete, 1994).

The model is grounded in Indigenous educational philosophy, highlighting the lifelong journey toward a central goal found in many Indigenous worldviews. It honours the individual's spirit, emphasizes cultural continuity, and reflects the interconnectedness of all life. At its heart is the concept of "the Centre," symbolising wholeness, spirituality, and the harmony that guides personal and communal balance. This core principle shapes eight interconnected stages of learning and growth, each contributing to a holistic and meaningful life journey (Cajete, 1994).

The eight stages are:

1. **Basic Learning**: begins before birth, focuses on familial bonds, cultural orientation, and a sense of place.
2. **Societal Education**: introduces survival skills, tribal history and environmental living.
3. **Myth, Ritual and Ceremony:** Integrates individual and communal needs through initiation and tradition.
4. **Integration with Tribal Culture:** marks a midpoint of cultural immersion, personal empowerment and maturity.
5. **Visioning:** involves seeking life purpose and developing mythical thinking, fostering deep relational understanding.
6. **Individuation**: is a transformative phase of inner exploration, often marked by struggle, disintegration and eventual healing.
7. **Enlightenment and Wisdom**: brings profound health and spiritual insight, aligning body, mind and spirit.
8. **Transformational Understanding**: completes the cycle, returning the individual to the centre with renewed wholes and spiritual clarity.

This Indigenous framework offers a powerful alternative to Western education paradigms, by centering spiritual growth, relational learning and cultural identify.

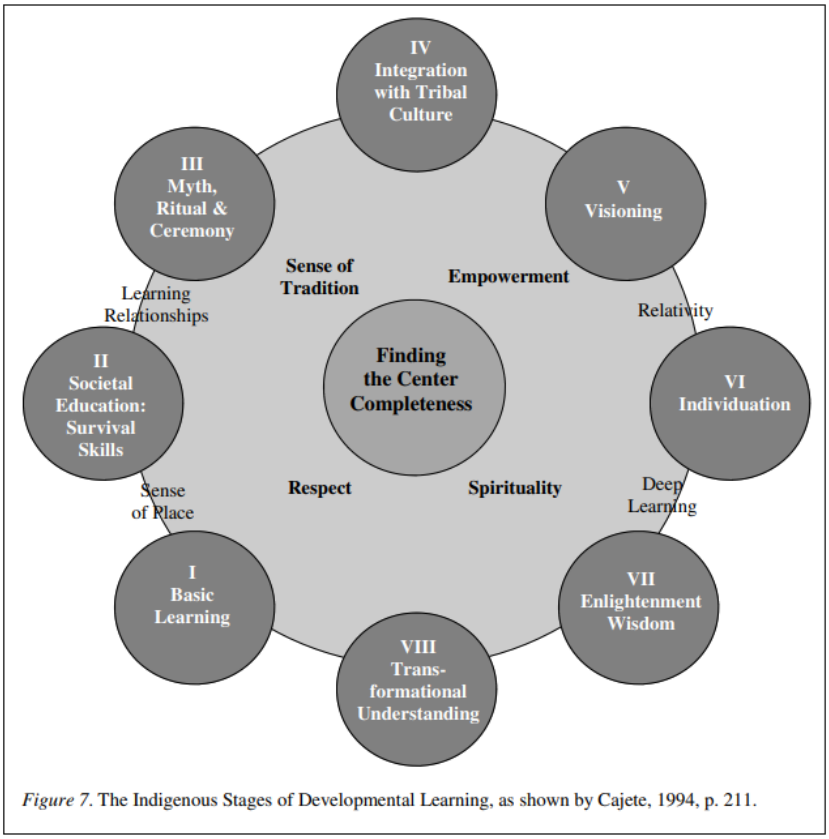


Figure 7. The Indigenous Stages of Developmental Learning, as shown by Cajete, 1994, p. 211.

Figure B.5 The Indigenous Stages of Developmental Learning, (Cajete, 1994)

14.5 Forests Managed by Indigenous Communities - Whitefeather Forest Initiative (Canada)

The Whitefeather Forest Initiative is an economic renewal initiative created by the elders of Pikangikum First Nation. The forest is located in the ancestral lands of the people of Pikangikum in Northwestern Ontario and includes boreal forest and extensive wetlands. The mandate is to create employment and training opportunities for Pikangikum youth via the Whitefeather Forest products enterprise (AborVitae Environmental, 2018).

Vision – *To maintain the Whitefeather Forest for future generation via indigenous light-footprint stewardship that supports a healthy and sustainable economy.*

Mission – *To develop training and employment opportunities for Pikangikum youth via a Whitefeather Forest products enterprise*

The Whitefeather Forest Initiative was developed in 1996, and since that time the community has engaged in an extensive process to develop wood products business that uses the wood from Whitefeather Forest (AborVitae Environmental, 2018).

The Pikangikum people have maintained biological diversity of the landscape, nurturing greater abundance and diversity. The success has lay in the customary indigenous resource stewardship practices and management techniques supported by rich Indigenous Knowledge tradition and is a cultural landscape of international ecological significance (AborVitae Environmental, 2018).

The intention of the Pikangikum First Nation is to provide economic opportunities while protecting the rich ecological and cultural heritage of the ancestral forests with a focus on "**Advancing reconciliation through sustainable forest management".**

Everything that you see in me, it is the land that has moulded me. The first have moulded me. The animals and everything that I have eaten from the land has moulded me, it has shaped me. I believe every Aboriginal person has been moulded in this way. Elder Whitehead Moose.

Indigenous Forestry Management - Whitefeather Forest Initiative (Canada)

Central to the Whitefeather Forest Initiative is the 'Keeping the Land' (*Cheekahnahwaydahmungk Keetahkeemeenaan*) Land Use Strategy document. The vision for the Whitefeather Forest peoples is:

A future in which Beekahncheekahmeeng paymahteeseewahch are able to maintain our ancestral stewardship responsibilitlies for Keeping the Land (Cheekahnahwaydahmunk Keetahkeemeenahn) for the continued survival and well-being of Pikangikum people.

The vision honours the teachings of Pikangikum Elders, who guide the community in caring for their ancestral lands, seen as a sacred gift from the Creator. These lands sustain their traditional way of life and livelihood. Through Indigenous Knowledge and stewardship practices passed down through generations, the Pikangikum people maintain a deep, spiritual relationship with their lands and waters. The Land Use Strategy, "Keeping the Land," aims to preserve this connection while integrating new land use activities. These will align with traditional practices, ensuring that development respects and continues the *Ahneesheenahbay kahnahwaycheekahwin* way of life and customary stewardship values (AborVitae Environmental, 2018).

The image was created to express the vision of the Pikangikum First Nation and symbolises the speaks of the ancient teaching of ancestors. It expresses the deep respect for the Creator (*Keeshaymahneetoo*) who created the lands, the water, the different creatures every flying creature and everything that exists.

Keeshaymahneetoo also created the *Ahneesheenahbek* who were placed on the lands to maintain a sustainable way of life from the land.

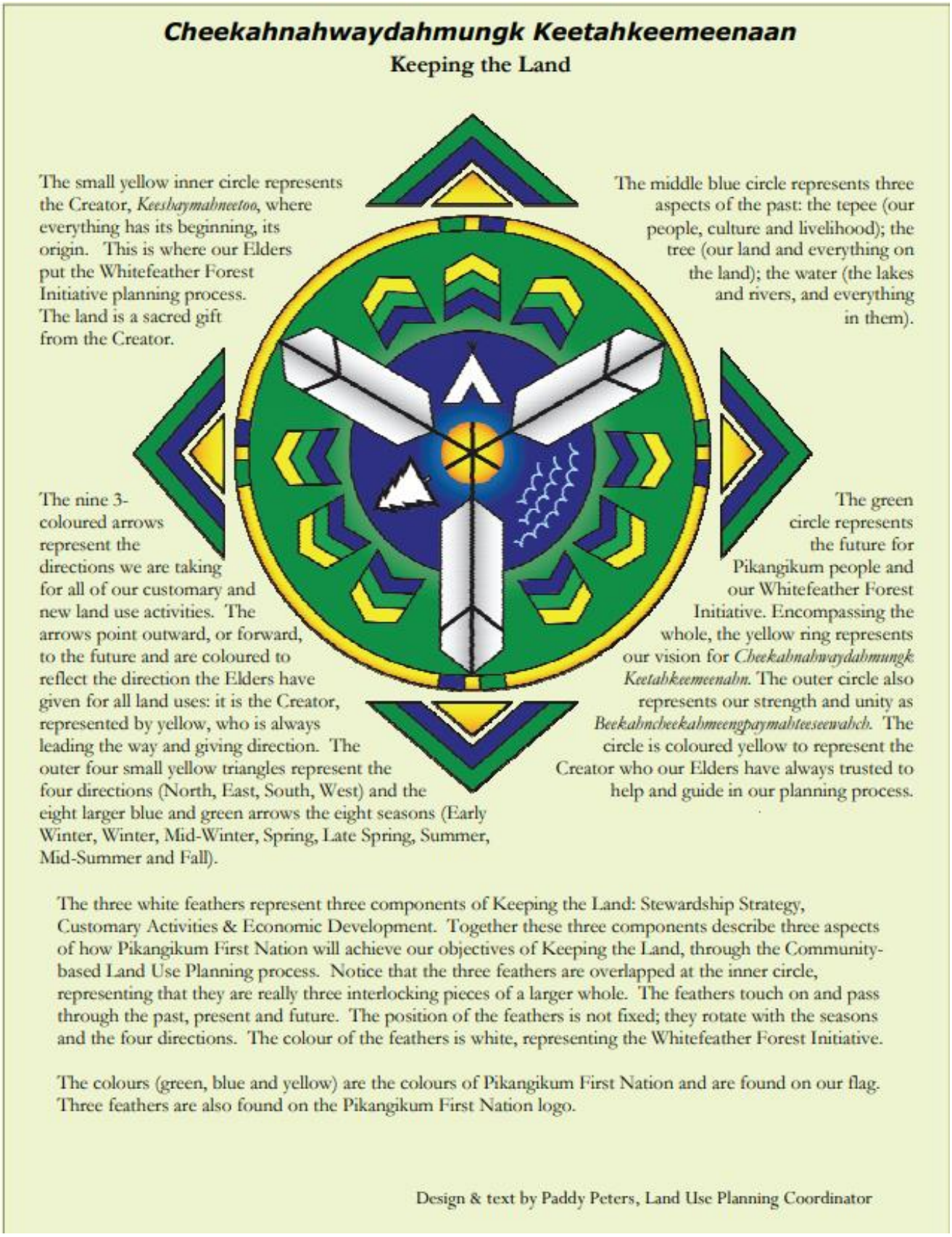


Figure B.6 Cheekahnahwaydahmungk Keetahkeemeenaan, Keeping the Land, Whitefeather Forest Initiative (AborVitae Environmental Services Ltd, 2018)

14.6 Forests Manged by Indigenous Communities - Non-timber Forest Product Management and Sustainability, Missanabie Cree First Nation (USA)

Non-timber forest products (NFTPs) are crucial to the spiritual and cultural identity of Indigenous communities, while playing a significant role in traditional economies (Palaschuk, et al. 2024). While forestry management in Canada has yet to fully and effectively incorporate local and traditional knowledge into forest policy and planning, progress is being made. Community research of the Missanabie Cree First Nation (MCFN)—a distinct Mushkegowuk community and member of the Tribal Council in northeastern Ontario—has conceptualised local values and management approaches surrounding non-timber forest product (NTFP) development and conservation (Palaschuk, et al., 2024).

Recent research into Indigenous participation in forest management found two main challenges (Robinson et al., 2024):

1. How forestry decisions are made, and the perception of many Indigenous people that current processed are still far from constituting meaningful consultation.
2. Indigenous people's concerns of sustainability forestry practices beyond the spatial boundaries of forest management units and the administrative/sectoral boundaries of forestry.

Criteria and indicators (C&I) have emerged as a method to conceptualise, monitor, assess and report on sustainable forest management. C&I are efficient, consistent, transparent and scientific and impartial (Lisner, et al., 2018). In Canadian forest management, C&I processes have shifted from sustainable yield (mostly of wood) towards Indigenous values and holistic conceptualisation of Sustainable Forestry Management (Lisner et al., 2018).

NFTP produced by the MCFN include (Palaschuk, 2018):

- Medicinal plants (labrador tea, sweetgrass, cedar, spruce gum)
- Edible plants and berries (blueberries, raspberries, chokecherries, wild rice)
- Craft and cultural materials (birch bark, willow and spruce roots, moss and lichen)
- Fungi and mushrooms (chaga and morels)

The importance of community based criterial and critical local values has allowed for MCFN to overcome the reductionist tendencies of conventional methodologies. Six criteria (productive capacity, health, conservation and protection, long-term management benefits, community participation, capacity of institutions), 18 associated elements and 239 critical local values which span the maintenance and enhancement of NTDPs are captured in a circular model (Palaschuk et al., 2024).

Each component of the circular model and its connectivity is outlined below.

1. **Maintenance & Enhancement of the Productive Capacity of NTFPs**: It is important to sustain NTFPs without exceeding productive capacity, which could deplete NTFPs and undermine forest ecosystems, thereby impacting the MCFN community. To this end, participants highlighted three main elements: wise practice in policy & planning, sustainable harvesting practice and management systems, and cultivation/propagation of NTFPs.
2. **Maintenance & Enhancement of NTFP Health**: Taking into account anthropogenic disturbances like NTFP extraction, this focuses on maintaining NTFP and forest health, which forms the baseline for sustainable forest use. The community voices the need for protective measures for ecosystems, including protection and monitoring of soil conditions and allowing forest regeneration time prior to implementing new NTFP harvesting initiatives.

3. **Conservation & Protection of NTFPs**: Noting the impact of forestry practices on NFTPs, the community calls for conservation measures that protect NTFPs but also ecosystem processes and habitats. This includes conservation of biodiversity, prioritizing traditional medicines, preserving species at ecological risk, maintaining plant and habitat diversity, and conserving non-timber forest resources within the MCFN traditional territory.
4. **Enhancing Long-Term Benefits From Sustainable NTFP Management**: This entails cultivating a sustainable NTFP management system that offers long-term benefits to the community.

Participants also emphasized the role of local economic development and the potential for economic diversification through NTFP-based livelihoods.

1. **Maintenance & Enhancement of Community Participation in the Management of NTFPs**: Bringing together Indigenous communities and Traditional Knowledge in forest management planning, the report emphasizes the importance of improving community well-being and resilience. It underscores the importance of building a resilient community and enhancing individual well-being by strengthening roles community members play in NTFP management and conservation.
2. **Strengthening Legal and Policy Infrastructure**: Last but not least, securing land ownership rights was perceived as a precursor to establishing a strong legal and policy framework for sustainable NTFP management. Participants also stressed the need to incorporate conservation policy into the sustainable NTFP management policy and that local land use regulations should be internally deliberated, developed, and implemented.

To conclude, the report suggests that achieving sustainability in NTFP management for the MCFN lies in a combination of maintaining and enhancing NTFP health and productive capacity, adopting robust conservation efforts, aiming for long-term benefits, encouraging community participation in management, and fortifying the legal and policy framework (Palaschuk et al.,2024).

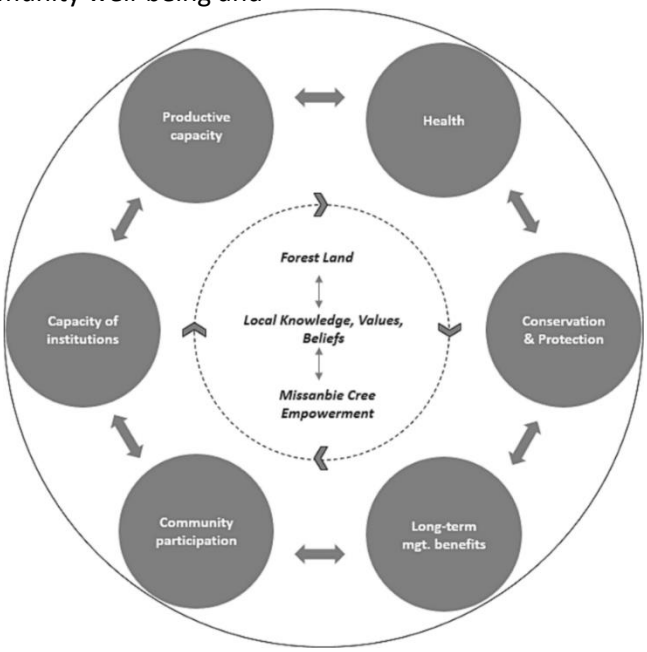


Figure B-7. Circular Model Capturing Elements and Values of NTFPs (Palaschuk et al., 2024).

Appendix C: Case Study Waitakere Ranges

The following section provides an example of forests managed by indigenous communities, in the case of kauri dieback in the Waitākere Ranges, Auckland/Tamaki Makaurau.

Waitākere Ranges Case Study

Rāhui to protect the Waitākere Ranges from kauri dieback disease (Auckland, New Zealand)

The Waitākere Ranges (Te Wao Nui ā Tiriwa – the great forest of Tiriwa) lies on the west coast of Tamaki Makaurau / Auckland to the north of the Manukau Harbour. The area holds significant cultural and spiritual values for mana whenua.

The kaitiaki (guardianship) iwi Te Kawarau ā Maki maintains identity, mana, tikanga, rights and responsibilities to the lands, natural resources and taonga of the Waitākere Ranges Heritage Area.

The Waitākere Range Heritage Area covers approximately 27,700 ha of public and private land and in 2008 the Waitākere Ranges Heritage Area Act was passed to promote the protection and enhancement of heritage features for the present and future generations. (Auckland Council, 2025a) (Figure C-10.1).

One of the keystone species of the Waitākere Ranges is the Kauri tree. Kauri are tupuna (ancestors) and the rangatira (chiefs) of the forest, with their health linked to the health of numerous other plants and animals within the ecosystem, and to the intrinsic health of iwi (Auckland Council, 2019). Kauri forests play a critical ecological role as foundational species directly influencing the forest structure and contributing to habitat for other species (Beever et al., 2009).

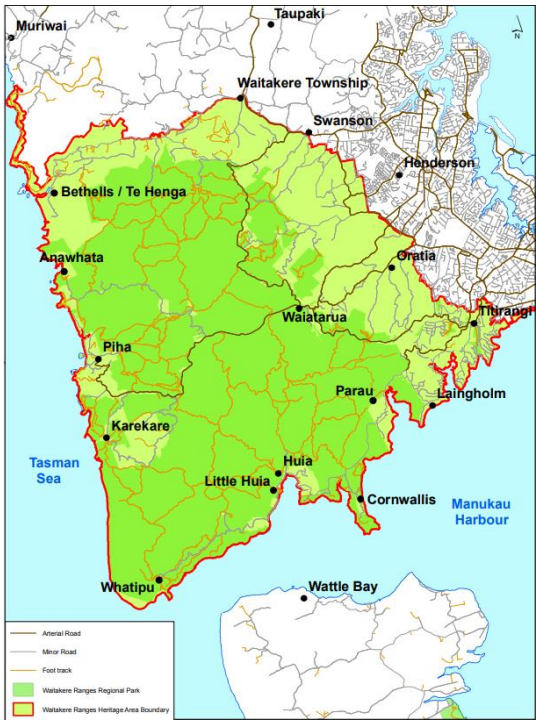


Figure C-10.1 Waitakere Ranges Regional Park and Heritage Area boundaries

Among the most pressing environmental threats to the Waitākere Ranges today is the spread of Kauri dieback disease. Kauri dieback is a soil-borne disease that causes yellowing leaves, thinning canopy, dead branches, peeling bark, and below ground, lesions on the roots and trunk base. In severe cases the tree will die. Treatment has been challenging, with some treatments helping to delay the disease, however, there is no known cure for the disease (DoC, 2025).

Te Whakaora o ngā Kauri is a project that explored how rongoā Māori (traditional Māori healing practices) could fight against Kauri dieback. The project sought to use mātauranga Māori (Māori knowledge) and science applied together using kaupapa Māori research approaches to develop and test innovative holistic treatment (Te Tira Whakamātaki, 2025).

The outcome of the project was tangible evidence that rongoā Māori could offer a viable, non-chemical treatment option for Kauri dieback. Through the rongoā Māori

approach for a solution, the cultural and spiritual connections between people, whenua (land) and the ngahere (forest) were strengthened. This provided proof of the power of combining rongoā Māori with scientific approaches a valid took for the future and protection of Aotearoa's forests (Te Tira Whakamātaki, 2025).

Another approach to protect the forest and reduce the spread of kauri dieback was implemented by Te Kawarau ā Maki placed a rāhui over the Waitākere Ranges in 2017 to protect the forest from the spread of Kauri dieback, followed by Controlled Area Notices (CANs) placed by Auckland Council in May 2018.

A rāhui is a form of Māori environmental management utilised by iwi leaders to modify human behaviour and engagement for the purpose of protecting a taonga (treasure), such as the Waitākere Ranges. The rāhui seeks to allow nature time to re-establish balance, or its natural or desired state. The rāhui reflects deep cultural values of kaitiakitanga and has helped raise awareness about the ecological fragility of the Waitākere Ranges.

The rāhui covers over 3,360 ha of public reserve and private land and is under active community stewardship (Auckland Council, 2023). To support the rāhui, the Auckland Council Natural Environment Targeted Rate (NETR) has provided funding for track upgrades to help safeguard the surrounding trees, surveillance and monitoring (Auckland Council, 2025b), and legal prosecutions (New Zealand Herald, 2019).

The Waitākere Ranges Heritage Act (2008) specifies that governances and responsibilities are shared between the governing body of Auckland Council, three local boards and mana whenua (Te Kawarau ā Maki and Ngāti Whātua). In early 2025, a proposed Deed of Acknowledgement between the Crown, Auckland Council, and tangata whenua was presented and opened for feedback. The Deed of Acknowledgement aims to formalise the co-governance and long-term protection of the Waitākere Ranges (Te Wao Nui o Tiriwa), with the outcome of submissions and formal process still to be finalised (Auckland Council, 2025c).

Photograph C-10-1 View of the Waitakere Ranges (Photo credit: M. Tupe)

Appendix D: International Interviews

Sámi Forest Keeper, Norway

Background: This interviewee has had a long and impactful career. In addition to being a reindeer keeper, he has developed a broad range of expertise in advocacy, legislation, and the rights of indigenous people. Much of his career has been spent influencing legislation and policy at a range of levels including tribal, organizational, national, and political.

As Sami, above all is the importance of the land and the reindeer. The Sami practice reindeer husbandry and move seasonally with the herd. Reindeer graze in the mountains in the summer and migrate to the forests and lowlands in autumn. The reindeer need old forests with abundant lichen and mushrooms on which to feed. Although they don't own the forests, the Sami people hold customary rights to use the forests. They have well established political structures, through the Sami Parliament and Sami Council systems which connect to district and community groups.

The Sami people face many challenges, and their way of life is increasingly difficult to defend. Fragmentation of the land is a major issue which is driven by many reasons including roads, infrastructure, windmill farms, and climate change causing loss of land in the Arctic.

Indigenous models / frameworks: The interviewee described the important considerations that guide him as 'the Sami wheel of existence'. This is centred on the land, where the land is everything, 'the land is us'. It considers the culture and language which is associated with connection to place. Time, the unbroken connection to ancestors through stories and narrative and hope for a new generation. The spirit, the self, and health that is a wholistic health - health of the family, health of the environment, health of the herd to find harmony, balance and resilience.

Against a history of cultural trauma, and with forest fragmentation posing a growing threat to the ways and practices of Sami people, the interviewee described leadership types and characteristics as follows:

- Cultural leader: These leaders are the defenders of the Sami language and culture (art, music). They are leading the cultural renaissance and navigating how to preserve the traditional way of life and repair the trauma from the past. This type of leader is often tied to the individual, where the Sami have few shared cultural ceremonies.
- Political leader: These leaders advocate for Sami reindeer husbandry rights. They travel to international forum, and must be au fait with regulations, international law.
- Village/ Community leaders: These leaders practice reindeer husbandry, they migrate with the reindeer, provide for their families, and see that husbandry is carried out in a traditional way. For this, they must be flexible, knowledgeable, adaptable and have endurance to manage the herd and their families throughout the year. It is also their role to protect their traditional lands against threats such as wind farm development, mining, and utilities construction. For this, they must be knowledgeable in the rights and interests of the Sami people so that they may influence and negotiate their land rights. The community leaders must understand and operate within a very complex world, with competing, simultaneous demands.
- Emerging leader: Many young people are taking back their language, and often the young generation leaders are comfortable raising their voices more than previous generations.

Differences in gender roles were acknowledged where there are different traditional gender roles, but these are often complimentary and create a balance between men and women. Often it is the women who will work to supplement the income from reindeer, and many are very well qualified. This helps to maintain a balance in knowledge, where both traditional knowledge and western knowledge are used.

Leadership development through recruitment, training, and retention: There are training schools for reindeer husbandry that young people attend, at place leaders are developed in these forums. Beyond, some also attend Sami Allaskuvla - Sami University of Applied Sciences, Norway a new higher training and education institution. An emerging pattern is for women to attend these institutions then return to husbandry. Broad skillsets are valued, often leaders that emerge are those with a combination of personal skills in addition to being herd owners.

Tribal members and young people tend to stay because of a well-developed sense of belonging. They take pride in assisting their communities, and pride in being a steward of that culture, their place, and their history. *"There is pride in being a part of the community, to show commitment to assisting their Sami brothers and sisters, to help, and to be a steward of the land."*

Success indicators: Reindeer husbandry needs multi-faceted leaders who hold knowledge across all areas. A good leader needs to fulfil each touch point in the existential wheel; political, social, environmental, health, self, reindeer, and land. They will need to advocate for Sami people across all levels and fight for the sustainability of land to continue husbandry. In doing so, they must also balance their response to manage these sensitive issues (such as windfarms that reduce greenhouse gas emissions) that are important for wider society.

New Mexico Tribe Member, USA.

This interviewee is of a New Mexican tribe has a technical background in applied science. She is a PhD student studying geospatial data systems of forests owned and managed by Indigenous communities in the USA. She is also actively on a journey of learning her language and culture. Currently, working alongside her own community contributing knowledge related to her technical skill area.

The environment and trees hold an important role in the survival of the people and the trees face a range of environmental issues and challenges, particularly in relation to the ongoing drought, such as bark beetle, and fire risk. While the local forest is managed by government entities, her tribe is within a community of tribes that share insights, resources and knowledge. Her focus in the interview was primarily, but not exclusively, from the perspective of technical leadership.

Indigenous models: The participant has a clear understanding of her place within the community and limitations on her ability to speak on behalf of her tribe. On a personal level, she spoke of:

- Love of the place, the world around, for deeper understanding, balance and harmony.
- Spirituality, the cultural sacred space of dance, song, prayer, artwork, narrative, and living alongside her relatives in nature (plants, insects).
- Supporting and nurturing the youth (particularly in relation to her own son) and building culture into her son's future.
- Bringing western and traditional worlds together through technological advancements. A recognised need for the traditional world to adapt to a changing modern world.

Leadership styles within the tribe included:

- Elder leaders (Council of elders): Tribally nominated, these people are respected within the community for being an expert in traditional ecological knowledge. The council leads the tribe, holds the connection with the spirit world, and has the entire tribes' interests at heart. They

know the language and the tribal history/stories and ways of being and knowing. They make decisions based on this knowledge and are guided by the legacy that they need to uphold and to find balance and harmony with the natural world.

- Indigenous Technical Leader: These leaders occupy the in-between space where they are not an elder, but also not young, and are still learning traditional ways. They may be recognised in the western world but not in the traditional world. These leaders must also understand the roles and responsibilities of being a tribal member as a younger person, show respect for the elders, and know the gender roles and how to support each other
- Youth – The youth occupy an important space, that represents the future, and so they must be healthy and nurtured. They may be able to support the tribe through technical skills and expertise. Younger generations are learning the language, which is an important aspect following the loss of language in previous. They must also show humility, respect for elders, respect for tradition, sometimes bold, likely to be challenging the western science way (given traditionalism).
- Activism – These leaders respond to the challenges and threats facing the tribe and their lands. Fighting for water rights, and to protect people and the land against government activities that threaten to damage the land. This is spurred by a respect for traditionality, a love for the grandmother earth and prioritised considerations for wellbeing.

The participant described roles associated with seasonality, shared responsibility, and consideration for complementary strengths between gender. She described the different roles amongst tribal members - activities that males engage that females support. Leaders can be many things: bold, charismatic, willing to share, fragile, empathetic, funny, and respect is important.

“We don't seek leadership, leadership finds you” she explained sharing this and other perspectives on developing leaders.

Leadership development:

The participant described that people are recognised as people to be respected, and that they are appointed by others based on their strengths, knowledge and actions. Be the person you are, and be recognised “We don't seek leadership, leadership finds you”.

Within more formal training, she spoke of the importance of building trust, support, and love for environment. She reports that there is an inter-dependency between knowledge and belonging, noting that both factors are separate but related when referring to leadership. Belonging is nurtured through showing care, empathy and providing support. Contributing to tribal affairs is a voluntary action, where the freedom to make choices is still prioritised.

In her experience, having leaders / teachers who show genuine interest in tribal development and advancement coupled with the capacity to quickly build trust through commitment is valued.

Indigenous leadership academy:

Reflecting on the value of an indigenous leadership academy with an indigenous based curriculum, she noted that such would be highly valuable. This would allow for bringing together like-minded people, and enable the sharing of experiences, sharing contrasts and commonalities between cultural knowledge bases, and sharing experiences related to ways of navigating an indigenous lens. The opportunity would enable discussions, the deepening of relationships, and the further strengthening of networks and forms of solidarity.

Success indicators:

The first, most important success indicator is celebration and joy. It is important to make time to

celebrate, to ensure joy in your life and reflect and celebrate to overcoming obstacles.

"Smile wrinkles; to become old and to have smile wrinkles, that is success"

In addition, success indicators include:

- Wellbeing: the wellbeing of the group, the tribe, and the surrounding cousins.
- Species and biodiversity: a measure of higher biodiversity in forest spaces is a strong indicator of successful forestry management.
- Waterways: returning to their natural flow.
- Language: the number of people with fluency in indigenous language.

Food Forestry Practitioner in Kilauea, Hawai'i, USA

This interviewee works with farmers, providing agroforestry technical support. This work is designed to promote the development of food forests and multi-story cropping and promotes a shift away from conventional cropping. This work places high importance upon the regeneration of indigenous species and healing land.

His work is centred around the Kupuna ways; the ancestral teachings of land and forests. A cultural teaching followed is Kuleana (responsibility). This concept is associated with identity, cultural responsibility and purpose over natural resources. This concept includes adopting practices and approaches that advance environmental and spiritual balance. Much of the indigenous forestry practices and philosophy in his work are practical and hands-on, assisting farmers to adopt re-generative approaches, specifically food forests.

A dual world view that included embracing technology/machinery to support agroforestry, was viewed as a sustainable future pathway for food forestry. Preferences for this approach included the capacity of machinery to achieve development at a quicker pace. Technology also provided for a more efficient and digitally connected operation.

Indigenous models: The interviewee spoke of:

- Two eyed seeing and the dual world view that he navigates on a personal level mind, body, and spirit.
- Kuleana (responsibility) relationship with land and its healing preservation
- Importance of indigenous species

Leadership styles: Leadership styles that were discussed were:

- **Practitioner:** Hands on, experienced, pulls together research ideas. Hard working, patience, open mindedness, honesty, patience, passion and love for the land. High level of communication skills, honesty, speaks from the heart.
- **Cultural leader:** Conduct ceremony, align tribal mission with tribal direction, spiritual guidance
- **Administrative/external facing:** administration, marketing
- **Technological:** embracing technology/machinery to support agroforestry

Leadership development:

Recruitment: Difficulty in recruiting youth against the appeal of faster technology. In response, developing farming technology that is of interest to younger farmers can be effective.

Leadership retention: An important component of retention is tied to the beauty of trees. The act of

planting a tree on the land has a strong pull to strengthen the sense of obligation and responsibility. Trees need nurturing for a long time. This responsibility and care for the land is instilled through teachers at a very young age. The concept of Kuleana is central to identity, right, responsibility, and purpose. This cultural concept is integral to the development of a retention strategy for food forests. Children are taught to love and appreciate the role that trees play in the broader system – growing trees to ensure re-generative cultural land practices is important.

On vocational training within Hawaii and the value of the wananga style of learning

Go Farm Hawai'i

Go Farm Hawai'i is a vocational training model in Hawaii. This is a yearlong course, where students are given a plot of land to develop produce and to sell. The programme is state funded and consists of a small cohort taken on each year. The course is structured to include hands-on field work and classwork. The formal learning program takes up a day or two during the week, with the remainder of the time to be spent developing and maintaining the land. The program teaches across all aspects of food production, with an acceptance of all types of farming approaches that students may wish to pursue. One of the core deliverables includes students generating produce for market. This includes the development of core market relationships to sell. The programme includes an option for a level 2 course, where the qualification enables graduates to start their own farm business. The aim of the program is to increase a competent successful farmer base in Hawaii.

Our Story - GoFarm Hawaii

Leadership Academy

This participant had attended the Ngā Pou ā Tāne international wananga (held earlier in the year). An academy that followed similar lines was viewed as valuable, specifically with regard to networking and the sharing of knowledge. This style of gathering is missing in Hawai'i.

Success indicators: success indicators include:

- Number of students graduating
- How much land are we reclaiming, converting, healing
- Land area and food produced
- Number of graduates still in agroforestry
- How much water in the hydrological cycle are we cleaning, healing?
- How the community affected / benefitting? (measured qualitatively through survey, community meetings, or quantitatively through health / wellness studies).
- Research coming out of the system

Menominee Cultural Leader, Wisconsin, USA.

This interviewee described her tribal ancestry, where, "We are the keepers of the forest".

Background: This interviewee is a cultural leader within the Menominee Tribe. The history of the tribe comes from 16,000 years of ancestral land stewardship. Their creation story originates from the bear, eagle, wolf, crane, and moose that emerged from Menominee river. Each animal played a role in the creation of the Menominee people. Clans each descend from the first animals that were transformed. Their tribe is unique in that their people originate from totems that are from both below and above, which lays the understanding of the world. Much of their original 10 million hectares of land was taken and what remains today, is 93,000 hectares of dense forest.

According to their tradition, the people were given their natural resources as gifts to use by the Creator. Several key cultural teachings were shared. The interviewee explained that according to their own ancient ancestral teachings, there is an expectation that outsiders to the nation will arrive and will seek change- "Others will come, and that the tribe would feed the 'others. So, when 'others' arrive, the tribe is peaceful and welcoming".

Several cultural understandings guide forestry management systems. One key cultural teaching explained includes an understanding of reciprocal relationship between all things, and associated responsibilities to be respectful to all things that are given – whether wild rice, sturgeon, tobacco, and/or sugar/syrup. A second teaching is 'to give first, ask second, and pray before taking to ensure an honourable harvest'. In terms of sustainability, only what is needed is taken from the forest alongside an adherence of not taking the first and/or last. The final teaching is promotes maintaining balance with the earth. All activities are guided by balance. The tribe recognises the earth as grandmother. All beings are relatives (animals, insects), as such guiding actions." We are the keepers of the forest. When things go wrong, we must ask: what have we done wrong? Why is this out of balance? We must strive to maintain balance".

She explained after the 'others' came we saw the imbalance happening more and more. We had smaller lands available and saw the loss of the wild rice fields etc. This resulted in a loss of our semi nomadic way of living. Others continued to come, and to take the trees.

Now the forest is protected as part of the Menominee Nation reservation. The tribe manages a sustainable forestry management program. The tribe's elders promote the stewardship of the land and forest and invest in education to help protect the tribe and the forest.

An indigenous-led forestry management system for Menominee nation applies their own lores in terms of forest harvesting, which includes felling according to their own cultural traditions. The tribe manages the forestry according to the teachings of ancestor Chief Oshkosh who lived at the time the sustainable forestry management programme with the state got underway (mid-1800s), so that the harvest starts from the place of the rising sun and moves towards the setting sun, and only takes the sick, dying trees and those restricting the ecological health of the forest. They maintain what grows there, and do not bring in foreign trees. This is monitored through a data driven harvesting and management programme geared strictly to ancestral teachings. Since the 1950s, their biodiversity and production levels have doubled.

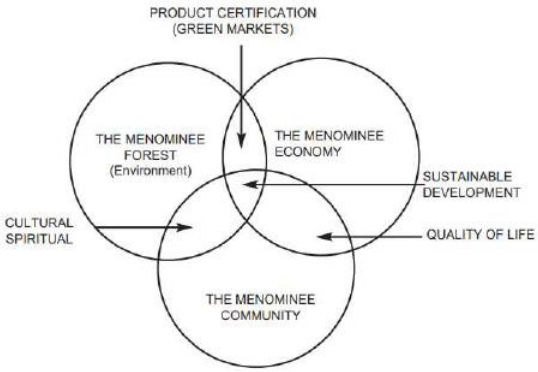
"If we take care of the forest, the forest will take care of us. Know who you are as an indigenous person, your place, where you come from, all those who came before us who considered us as the 7th generation"

Indigenous models: The interviewee explained that cultural success is tied to adopting indigenous knowledge and practices, hence, maintaining a relationship with the earth. Menominee has a strong focus on 7th generation thinking, where decisions are made for the 7th generation removed. 'Without that, there is no success'. In this respect, we practice 'Seventh generation thinking'. In terms of

leadership there is an expectation that 7th generation thinking is adopted and applied. This requires leaders to know their identity, their history and the connection between the past and the present. She explained "Know who you are as an indigenous person, your place, where you come from, and all those who came before us who considered us as the 7th generation."

The Forest Keepers' Book[2] provides an important reference for the Menominee Tribe. This model shows the forest, economy and community in overlapping circles (see graphic below). If you take remove a facet from the intersecting circles, the circle is broken, causing disruption – take away the trees and the system will collapse. Except, if you take out man, the forest will flourish. This model guides the forest management plan which is in place. The goal of the forestry is stewardship of the trees, and to have a healthy forest.

- **Forest:** Trees are crucial - not just life giving, but also wellbeing and connection to the trees. If you are feeling unwell, go out to the trees and breathe and pray and it helps.
- **Economy:** Success in economic space should be guided by considering what is best for the trees? If we don't think of this we lose track of the indigenous mindset.
- **Community:** Community first, not just the people but all beings that are with us, the trees, animals, people. That is how people have risen to leadership. Rose out of the people that show selflessness, community mindedness, and thought for beings all around. These leaders are valued and are selected to lead.
- **Culture:** Cultural lore in forest management is taught in schools and early education. This ensures continuity of cultural knowledge and practices.



Insights into leadership styles

Leadership styles: Traditionally there were different leaders for different circumstances. There was a hunt leader, wartime leader, and many different peacetime leaders, e.g. wild rice chief who knows everything about caring for, harvesting, and preparing the wild rice, who watches and prays for the rice. She spoke of some of the leadership styles within the tribe today:

- **Cultural leader:** This person is responsible for knowing who you are, knowing your origins, your place in the community, within the land, where you come from. The tribal story, history, clan system, creation site, and understanding the worldview as indigenous people is of high importance. Knowing about humility as humans, that we should always be striving to do better, our dependency on the world and all its beings, and that we are at the whim of everything else are key teachings. This leader passes this knowledge on through community gatherings and activities such as the sturgeon catch and maple syrup gathering festival, or even just through storytelling at the library. The tribe provides spaces where we come together as a community. As part of this the community is taught by elders who are the holders of the knowledge. In tribal history, the eagle is sacred, the one that flies the highest. He is watching out for us to see if we are living the right way and when he sees us he tells the creator. It is a blessing to see him. As you receive the feathers it is a recognition of the skills that you carry.

[2] Source: https://archive.epa.gov/ecopage/web/pdf/menominee-forest-keepers-1997-25pp.pdf

- **Technical leader:** These leaders are professionally trained and educated in civil culture and the forest. The Local State University Stevens Point as an example, has developed the 'Leaf' program that includes forest teachings. These leaders learn through professional training but must also hold the knowledge of the people. Likely candidates are those grown up within the forest- be of the people and the land. The program supports tribal stewardship of the forest and requires all students to foster this approach. The program is also taught at pre-school level, with basic understandings of the clan story and connection to the forest system. Beyond, the tribe has other activities like the Lumberjack breakfast which celebrates the forest and primary schools undertake learning programmes and activities related to the forest. Within the secondary schools, forestry is taught, with the expectation that tribal members will seek qualifications at a college/university level. Forestry as a subject then, is taught across the entire compulsory education sector.

- **Political leader:** The political leaders speak for us and take care of us politically. These people must run for legislature, where there are nine legislatures and one leader is chosen out of these. Leaders must know the history of the relationship with the government, the amendments of the constitution of the states, and our special designation as public law 280. The key issues that leaders must consider are to maintain sovereignty to ensure continued land ownership.

- Regarding **gender**, there are many women leaders. Women are viewed to hold important qualities as nurturers and can maintain emotional connections to the forest system. Women maintain the balance as life givers. This ability is valued tribally, and women are cautioned not to lose sight of their status.

Insights into leadership development and highlights the importance of creating a sense of belonging.

Leadership development:

Recruitment: Achieved through a purposeful education curriculum that is integrated and streamlined to include forestry from pre-school through to secondary school and beyond. The tribe has negotiated at both a tribal college level and with the local university to include tribal supported papers. Stewardship of the forest is taught within the tribe and requires all members to foster this value. The tribe values intergenerational connections. This ensures indigenous knowledge systems remain at the root of learning. She reports that young people are observed by elders, and if there is an interest in forestry, they are nurtured in this area of learning.

Training: Below college level, training is described as purposeful but organic. Schools are integrated within the community. The Menominee leaders have a degree of control over education and in this way have control over the outputs. Beyond this there is university, where the Stevens Point Leaf programme, an environmental programme that teaches forestry, and tribal lore. Madison University is also involved; students go to a site (this year is Menominee) for a weeklong field-based learning. They grade lumber, mark trees, learn about the tribal forestry management plan, see maps and planning. These activities are promoted as supporting the development of future forest leaders for Menominee nation.

Retention: The Interviewee identified that Menominee students within the university system are more difficult to track, as they living removed from the tribal nation. Currently, Menominee leaders are working with the university system to adopt strategies and processes that allow for students to remain connected to the nation whilst continuing with studies. Students often lose connection, feel that the system is impersonal, or that sometimes it is described as 'mean', and feel as though they are not cared for. She explained that 'we are helping the university to show that it cares'. One approach that has been promoted is the 'Aunty program' where mature Menominee women (staff) are

employed specifically to provide pastoral support for Menominee students.

“It is important to create a sense of belonging, to teach the university to be culturally responsive to Menominee students.”

Indigenous leadership academy

The participant viewed the development of a learning academy as positive. Strengthening partnerships and enabling a space to share learnings was of particular importance. Indigenous people she noted ‘think differently and treat the trees differently’.

There could be a range delivery modes adopted to include both in person and online. Each member could deliver our own programme within our own places but regularly connect internationally to share with each other, strengthen and build relationships and partnerships.

Appendix E: Indigenous Education Case Studies

Case study: Educational course delivery - Model of Indigenous Diversity and Inclusion - USA

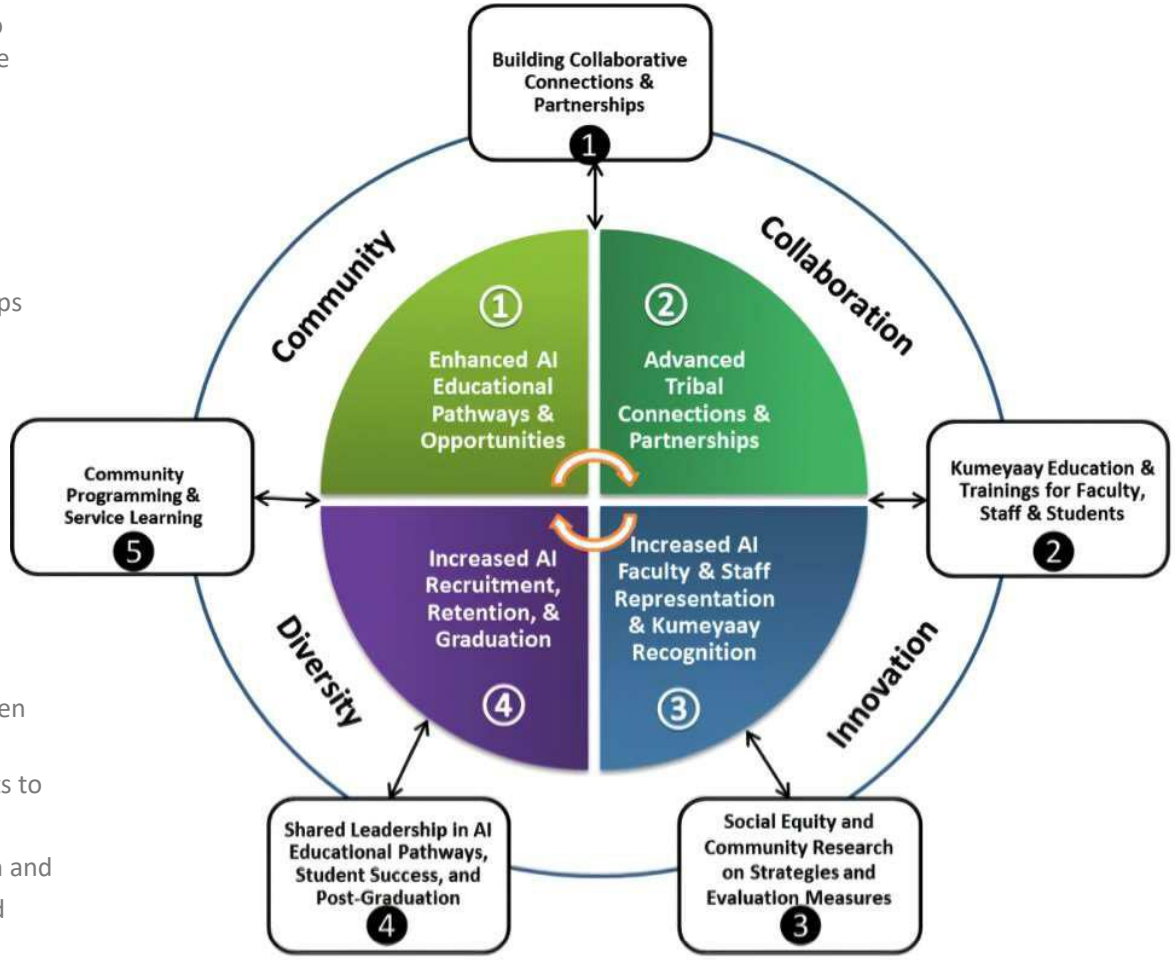
The Model of Indigenous Diversity and Inclusion, developed by J. Waipuk of San Diego State University is aimed at creating an inclusive, culturally responsive, and supportive environment for Indigenous students, faculty, staff and alumni. Key elements of the model include:

1.Centralised Goals:

- Enhance AI Educational Pathways & Opportunities: Improving access to educational resources and opportunities for Indigenous students.
- Advance Tribal Connections and Partnerships: Strengthening relationships with tribal communities to support mutual growth and understanding.
- Increase AI Faculty & Staff Representation & Kumeyaay Recognition: Promoting the representation of Indigenous faculty and staff and recognizing the Kumeyaay people.
- Increase AI Representation, Retention, and Graduation: Focusing on increasing the representation, retention, and graduation rates of Indigenous students.

2.Strategic Areas:

1. Building Collaborative Connections & Partnerships: Using participatory action research to foster trust, mutual respect, and collaboration between the university, tribal communities, and non-tribal communities.
2. Kumeyaay Education & Trainings: Providing opportunities for all students to learn about Kumeyaay life, history, culture, and contemporary issues.
3. Social Equity, Inclusion, and Community Research: Supporting education and scholarship related to Indigenous student representation, retention, and graduation, as well as faculty and staff representation and retention.
4. Shared Leadership in AI Educational Pathways: Promoting student success and post-graduation opportunities through shared leadership



E-1 – Model of Diversity and Inclusion (Waipuk, nd)

A Culturally Responsive Science Curriculum – Traditional Knowledge and Western Science

When delivering scientific education that is culturally responsive, attempts to integrate TEK and Western science knowledge systems help to educate the value of the rich knowledge of TEK and Western Science as complementary to one another in mutually beneficial ways.

Characteristics of culturally responsive curricula:

- Intro to cultural significance from elders and local experts
- Links science instruction to local topics and science standards
- Provides time for conversation and deeper understanding
- Teaching practice focus on student understanding and use of knowledge and skills
- Engages ongoing authentic assessment of scientific understanding, reasoning and skill development.

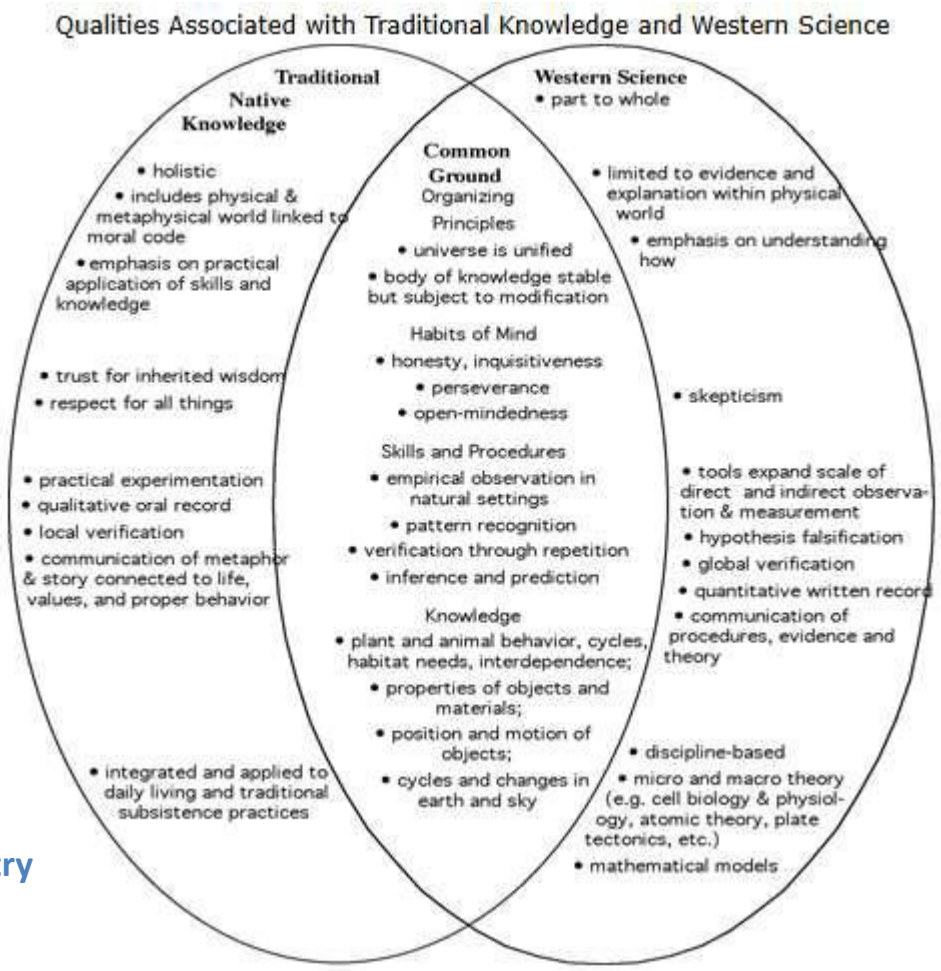
Strengths of culturally responsive curricula:

- Recognition and validation to build on existing knowledge, towards a more disciplined and sophisticated understanding of TEK and Western Science
- Inclusion of elders and local experts, links to historical knowledge that has been passed down
- Provides for inquiry into different knowledge systems and fosters collaboration, mutual understanding and respect
- Creates a strong connection between students experience within school and lives outside of school
- Addresses standards from multiple disciplines

Challenges of culturally responsive curricula:

- Knowledge may not be available or understood by teachers/educators
- Cultural experts may not be comfortable be present in school setting
- Standard text may be of little assistance for locally relevant activities
- Administrative or community support for design and implementation may be lacking
- It takes time and commitment

The delivery of both TEK and Western Science in education both share common grounds. A culturally responsive science curriculum is shaped by its context, values, and beliefs. For Indigenous educators, this means embedding cultural knowledge and language into science. The approach benefits students by fostering shared skills, enriching perspectives through multiple knowledge systems and encouraging critical thinking (Stephens, 2000).

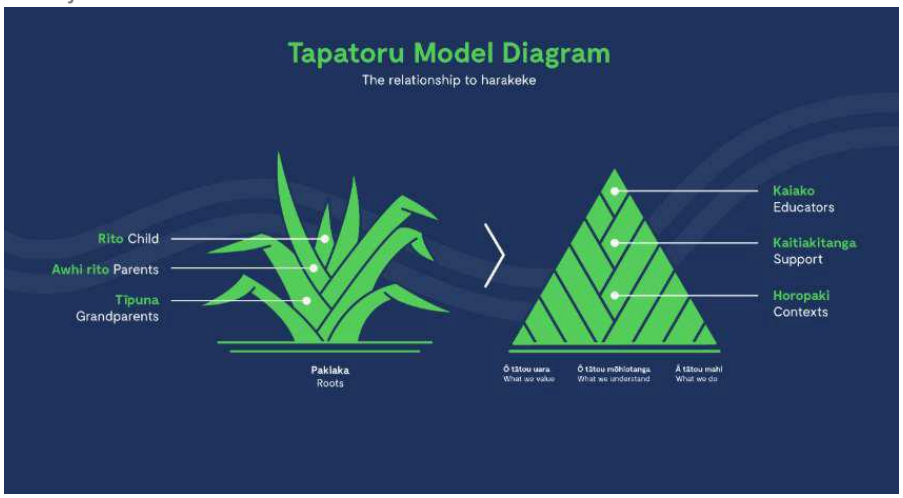


Case study - Te Pā Harakeke Tapatoru

Te Pā Harakeke Tapatoru (NZ) – a professional development framework and is a metaphorical model for leadership education development and delivery. **Te Pā Harakeke** is a metaphor for the whānau, as a multigenerational model with multiple layers of support. This model is deeply rooted in Māori culture and uses a harakeke (flax) plant as a symbol for the family unit.

The **Te Pā Harakeke Tapatoru** model emphasises the importance of intergenerational support and the nurturing environment necessary for growth and learning. In the educational context, the rito represents the learner, and the surrounding blades symbolise the educators and the broader community that support the learner's development.

At the centre of a harakeke is the 'rito'which grown at the apex and is likened to a child or represents the learner. The flax blades immediately either side of the rito are the parents, or 'awhi rito', and the outer blades of flax are the 'tīpuna' or grandparents. The outer layers offer a level of safety and protection for the inner more juvenile flax blades



Tapatoru is designed to ensure the continued professional development, as a holistic learner-centered framework that incorporates Mātauranga Māori and integrates three dimensions:

- Professsional values: Ō tātou uara - What we value
- Professional knowledge: Ō tātou mōhiotanga - What we understand
- Professional practice: Ā tātou mahi - What we do

E-2 Te Pā Harakeke Tapatoru (Ako Aotearoa)

Case study – Nishnaabeg people, Land as pedagogy

Nishnaabeg refers to Mississauga Ojibwe people, and the territory of the north shore of Lake Huron, or known as Ontario Canada – part of the larger Anishinaabeg nation.

Indigenous leadership is rooted in Nishnaabeg intelligence, cultivated through deep reciprocal relationships with the land, community and spirit. Simpson (2014).

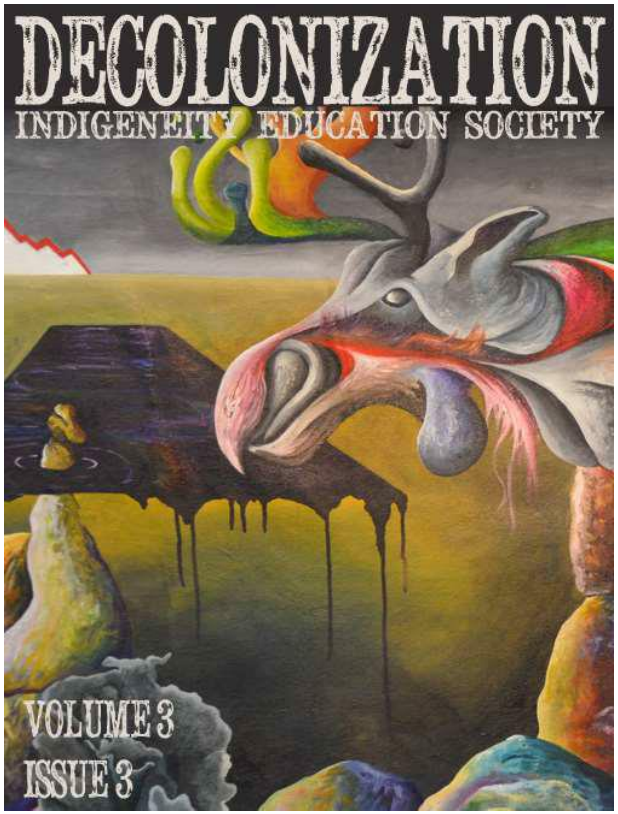
Nishnaabeg knowledge originates in the spiritual realm, coming to individuals through dreams, visions, ceremony, and through gaaizhi-zhaawendaagoziyaang – that which is given lovingly by the spirits (Geniusz, 2009). For individuals to gain access to knowledge, one has to align themselves within and with the forces of the implicate order (term that refers to the spiritual world) through ceremony, ritual, and embodiment of the teachings one already carries (Henderson, 2000).

Nishinaabeg intelligence aims to foster expertise with people engaging with the land as curriculum and in languages for a lifetime, rather than a period of time when they are attending a educational institute.

Within Nishnaabeg systems, there is no curriculum, the delivery of knowledge comes from the spirits. Within Nishnaabeg society there is a focus on on identifying gifts and skills of a person, as a mechanism to grow diversity within the community (Cajete, 1994).

Nishnaabewin (all things Nishnaabe) aims to prepare children to be self-motivated, self-directed, community-minded, inter-dependent, brilliant, loving citizens who at their core uphold cultural ideals around family, community and nationhood by valuing their intelligences, their diversity, their desires and gifts and their lived experiences. This is in contrast to preparing children for successful career paths in hyper capitalistic systems (Simpson, 2014).

The belief in a functional society lies with leadership not being about authority or control but about modelling ethical, reciprocal relationships with all beings. Through valuing diversity, emotional intelligence the ability to uphold Nishnaabeg ways of knowing, true leadership is fostered, resisting colonial systems by living in alignment with ancestral teachings (Simpson, 2014).



E-3 Decolonization Indigeneity Education Society (2014)

Appendix F: Māori Leadership Archetypes

1. The Quietly Influential Leader (He Rangatira Āta Noho)

This leadership archetype embodies a person who leads fluidly—from behind, besides, or in front—depending on the needs of the group and the situation. They are deeply respected, and their guidance is trusted without question. Known as a Quietly Influential Leader, they adapt their leadership style to suit the moment—stepping forward in times of crisis or stepping back to empower others during routine operations. They carry a natural sense of mana and influence, preferring clarity over lengthy explanations and efficiency over unnecessary processes. With just a few wise and well-timed words, they can swiftly inspire and mobilise a group toward action.

2. The Intuitive Leader (Mātau Wairua)

This leadership archetype is deeply attuned—both emotionally and spiritually—to the group and the environment. They lead with empathy, intuition, and a strong sense of connection to people and place. Able to read the emotional tone of the group and the rhythms of the natural world, this leader fosters harmony between the land, the forest, and forestry operations. Their presence nurtures balance, guiding others in a way that honours the relationship between human wellbeing and environmental stewardship

3. The Mana Inherited/Achieved Leader (Te Amorangi)

This leadership archetype is a person who holds great respect (mana), they are someone who equates a feeling of calmness and have the strength and knowledge to be decisive. Their commands attract respect through integrity and action rather than through words.

This leadership archetype embodies a person of mana—respected not only for their presence but for their unwavering integrity, strategic insight, and calm authority. They exude a sense of steadiness and clarity, making decisive choices grounded in wisdom and foresight. Their influence is earned through consistent action, ethical leadership, and the ability to inspire trust, rather than through words alone. They lead with vision, emotional intelligence, and a quiet strength that naturally commands respect.

4. The Cultural Conduit Leader (Pou Tikanga/Amokura)

This leadership archetype is grounded in *te reo me ōna tikanga*, using this knowledge to anchor, guide, and inspire the group. Through the intentional embedding of tikanga into forestry management practices, this leader fosters unity, reinforces cultural purpose, and strengthens collective identity. They serve as a vital connector between the spiritual and physical realms, drawing on deep knowledge of *te reo*, *tikanga*, *pūrakau* (ancestral narratives), and Māori history. Their influence is expressed through *kōrero tuku iho*—the transmission of ancestral wisdom—strategically applied to shape decisions, uphold values, and lead with cultural integrity.

5. The Kaupapa -Driven Leader (Kaiārahi Kaupapa)

This leadership archetype is defined by a strong sense of purpose and expertise in a kaupapa or project at hand. Often a subject matter expert, this leader inspires others by building a shared sense of identity and direction, uniting the group around a common goal. Their leadership is especially impactful in kaupapa such as climate resilience, biodiversity protection, and intergenerational equity—where vision, knowledge, and collective commitment are essential. Through clarity of

purpose and strategic insight, they guide the group toward meaningful, long-term outcomes.

6. The Thought Leadership (Kaiwhakaaro Matua)

This leadership archetype is a person who is innovative and future focused. They provide direction and technical knowledge to support their decisions and reasons for decisions. They hold the expert knowledge to guide groups through challenges in forestry management such as sustainable land use, carbon markets.

7. The Strategic Leader (Kaiwhakatakoto Rautaki)

This leadership archetype embodies a deep understanding of policy, governance, and legislation. Often serving on boards or advisory groups, they are strategic thinkers who drive vision, shape development pathways, and influence systemic change.

They play a pivotal role in ensuring that Māori rights and interests are embedded within forestry regulations and industry standards. With a strong sense of justice and cultural responsibility, these leaders are quick to identify inequities affecting Māori in the forestry sector. More importantly, they are at the forefront—forging new pathways, advocating for change, and ensuring that Māori perspectives are not only heard but integrated into the future of the industry.

8. The Doer Leader (Kaiwhakatūtuki)

This leadership archetype is a person who is hands on, they are someone who acts, and they are a leader that leads by doing. In forestry management they are the leader who gets in and does the mahi, formulating groups to achieve outputs, sets up and maintains group connectivity, has a wide network, excels in finding connections to achieve outputs, and will have tasks completed in a timely manner. They earn the respect through doing the mahi. These leaders are found at all levels.

9. The Pa Leader (Rangatira Hau Kainga)

The Māori Pā leader is a guardian of tikanga and whakapapa, upholding the cultural integrity and identity of their people. They are strategic and community-focused, guiding collective decision-making and ensuring the wellbeing of the whānau, hapū, and iwi. As a visionary and protector, they navigate both traditional and contemporary systems to advocate for Māori rights, land, and future generations.

F-1 NPAT Leadership Architypes: Examples

Leadership Archetype	Related Archetype	Key Traits	Function in Forestry Management	Strengths	Challenges
Quietly Influential Leader (He Rangatira Āta Noho)	The Visionary	Flexible, responsive, situational	Adjusts leadership style based on team and environmental needs.	Future-focused, sees the big picture; adapts to changing environmental and social needs.	May struggle with consistency in leadership style.
Intuitive Leader (Mātau Wairua)	The Sage / The Nurturer	Emotionally and spiritually attuned, empathetic	Ensures emotional and spiritual wellbeing of people and land.	Combines wisdom with compassion; reads the emotional and spiritual climate.	Can be perceived as overly emotional or spiritual.
Mana Inherited/Achieved Leader (Te Amorangi)	The Ruler	Quiet strength, presence, respect	Leads by example; commands respect through integrity.	Holds mana and authority; leads with calm strength and structure.	May be seen as aloof or unapproachable.
Cultural Conduit (Pou Tikanga/Amokura)	The Creator	Uses cultural mediums (waiata, haka, etc.) to inspire	Embeds tikanga Māori into forestry practices.	Uses expressive, cultural tools to inspire and unify.	Risk of cultural practices being misunderstood or undervalued.
Kaupapa-Driven Leader (Kaiārahi Kaupapa)	The Rebel / The Visionary	Cause-oriented, visionary	Drives kaupapa like climate action, biodiversity, and equity.	Challenges norms for collective good; leads with a strong sense of purpose.	May face resistance when challenging established norms.
Thought Leader (Kaiwhakaaro Matua)	The Sage / The Creator	Innovative, future-focused, big picture focussed	Guides strategic direction using mātauranga Māori and modern science.	Synthesizes knowledge and innovation; leads through ideas and insight.	Balancing innovation with tradition and/or practicality can be difficult.
Strategic Leader (Kaiwhakatakoto Rautaki)	The Ruler / The Sage	Governance-savvy, policy-aware	Influences policy and ensures Māori values in forestry governance.	Navigates systems and institutions with foresight and authority.	Navigating complex governance structures can be challenging.
The Doer (Kaiwhakatutuki)	The Warrior / The Servant	Action-oriented, hands-on	Leads by doing; engages directly in forestry work.	Leads through mahi (work); protects and uplifts the team.	May be seen as too focused on action over strategy.
Pa Leader (Rangatira Hau Kainga)	The On-ground Practitioner	Tikanga-led, whānau, hapū, iwi focussed	Organises and guides direction, influences cultural direction.	Leads through doing, can move a group quickly, group supports him/her.	Keeping the group focussed and moving as one, factionalism.

Appendix G: Glossary of Māori Terms

Māori Term	Definition
Te Ao Māori	The Māori world; encompasses Māori perspectives, worldviews, and ways of being.
Tikanga	Customary values, practices, and correct protocols that guide Māori behaviour.
Kawa	Protocols or customs, often specific to a place or group, that shape how tikanga is practised.
Mana	Prestige, authority, control, power, influence, status, spiritual power, charisma.
Mauri	Life principle, life force, vital essence, special nature.
Whakapapa	Genealogy; connections to ancestors, people, land, and the universe. It forms the foundation of identity and belonging.
Tangata	Person, man, human being, individual.
Whenua	Land; also means placenta, highlighting the deep relationship between people and land.
Wānanga	A forum, learning space, or discussion; also refers to Māori tertiary institutions.
Hui	To gather, congregate, assemble, meet.
Manaaki	To support, take care of, uplift, or show hospitality and respect.
Manaakitanga	Hospitality, kindness, generosity, support - the process of showing respect, generosity and care for others.
Rangatiratanga	Leadership, self-determination, sovereignty, and the exercise of authority with integrity.
Whanaungatanga	The process of establishing and maintaining relationships and a sense of connection.
Te Taiao	The natural environment; encompasses ecosystems and the interconnectedness of all living things.
Mātauranga Māori	Māori knowledge systems; includes knowledge, wisdom, and understanding passed down through generations.
Hapū	Sub-tribe; a kinship group descended from a common ancestor.

Māori Term	Definition
Iwi	Tribe; a large kinship group made up of hapū.
Ariki	Paramount chief, high chief, chieftain, lord, leader.
Mahi	Work, activity, or effort.
Nui	Big, large.
Kaitiakitanga	Guardianship, especially of the environment, based on intergenerational responsibility.
Kaumātua	Elder; respected tribal leader or senior person in a Māori community.
Whare wānanga	Traditional house of learning; also refers to modern Māori tertiary institutions.
Tika	Correct, right, fair, or just.
Pono	Truth, integrity, honesty.
Tūpuna / Tipuna	Ancestors.
Te Reo Māori	The Māori language.
Aotearoa	New Zealand (the Māori name for the country, meaning "land of the long white cloud").
Kotahitanga	Unity, togetherness, solidarity, collective action.
Ako	To learn, study, instruct, teach, advise.
Tuakana	Elder brothers (of a male), elder sisters (of a female), cousins (of the same gender from a more senior branch of the family).
Teina	Younger brothers (of a male), younger sisters (of a female), cousins (of the same gender) of a junior line, junior relatives
Pūrakau	Myth, ancient legend, story.
Whakatauaki	To utter a proverb, utter a significant saying, utter a formulaic saying, utter an aphorism.