

A new look at sustainable forestry of the future: Aotearoa-New Zealand philosophy

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According to Māori philosophy and understanding of the spiritual world, cosmos, nature and the natural world, all of creation, including the forest and its inhabitants, stems from the spiritual world and over time is gifted by spiritual ancestors to the natural material world and humanity. Rākau rangatira, i.e. the great trees of the forest, are among the most ancient in our part of the universe. Their antecedents appeared during the Jurassic period, between 190 and 135 million years ago. They are thus a taonga tuku iho of the ancestral spiritual world of the Supreme Being, Io Matua Kore, followed through aeons to Ranginui and Papatūānuku, Father Sky and Mother Earth, and their child Tāne. As Suzuki and Grady (2004) have written, all trees attest to the wonder of evolution, the ability of life to adapt to unexpected challenges, and to perpetuate itself over vast periods of time. Rooted securely in the earth, trees reach for the heavens.

First arrival

Take your mind back to the time of Kupe, the East-Polynesian explorer-trader. In 925 AD, Kupe together with his wife Kuramarotini voyaged from the northeast Pacific, thought to be the direction of the earthly Hawaiki, in their canoe Mata-whaorua. It was Kuramarotini who, upon sighting a long, large white cloud, excitedly pointed to the land naming it Aotearoa – the Land of the Long White Cloud. On arrival, these first human visitors were confronted with a large complex ecosystem and environment spanning 1,600 kilometres from north to south that was alien to the ecosystem of Hawaiki.

In comparison to their homeland, it was a landmass of continental proportions. Large trees later identified and named by other generations of Māori provided the canopy covering the main broad-leafed species. In the coastal areas they would have sighted for the first time the ancestral native trees, particularly the pohutukawa, tōtara, kauri, karaka and kowhai, which all became revered over time, and along the muddy margins of the coast, the mangroves. As they traversed the valleys seeking food and fresh water they found swamps of flax and bulrushes, orchids, ferns, fungi, mosses and lichen. Abundant bird life was everywhere and in the undergrowth and astonishing insects and invertebrates unknown to the explorers were found. While fishing or fetching seafood they would have spotted the endless supply of new fish species living along the larger continental shelf of the islands.

The ancestors of Kupe were coastal dwellers and never lived within what they knew as ngāhere, or forest. However today the forests are seen as kāinga, a habitat and home to a succession of creatures and other plant species. It is a provider of plants for food and medicines,

and other birds, animals and insects live within the forest that can offer sustenance for the natural world and humankind. A proverbial saying of Māori is: he mahi kai te taonga (survival is the treasured goal), which inspires the ability to provide sustenance for forest survival and a reasonable standard of living for it. Today the meaning is the same – the care of the trees gives the forests a reasonable and resilient quality of life.

From conception, all of creation receives its own mauri, or life-force, from Io Matua Kore, and it is the mauri that defines its nature, thus determining its specific characteristics. All beings that make up the forest, but more specifically here the trees, consist of the following attributes: each has a tinana, rendered as its body; it is imbued at its birth with its own tapu, meaning its potentiality to be a remarkable being; and it is the tapu of Tāne that gives to the tree its primary mana, its authority and status as a being of the forest. Each tree is a child of Tāne, Rangi and Papa, and ultimately of Io Matua Kore. In ancient Aotearoa-New Zealand metaphysics, the name is closely connected with the very being of things of creation. The action of Io Matua Kore by giving the name established its mana and tapu, and in so doing its identity. It is from this action the tree takes its unique āhua or form.

The mauri also binds the tinana to its wairua, which is the spiritual kaitiaki or guardian that guides and protects it throughout its long life. Each being has its own hau, another life-force of Io Matua Kore, which guides its capability to be productive as a tree. It is this productivity that gives sustenance and life to associated flora and fauna. The death of a tree occurs when its mauri separates itself from the tinana, for various reasons, thus releasing the wairua of the tree to return to its spiritual source. In this ethical view of life and of the natural world, all trees come from the spiritual world and are gifted to the cosmos, the natural material world and humanity.

Today

When European settlers arrived, diary accounts and letters back home describe how they found the bush gloomy, frightening and irritating. Vast areas of it were cleared to create open farmland, and much of the heritage forest was lost. Today, Te Tai Tokerau known as Northland is a region dominated by farming and forestry, covering a total land area of 1.394 million hectares stretching from Mangawhai and Kaipara Harbour to Cape Reinga.

Eleven iwi are represented across the region and Māori-owned land these days represents 10 per cent of forestry land, with the majority of the rest managed by the Department of Conservation. An estimated 460,000

hectares of Māori land is now in plantation forestry in the region, with most leased to forestry companies already existing on forest estates. However as Māori participation in land ownership and primary sectors increases with Treaty of Waitangi settlements, so does the potential for land use and value, and a greater diversification of forestry commerce. As the recognition grows that forestry is a longer-term option that fits well with Māori aspirations in terms of spiritual, environmental, social and cultural, and economic needs, so does a lingering dissatisfaction with current forestry practices.

Ecological economics

Māoritanga is the way in which Māori ensure their customary knowledge, values and principles are adhered to in an appropriate modern context. We have a responsibility to the environment and community, and must balance the growth of the Māori economy and compliance to Treasury.

A Māori worldview finds kinship with ecological economics, the proposition being that economies exist in the ecology and not the other way around. Thus forestry can be considered as part of nature capital. Further research that integrates ecology and economics, humanity's impact on the natural world, historically and in the future will in this way lead to a greater understanding of both the natural and economic value of the trees and the forest and its specific integral part in the ecological system of Te Tai Tokerau. Such research will also identify its economic values of significance.

In traditional Māori economics, i.e. the Economy of Mana also referred to as he whenua rangatira, there are two significant understandings of economy and the values that inspire its productivity. First, the economy is embedded in society and the values of that society inform the economy. The Economy of Mana is inspired by the worldview of the first Aotearoa-New Zealanders and its four well-beings – spiritual, environmental, kinship and economic. The second understanding is that the Economy of Mana is embedded in the ecological system that sustains it. These two beliefs integrate methods for understanding and promoting regional resilience and transformations relevant to the survival, sustainability and productivity of the forests of Te Tai Tokerau.

In this framework of the Economies of Mana embedded in society and ecology, trees are part of the natural capital of nature itself in the habitats. Forests are structurally complex, with many different tree species per hectare. These ancient economies are significant, first to the ecological economics of each region, and second to the kaitiaki or guardian function of the kinship family systems of the regions. The demise of the ecology of the forest and the economy will lead to the diminution of the Ecological Economy of Tai Tokerau forestry and to the stock of natural capital of trees.

The above understanding of the nature of trees and forests is evidence of the flow of valuable ecosystem goods or services into the future. A stock of trees and associated

flora and fauna also ensures a flow of future trees as well as the flora and fauna, thus creating a flow of sustainable nature capital. This is natural resilience in transformation. Trees as natural capital also provide services such as recycling wastes, water catchment, erosion control and a haven for other species such as birds, insects and other plants. According to ecological economic thinking, the flow of services from ecosystems requires these systems to function as a whole and thus their structure and diversity are important components of natural capital. Each tree is thus individually and collectively significant.

The loss to the Ecological Economy of Tai Tokerau, and the loss to the kaitiaki function of being Aotearoa-New Zealanders, are separately and collectively significant. As stated, all trees have value in themselves and contribute to both the Ecological Economy of Tai Tokerau forestry and the Economy of Mana and enhance the total sustainable future of the cosmos, natural world and humanity. Should the forests suffer through an over-reliance on one dominant species and forests of diverse species as we have known over the millennium, the Ecological Economy of Tai Tokerau forest suffers and its natural capital is greatly diminished. In turn the ability of the kaitiaki, both spiritual and human, to carry out their function as caretakers is also profoundly diminished.

Māori business responsibilities

To that end, it is important to understand the concept of Māori enterprise. Communal and collective business ventures (umanga whanaungatanga) see networks and relationships as key factors along with the need to support their employees, kainga and households, and whole communities. A collective supply chain means Māori are in a position to negotiate better returns but we must continue to satisfy all the four well-beings – spiritual, environment, kinship and economic.

In Māori circles, the Treaty settlements are not working in some sectors. These settlements and the implied commercial model embedded within these constrain Māori communities and commercial ventures with compliance costs, limiting innovation and entrepreneurship. Māori are looking outside of this model, as they are too expensive and come with enforced boards and structures that impose extra transaction costs that eat into Treaty settlements. In other words, Māori can't rely solely on the Crown as a long-term commercial partner.

Māori are in transition from being a cheap labour force for a settler community and economy, and the associated dependency, to empowerment as owners and managers of a restored means of production in land, capital, labour and knowledge. A dependency on government funding for new commercial enterprises is not a sustainable self-reliant way of thinking and planning for change. The current mood is that Māori must ultimately take care of ourselves, taking what we want from global intelligence which has always been available, but not accessible by Māori. Globalisation of economies and business practices now places Māori in a better position to bring everything together for a common purpose.

That intelligence has also enabled Māori to now understand that the early 20th century mono-cultural approach to forestry created a commercial large-scale forestry mode of thinking and operating and planted with forests of radiata pine. This mode of thinking and practice is not in sync with Māori forestry knowledge and aspirations, despite some limited aspects of economic and financial gain. As more and more pine forests and land is returned to Māori owners there is an urgent need for:

- Novel research around a new vision of forest species diversity
- A greater harmonising of exotic species with endemic and native species
- Innovative modes of manufacturing of wood and biomaterials, and to quantify the associated economic value.

In the past, this has been thwarted by three factors. First, without clear quantification of the values of Māori-based forest systems in comparison with traditional radiata pine-planted systems, Te Tai Tokerau has struggled to gain investment for their land to enter productive use. Second, access to credit facilities has been a continuing problem for innovation, enterprise and employment. The third factor is by far a greater challenge. The limited Māori involvement in science and technology, but particularly forest science, is a current concern.

More of our children need to be encouraged to study science, maths, engineering and commerce in their early years of schooling. While change is taking place, the rate of change is too slow for the needs of the Māori market and economy. Paradoxically, we know that the Māori economy is growing at a faster rate than the New Zealand growth rate, and more Māori are aware of this change which has motivated thousands of adult Māori into tertiary education into courses at Te Wānanga o Aotearoa, many polytechnics and some universities.

What we do know about the forestry industry today is that we have an over-dependence on one species – radiata pine – and there is much waste when the production of logs is seen as the end product. The new vision sees 100 per cent usage of every tree and 100 per cent use of production forests. A Māori member of parliament, the Hon Shane Jones, has recently criticised foreign owners of New Zealand forests for their pursuit of the highest possible profits at the expense of local workers, communities and the wood processing industry. Jon Tanner, Chief Executive of the Wood Processors Association, has also said that the increasing proportion of the wood harvest being exported as raw logs is getting to be a serious situation. Furthermore, he describes New Zealand as becoming a plantation for other countries' interests.

Countries such as Finland (which was heavily dependent on forestry before the government-supported Nokia company diversified into telecommunications technology) and Iceland do not allow primary produce to leave their shores unprocessed. Why shouldn't it be the same here in Aotearoa-New Zealand? The forestry sector needs a new *raison d'être*. It is the aim of a nascent Te Tai

Tokerau Forestry Innovation Cluster to elaborate a new reason for the existence and purpose of the forestry sector.

Bio-activity research of our country's species, such as greenshell mussels and manuka plantations, are not currently conducted in our own institutions on the same scale as universities in Germany and Japan. Worryingly, forestry, if it continues its current trajectory, is a sector heading toward the sunset. The alarming thing for Māori to consider is that we are heavily invested in the forestry sector, yet exert little ownership control.

Imagining the future

In 2011, the Tai Tokerau Forestry Innovation Cluster was formed from a group of Māori-based enterprises who own forest land in the region in association with the Mira Százy Research Centre at the University of Auckland Business School and Scion Forestry Research, Rotorua. Some eight participating Māori organisations govern and manage about 10,000 hectares of land in commercial forestry around Dargaville, 5,000 at Kaikohe and more than 17,000 beyond Kaitiaia.

This business innovation cluster is based on studies of the Mira Százy Research Centre that have explored approaches to innovation along the supply chain and its application in Māori commerce. It draws on key commercial principles of Professor Michael Porter at the Harvard Business School and the formation of business clusters. Such clusters consist of successful existing companies, significant research capabilities based at top universities and leading science labs, and they include the potential for investors to join the cluster. The role of the Business School and Scion is to enhance the research capabilities of the participating companies.

The Te Tai Tokerau Forestry Innovation Cluster is one that sets an agenda, but leaves the door open. It sits above individual interests, with overarching goals and strategies that individual entities could utilise as the 'big picture' in their daily operations. Boiling it down, Māori needed to transition from leasing to forest owners and managers and manufacturers. A collective was a good place to start.

It was apparent from the first meeting that change was in the air and was possible. Aiming to create an economically resilient community through the development of a new forest industry with an appropriate forestry infrastructure, we soon realised that radiata pine-planted forest regimes might need to be replaced or enhanced by plantings of exotic and indigenous tree species for economic return and cultural benefit. In broad terms, the idea was of two forests serving two complementary yet distinct needs.

The vision is that on Māori land there will be heritage forests of appropriate native and endemic species particular to Tai Tokerau, which is there forever as part of the cultural heritage and cultural identity of Māori families and communities. On the same Māori land, there would be a production forest with a greater mix of native and endemic species together with exotics

such as radiata pine. These trees are for production purposes and aimed at broader commercial and economic purposes. In these ways the four well-beings of Māori culture and society – the spiritual, environmental, kinship and economic – underpin both commercial and heritage purposes.



Natural kauri plantation and planted kauri



Natural tōtara plantation and planted tōtara

Those present spoke about their desire for planted forest estates incorporating culturally-important species such as tōtara and kauri. It was not hard to come up with a simple vision: To create a new forest system incorporating indigenous species to deliver high-value wood products and potential pharmaceuticals. This would not only support local industry and provide cash flow, and increase foreign exchange earnings and employment, but it would also spur recreation and tourism opportunities. An added benefit was that the template of Māori forestry business innovation and development could be transferred to other Māori authorities such as the East Coast and central North Island Māori forestry interests.

Using a philosophy of Māoritanga and its four intrinsic well-beings, we are currently mapping up four forestry scenarios across Te Tai Tokerau based on a hapū-iwi vision for the land. Using models, productivity surfaces, wood quality and market research we have quietly been conducting an economic analysis and developing an investment case for a novel Te Tai Tokerau business proposition and investment opportunity.

But we are also realistic. You cannot change the forestry industry quickly, due to existing long-term contracts, so a 100-year goal was mooted. This provided the luxury of planning for change, and the time to liaise with iwi through hui. After all, forestry is a long-term land use option and cannot easily be changed once established.

Our one-page vision statement was succinct and clear, stating that we wanted to:

- Enhance the virtues, principles and values, and governance and management of forestry practices including both native and exotic trees and shrubs
- Enhance the wellbeing of whānau, hapū, iwi and Māori of Te Tai Tokerau
- Capture growing markets
- Lead the development of the Māori forestry sector
- Diversify the Te Tai Tokerau and Aotearoa economy
- Leverage the unique local assets such as land and other resources
- Build an investment portfolio for sustainable growth and to enhance the quality of life of te ngāhere (Māori relationship with the forest)
- Enhance member companies within the cluster through innovation and entrepreneurship, and incubate new business entities within it
- Identify and research best future options for Māori in the forestry sector.

Current research

Cluster members led by the Scion team of scientists were successful at obtaining a research grant through the Sustainable Farming Fund of the Ministry for Primary Industries. The project, building the business case for economic resilience of Northland with a new forest industry, highlights the collective goal to double Māori investment in the forestry sector.

Manaakitanga and reciprocity between the participating organisations of the collective drive the project, with scientists and researchers gaining entry to forestry land and the owners benefiting from the research undertaken.

Initially our work will involve the development of design scenarios including specific GIS-based maps that look at wood quality, recovery and current standards of quality specifications to determine the likely percentage return from logs harvested from planted forests scenarios. Growth and yields are being estimated using the current database and models, and site visits are organised to show how the forest scenarios will appear on Te Tai Tokerau land. An economic analysis conducted by the University of Auckland Business School will quantify the economic benefit associated with projected returns of the forest models over 10-year, 30-year, 60-year, 90-year and 150-year periods using a variety of harvesting regimes.

Multiple benefits

At the completion of this first research project, Māori forestry owners will be informed by the research and have a deeper understanding of the true potential value that could be realised through investment in forest systems and infrastructural development that meets the aspirations for Māori forestry. It will also have scope to provide numerous benefits to other Māori forestry enterprises by providing the key data needed to build investment cases. Māori will participate more strongly in the primary sector, and create a greater economically resilient community and a world-class ecological economy.

For the government and other policy-makers, the economic data created from the research project will be used to identify key areas where policy through either grant schemes or by other means can positively influence afforestation of Māori land in a way that meets aspirational intent. The project will also provide significant spiritual, cultural and environmental benefits:

- Mixed species forests will encourage the establishment of longer-term forestry in land that may not currently be in forestry use
- A positive impact on protecting soils that may otherwise be at risk from erosion
- Capturing and storing carbon
- Improving water quality through tree roots filtering nutrients from the soil
- Enhancing biodiversity within the region by providing a habitat for birds and other small animals.

Māori enterprise seeks a more informed and embedded culture of innovation in our country, better still as underpinning our economy. Members of the cluster and other Māori forestry interests are willing to take responsibility for establishing a set of innovative projects that could transform the sector that Māori are heavily invested in, and source the capital necessary for both research and development and commercialisation from the private sector in New Zealand and internationally. Essentially, we need to have some skin in this game. That is the only way we will appreciate the potential returns as well as restore heritage forests for the benefit of future generations of Kiwis.

As kaitiaki, it is Māori cultural and commercial business to nurture Tāne and the associated flora and fauna. We seek clients and customers who share this view and its values, with well-being, identity and culture linked to the whole ecological system of the forest. Consequently the ultimate survival and rebirth of the forest will require a comprehensive approach. In Māori, the call is to atawhai ki te ngāhere, manaaki ki te ngāhere; whāngaia te mauri me te hau o te ngāhere (show compassion and care of the forest; feed the life-forces of the forest and its flora and fauna).

As far as we are concerned, the maintenance of our identity is in direct proportion to the quality of the forest in which we are part of. There will always be a

forest as part of the natural world and of the cosmos, and humanity's role is to create harmony between these two. However, the vision will not be dependent on a single exotic species such as radiata pine.

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