# Is there a pivotal role for Māori in a forestry-based biofuel industry in New Zealand?

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## Abstract

To address climate change, reduce $CO_2$ emissions and provide future energy security, the need to develop alternatives to petroleum-based fossil fuels has become a priority for many developed countries. In particular, transportation is heavily dependent on petroleum. As technologies develop, increasing electrification will provide an alternative to liquid fuels. In the short term, second generation biofuels could provide a sustainable source to supplement liquid transport fuels at scale. The New Zealand Government's Ministry of Economic Development's Energy Strategy identifies alternative transport fuels, 'derived from a range of sources', as one mechanism to achieve a more energy efficient transport system with greater fuel diversity (MED, 2011).

According to Scion, a New Zealand Government Crown Research Institute (CRI), 'It's theoretically possible for New Zealand to be self-sufficient in terms of liquid [bio] fuels by using sustainably managed forests, while having a low impact on domestic and export food production' (Hall & Gifford, 2007). Scion estimate that a large-scale sustainable biofuel industry in New Zealand will require an expansion of the current exotic plantation estate to include purpose-grown 'energy' forests across some 3.7 million ha of marginal and steep country land (Hall & Jack, 2008).

Māori, the indigenous people of New Zealand, are recognised as a significant group within the forestry sector. Forecasts indicate that ownership will increase significantly as Treaty of Waitangi claim settlements take effect. There is an increasing recognition of the ecosystem services forestry provides over the long term, such as carbon sequestration, improved water quality and biodiversity. This paper supports the view that a forestry-based biofuel industry could provide intergenerational Māori landowners with a unique opportunity to secure a long-term financial, cultural and spiritual future for 20, 50 and 100 years hence.


## Introduction

New Zealand's forest estate is divided into 'non-productive native forests, a non-negotiable restriction on harvesting of native timber for commercial uses, primarily administered by the Department of Conservation (DOC) and 'productive' exotic plantations. A monoculture of radiata pine makes up 90% of the estimated 1.7 million ha of plantation forests and provides almost all of the national commercial timber harvest (Woodco, 2011). Plantation forests in New Zealand are largely privately owned, the largest by international investment funds whose principal interests are considered to be for financial gain. Thus, the primary focus is on the existing domestic wood processing industry and export markets, principally south-east Asia, for unprocessed logs and timber.

According to the New Zealand Forest Owners Association (NZFOA), which represents the interests of owners and growers of planted commercial forest, 'New Zealand forest managers are generally aware of what the processing industry and its customers want, therefore they strive to grow and supply wood to meet this demand' (NZFOA, 2012). It is unclear how a future low-carbon economy might operate and how the forestry industry would respond to an increasing demand for carbon products and ecosystem services. Forest certification is an increasingly important component in providing access to future 'green' markets – the trade of ecosystem goods and services provided by planted forests (Hock et al, 2009). Certification guarantees that forests are managed according to a set of environmental, social, economic and cultural standards.

Langer and Barnard (2003) suggest that, 'There are some misinformed views on the environmental, social and community aspects of forestry. Concerns around logging trucks and road safety and the perceived negatives from the forestry industry such as the closing of rural schools due to fewer students and a reduction in local employment [sic] arising from forestry.' Opponents to forestry expansion also refer to 'poor use of arable land' and 'planting on good farmland' as being significant concerns (Langer & Barnard, 2003). Social acceptance of forestry is vitally important for the long-term sustainability of the forestry industry.

Acceptance of forestry can be achieved as demonstrated on the East Coast of the North Island. Since the 1990s, support has steadily risen among the local communities when the first exotic trees were planted on open-grazed grassland and the environmental benefits changed significantly. A greater focus on cultural values and options for community development are considered essential for acceptance (Langer & Barnard, 2003).

The Bioenergy Association of New Zealand (BANZ) identified that government recognition of the economic opportunities to be gained from conversion of wood

into transport fuels would encourage investment across the complete supply chain. Such recognition 'would also give confidence to forest and other landowners that biofuel production is a viable means to increase revenue' (BANZ, 2010) and acknowledges that 'specific policies to help promote investment in bioenergy plant, building on the introduction of the ETS, will encourage planting in forestry and energy crops' (BANZ, 2010).

## ETS and low-carbon economy

It was forestry's potential to store (sequestrate) carbon emissions that resulted in forestry being the first industry sector to enter the New Zealand Emissions Trading Scheme (ETS) on 1 January 2008. Forests under the ETS are classified as either pre-1990 or post-1989 forests, with each classification subject to different rules:

- Pre-1990 forests are exotic plantations that were still in forestry as at 31 December 2007, and while they can be harvested they require the surrender of NZ Units (carbon credits) if the land is deforested or if a land use change takes place, e.g. a move into dairy farming (MPI, n.d.)
- The ETS requires that pre-1990 forest is replanted and this incurs a significant financial cost, which can be in the region of $5.5 million per 1,000 ha (NHFT, 2012)
- Post-1989 forests earn NZ Units as their forests grow.

Māori consider that the ETS affects them disproportionately due to the amount of land and business they own, which is given to the primary industries such as forestry, agriculture and fisheries. A submission by the Federation of Māori Authorities (FOMA) on a recent review of the ETS warned that, 'There will be a negative financial impact on Māori forestry.' It highlighted that 'Exotic forests are subject to large deforestation liabilities whilst having little opportunity to gain NZ Units for their carbon sequestration.' This essentially means that pre-1990 forests must remain as forests to avoid potentially crippling onerous financial liabilities. FOMA recommended that the government allow the introduction of offsetting (potentially removing deforestation liabilities) for a land-use change from forestry so Māori could convert suitable land to a more 'productive' state (FOMA, 2011).

Māori, through organisations such as FOMA, continuously highlight the need for certainty in government policy to enable 'long-term investment decisions to be made across the primary industries' (FOMA, 2011). One of the key principles of the Treaty of Waitangi is the notion of 'partnership', whereby tangata whenua and the Crown work together dealing with matters of mutual concern such as resource management. Hence, the rationale for the continual drive by Māori to have greater involvement in decision-making, and policy development incorporating their particular values (Anon, 2006).

Māori accept the importance forestry plays in the transition to a low-carbon economy and regard the necessary advances in science and technology as critical to their future prosperity. While reducing emissions from agriculture and dairy are prioritised, renewable energies and other low-emission services and products have also been identified as a priority for government and research (NZPA, 2012). Māori are increasingly seeking support from government investments in science, research and new technology and collaboration with universities and CRIs into a future low-carbon economy.

## Māori land ownership and governance

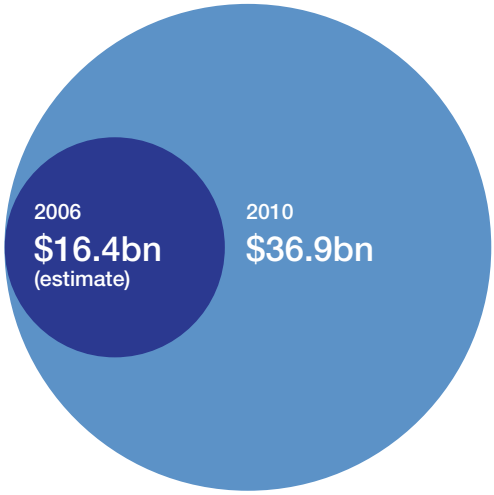
The Māori asset base is substantial – in 2010 the primary industries of agriculture, forestry and fishing accounted for $10.6 billion of their total estimated asset base of $36.9 billion. In addition to owning tracts of 'non-productive' native forest, Māori own around 520,000 ha of land under plantation forestry, with land ownership forecast to increase as a result of future Treaty claim settlements to 785,000 ha, i.e. close to half of New Zealand's existing plantation forests (Goodhew, 2013). According to Miller et al. (2005), Māori belief considers that 'exotic commercial forestry is the "adopted son" who provides protection of remaining lands, employment and economic benefits.'

Māori customary law includes a body of rules developed by Māori to govern themselves. Whakapapa (lineage) connects all Māori to every aspect of the universe and this includes the belief that humans are junior to all other animate or inanimate forms (Asher, 2003). Māori have a unique cultural, spiritual and commercial connection to forestry and land which includes:

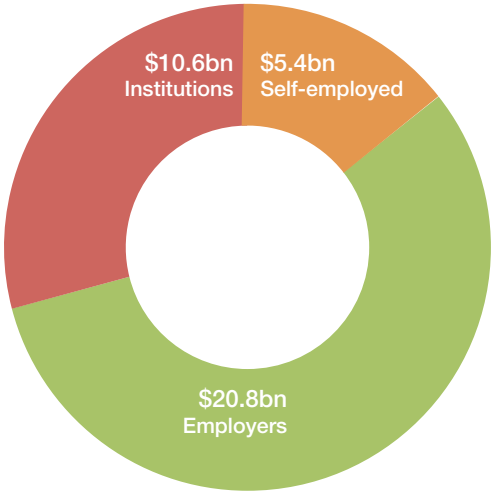
- Communal ownership and distribution of resources (taonga)
- Guardianship over ancestral lands (kaitiakitanga) and sacred areas (waahi tapu)
- Non-transferability of collective and multiple accountabilities and relationships (Asher, 2003; Thorp, 2006).

Māori land ownership is for the long term, due to statutory restrictions on the sale of land, the difficulty in the granting of leases, and the cultural responsibility to retain the lands in perpetuity for future generations (Insley, 2008; Asher, 2003). These factors impact on investment capital and the rationalising of land assets, resulting in a limited scope to receive additional income from the land itself. Consequently, there is a need for owners to invest for the long term (Thorp, 2006). Large areas of Māori land, mainly in Northland and the East Coast, are considered marginal, unproductive and under-performing (Nana, Stokes & Molano, 2011; Woodco, 2011).

Māori forestry knowledge and aspirations in terms of spiritual, environmental, social, cultural and economic needs call for production forests having a mix of native species along with exotics such as radiata pine (Anon, 2014). An example of this is mixed forestry




Source:
BERL, The Asset Base, Income, Expenditure and GDP of the 2010 Maori Economy




Source:
Maori Economic Taskforce/BERL Economics

with native species such as totara and kauri for wood carving, non-timber forest products, and to meet increased tourism demands (Thorp, 2006).

Māori landowners are over-represented as 'small' holders, as few have estates greater than 500 ha and most have less than 40 ha (Miller, Dickinson & Reid, 2005). It is not uncommon for Māori land to have multiple owners running into tens of thousands (Thorp, 2006). The rules for Māori land use are contained in the Te Ture Whenua Māori Act 1993 and these are administered by the Māori Land Court (MLC). The MLC has the capacity to intervene in asset management decisions made by any Māori management structure (Insley, 2008). While such incorporations cover 13% of Māori land area, trusts are the most common management structures for managing multiple ownership organisations, covering approximately 50% of Māori land area.

The New Zealand Government and local authorities acknowledge Māori landowners as 'protectors of the environment'. Māori consider this responsibility is in practice a steady erosion of their property rights, imposing restrictions on land being used for commercial purposes. Māori landowners have a different view about this imposition of 'environmental' district, regional and national regulations relating to their land. As Māori are subject to statutory and cultural restrictions on the sale of their land they tend to manage it for the long term. This, in turn, means they are disproportionately affected by regulations that value much of what Māori value (gain) from the land, i.e. its environmental, social and recreational benefits (Thorp, 2006).

It is not uncommon to find that trusts begin with the trustees doing most of the management tasks, and then as the business expands and income increases specialised staff are employed to carry out this work. According to Thorp (2006), governance and management roles can become confused. Thus, the management of Māori trusts can become an unwieldy, inefficient and expensive bureaucracy with high overheads. Thorp adds, 'This is essentially the cost of doing business on Māori land.' Māori trustees believe that they are only temporarily responsible for the land and that they must leave it as they found it for future generations. As kaitiaki, or stewards of the land, they have a duty to ensure that the vital life force (mauri) and the physical and spiritual health of the environment is maintained, protected and enhanced.

## Social, environmental and community benefits

Forestry has traditionally been a strong employer of Māori; some 16,000 individuals were employed across the primary industries of agriculture, forestry and fishing in 2001 (Miller et al, 2005). Workforce surveys in the Lake Taupo and Lake Rotoaira forests identified that up to 75% of the workforce is Māori and that 38% of the owners are descendants of owners of the forest lands (Thorp, 2006). Māori trustees consider one of their primary roles is the creator of employment, particularly for young Māori. A study into local community attitudes covering the expansion of a forestry industry on the East Coast of the North Island revealed a consensus of opinion that better job opportunities for rural areas would result from such expansion (Langer & Barnard, 2003). Increasing harvesting mechanisation has improved production and reduced personnel injuries, but resulted in less manual employment.

Many Māori landowners enjoy 'exclusive' access rights for traditional recreational activities such as pig and deer hunting, firewood and food gathering, fishing and other general recreation. Māori elders take comfort from the knowledge that younger generations will be able to share these assets into the future (Thorp, 2006). An example of Māori kaitiakitanga and environmental management 'responsibilities' is in response to the problem of increasing nitrogen emissions from dairy farming, estimated to be in the region of 49 kg/ha/yr, and the pollution of waterways from effluent. These by-products cause long-term problems as they enter rivers and lakes causing excess algae growth and reduced water

quality. However, forestry and undeveloped lands emit only 2 kg of nitrogen/ha/yr, encouraging Māori to retain existing lands in forestry for perpetuity (Thorp, 2006).

Research commissioned by the Māori Economic Taskforce in late 2009 concluded that 'increasing the performance of, and income from, the Māori economy is critical to ensuring the economic asset base is not eroded' and that 'such income is critical to the development and kaitiakitanga of the cultural, social, community and environmental assets and values of Māori and all other New Zealanders' (Nana, Stokes & Molano, 2011). On an individual level few Māori landowners have neither the will nor the financial resources to develop their plantations. However, evidence exists that suggests joint ventures may enable Māori landowners to make their land productive (Thorp, 2006). More recently, the importance of Māori involvement in science and technology has been identified, especially the need for more science, engineering and commerce graduates (Anon, 2014).

## Case study – The Lake Taupo Forest Trust

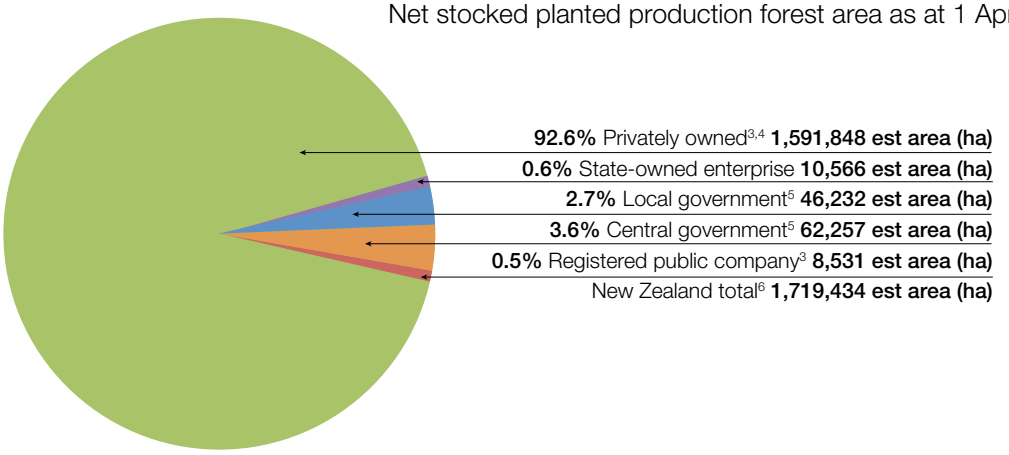
The Lake Taupo Forest Trust (LTFT) is an example of a successful venture. Formed in 1969, it administers 65 land blocks covering around 32,000 ha with approximately 10,000 owners. Individual blocks can have from 20 to 3,000 owners. Many owners have shares in multiple blocks, some as many as 25. In 2006, the LTFT distributed around $2.5 million annually to its owners, and while the average was $250 per owner, some received less than $10 per year (Thorp, 2006).

As a result of low dividends the forest becomes less financially relevant to many owners as their shareholding decreases, due to the number of owners increasing over time as succession rules pass ownership to each new generation. This has resulted in an increasing number of unclaimed individual dividends, amounting to $6 million for the LTFT (Thorp, 2006). The interest earned on unclaimed dividends is available for community purposes, e.g. educational and marae grants, cultural and sport programmes, health initiatives and assistance for the elderly (LTFT, 2012).

The LTFT has a planted area of around 22,000 ha, of which 90% is radiata pine, resulting in a long-term sustainable harvest of 480,000 $m^3$/p.a. in 1999. As the lease draws to a close and the first rotation trees are harvested, the trust replants using its share of the first rotation profits. It is planned that by 2021 all of Lake Taupo Forest will be trust owned and the harvesting of its second rotation will commence (LTFT, 2012). Nevertheless, a 'shared-ownership' model can lead to difficulties in securing a level of consensus (kotahitanga) for major investment or other land management decisions, e.g. a request for land use change (Nana et al, 2011). Despite this difficulty, the trust's overriding objectives are embedded in the conditions of the 70-year LTFT lease signed in 1969, which has resulted in around 30% of its lands remaining unplanted to protect the environment (Thorp, 2006).

LTFT achieved Forest Stewardship Council (FSC) certification following independent inspection and evaluation in April 2002 (LTFT, 2012). The demand for wood from sustainable sources, i.e. 'carbon forestry', and managing forests for ecosystem services have been identified as important issues for the future (NZFOA, 2012).

Net stocked planted production forest area as at 1 April 2011




Source: NEFD 2011

Note

[1] Ownership is based solely on the ownership of the forest irrespective of the ownership of the land.

[2] Net stocked planted production forest area.

[3] Note that significant changes in forest ownership occurred during 2003 resulting in large areas of forest previously owned by public companies now being privately owned.

[4]* 'Privately owned' includes all privately owned forests. The legal entities included in this category are private companies, partnerships,individuals and trusts, which include Maori Trusts and incorporations.

[5]* 'Central Government' Forests are predominantly Crown owned forests on Maori leasehold land. These forests are managed by the ministry for Primary Industries (MPI).

[6] Individual entries may not sum to total shown due to rounding.

## Discussion and conclusions

The embracing of social, cultural and environmental values by Māori results in a single characteristic which differentiates the approach of Māori landowners from many other forestry owners – their ability and commitment to invest for the future. The significant increase in Māori forestry ownership due to Treaty claim settlements has the potential to bring more stability to the forestry industry and reinforce this long-term view. While there may be some bureaucratic and governance constraints peculiar to Māori land and forestry ownership, by focusing on the long term, strong land system resilience exists in terms of economic, environmental and social impacts, rather than just short-term returns on investment.

In conclusion, Māori as guardians or kaitiakitanga of the land and its resources could realise significant benefits and help them play an essential role in a forestry-based biofuel industry. These benefits include:

- Employment
- Rural community regeneration, resulting in a higher skilled and wage economy
- Access to future 'green' markets through new sustainable products
- Not least, maximising the Māori asset base while contributing significantly to New Zealand's economy, emissions reduction targets and future energy security.

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