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Making sense of the numbers

*Education, training, and
extension services for
Māori land owners*

FOMA
ME URU KAHIKATEA

Poutū-te-rangi 2019

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Making sense of the numbers

Māori freehold land is distributed across regions and land use capability classes, and structures of ownership, governance, and management. Key issues facing owners of Māori land include:

- Challenging decision-making processes, compounded by legislative hurdles alongside restricted access to financial capital and skilled labour
- Consequentially, land owners ability to respond to climate-related issues are constrained, similar restrictions exist regarding ability to respond to policy and regulatory requirements and challenges
- The ability of the land itself (technically) to be open to changed uses is a crucial consideration.

Employment of Māori in primary sector (agriculture, forestry, and fishing) is modest with 10 percent representation nationally, a low figure when considering the younger age composition of the Māori population. There are higher ratios of Māori employment in the primary sector in Tairāwhiti and Waiariki. However, ratios are noticeably low in other areas, especially Te Tai Tokerau and Te Waipounamu.

Training provision for primary sector generally is sporadic and of varying quality and recent difficulties with Telford and Taratahi compound the challenges. The ability of education, training and extension service providers to engage with Māori land owners in the agricultural sector is patchy at best, and Māori engagement in education and training programmes remains limited. Extension services are generally not measuring engagement with Māori beyond specifically targeted programmes.

Other key findings on education, training and extension services:

- There are several examples of successful programmes, although these remain either small and/or one-off without ongoing funding, these programmes often share/highlight elements of ‘pastoral’ care, tikanga, and/or te ao Māori perspectives, e.g. mixed-model trainings
- The Federation of Māori Authorities programme, Performance Plus, has demonstrated outcomes, but due to funding constraints, it is restricted to a small number of farms with established processes. The programme has a focus on modifying decision-making and management processes
- Integration or relationship with tertiary education and training providers is sporadic and creates tension rather than collaboration given the funding model of establishing providers.

Recommendations include:

- A significant and protected proportion of any funds arising from climate policy proposals should be ring-fenced to assist Māori land owners determine and implement their climate change responses
- Provide ongoing funding to support programmes to operate sustainably
- Enable bespoke agricultural training and extension solutions to be developed by Māori for Māori
- Further research is required into better understanding pipeline issues regarding low Māori engagement in mainstream agriculture and horticulture education and training.

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1 Introduction

This report has been prepared by BERL and the Federation of Māori Authorities (FOMA) for the Interim Climate Change Commission (ICCC). The key research question is:

What is needed to ensure education, training and extension services for Māori land owners, land managers, and staff are suitable to support in reducing agricultural emissions?

The report provides:

- Section 2 – A brief outline of Māori land ownership, governance structures and land use
- Section 3 – An overview of the drivers around climate change and reducing biological greenhouse gas emissions
- Section 4 – Examples of existing Māori industry and mainstream education, training and extension services currently available for Māori land owners, land managers and staff in the agricultural sector, alongside horticulture sector re-training education and training
- Section 5 – Statistics on Māori engagement in agricultural education, training and apprenticeships
- Section 6 – Data on Māori employment in the agricultural sector
- Section 7 – A case study using a programme run by the Federation of Māori Authorities (FOMA), including key lessons
- Section 8 – Discussion on the findings of the data, including gaps in governance, management and on-farm training provision
- Section 9 – Recommendations to address the issues discussed in Section 8.

2 Māori land

Te Ture Whenua Māori Act 1993 (the Act), also known as the Māori Land Act, replaced the Māori Affairs Act 1953 to "reform the laws relating to Māori land in accordance with the principles set out in the Preamble". The principles¹:

- Reaffirm the Treaty of Waitangi/te Tiriti o Waitangi relationship between Māori and the Crown
- Recognise that land is taonga tuku iho (an inherited asset) of special significance to Māori
- Promote the retention of ... land in the hands of its owners, their whānau, and their hapū, and to protect wahi tapu (sacred places), and
- Facilitate the occupation, development, and utilisation of that land for the benefit of its owners, their whānau, and their hapū.

The Act decrees that all land in New Zealand shall have a status, which may be:

- Māori customary land – land held by Māori in accordance with tikanga Māori, not transferred into freehold land or ceded to the Crown
- Māori freehold land – land that has remained in Māori control and ownership as determined by the Māori Land Court
- General land owned by Māori – land owned communally by five or more people, where the majority are of Māori descent
- General land – land that is not Māori land or Crown land
- Crown land – state owned land
- Crown land reserved for Māori – state owned land that has been set aside for the use or benefit of Māori.

2.1 Māori Land Court Districts

The Native Land Court was established on 30 October 1865 by the General Assembly of the New Zealand Colony under the Native Lands Act 1865². Initially the court converted Māori land into titles which could be acquired, at first by the colonial government then by individual settlers, disaffecting millions of acres of land from Māori. Since the 1993 Act (under review), the modern Māori Land Court's role has a more enabling role in providing a court service for Māori land owners, and their whānau and hapū which:

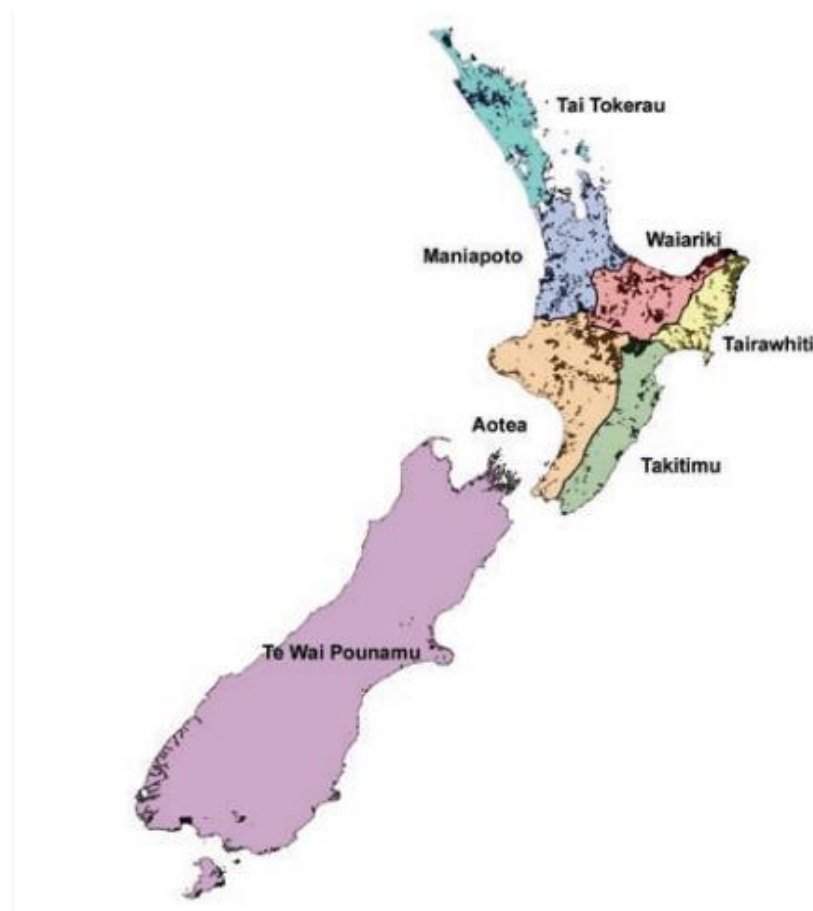
- Promotes the retention and use of Māori land
- Facilitates the occupation, development and use of that land.

The seven Māori Land Court Districts are detailed in Figure 2.1.

¹ <http://www.legislation.govt.nz/act/public/1993/0004/latest/DLM289885.html> Retrieved 29 January 2019

² He Pou Herenga Tangata, He Pou Herenga Whenua, He Pou Whare Kōrero – 150 Years of the Māori Land Court (2015). Ministry of Justice

Figure 2.1: Māori Land Court Districts



Source: Māori Land Court

2.2 Māori land ownership

Prior to 1840, all land was Māori land. As at June 2018, 5.7 percent of New Zealand was Māori land (Table 2.1). Almost all Māori land is freehold with over 27,000 land block titles (Table 2.2).

Table 2.1: Māori land as percentage of total New Zealand land

Rohe	Total land area (ha)	Total Māori land area (ha) ³	Māori land %
Te Tai Tokerau	1,592,842	138,362	8.7
Waikato-Maniapoto	2,019,874	124,060	6.1
Waiairiki	1,780,502	303,424	17.0
Tairāwhiti	1,075,041	269,034	25.0
Tākitimu	1,780,706	87,988	4.9
Aotea	1,180,967	412,901	35.0
Te Waipounamu	15,370,489	66,636	0.4
Total	24,800,421	1,402,404	5.7

³ Māori land Update – Ngā Āhuatanga o te whenua (June 2018). Māori Land Court

Table 2.2: Māori land type and titles

Rohe	Customary land		Freehold land	
	Area (ha)	# of titles	Area (ha)	# of titles
Te Tai Tokerau	38.6	5	138,323.1	5,443
Waikato-Maniapoto	48.3	13	124,011.7	3,740
Wairariki	453.2	2	302,970.5	5,140
Tairāwhiti	4.9	2	269,029.6	5,348
Tākitimu	0.2	1	87,987.5	1,384
Aotea	659.1	15	412,241.7	4,060
Te Waipounamu	0.0	0	66,636.0	2,356
Total	1,204.3	38	1,401,200.0	27,471

Owners of Māori land are restricted to using the land management structures contained within the Act. Not all blocks of land have a management or governance structure in place. Table 2.3 details the number of customary and freehold land blocks with/without structures and the area of land that is vested/not vested with trustees. Blocks with a trust are, on average, larger (100.2ha average) with more owners (206 owners), than unvested blocks with a smaller average size (15.6ha) and less owners (29). The average block of freehold Māori land is 51ha with 103 owners. There are a total number of 3,199,096 ownership records across all blocks.

Table 2.3: Governance structures⁴

Rohe	# Structures	# Blocks with structures	# Blocks without structures	Area vested		Area not vested	
				(ha)	% of total	(ha)	% of total
Te Tai Tokerau	1,131	1,522	3,926	85,584.7	62	52,776.9	38
Waikato-Maniapoto	1,304	1,679	2,074	95,829.4	77	28,230.6	23
Wairariki	2,216	2,481	2,661	271,297.4	89	32,126.3	11
Tairāwhiti	1,346	1,701	3,649	217,359.6	81	51,674.8	19
Tākitimu	527	612	773	70,173.1	80	17,814.6	20
Aotea	1,246	2,122	1,953	370,212.1	90	42,688.7	10
Te Waipounamu	603	1,386	970	42,484.5	64	24,148.5	36
Total	8,373	11,503	16,006	1,152,940.9	82.0	249,460.4	18

The structures available under the Act are Māori Land Court Trusts, Māori Incorporations and Māori Reservations (Table 2.4). These figures do not include Whānau Trusts (9,956) or Kaitiaki Trusts (1,591).

Māori Land Court trusts include:

- Ahu Whenua Trusts – land administration trusts designed to manage whole blocks of Māori freehold land, must promote and facilitate the use and administration of the land for the beneficial owners
- Whenua Tōpū Trusts – manages land belonging to an iwi or hapū, may be used to receive Crown land as part of Treaty settlements

⁴ Note: This includes all types of management structure, including Ahu Whenua Trusts, Whenua Tōpū Trusts, Pūtea Trusts, Māori Incorporations and non-Māori Land Court created structures or organisations but it does not include agencies or agents.

- Pūtea Trusts - manages uneconomical smaller share interests within one or more blocks, any income produced must be held for community purposes
- Whānau Trusts - manages beneficial interests or shares in Māori land or in general land owned by Māori, must benefit the whānau (and the descendants of the tipuna, either living or deceased) named in the trust order
- Kaitiaki Trusts - protects minors or persons under disability who are unable to manage their affairs.

Māori Incorporations have an elected governance board that manages the day-to-day activities on behalf of the owners, and has a similar structure to companies. This function can also be fulfilled by the Māori Trustee, who has legal responsibility under the Māori Trustee Act 1953 to manage land on behalf of Māori land owners. Some forms of governance structure, such as Ahu Whenua, Whenua Tōpū and Māori Incorporations, are used more extensively than others. These structures enable owners to more effectively manage blocks of Māori freehold land on a collective basis. There are also situations where governance structures are not required, as when land is used for housing.

There can be significant governance and management challenges that exist with fragmented land blocks, absentee owners, blocks with multiple owners, and blocks with no governance structure in place. A 2004 Office of the Auditor General performance audit report found, “As owners die and their descendants succeed to their interests, the number of owners of Māori land increases and the fragmentation of Māori land ownership continues. Multiple ownership has increased the administrative costs for Māori land owners because of the need to keep track of the identity and location of a growing number of beneficiaries – especially as a majority of owners is required to make decisions about the land. The (Māori) Trustee, for example, now records ownership interests to eight decimal places because some shares in Māori land have become so fragmented”.⁵

In 2011 Chief Judge W Isaac of the Māori Land Court stated, “Of the approximately 2.3 million ownership interests in Māori land, anecdotal evidence indicates that about half of these interests are held by deceased persons; many land interests are owned by the same person under multiple names; and many owners live far from their land and, in some cases, do not know they are owners of Māori land at all.”⁶

Table 2.4: Governance structure details

Rohe	# Structures	Māori Incorporations	Ahu Whenua Trusts	Māori Reservations	Whenua Tōpū Trusts	Pūtea Trusts	Other Trusts
Te Tai Tokerau	1,131	15	515	586	1	0	14
Waikato-Maniapoto	1,304	16	961	294	3	1	29
Waiariki	2,216	28	1,574	550	8	1	55
Tairāwhiti	1,346	63	974	273	5	0	31
Tākitimu	527	5	392	113	4	0	13
Aotea	1,246	23	827	364	10	0	22
Te Waipounamu	603	10	429	136	2	0	26
Total	8,373	160	5,672	2,316	33	2	190

⁵ Māori Land Administration: Client Service Performance of the Māori Land Court Unit and the Māori Trustee (March 2004). The Office of the Auditor-General

⁶ <https://maorilandcourt.govt.nz/assets/Documents/Publications/MLC-2011-May-Judges-Corner-Isaac-CJ.pdf> Retrieved 29 January 2019

Substantial blocks of land, including Landcorp farms, are also owned and managed by Post-Settlement Governance Entities (PSGE) as land has been returned to iwi or hapū through Treaty Settlement processes. Land administered by PSGEs is defined as General Land in the Act. Transfers and purchases of such land through Treaty Settlement is likely to continue, thus the number of farms owned by Māori will increase over time. This report does not explicitly address the needs of PSGE farming operations and some of the concerns around ownership and development may be different from those of Māori land owners under the Act.

2.3 Development of Māori land

Māori land is often held in small parcels and poorly located, being hilly, marginal or prone to erosion. However, Māori are substantial owners of utilised land, including an estimated 30 percent of plantation forest land, 10 percent of land used for kiwifruit and dairy production, and 25 percent of land used for sheep and beef production.⁷ Furthermore, nearly 40 percent of Māori freehold land is covered with native forest.⁸

The range of issues around land utility is as multifaceted as the complexity of Māori land ownership. The inability to transfer land ownership under the Act supports Māori values on whakapapa (genealogy), kaitiakitanga (guardianship) over ancestral land, and whakatipu rawa (growing the asset base). Therefore, decisions made by land owners tend to revolve around the use of the land rather than divestiture. However, land owners can face considerable difficulty in raising external capital to invest in development, and there can be challenges in board composition and ensuring the right skills are seated at the table.⁹ These factors will have a significant influence when making decisions on how land is used over time.

Te Puni Kōkiri identified six main interlinked barriers to the development of Māori land:¹⁰

- Collective ownership – potential difficulties with obtaining agreement about land use and development
- Access to finance – multiple owners makes it difficult to use land as security when seeking finance for land development
- Governance/Management issues – a lack of expertise to plan and make decisions about administration
- Access to information – costly to obtain information on potential use of Māori land
- Access to land – much Māori land is landlocked, reducing the options available for its use and/or lease
- Rating of Māori land – rating valuations do not allow for single unit rating to same extent as other land, and owners of multiple houses on Māori land cannot access Rates Rebates Scheme.¹¹

⁷ Briefing for incoming Ministers (2017). Ministry for Primary Industries

⁸ Harmsworth, G., Tahi, M., & Insley, C. K. (2010). Climate change business opportunities for Māori land and Māori organisations. Ministry for Primary Industries.

⁹ Insley, C., & Meade, R. (2008). Māori impacts from the emissions trading scheme: Detailed analysis and conclusions. Ministry for the Environment.

¹⁰ Māori Land Administration: Client Service Performance of the Māori Land Court Unit and the Māori Trustee (2004). The Office of the Auditor-General

¹¹ <https://www.tpk.govt.nz/mi/mo-te-puni-kokiri/our-stories-and-media/removing-long-standing-barriers>
Retrieved 29 January 2019

A 2011 report by the former Ministry for Agriculture and Forestry (MAF) stated that only 20 percent of Māori land was operating productively. The report provided a framework for categorising Māori land enterprises, and asserted 80 percent (just under 1m ha) of Māori land was non-arable, with half being under-utilised (Tier 3 – under-utilised lands) and the other half under-performing (Tier 2 – under-performing entities) relative to industry benchmarks.¹² Tier 1 is considered well-developed business. The report also provided recommendations to improve Māori land productivity in three areas:

- Skills development and training (of governors and staff)
- Scale and support for small Māori agribusinesses
- Legislation, ie a review of the Act.

The categorisation of Māori land enterprises in the report were estimates only, as the quality of existing data does not support definitive determination of the current or potential production value of Māori land. The report made critical assumptions that all land was capable of being utilised for sheep or beef farming (61,000ha), or dairy production (910,000ha), and did not consider forestry, other forms of agriculture, horticulture, or apiculture. Moreover, much of this same land is in the poorest land use capability (LUC) classes (Figure 2.2), particularly classes 6, 7 and 8.

Figure 2.2: Land use capability (LUC) classes¹³

LUC Class	Arable cropping suitability†	Pastoral grazing suitability	Production forestry suitability	General suitability
1	High ↓ Low	High ↓ Low	High ↓ Low	Multiple use land
2				
3				
4				
5	Unsuitable	Low ↓ Unsuitable	Low ↓ Unsuitable	Pastoral or forestry land
6				
7				
8				
		Unsuitable	Unsuitable	Conservation land

One hundred percent land use may not be the ultimate goal of Māori land owners, and a broader definition of “development” to include rangatiratanga (leadership), kaitiakitanga (guardianship) and whanaungatanga (family relationships and kinship) is likely to be more inclusive of Māori aspirations. For example, considering succession planning in governance and management as a way of empowering land owners to decide and action land use choices, may be appropriate concepts to include when considering Māori land development.

¹² Māori Agribusiness in New Zealand: A Study of the Māori Freehold Land Resource (2011). Ministry for Agriculture and Forestry

¹³ Lynn IH, Manderson AK, Page MJ, Harmsworth GR, Eyles GO, Douglas GB, Mackay AD, Newsome PJF (2009). Land use capability survey handbook – a New Zealand handbook for the classification of land 3rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science.

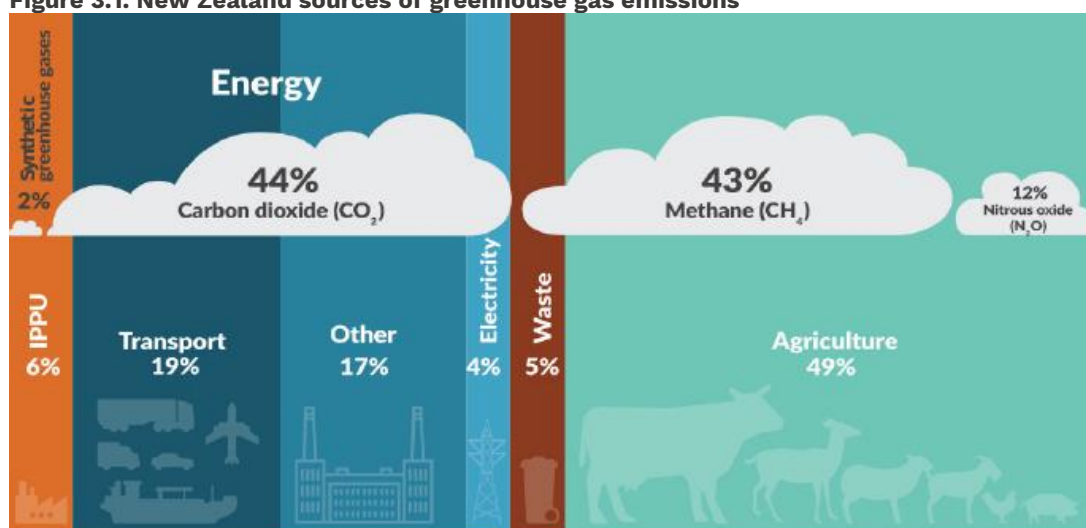
3 Climate change and agriculture

The Kyoto Protocol was adopted (1997) and entered into force (2005). A subsidiary agreement under the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol legally binds the ratifying parties to reduce global greenhouse gas emissions, and provides a framework for emissions trading. The first commitment period covered 2008-2012, and the second covers 2013-2020. As a signatory, New Zealand's 2020 target is to reduce emissions by 5 percent below 1990 levels. This target includes all greenhouse gases, such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), and extends to all sectors of the economy.

The Paris Climate Agreement (the Paris Agreement), to which New Zealand is also a signatory, is a global agreement to take action on climate change. Similarly under the UNFCCC, the Paris Agreement came into force in 2016 with the purposes of keeping the global average temperature well below 2°C above pre-industrial levels, strengthen the ability of countries to deal with the impacts of climate change, and ensuring that financial flows support the development of low-carbon and climate-resilient economies. The Paris Agreement specifically recognises the rights of indigenous peoples in the context of climate change mitigation, as well as the traditional knowledge of indigenous peoples and local knowledge systems.¹⁴ Superseding the Kyoto Protocol in 2020 as the global framework for mitigating greenhouse gas emissions, the Paris Agreement covers the period 2021-2030. New Zealand's 2030 target is to reduce emissions by 30 percent below 2005 levels, which is equivalent to 11 percent below 1990 levels.

However, our greenhouse gas emissions in 2015 (76m tonnes of carbon dioxide equivalent) were 24.6 percent higher than 1990 levels (61m tonnes)¹⁵. Agriculture contributed the most to New Zealand's emissions profile over that time (Figure 3.1), largely due to an increase in the national dairy herd size of over 85 percent, and a fivefold increase in the application of nitrogen-containing fertiliser. The most recent livestock statistics indicate dairy cattle numbers reached a peak in 2014 (6.7m) and have dropped 4.5 percent to 6.4m.¹⁶

Figure 3.1: New Zealand sources of greenhouse gas emissions¹⁷



Source: Ministry for the Environment

¹⁴ http://unfccc.int/files/home/application/pdf/paris_agreement.pdf Retrieved 1 February 2019

¹⁵ Environmental-economic accounts: 2018. StatsNZ

¹⁶ Agricultural production statistics: June 2018 (provisional). StatsNZ

¹⁷ Due to rounding, the percentages add up to 101 percent

In the years since the Kyoto Protocol was adopted (1997) and entered into force (2005), there has been a raft of research investigating the impacts of agricultural activity on carbon emissions and climate change. There has also been a raft of regulatory activity with the government's proposed Zero Carbon Bill¹⁸, a report from the New Zealand Productivity Commission recently released a report on options to transition to a low-emission economy¹⁹, the establishment of an Interim Climate Change Commission, and examination by the Parliamentary Commissioner for the Environment (PCE) into biological sources and sinks of greenhouse gases and potential target and policy options.²⁰

Agriculture is a significant contributor to the New Zealand economy and to the Māori economy. Total export revenue from agriculture for the 12 months to December 2018 totalled \$23.49bn.²¹ Agriculture is also a significant contributor to the production of greenhouse gas emissions, particularly CH₄ largely produced by ruminants such as sheep and cattle, and N₂O from fertiliser use and animal urine interacting with soil microbes. Although there has been progress is slowing down the production of emissions through the use of mitigating on-farm practices²², there is much to do if New Zealand is to meet Agreement commitments and avoid the risks associated with rising global temperatures.

The Climate Change Response Act 2002 (the CCRA) provides the main legal framework for New Zealand's climate change mitigation response and was established in the context of being signatory to the Kyoto Protocol. A subsequent amendment, the Climate Change Response (Emissions Trading) Amendment Act 2008, provides the statutory basis for the New Zealand Emissions Trading Scheme (NZ ETS), the central policy tool for reducing emissions. The CCRA recognises the right of Māori to be consulted on ministerial decisions related to climate change. Section 3A states the Crown's responsibilities under the Treaty of Waitangi, and requires the Minister or the Chief Executive of the administering agency to consult with iwi and Māori before making specified decisions under the CCRA. The specific decisions are noted in additional sections, with acknowledgement that climate change mitigations may have an effect on Māori interests in the natural environment.

3.1 Interim Climate Change Committee

New Zealand has set a target under the Paris Agreement to reduce its greenhouse gas emissions by 30 percent below 2005 levels by 2030, and to adopt increasingly more ambitious targets in the future. The Interim Climate Change Committee (ICCC) is a Ministerial Advisory Committee appointed by the Climate Change Minister, Hon James Shaw, with the agreement of Cabinet. Officially starting on 1 May 2018, the purpose of the ICCC is to provide independent evidence and analysis that will be passed to a proposed Climate Change Commission to inform its recommendations.

The ICCC's is expected to make recommendations on:

- How surrender obligations could best be arranged if agricultural methane and nitrous oxide emissions enter into the New Zealand Emissions Trading Scheme

¹⁸ <https://zerocarbonact.nz/zca-summary/> Retrieved 31 January 2019

¹⁹ <https://www.productivity.govt.nz/inquiry-content/3254?stage=4> Retrieved 31 January 2019

²⁰ <https://www.pce.parliament.nz/publications/a-note-on-new-zealand-s-methane-emissions-from-livestock> Retrieved 31 January 2019

²¹ Includes: Live Animals, Meat and edible offal, Dairy produce, bird's eggs and honey, Other animal originated products, Animal and vegetable fats and oils, and Meat and fish preparations. StatsNZ, Retrieved 19 February 2019.

²² Climate Change and Agriculture: Understanding the biological greenhouse gases (2016). Parliamentary Commission for the Environment

- Planning for the transition to 100 percent renewable electricity by 2035.

In July 2018 the ICCC established a technical working group as part of its agricultural workstream, known as the AgCharg group. The AgCharg group reviews and provides input on proposals brought to the group by the ICCC. FOMA is a member of this group, providing specific knowledge and expertise on Māori land use and Māori agricultural economics.

3.2 Biological Emissions Reference Group

Predating the ICCC, the Biological Emissions Reference Group (BERG) was established in June 2016, with the aim of bringing together the primary sector and government agencies to develop understanding around the opportunities, costs, benefits and barriers to reducing biological greenhouse gas emissions (methane and nitrous oxide) from agricultural activity. BERG released a report in December 2018 with summaries of their research and analyses.²³

A key part of the report is analysis on the social and behavioural barriers to farmers adopting biological emission mitigation practices. Barriers identified include:

- Lack of information and institutional support
- New ways of doing things not being compatible with existing practice
- Complexity of changes
- Difficulties with access to finance
- Land tenure issues
- Personal characteristics, such as age and lack of confidence.

Some of these barriers are comparable to those identified in Section 2.3 on barriers to the development of Māori land, in particular, access to finance, access to information, land tenure issues, and the complexity of changes. Lack of confidence (regarding governance or management expertise) may also be akin.

AgFirst was contracted by BERG to undertake a survey of farmers on their understanding of biological emissions as part of the analyses. Survey results indicated 98 percent of farmers surveyed didn't know the level of greenhouse gas emissions for their own farm, and 97 percent underestimated the amount of carbon dioxide equivalent emitted by the average farm.

The New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) led an assessment of the probability of future availability of various mitigation technologies, and their potential to reduce biological emissions. NZAGRC reported that no one mitigation option will address the issue and "packages" of options were more likely to be successful. The report also stated that to assist farmers in implementing mitigation management systems, future investment into extension was required.

3.3 Productivity Commission low-emissions economy report

In May 2017, the Productivity Commission (PC) was tasked with identifying options for how New Zealand can reduce domestic greenhouse gas emissions by transition to a low-emissions economy,

²³ Report of the Biological Emissions Reference Group (BERG), (2018)

where income and wellbeing are also prioritised. The PC inquiry found three particular shifts must happen for New Zealand to achieve its low-emissions commitments:²⁴

- Ceasing the use of fossil fuels and switching to using electricity and other low-emission energy sources, including for vehicular use
- Undertaking afforestation to offset emissions, required substantial and sustained rates of planting
- Changing agricultural production methods, including land use diversification and adopting low-emissions practices on farms.

Section 11.8 of the report specifically discussed Māori land, including the opportunities and barriers to reducing net emissions from this land. The report acknowledged the challenges with locality, ownership, and governance capability. These challenges also contribute to making changes in farm management practices and in utilising technology for reducing greenhouse gas emissions.

The report stated that development of Māori land will have a significant impact on New Zealand's transition to a low-emissions economy, and discussed initiatives in progress, such as planting trees on marginal land for carbon sequestration. There was a reminder to consider the Treaty partnership in developing a legislative framework for a low-emissions economy, particularly around meaningful consultation and enhanced participation (and developing Māori capacity and capability to do so), Māori land owners have also asked for Māori-specific approaches to lowering emissions from land use.²⁵

The Productivity Commission has also supported increased investment by the government in agricultural gas research, including low-emitting animals and an anti-methane vaccine for cows and sheep. The Commission has stated that simply adopting already available good farming techniques would only achieve at most a 10 percent emissions reduction without far-reaching changes to what is currently farmed.

3.4 New Zealand Agricultural Greenhouse Gas Research Centre

The New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) has established a Māori Advisory Group to advise on science needs, capability development and information requirements that relate to the mitigation of agricultural greenhouse gas emissions as they relate to Māori agribusinesses. As part of this mandate, NZAGRC is undertaking research to assist the Māori agribusiness sector to improve farm productivity while reducing greenhouse gas emissions.

One project worked with a network of 29 Māori-owned farms with a mix of ownership structures, including Māori freehold land, PSGE farms and privately held farms, and used intensive modelling investigating mitigation strategies on four of these farms. The project did not use cultural values to differentiate or select farms, and values, aspirations or objectives were not considered. The end-of-project report stated that there was no direct correlation between farm ownership type and the level of greenhouse gas emissions, and that farm performance was driven more by the capability of governance and management than by the ownership structure of the business. However, the research also found an organisation managing multiple enterprises or properties across different sectors could

²⁴ New Zealand Productivity Commission. (2018). Low-emissions economy: Final report. Available from www.productivity.govt.nz/low-emissions

²⁵ Harmsworth, G., Tahī, M., & Insley, C. K. (2010). Climate change business opportunities for Māori land and Māori organisations. Ministry for Primary Industries

make decisions about a wider range of mitigation options, including land diversification, than an organisation that was reliant on one type of enterprise or land use type, ie dairy farm.²⁶

A Ministry for Primary Industries (MPI) review of the NZAGRC was completed in October 2018 and the report released February 2019.²⁷ The report found there is an opportunity to become more involved in the Primary Industry Training Organisation (ITO) curriculum development on climate change in the primary sector. The review also recommended working in partnership with the sector to develop further capability of best practice in farming efficiency.

²⁶ Mitigating Greenhouse Gas Emissions on Māori Farms - End of Project Report (2014 – 2017). (2018). NZAGRC

²⁷ <https://www.mpi.govt.nz/dmsdocument/32911/loggedIn> Retrieved 22 February 2019

4 Existing education, training and extension services

The challenges inherent in Māori land ownership and development requires a comprehensive range of supports in order to develop the capability and skills necessary to lift the utility of Māori land. This does not exclude the additional needs for information, technology, networks, and capital investment. This section summarises some of the education, training and extension services relevant to the agricultural sector.

4.1 Education and training available

In this section, we outline a range of education and training offerings relevant to Māori land owners, governors, managers and workers. For ease of navigation, these are presented as three distinct groupings:

- Governance – owners, trustees, management committee members
- Management – land/farm managers
- Staff – land//farm workers.

However, these groupings may not reflect the organisation of all Māori land owning structures. In which case, they may be considered as functions rather than specific roles.

Where Mātauranga Māori is referenced in the following sections, we take this to encompass Māori ways of being and engaging in the world, including kawa (cultural practices) and tikanga (cultural principles) as well as values such as kaitiakitanga, whakapapa, and whanaungatanga, which are all relevant when considering Māori land management and succession planning. Mātauranga is the process by which information is observed, tested, interpreted, built upon and handed down. Longstanding relationships with, and understanding of, specific pieces of land are part of Mātauranga, as maramataka (the Māori calendar) guides when it is appropriate to undertake activities such as planting, hunting and fishing. For example, in some communities, the time to plant kūmara is when the kōwhai blooms.

4.1.1 Governance

Governance may refer to owners, trustees, management committee members, or any other role associated with a structure, such as referred to in Section 2.2. Developing effective governance skills and capability is essential to strategic decision-making regarding Māori land utilisation. Kaitiaki (governors/trustees) are charged with responsibility over assets, and have to balance valuing the legacy from the past and a long-term strategic approach, with a broad set of beneficiaries, including current and future generations. These multi-generational time frames offer a distinct natural advantage but also provide challenges to plan for time frames beyond those of typical entities.

Communal ownership of lands inherently emphasising the importance of kaitiakitanga in a governance context. Multiple bottom-line perspectives balancing social, cultural, commercial and environmental needs are common, and governance bodies often required to carry out extensive consultation with regular hui (meetings) and consensus decision making.

Careful consideration needs to be given to governance appointments to ensure the right people are sitting around the table, and this may be heavily influenced by the needs and purpose of the governance structure, long-term strategy, and the importance of tikanga and kawa. Structures may need ongoing training and support to develop the skills and knowledge needed to manage the land, to provide strategic direction to management, and to be accountable to land owners.

A sample of governance trainings follows. These are primarily short courses with no-prerequisites.

Toi Ohomai Institute of Technology

Manu Taiko - Toro Parirau (Kaupae 4) New Zealand Certificate in Māori Governance (Level 4)

- Offered in Rotorua, Taupō, Tauranga, Whakatāne (Waiariki)
- 19 weeks part-time study, February and July intakes in 2019
- No fees
- The main outcome of this course is to provide governance skills for trustees on Māori trusts and committees. Environmental sustainability is covered in one module. No specific coverage of land management.

Western Institute of Technology at Taranaki (WITT)

New Zealand Certificate in Māori Governance (Level 4)

- Offered in New Plymouth (Aotea)
- 17 weeks part-time study, February and July intakes in 2019
- No fees
- The main outcome of this course is to provide governance skills for Māori governance entities or Māori Land Court governance roles. Environmental sustainability is covered in one module. No specific coverage of land management.

Institute of Directors (IoD)

Rural Governance Essentials

- Offered in Timaru (Te Waipounamu) as a one day course in 2019
- \$850-\$1,080 fee
- Focus on the role of governance in agribusiness and rural context. No explicit focus on land use, environmental concerns or Mātauranga Māori.

Company Directors Course

- Courses offered in Auckland, Waiheke Island (Te Tai Tokerau), Tauranga (Waiariki), Wellington (Aotea), Christchurch, Queenstown (Te Waipounamu)
- Five day intensive course
- Fees from \$7,880 to \$10,600, depending on location and whether a member of the IoD, businesses may apply for up to 50 percent of course costs to be covered by NZTE
- Focus on developing governance skills of individuals, so that they become more effective at the board table. Aimed at people with some exposure to governance already, No explicit focus on rural governance, environmental concerns or Mātauranga Māori.

DairyNZ

Rural Governance Development Programme

- Offered in Christchurch (Te Waipounamu), Taupo (Waiariki)
- Five day course over 10 months from April 2019 to February 2020
- \$4,750 + GST fee, businesses may apply for up to 50 percent of course costs to be covered by NZTE
- Aims to develop effective governance in boards of rural enterprises, focuses on the transition from having no governance, or governance mixed with management, to having a distinct governance function. Each participating business is encouraged to bring an advisor. No explicit focus on environmental concerns or Mātauranga Māori in curriculum. Presenter has experience with Māori trusts.

Fonterra

Governance Development Programme

- No location listed for 2019
- 8 ½ days study over one year, plus distance learning between workshops
- Stage One fees – \$350, Stage Two fees – \$2,500; all additional costs, including travel and accommodation, are met by the Governance Development Programme
- Open to shareholders associated with Fonterra shareholders
- Aims to develop governance acumen and foster leadership skills in future rural leaders. No explicit focus on environmental concerns or Mātauranga Māori in curriculum.

Many providers of governance training are private companies or consultants with governance experience. Most provide tailored training as requested by governance structures, but websites provide little detail on whether they are able to provide specific rural governance training in an Mātauranga Māori context or consider land use from the perspective of environmental sustainability.

4.1.2 Management

Māori land managers are tasked with delivering on the strategic objectives defined by their governance structures. In some instances, there may be no delineation between land owners/governors and land managers.

For the purposes of considering whether a training is for land managers, courses listed here clearly described the farm management in their curriculum or defined farm manager as a career outcome.

With the exception of two Te Wānanga O Raukawa courses which were included here due to their specific Mātauranga Māori approaches, we have excluded Bachelor and Post-graduate courses from this list due to the complexities of the programme structures and range of subjects. More relevant is that very few Māori study agriculture at degree level. Both Massey University and Lincoln University offer undergraduate and post-graduate qualifications in agricultural science, and individual papers may also be taken. Massey University is in Palmerston North (Aotea) and Lincoln University is in Christchurch (Te Waipounamu).

Te Wānanga O Raukawa

Heke Kaitiakitanga Pūtaiao - Diploma in Environmental Management (Level 5)

- Offered in Ōtaki (Aotea)
- 1 year full-time study, March intake in 2019
- \$4,167 total cost of qualification for domestic students
- Bilingual (Māori/English)
- Foundations of environmental management, gain understanding of Mātauranga Māori approach to the environment. No specific coverage of agricultural land use.

Poutuarongo Kaitiakitanga Pūtaiao - Bachelor of Environmental Management (Level 7)

- Offered in Ōtaki (Aotea)
- 3 years full-time study, March intake in 2019
- \$11,932 total cost of qualification for domestic students
- Bilingual (Māori/English)
- Consider natural resource management in te taiao (the environment) within tikanga management frameworks. Environmental planning, eel fisheries, wetlands and other natural habitats feature. No specific coverage of agricultural land use.

Poutāhū Whakahaere - Postgraduate Diploma in Management (Level 8)

- Offered in Ōtaki (Aotea)
- 1 year full-time study, March intake in 2019
- \$3,935 total cost of qualification for domestic students
- Bilingual (Māori/English)
- A level of proficiency in te reo Māori required. Support from a hapū/iwi to conduct research. Must hold an undergraduate degree or have appropriate knowledge and experience to study at postgraduate level.
- Specialist skills and knowledge in Māori language and tikanga combined with the functions of planning, organising, and leading. No specific coverage of agricultural land use or environmental sustainability.

Te Whare Wānanga o Awanuiārangi

Te Aka Pūtaiao (Kaupae 5) – Diploma in Environmental Management (Level 5)

- Offered in Whakatāne (Waiariki)
- 20 weeks full-time study, February and July intakes in 2019
- \$4,167 total cost of qualification for domestic students
- Bilingual (Māori/English)
- Foundations of environmental management, gain understanding of Mātauranga Māori approach. No specific coverage of agricultural land use.

Southern Institute of Technology (SIT)

New Zealand Diploma in Agribusiness Management (Level 5)

- Distance learning with intakes listed for March, July, and August 2019
- 18 months full-time study, up to 5 years part-time study
- Zero fees scheme for domestic students
- It is recommended that learners have a minimum of three years of agribusiness experience, which may include previous training or qualifications.
- Suited to land owners or people working in the agricultural sector who want to move into management. Resource management paper includes environmental management practices which enhance sustainability, and evaluating sustainable and environmental management plans in agribusinesses. No specific coverage of Mātauranga Māori.

New Zealand Certificate in Sustainable Primary Production (Level 4)

- Distance learning with intakes listed for April, June, and August 2019
- 18 weeks full-time study, up to 2 years part-time study
- \$20 per credit for domestic students plus administration fees (70 credits)
- Provides skills and knowledge directly relevant to day-to-day sustainable management of land-based primary production operations. No specific coverage of Mātauranga Māori.

Toi Ohomai Institute of Technology

New Zealand Diploma in Agribusiness Management (Level 5)

- No locations/intakes listed at February 2019
- 15 months part-time study
- \$6,190 total cost of qualification for domestic students
- Entry criteria include a Level 3 or 4 industry-related qualification or equivalent, OR evidence of ability to meet academic requirements, relevant industry experience, and current employment in the agriculture industry
- Suited to land owners or people working in the agricultural sector who want to move into management. Covers sustainable resource management and risk management. No specific coverage of Mātauranga Māori.

Primary ITO

New Zealand Diploma in Agribusiness Management (Level 5)

- Modules offered across the country, including by Zoom
- 2 ½ years part-time study
- From \$495 per module
- Provides skills needed to run an agribusiness. Includes a Sustainability Management module. No specific coverage of Mātauranga Māori.

Eastern Institute of Technology offers this qualification to its students in Hawke's Bay and Gisborne through a partnership with Primary ITO.

NorthTec

New Zealand Diploma in Agribusiness Management (Level 5)

- Offered in Dargaville, Whangarei, Kaikohe (Te Tai Tokerau)
- 2 ½ years part-time study, block courses with online learning
- \$3,447.60 total cost of qualification for domestic students
- No academic entry criteria, but must have current employment in the agriculture industry
- For those in decision-making roles on a farm or wanting to step up into management. Covers sustainable resource management and risk management. No specific coverage of Mātauranga Māori.

New Zealand Certificate in Sustainable Primary Production (Level 4)

- Offered in Kaitia, Whangarei (Te Tai Tokerau)
- 22 weeks full-time study, July intakes in 2019
- No fees for 2019 as a pilot to boost number of trained workers entering the sector
- Provides skills and knowledge to develop and manage sustainable land-based production. No specific coverage of Mātauranga Māori.

4.1.3 Staff

Staff working on Māori land are the backbones of their farms, and are charged with day-to-day operational tasks as directed by Māori land managers. Farm workers tasks may include raising and caring for livestock, repairs and maintenance, tractor work, and other farming activities. There are no specific entry requirements for being employed as farm workers, farmhands or farm assistants, but employers may prefer someone who has taken a step towards gaining knowledge and experience. National certificates in agriculture, Primary ITO trainings and apprenticeships are some of the entry pathways for these jobs.

Courses listed here are at NCEA Level 2 and Level 3, which are introductory and foundation level courses. Level 2 courses in agriculture are predominantly offered by Primary ITO, with Level 3 courses being more widely available. The liquidation of Taratahi in February 2019 has impacted the availability of Level 2 -4 qualifications in agriculture.

Several institutes offer the New Zealand Certificate in Land Based Sustainability Practices (Level 3) as at February 2019, including NorthTec (Te Tai Tokerau), Eastern Institute of Technology (Tairāwhiti and Tākitimu), Land Based Training (Aotea), and SIT (Distance Learning). While not specifically a foundation or introduction agricultural qualification, it could be considered an extension training for those already working in the land based primary sector who want to use best practice sustainability to enhance the performance of their agribusiness.

Southern Institute of Technology (SIT)

At the time of writing, SIT had confirmed that Telford in Balclutha (Te Waipounamu) was now a faculty on its campus, and SIT would take over provision of the New Zealand Certificate in Agriculture

(Level 3) and Massey Diploma in Agriculture from Taratahi, but no further details of these courses were available. Delivery of the Level 4 New Zealand Certificate in Agriculture (Dairy Farming) was not confirmed

Toi Ohomai Institute of Technology

New Zealand Certificate in Agriculture (Farming Systems) (Level 3)

- Offered in Rotorua, Taupō, Tauranga, Whakatāne (Waiariki)
- 1 year full-time study, June intake in 2019
- \$5,262 total cost of qualification for domestic students
- Includes New Zealand Certificate in Agriculture (Vehicles, Machinery and Infrastructure) (Level 3)
- Introductory course for working on a farm, includes soil and pasture production, livestock health and handling, and sustainability in primary sector. No specific coverage of Mātauranga Māori.

Eastern Institute of Technology (EIT)

New Zealand Certificate in Agriculture (Farming Systems) (Level 3)

- Offered in Gisborne (Tairāwhiti), Hawke's Bay (Tākitimu)
- 28 weeks full-time study, various intakes in 2019
- \$4,166 total cost of qualification for domestic students
- Introductory course for day-to-day farm operations. No specific coverage of Mātauranga Māori.

NorthTec

New Zealand Certificate in Agriculture (Level 3)

- Kaitaia, Whangarei, Kaikohe (Te Tai Tokerau)
- 1 year full-time study, February and July intakes in 2019
- \$3,362.81 total cost of qualification for domestic students
- Includes New Zealand Certificate in Agriculture (Farming Systems) (Level 3) and New Zealand Certificate in Agriculture (Vehicles, Machinery and Infrastructure) (Level 3)
- Introductory course for working on a farm, includes soil and pasture production, livestock health and handling, and sustainability in primary sector. No specific coverage of Mātauranga Māori.

Otago Polytechnic

High Country Farming (Level 3)

- Offered in Central Otago (Te Waipounamu)
- One year full-time study, February, April and July intakes in 2019
- \$5,962 total cost of qualification for domestic students
- Includes New Zealand Certificate in Agriculture (Farming Systems) (Level 3) and New Zealand Certificate in Agriculture (Vehicles, Machinery and Infrastructure) (Level 3)

- Provides broad theoretical understanding of and practical capability in the New Zealand pastoral farming sector. Only training provider offering this qualification with high country specialisation. No specific coverage of Mātauranga Māori.

Primary ITO

Primary ITO provides a range of training and qualifications to primary industries, many of which are undertaken as in-work training. Courses can take up to one year to complete, and fees are up to \$620. No courses describe including coverage of Mātauranga Māori. Relevant qualifications offered include:

- Primary Industry Skills – New Zealand Certificate (Level 2)
- New Zealand Certificate in Primary Industry Skills (Agriculture) (Dairy Farming) (Level 2)
- New Zealand Certificate In Agriculture (Pastoral Livestock Production) (Level 3)
- New Zealand Certificate in Agriculture (Milk Harvesting) (Level 3)
- New Zealand Certificate in Agriculture (Livestock Husbandry – Dairy, Sheep, Beef or Deer) (Level 3).

Land Based Training (LBT)

LBT is a private training establishment (PTE) based in Whanganui, with branches and locations throughout the North Island, including in Waikato-Maniapoto, Waiairiki, Tākitimu, and Aotea. Some courses have no fees, and some are fee paying. Some courses are held in specific locations, and some define location as “Local”. No courses describe including coverage of Mātauranga Māori. Relevant qualifications offered include:

- Primary Industry Agriculture (Level 2)
- Primary Industry Skills – New Zealand Certificate (Level 2)
- New Zealand Certificate In Agriculture (Pastoral Livestock Production) (Level 3)
- New Zealand Certificate In Agriculture (Farming Systems) (Level 3)
- New Zealand Certificate in Land Based Sustainability Practices (Level 3)
- New Zealand Certificate Agriculture (Level 4)
- New Zealand Certificate In Agriculture (Arable, Dairy & Livestock Farming) (Level 4).

The Awhiwhenua Land Based Training Farm School is a partnership between LBT and Āti hau Whanganui Incorporation (AWHI). Based at Ngā Mōkai Papakainga near Waiōuru (Aotea), the programme has been operating for a few years and prioritises shareholders and descendants of Āti hau Whanganui land owners. AWHI offers scholarships to students with family ties in the region and it also pays some of the course costs. The New Zealand Certificate in Agriculture (Level 3 and Level 4) programme adds tikanga Māori to pastoral farm skills and emphasises sustainability, including the consequences of fertiliser use.

Western Institute of Technology at Taranaki (WITT)

New Zealand Certificate in Agriculture Farming Systems (Level 3)

- Offered in New Plymouth (Aotea)
- 28 weeks full-time study, monthly intakes in 2019
- \$420 total cost of qualification for domestic students
- Provides broad theoretical understanding of and practical capability in the New Zealand pastoral farming sector. Specialise in Dairy, Beef Cattle or Sheep. No specific coverage of Mātauranga Māori. WITT trainings are delivered in partnership with LBT.

4.1.4 Whenua Kura

Whenua Kura is an iwi-led partnership between Ngāi Tahu, Te Tapuae o Rehua, Ngāi Tahu Farming and Lincoln University. The partnership seeks to grow Māori leadership in agriculture and is open to all Māori. Whenua Kura is funded by the government as part of a programme to help young Māori gain the skills and qualifications necessary to enter the workforce in their chosen field. Based at Te Waihora Campus of Lincoln University and the Telford campus in Balclutha (Te Waipounamu), practical work placements are offered via cadetships with Ngāi Tahu farms, on one of the Telford farm units or on other farms in the Otago/Southland regions.

All Whenua Kura students participate in four scheduled noho marae throughout the year at different marae across the country, the first of which takes place as orientation immediately before the start dates of the programmes. Students learn local Ngāi Tahu history and build relationships and community with the local rūnanga affiliated to the area where they are study. The programmes links contemporary learning pedagogy with Tikanga and Kaupapa Māori, including values such as kaitiakitanga, identity, rangatiratanga, and whanaungatanga. Te Whare Tapa Whā is an integral and underpinning framework, ensuring all aspects of Māori health and wellbeing are aligned with the wider environment and community.

Whenua Kura offers the following programmes for staff and management:

- Whenua Kura Certificate in Farming (Dairy) (Level 3)
- Whenua Kura Certificate in Agriculture (Level 3)
- Whenua Kura Diploma in Agriculture (Level 5)
- Whenua Kura Diploma in Farm Management (Level 6).

4.2 Re-training options for staff

This section provides an overview of horticulture training as at February 2019. As to the capacity and agility of training providers to increase horticultural courses, the delivery of horticultural qualifications requires different staff experience and resourcing, administration, and market positioning by training providers to that of agricultural qualifications, and any increase in market demand is not likely to be responded to quickly due to these logistical challenges. Training providers are likely to undertake their own feasibility studies into the viability of increasing horticultural qualification delivery. If demand did increase, some of the providers offering agricultural trainings also offer trainings in horticulture, including EIT, LBT, NorthTec, Otago Polytechnic, Primary ITO, SIT, Toi Ohomai Institute of Technology, and WITT, and may be able to increase their capacity to deliver.

Regarding new qualifications that may be required, qualifications are inherently tied to assessment standards. New standards and qualifications take considerable time to develop, and in the primary sector, the Primary ITO is the principal developer. The approval of new qualifications by the New Zealand Qualifications Authority (NZQA) does not in itself guarantee the qualification will be delivered by training providers, and there are a number of cases where training providers no longer offer qualifications due to lack of student demand.

Te Wānanga O Aotearoa (TWOA)

TWOA does not currently provide any training in agriculture or horticulture. The only training that may be relevant to the needs of Māori land owners is a no fees foundation forestry training.

NZ Certificate in Forest Industry Foundation Skills (Level 2)

- Offered in Kawerau and Rotorua (Waiariki)
- 22 weeks full-time study, February and July intakes in 2019
- Foundation silviculture skills.

Eastern Institute of Technology (EIT)

EIT offer a range of horticulture programmes in Gisborne (Tairāwhiti) and Hawke's Bay (Tākitimu), from trainee and foundation programmes from Levels 2-4, to Level 5 Diploma in Horticulture, with strands in fruit production, nursery production and post-harvest. Some are offered part-time to support training while being employed, or require employment in the horticultural sector for the duration of the course. Other courses have full time delivery with work experience components. The Institute is one of the providers of the Level 3 Certificate in Land Based Sustainability Practices so there are options for considering sustainable land use practices. EIT also offer a specific Māori Mahinga Kai qualification, which may sit alongside other agriculture and horticulture qualifications.

Mahinga Kai Te Hoata - NZ Certificate in Māori Traditional Food Production, Harvest and Management (Level 3)

- Offered in Hawke's Bay (Tākitimu)
- 20 weeks full-time study, February and July intakes in 2019
- No fees
- Develops capability and capacity to protect, maintain, and enrich Mātauranga Mahinga Kai (Māori traditional food production, harvesting, and management).

Land Based Training

LBT have several horticulture qualifications at Levels 2 and 3, including:

- Primary Industry Skills – New Zealand Certificate (Level 2)
- National Certificate in Horticulture (Level 2)
- New Zealand Certificate in Land Based Sustainability Practices (Level 3)
- New Zealand Certificate Horticulture (General) (Level 4)
- New Zealand Certificate in Organic Primary Production.

As with their agriculture offerings, they are offered in multiple locations with low fees.

Otago Polytechnic

Otago Polytechnic offers a range of horticultural qualifications from Levels 2-5, including:

- New Zealand Certificate in Primary Industry Skills (Level 2)
- New Zealand Certificate in Horticulture (General, Amenity, Nursery Production, and Arboriculture strands) (Level 3)
- New Zealand Certificate in Horticulture Production (Fruit Production) (Level 4)
- New Zealand Diploma in Horticulture Production (Fruit Production) (Level 5).

The courses are delivered in Dunedin and Central Otago (Te Waipounamu), as well as work-placed based distance learning for Fruit Production and Nursery Production. The Level 5 Diploma may be taken in block courses with an online component, and covers stone fruit, pip fruit, berry or wine grape production industries.

Primary ITO

Primary ITO provides a range of training and qualifications in horticulture, including for apprentices. Courses can take up to one year to complete, and fees are up to \$620. Relevant qualifications offered include:

- New Zealand Certificate in Primary Industry Skills (Fruit Production, Nursery Production, Indoor Crop Production, Outdoor Vegetable Production and Post-Harvest strands) (Level 2)
- New Zealand Certificate in Horticulture (Fruit Production, Nursery Production, Indoor Crop Production, Outdoor Vegetable Production and Post-Harvest strands) (Level 3)
- New Zealand Certificate in Horticulture Production (Fruit Production, Nursery Production, Indoor Crop Production, Outdoor Vegetable Production and Post-Harvest strands) (Level 4) – aimed at supervisors/managers.

NorthTec

New Zealand Certificate in Horticulture (General) (Level 3)

- Offered in Dargaville, Kaitaia, Whangarei, Kaikohe (Te Tai Tokerau)
- 1 semester full-time study, February and May intakes in 2019
- No fees for 2019 as a pilot to boost number of trained workers entering the sector
- Introductory training for horticulture workers, including propagation, cultivation and growing systems.

Southern Institute of Technology (SIT)

SIT does not have any onsite programmes in horticulture. The below programmes are all offered by distance learning, with multiple intakes and facilitator support, but no requirement to be working in horticulture while enrolled:

- New Zealand Certificate in Horticulture (General) (Level 3)
- New Zealand Certificate in Organic Primary Production (Level 3)
- New Zealand Certificate in Organic Primary Production (Crop Production or Livestock Production strands) (Level 4).

Toi Ohomai Institute of Technology

New Zealand Certificate in Horticulture (General) (Level 3)

- Offered in Rotorua, Tauranga (Waiariki)
- 1 year full-time study, June intakes in 2019
- \$4,333 total cost of qualification for domestic students
- Includes New Zealand Certificate in Agriculture (Vehicles, Machinery and Infrastructure) (Level 3)
- Introductory training for horticulture workers, including propagation, cultivation and growing systems.

New Zealand Certificate in Horticulture (Fruit Production) (Level 3)

- Offered in Tauranga (Waiariki)
- 1 year part-time study, June intakes in 2019
- \$780 total cost of qualification for domestic students
- Introductory training for those currently working in the fruit production sector in the Bay of Plenty.

Toi Ohomai also offer the New Zealand Certificate in Horticulture Production (Fruit Production) (Level 4) aimed at supervisors and managers who already have the Level 3 certificate or have extensive experience. It is also designed to be taken while still working. No locations or intakes are listed for 2019.

Western Institute of Technology at Taranaki (WITT)

New Zealand Certificate in Horticulture (Level 3)

- Offered in New Plymouth (Aotea)
- 20 weeks full-time study, monthly intakes in 2019
- \$778 total cost of qualification for domestic students
- Provides broad theoretical understanding of and practical capability in horticulture. No specific coverage of Mātauranga Māori. WITT trainings are delivered in partnership with LBT.

4.3 Extension services

Extension services are programmes formulated to bring about positive growth in rural areas, and play a critical role in supporting agribusinesses by providing information and support.

Extension services are classified into 3 types:²⁸

- Technology transfer – the transfer of advice, knowledge and information in a linear manner
- Advisory – the use of a group of experts or advisors in relation to specific problems they face
- Facilitation – assisting farmers to define their own problems and develop their own solutions.

²⁸ Beynon, J, Akroys, S, Duncan, A & Jones, S. (1998). Financing the future: options for research and extension in Sub-Saharan Africa. Oxford Policy Management, Oxford.

4.3.1 Ministry for Primary Industries

Extension Service Model initiative

In late 2018, the Ministry for Primary Industries (MPI) launched the Extension Service Model initiative, a pilot programme that will support farmers in improving their environmental performance. The initiative will build on existing programmes, such as Extension350 and the Red Meat Profit Partnership, to ensure farmers use information on environmental sustainability and value creation as part of their farm planning. The government expects the pilot will help improve water quality, animal welfare, nutrients management and New Zealand's greenhouse gas emissions targets.

MPI aims to work with 300 farms each year over the four years of the pilot, from high performing farms to those requiring more assistance. \$3m funding has been sourced from the new Sustainable Food and Fibre Fund. A range of tools will be used, including one-on-one meetings, distance learning and online modules, focus groups, and evaluations. MPI will work with industry groups, local councils and government agencies to promote the programme and to identify farms.

The programme intends to:²⁹

- Expand and deepen the skill base among farmers
- Support coordination and sharing of ideas
- Encourage use of multiple channels to get information to target groups
- Support capacity and capability building among rural professionals.

Māori Agribusiness – Pathway to Increased Productivity (MAPIP)

MPI's Pathway to Increased Productivity (MAPIP) programme focuses on increasing sustainability and productivity of Māori land owning entities with primary sector assets, particularly those that are in collective ownership. MAPIP has a specific focus on tangible grassroots projects focused on increasing productivity by providing access to information and expertise to support informed decision-making. In order to access support, there is an application process and set of requirements, including:

- Māori land in collective ownership
- A clear governance structure and transparent decision-making processes
- The permission of land owners
- A long-term, sustainable primary sector focus.

During 2017/18, MPI supported 16 projects through MAPIP. It is unclear how many of these are agribusinesses.³⁰

Extension 350

Extension 350, an initiative funded by MPI, Northland Regional Council, DairyNZ and Beef+Lamb New Zealand, is a farmer led and farmer-focused mentoring and extension programme intending to work with 350 Northland farms within five years to improve on-farm productivity, sustainability and profit. Two dairy clusters and one sheep and beef cluster, consisting of five farmers each, were set up in 2017, with four clusters added in 2018, and three planned for 2019. There will be a total of ten clusters,

²⁹ <https://www.mpi.govt.nz/funding-and-programmes/other-programmes/extension-service-model-initiative/> Retrieved 14 February 2019

³⁰ Ministry for Primary Industries Annual Report 2017-2018

three sheep/beef and seven dairy. Each cluster runs for three years, and is made up of five target farms, five mentor farmers and 50 associate farmers. The target farms are provided advice and direction by a farm consultant, receive support from representatives from DairyNZ, or Beef + Lamb NZ, and are supported by a mentor farmer. Target farmers and mentor farmers interact and influence the surrounding group of associated farmers, as a way spreading the benefits.

4.3.2 Red Meat Profit Partnership

Red Meat Profit Partnership (RMPP) is a Primary Growth Partnership programme that works with sheep and beef farmers and sector businesses to develop, test and introduce new ideas, new technology solutions and new ways of operating, in order to increase productivity and profitability.

RMPP Action Network

The RMPP Action Network is a network of Action Groups, made up of farm businesses and facilitators. As at January 2019, there are

- 112 approved Action Groups made up of 910 farm businesses (average 8.1 farms)
- 86 approved facilitators.

There are a further 59 Actions Groups in the pipeline, with a goal of 300 groups by September 2019, and 192 people have been trained as Action Network facilitators. Action Groups meet an average of 5.3 times each year.

As a member of an Action Group, a farmer can:

- Work together with other like-minded farmers and rural professionals to identify ways to improve the performance of their farm business
- Benefit from a network of experts who can share new knowledge and support their farm business to make changes
- Receive support from trained facilitators to help get the most out of the group
- Access great tools and resources
- Obtain a \$4,000 per farm business kick-start allocation towards the group fund.

Figure 4.1: Action Network snapshot



Source: RMPP

Over a 12-month period, a farm business that is part of an Action Group will go through eight specific steps:

- 1) An idea, an opportunity, a challenge – support to explore innovative ideas
- 2) Farmer Connected – farmers may form their own group, already be a part of a discussion group that they are looking to turn into an Action Group or they may be approached by a rural professional who is pulling together a group
- 3) Action Group formed – between 7-9 farm businesses who have a shared area of focus (breeding, genetics, feeding) form an Action Group, decide which trained facilitator they would like to use, and how they want to run the group
- 4) Extension Plan and Farm Action Plan drawn up – facilitator supports Action Group to create an Extension Plan, outlining objectives, activities and approximate costs; each farm business will also create a short farm action plan with their own goals, objectives and actions relevant to their farm business
- 5) Extension Plan approved – plan sent to RMPP for review, approval and funding
- 6) Extension Plan activities occur – Action Group starts activities from Extension Plan, which may include a field day, workshop, farm visit, tour of a high performing farm

- 7) Extension Plan review – Action Group reviews Extension Plan after 12 months and updated for next 12 months; farm businesses are expected to contribute \$800 towards extension at the beginning of this second year; farmers complete a survey and review facilitator performance
- 8) Action on-farm – farmers put good ideas into action on their own farm business; individual farm business Action Plans may take variable lengths of time to implement depending on their own goals, objectives and actions.

4.3.3 Agri-Women's Development Trust

The Agri-Women's Development Trust (AWDT) is funded by RMPP to provide two extension programmes for women involved in sheep and beef farming. These two courses could be suitable for those in governance roles, land-owners or farm managers.

Wāhine Māia, Wāhine Whenua (WMWW)

- Offered in Gisborne (Tairāwhiti), Kaikohe (Te Tai Tokerau), Ōpōtiki (Wairiki), Christchurch (Te Waipounamu) and Wellington (Aotea)
- Four dates over four months, three full days plus an evening graduation ceremony
- No fees (funded by RMPP)
- Designed especially for whenua Māori, WMWW helps participants better understand how their whānau, trust or incorporation farm is run. No specific environmental content.

Since the 2016 pilot, 142 women have graduated from the WMWW programme after attending trainings in:

- Te Tai Tokerau – Whangarei, Kaikohe
- Wairiki – Rotorua, Whakatāne
- Waikato-Maniapoto – Karapiro
- Tairāwhiti – Gisborne, Tolaga Bay
- Tākitimu – Masterton
- Aotea – National Park, New Plymouth, Whanganui.

AWDT has a target of an additional 70 women graduating in 2019. All women work on Māori land, but not all identify as Māori and ethnicity data is not captured.

In addition, AWDT is undertaking a Wāhine Māori Leadership Research and Programme Development Project, “Me aro ki te hā o Hine-ahu-one – Pay heed to the mana of women”, as part of their two-year Sustainable Farming Fund research programme. Wāhine Māori realising their full potential is good for all of Aotearoa, and AWDT wants to design programmes to best achieve that outcome. Wāhine Māori leaders in their businesses and/or rural communities are the key to unlocking and supporting self-sustaining enterprises that meet whānau, hapū, and iwi aspirations, as well as social, environmental and economic objectives. AWDT has commissioned the completion of the kaupapa-Māori research to investigate ways to support leadership and capability growth of wāhine Māori involved in the primary sector and rural communities, to understand their leadership and capability needs and aspirations, including current barriers to their realisation.

AWDT also offer a non-whenua Māori specific training that any woman working in the primary sector can enrol in.

Understanding Your Farming Business (UYFB)

- Offered in 39 locations across the country
- Four dates over four months, three full days plus an evening graduation ceremony
- No fees (funded by RMPP)
- Similar to WMWW, UYFB is designed especially for women to better understand how their farm is run. No specific environmental content.

4.3.4 DairyNZ

DairyNZ has a suite of agribusiness extension services and initiatives, including:

- DairyBase – an industry benchmarking tool comparing a farm's Key Performance Indicators (KPIs) to others in the region or nationally, financial performance and physical KPIs can be benchmarked
- Whole Farm Assessments (WFA) – a WFA looks at the whole farm system to identify and prioritise key issues, opportunities and options for change in line with the business strategy
- Dairy Basics for Governors – an introductory seminar for trustees and board members on the dairy industry and key aspects of overseeing a dairy farm, a stepping stone to further governance trainings
- Dairy Connect – a mentoring programme where farmers seeking information on particular topics, such as livestock, pasture, feed, environment, people management and business, are matched with experienced farmers willing to offer support
- Progression Groups – skill and career development forums on topics such as career pathways, tax management, and key drivers, with contributions from farmers, rural professionals and industry experts providing valuable insight and advice.

4.4 Mixed model trainings

There are instances of initiatives and established prototypes of 'embedded learning in communities' that have had success with Māori students. These initiatives have the following features:

- Multi-level mixed model training
- In community – a geographical area, enterprise or cluster
- Individual learning plans, but training undertaken where it is accessible, i.e. in the community or on site
- A fit-for-purpose tutor, together with fit-for-purpose mentor/s and pastoral support, typically drawn from within the community.

This type of model is offered by:

- Te Wānanga o Aotearoa – mixed model delivery, not in primary industries subjects
- Te Kāuta initiative between Primary ITO and FOMA
- Whenua Kura.

Te Kāuta had over 300 Māori students participate, with one particular initiative held on Matakana Island, where the training was delivered on the Island and across different levels.

Another learning model with evidence of success is the residential model. It also has the attributes of individual learning plans, and fit-for-purpose mentor/s and pastoral support. Examples of this type of model include:

- Department of Māori Affairs Trades Training and Vocational Training (historical)
- Telford – Whenua Kura (see Section 4.1.4).

A third model is in work placed assessment or experience assessment mapped into a qualification and content, such as unit standards. This is ideally for those already in work who have relevant experience but limited or no qualifications that recognise that experience. This model involves assessment processes, recognition of prior learning, and a customised and supported learning plan to ‘fill the gaps’ and thereby achieve qualification. Instances of this model include:

- Te Kāuta Level 5 Diploma in Agribusiness
- Capable NZ Independent Learning Pathways and Work-based Learning.

Governors of well-established and well-performing Māori agribusinesses have described the challenge in getting capability fit-for-purpose trainings in large-scale primary sector operations. Academic trainings on their own, such as described in Section 4.1, are lacking aspects that would have made them fit-for-purpose for Māori land owners, and have observed variable quality in the training providers. These agribusinesses have expressed that the mixed model approach above would be ideal and effectively the training as a whole would be developed in a way that could be “their way”.

For example, one entity hires around 4,000 people for seasonal labour and would ideally like to customise training to be delivered to their staff when there are gaps in the workflow. Trainings could be delivered in blocks at the front and back ends of the season, and whilst in work, staff could have their skills assessed at work and mapped into the relevant unit standards and qualification/s. This entity believes that investing in hard infrastructure, such as is supported by the Provincial Growth Fund, needs an aligned capability-build to ensure initiatives will be enduring and effective.

5 Education and training data

To understand what training is available to whom and where, we analyse Education Counts data on trainees and apprentices:

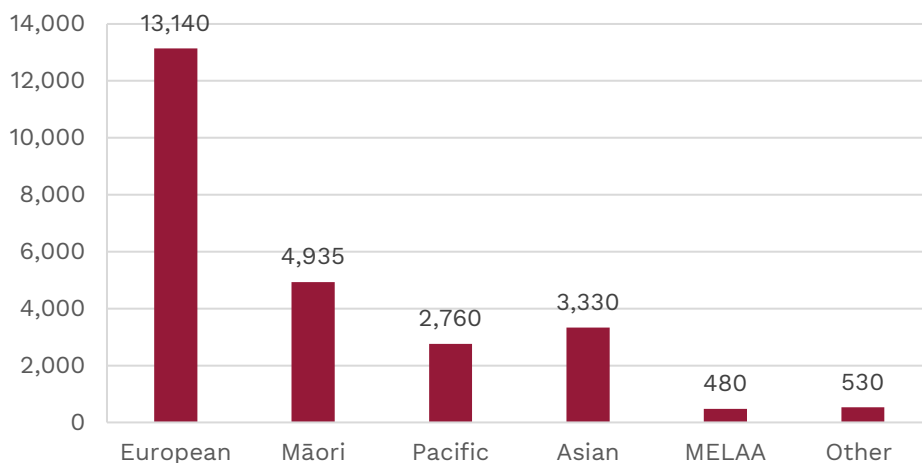
- Enrolled under the Primary ITO
- Enrolled in Agriculture, Environmental and Related Studies
- Those who are employed in the Agriculture Professional occupation, while being enrolled under Primary ITO.

Over its existence, the modern apprenticeship scheme has undergone many changes. Many of these changes make the data less than optimal. For instance, the distinction between an apprentice and a trainee is not useful, so we have elected to combine these categories.

5.1 Primary ITO apprentices and trainees

In Figure 5.1, the counts of people who were enrolled as apprentices and trainees under the Primary ITO in 2017 by ethnicity are summarised. There were around 4,935 Māori (20 percent). According to Statistics NZ Estimate of Resident Population, Māori accounted for almost 15.6 percent of New Zealand's general population. The Māori population is considerably younger, with nearly 60 percent under 30yrs compared to 41 percent under 30yrs in the national population. Younger people are more likely to be apprentices and trainees, so the apparent overrepresentation of Māori in this data can be explained, and given this context, could in fact be considered an underrepresentation.

Figure 5.1: Apprentices and trainees enrolled under the Primary ITO

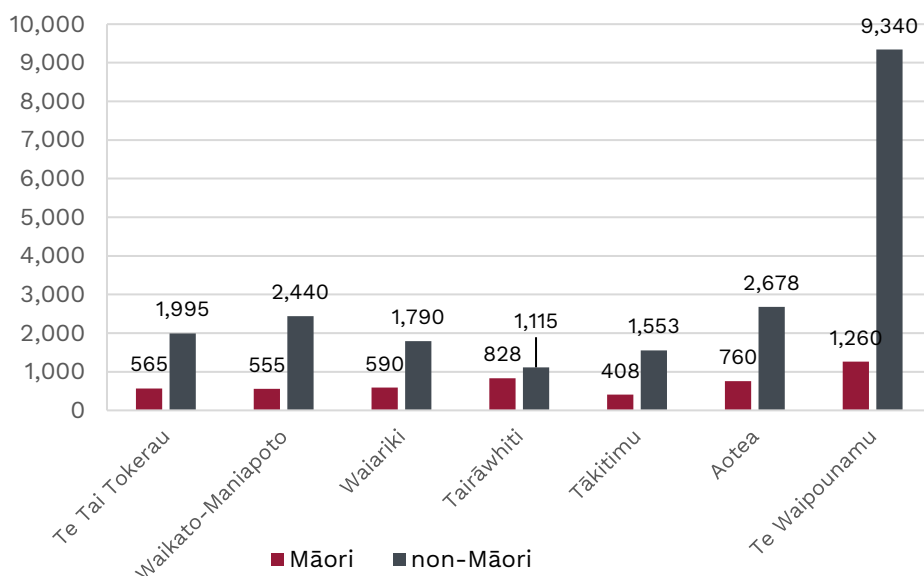


To consider where training might be most available, we mapped the Regional Authority data to Māori Land Court areas to paint a picture of where training can be accessed. This data is summarised in Figure 5.2.

By far and away, the largest number of apprentices and trainees at Primary ITO are in Te Waipounamu. This is essentially because it is largest land area, and also the largest agricultural land area in New Zealand. Te Waipounamu accounts for 10,600 apprentices and trainees under Primary ITO, 41 percent of the total. However, only 12 percent of Primary ITO apprentices in Te Waipounamu are Māori. Aotea

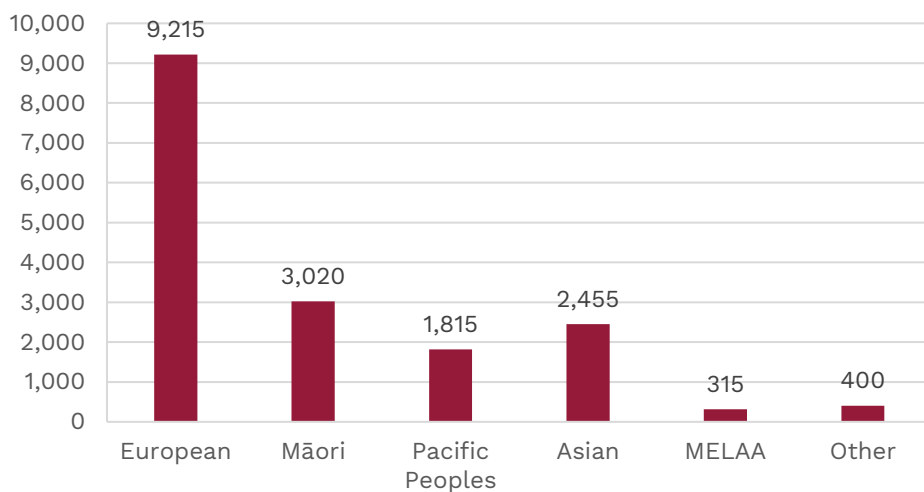
has 13 percent of the total (22 percent Māori), followed by Waikato-Maniapoto with 12 percent (19 percent Māori). Tairāwhiti had the largest Māori representation with 43 percent of all Primary ITO apprentices and trainees in the area being Māori.

Figure 5.2: Primary ITO apprentices and trainees by Māori Land Court area



5.2 Apprentices and trainees studying Agriculture, Environmental and Related Studies

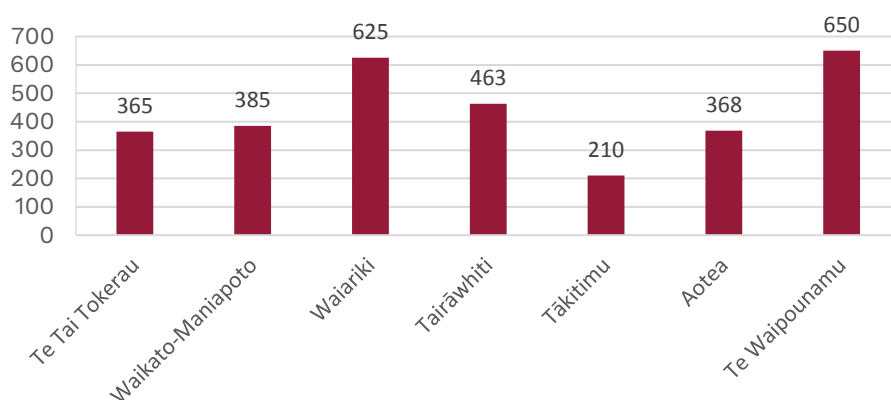
Figure 5.3: Apprentices and trainees studying Agriculture, Environment and Related Studies, by ethnicity (2017)



The data for those people who are enrolled under the study subject Agriculture, Environmental and Related Studies at any of the ITOs is summarised in Figure 5.3 and Figure 5.4. These figures support Primary ITO enrolment data, with Māori accounting for around 18 percent of the 17,220 total.

For counts of learners by field of study, the Ministry of Education counts each learner once in each field of study they participate in. Learners who participate in multiple fields of study will be counted multiple times. This means that the total count of learners by field of study can be higher than the total count of learners, due to the multiple times some learners can be counted. For example a learner studying animal husbandry and beekeeping will be counted twice in the total count of learners by field of study. Therefore, we are unable to compare Primary ITO data in Figure 5.2 on the number of Māori apprentices and trainees with data relating to subjects studied in Figure 5.4.

Figure 5.4: Māori apprentices and trainees studying Agriculture, Environment and Related Studies, by Māori land area (2017)



The area where one can find most Māori apprentices and trainees studying Agriculture, Environmental and Related Studies is again, Te Waipounamu with 21 percent of the total. Waiairiki is only fractionally less at 20 percent, with 15 percent in Tairāwhiti. Aotea's percentage for this subject matter is consistent with Figure 5.2 statistics at 12 percent. Tākitimu has the lowest raw numbers studying agriculture and related topics, but it also has the lowest number of Primary ITO apprentices and trainees, including Māori.

5.3 Apprentices and trainees employed as Agricultural Professionals

The data on people who are working as Agricultural Professionals while enrolled at an ITO is summarised in Figure 5.5 and Figure 5.6. This data appears to generally corroborate the statistics in Sections 5.1 and 5.2, with a greater percentage of European apprentices and trainees, and apprentices and trainees predominantly located in Te Waipounamu.

In Figure 5.5, we can see Māori accounted for 1,245 Agricultural Professional apprentices and trainees in 2017, 13 percent of the total. This is a considerable underrepresentation for Māori compared to the 3,020 (18 percent) studying Agriculture, Environment and Related Studies, and indicates 41 percent

are employed while studying. Compared to European figures (51 percent), this indicates Māori are not being well served by the current system.

Figure 5.5: Apprentices and trainees working as Agriculture Professionals, by ethnicity (2017)

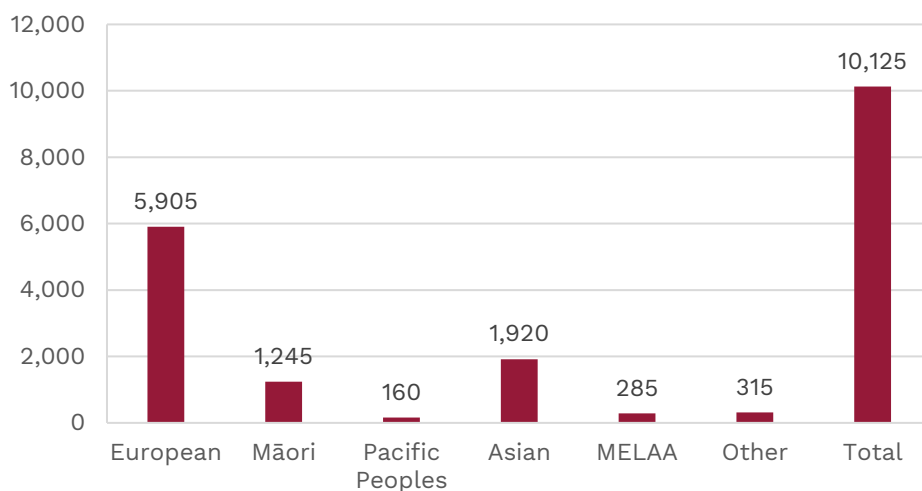


Figure 5.6: Apprentices and trainees working as Agriculture Professionals, by Māori Land Court area (2017)

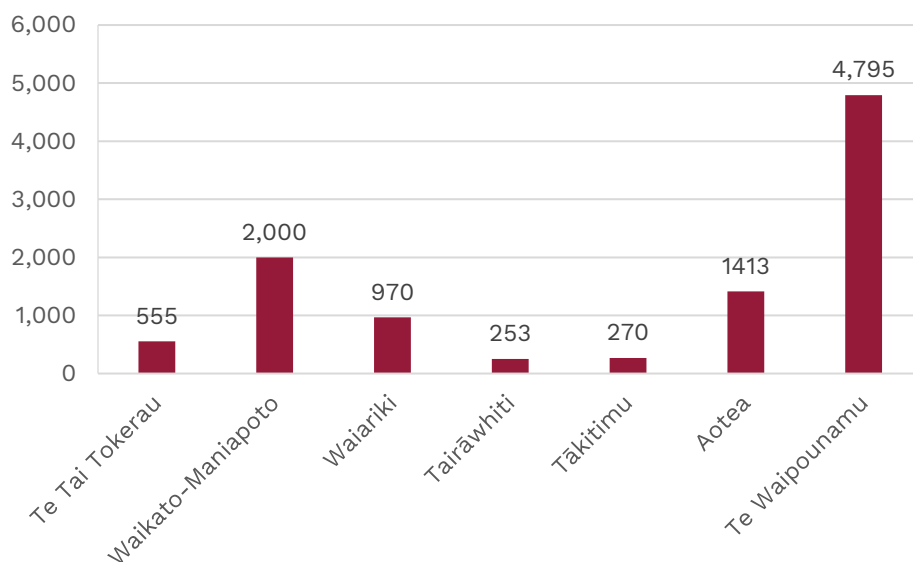
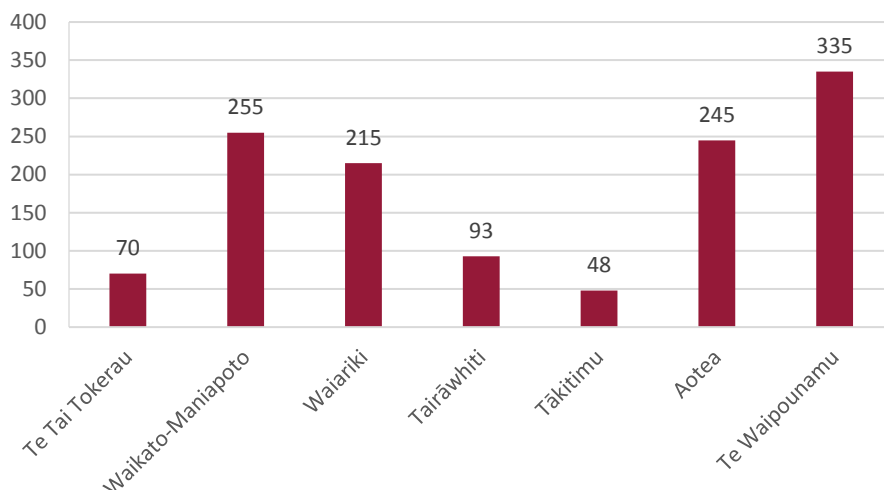


Figure 5.6 describes the areas where people are employed as Agricultural Professionals while enrolled at an ITO. Most people are employed in Te Waipounamu with 4,795 apprentices and Trainees in 2017, or 47 percent of the total. However, a higher rate of apprentices and trainees in Waikato-Maniapoto working as Agricultural Professionals, with 67 percent concurrent employment in that area compared to 45 percent in Te Waipounamu. Tairāwhiti and Tākitimu have low levels of agricultural employment while studying (13 percent), which could indicate either low employment opportunities or low numbers of apprentices and trainees studying agriculture.

Figure 5.7: Māori apprentices and trainees working as Agriculture Professionals, by Māori Land Court area (2017)



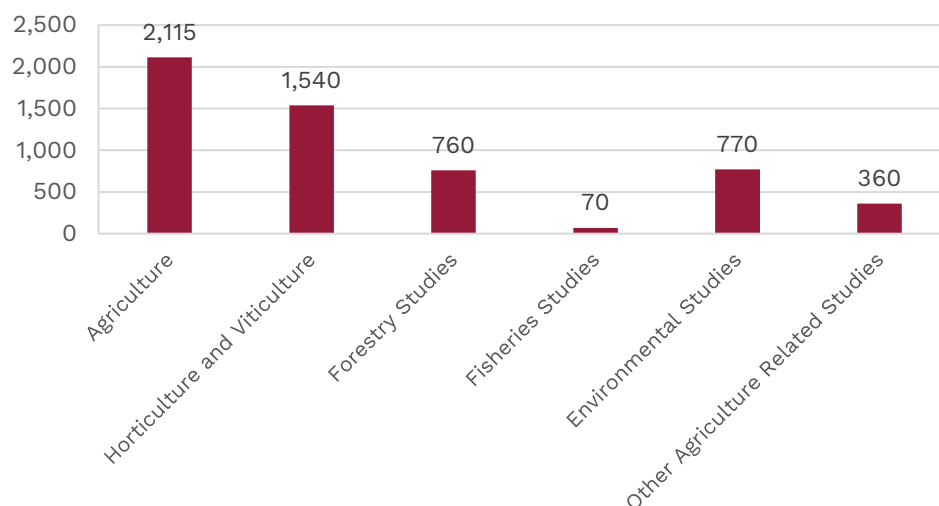
When analysing Agriculture Professional employment rates for Māori apprentices and trainees across the regions (Figure 5.7), the data shows that only 7 percent of those in Te Waipounamu are Māori. Figures for the other regions are varied with Te Tai Tokerau and Waikato-Maniapoto also low at 13 percent, Tākitimu and Aotea fractionally higher at around 17 percent, Waiariki at 22 percent, and Tairāwhiti with the highest percentage of Māori apprentices working as Agriculture Professionals at 37 percent.

Despite the low representation of Māori, Te Waipounamu was still the largest gross employment area followed by Waikato-Maniapoto and Aotea. Tākitimu raw number is small enough to almost be identifiable.

5.4 Students studying Agriculture, Environmental and Related Studies

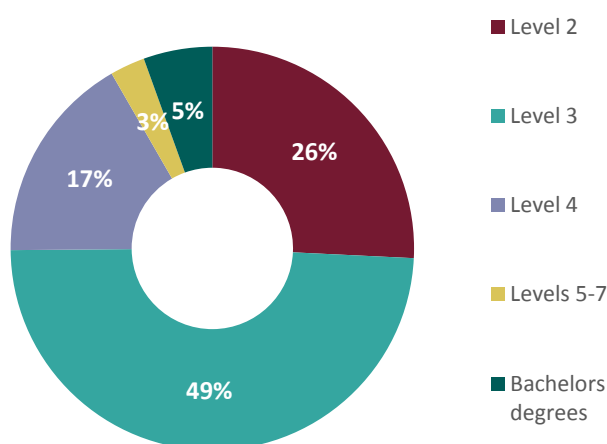
Figure 5.8 shows the number of Māori studying Agriculture, Environmental and Related Studies at any provider, a broader criterion than those studying with an ITO. In total, there were 5,240 Māori students studying Agriculture, Environmental and Related Studies at any provider in 2017, with 2,174 Māori students at providers other than the Primary ITO. We summarise the total numbers data in Figure 5.8 below. The most studied subject under this heading is Agriculture with 38 percent studying this in 2017, closely by Horticulture and Viticulture at 27 percent. Other Agriculture Related Studies is 6 percent, with a total of 44 percent studying in this field.

Figure 5.8 Māori studying Agriculture, Environmental and Related Studies at any provider (2017)³¹



When considering the level at which Māori tend to study Agricultural, Environmental and Related Studies (Figure 5.9), nearly half (49 percent) studied Level 3 qualifications in 2017, such as detailed in Section 4.1.3. Around a quarter (26 percent) studied Level 2 courses, and a further 17 percent studied for Level 4 qualifications. Only 5 percent of Māori students (305 people) studied this subject at a Bachelor's degree level just 305 in 2017. Even fewer studied Levels 5-7 qualifications (3 percent), which are the type of management level qualifications outlined in Section 4.1.2. Though the figures are not included in this graph, there were 60 Māori students studying Agricultural Environmental and Related Studies at post-graduate level in 2017, which is 0.01 percent of those studying these topics.

Figure 5.9 Māori studying Agricultural Environmental and Related Studies, by level (2017)



³¹ These numbers sum to more than 5,240 because students study multiple subjects

5.5 Data discussion – limitations and assumptions

Limitations

- This data counts participation in formal courses and programmes that are for a significant duration and does not include short courses on land governance specifically
- This data uses self-reported ethnicity
- Some data is unable to be analysed by ethnicity AND area at the same time
- We have not analysed data relating to governance trainings.

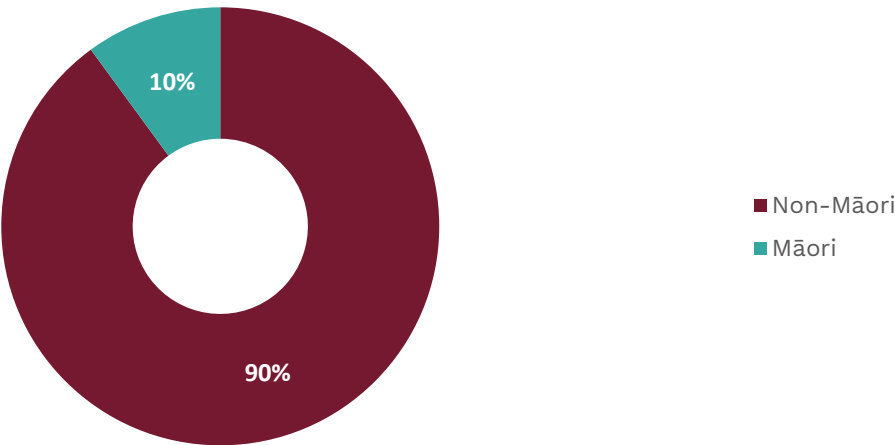
Assumptions

- We assume the processes at the TEC are sufficient to result in robust and accurate data
- We assume course and programme content from the subject name.

6 Employment data

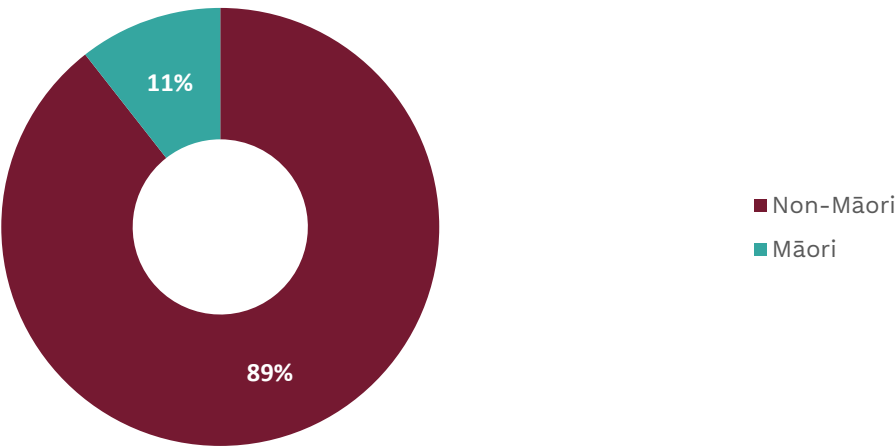
From Census 2013 data, Māori represented around 10 percent of the total employed population by industry (Figure 6.1) and 11 percent of the Agriculture, Forestry and Fishing industries (Figure 6.2). These are comparable figures.

Figure 6.1: Total people in employment (2013)



Source: Statistics NZ

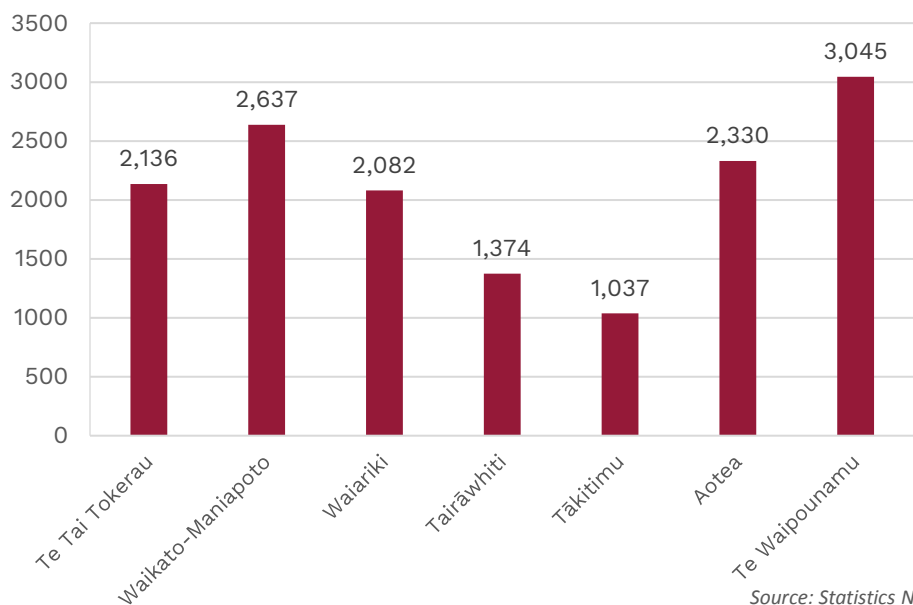
Figure 6.2: Total people employed in Agriculture, Forestry and Fishing (2013)



Source: Statistics NZ

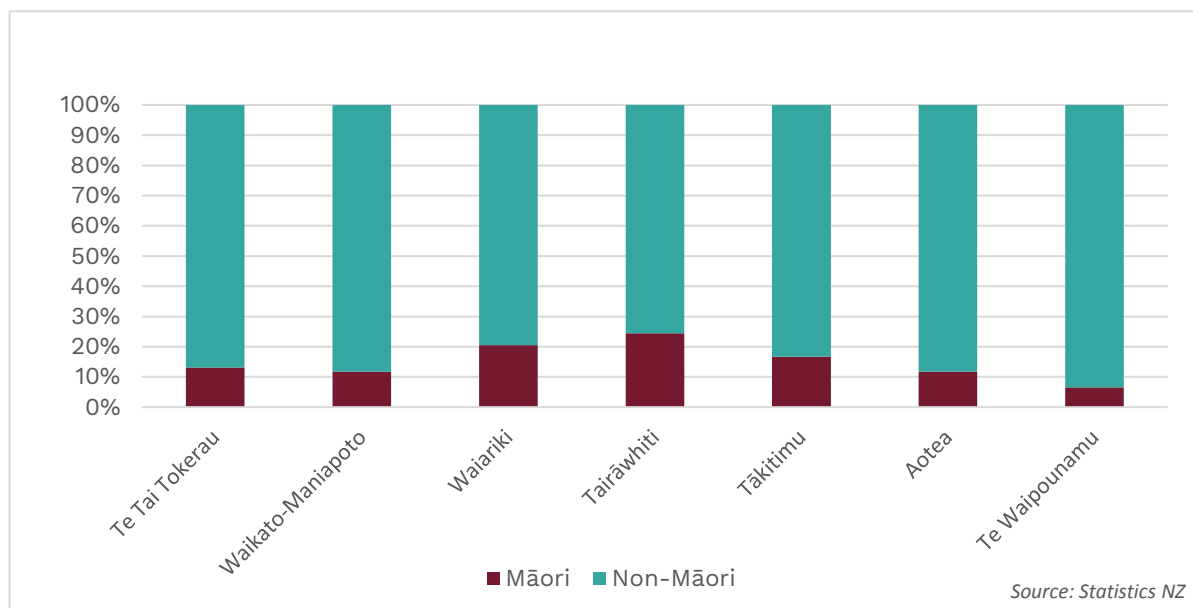
This data is able to be broken down by area and mapped to the Māori Land Court areas (Figure 6.3). Te Waipounamu is the largest employment area (21 percent), followed by Waikato-Maniapoto (18 percent), and Aotea (16 percent). Tairāwhiti and Tākitimu are two of the largest areas of Māori Land, but are two of the smallest percentages (9 and 7 percent respectively). However, it is impossible to say how many of those employed in these areas are working specifically in agriculture as opposed to forestry and fishing.

Figure 6.3 Māori employed in Agriculture, Forestry and Fishing, Māori Land Court area (2013)



When looking at the proportion of Māori employment in agriculture, forestry and fishing (Figure 6.4), the area with the largest representation is Tairāwhiti with 24 percent of the workforce being Māori, followed by Waiariki with 21 percent. Te Waipounamu has the lowest representation (7 percent), and while the Māori population in parts of the South Island is as low as this in Queenstown and Waimakariri for example, this is not representative of the Māori population spread across the rest of the rōhē (region). Māori representation in Te Tai Tokerau (9 percent) is also not representative of its area's diversity, where for example, Māori make up 12 percent and 28 percent of the population of Auckland and Whangarei respectively.

Figure 6.4 Employment in Agriculture, Forestry and Fishing, by Māori Land Court area and ethnicity (2013)



7 Federation of Māori Authorities (FOMA) case study

FOMA's mission is: "To create opportunities for its members to prosper and grow and we strive to achieve this through collaboration, leadership, knowledge and innovation".

The purpose of this case study is to highlight key lessons and information relating to a successful programme aimed at engaging Māori land blocks and supporting them to improve their business performance, by way of a project especially formed to address gaps in the sheep and beef sector's training and education systems.

7.1 Background

FOMA Performance Plus is a national scale roll-out of a successful pilot project run by the Tairāwhiti Land Development Trust (TLDT) from 2006 to 2009. The programme works with clusters of Māori land blocks on a performance improvement programme aimed at raising the on-farm capability and confidence of the teams involved to farm more profitably.

It was determined at the time of the pilot that the management capability for these blocks and the training available to the industry, was not sufficient to support them to farm profitably and therefore generate the kind of value and returns necessary to support the goals and aspirations of Māori land owners. The programme was required to provide more intensive support for these blocks, given they are often farming some of New Zealand's more difficult farmland. It was also found that many Māori land blocks are not generating sufficient revenue to wholly fund such activities themselves.

This situation has arisen out of the way in which Māori owned land blocks came into being through the Crown's past actions and historical land allocation policies, and thereafter a lack of support for Māori land owners to grow and develop these land blocks as compared to the rest of the agricultural sector. Indeed, the Crown actively worked against Māori land owners being able to develop these blocks, leading to a situation today where they require more intensive support to raise performance of the blocks to a level that can sustain decent value for their owners.

After successfully implementing the five-year pilot project aimed at addressing specific performance matters unique to each farm, the cluster achieved a lift in performance of 26 percent. In 2014, TLDT and FOMA agreed to use the same premise to roll out a similar programme across other regions in the country.

FOMA then deployed the programme across four clusters, each with five farms, in Te Tai Tokerau, Tairāwhiti, Tākitimu, and Aotea. After four years, the clusters averaged a similar performance uplift as the original pilot, credited by each participating farm as being a result of engaging in the programme.

7.2 What the programme does

The programme depends on utilising established networks of Māori land owners to promote and provide access to the programme. This is because traditional farmer training and industry group networks often lack contact or association with Māori land blocks even when operating in the same communities. This has also resulted in a poor uptake of industry and extension services by Māori land blocks.

FOMA, with its extensive network of Māori land owners, deployed a team to establish clusters of participating land blocks in the four regions. This was a key success factor to the project being implemented as successfully as it was within a short-timeframe.

Farms participating in the programme must already be invested in sheep and beef farming. This sector was selected as the focus due to the significant number of Māori land blocks invested in it. It should be noted that FOMA also runs a similar programme in the kiwifruit sector through its subsidiary Tūhono Whenua Horticulture Ltd.

FOMA established a project team led by FarmCare NZ Ltd to work with participating Māori land blocks to:

- Collect data
- Use this data to inform performance improvement plans
- Work with the farm teams to train staff to implement the plans, benchmark, review and adjust their performance
- Use this process to work with strategic decision makers to make better and more informed choices to improve the performance of their farming businesses.

FarmCare NZ Ltd were selected as the extension service provider because of their track-record implementing a proven performance improvement model and their experience working with Māori organisations to help them train staff and implement (not just advise) practice-change. They were also selected because of their ability to work with farm teams and advisors as opposed to replacing them. All of these factors were considered by the programme as important to ensure the extension services provided the necessary level of implementation support to Māori land blocks while not creating dependency or replacing existing staff and advisors.

The programme found that working in clusters was a key component of the programme. This enabled participating Māori land blocks to build relationships in their regions, share and learn off of each other, creating a competitive learning environment that helped accelerate performance improvement and enabled mentor farms to be included in the programme to support the project team.

It was also critical for the programme to engage and support the strategic decision makers of the participating Māori land blocks. Therefore, FOMA also ran a governance training programme providing support to decision makers to build their confidence, and awareness and understanding of:

- The role of strategic, business and financial planning
- Farming systems and people development
- Policy and regulatory impacts on their businesses
- The markets and value chains they are involved with.

Building this confidence and awareness among governance groups helped them make more effective decisions and investment choices, both in regards to their performance improvement plans and in other areas of the business too.

At the end of the initial four year programme, a further years funding was then secured, and all participating farms had raised their performance across key business metrics resulting in overall better profitability. This improvement was a result of the programme team working simultaneously across the farm governance and management teams to improve their skills and decision making, implement key practice changes in their businesses, and build the confidence of the people involved in the programme to manage their processes more effectively.

The challenge now is to incorporate an environmental performance component for the programme to support participating Māori land blocks in the implementation of an environmental plan for their

farming business. Participating blocks have indicated a need for the programme to extend its support across this part of their business strategy.

FOMA has determined that the programme could be deployed across more of its members, and other Māori land blocks, to build a critical mass of Māori land block performance improvement in the sector. Unfortunately gaining the funding to do so is difficult and time-consuming. Participants require at least five years in the programme before the practice changes and improvements across complicated biological systems start to make a real impact on improving the profitability of the participating land blocks. Current funding models are only willing to provide short-term (1-4 years) investment, requiring the programme to seek additional funding partway through the growth cycle. It is important for longer term investment to be made available to ensure certainty in planning and delivery to scale up successful programs supporting Māori land blocks.

7.3 Key lessons

Specialist networks are required to connect Māori land blocks with training and skill-building opportunities given the lack of networks established within industry and training organisations to achieve this. Programme designers also found there is low engagement between Māori land blocks and traditional farmer networks and extension services.

A tailored performance plan with implementation support is required to accelerate the progress of Māori land blocks to make key changes in their practice to improve performance. The programme found that tailoring performance plans to the specific needs and aspirations of participating land blocks and spending time directly training staff of these land blocks accelerated the learning curve of participants. Programme designers also found that industry training bodies were unable or unwilling to provide such tailored programmes.

A cluster approach to learning is key for Māori land blocks to share information among themselves and provide a competitive learning environment to further drive performance. The programme found that participants being in a peer learning environment was as critical to success as the support provided from technical experts in the programme team.

Programme support for strategic-level decision makers of Māori land blocks is just as important as providing support for technical on-farm workers, as governance decisions directly affect the successful implementation of on-farm practices and enable the investment required to improve on-farm performance. The programme found that where governance capability was strong or became stronger among participating land blocks, performance improvement and practice change occurred at a faster rate.

The programme needs to evolve to include a focus on managing environmental issues, including low-emissions practices. Participants found that the type of support the programme provided to help them improve their performance across existing business metrics, was also needed to help them focus on identifying and implementing practice-change to improve their environmental management performance.

While short-term funding support can be found, there is a lack of long-term financial support from government and industry to scale successful pilot programmes such as Performance Plus that sit outside of the current training industry. Such programmes help fill the gaps left by the training industry and provide Māori land owners the support to improve performance and accelerate the growth in value from their land.

8 Discussion

This intention of this research was to establish what was needed to ensure education, training and extension services for Māori land owners, land managers and staff are suitable to support them in reducing agricultural emissions. In order to understand what may be needed in future, it is important to understand whether what is currently offered meets current needs. Our research determined that the current primary sector support systems and infrastructures are not fit-for-purpose for Māori in all levels of the agriculture sector, and there are fundamental issues to address in getting it right before seeking to overlay potential shifts in land use to reduce emissions.

A skilled workforce, or engaging fit-for-purpose capability, is one of the critical success factors for organisation resilience and potential sustainable competitive advantage. The relatively large proportion of Māori land owning collectives in primary industries and the younger demographic lean of the Māori population means that putting effective support systems in place ensure workforce skills and capability is fundamental. Māori youth are not engaging in the training system as it stands, including in primary sector training. When considering 51 percent of Māori are under 24ys of age, and 25 percent of workforce age Māori are not engaged in the workforce and are welfare reliant, the motivation to look at better ways of engaging Māori should be paramount. 90,000 Māori children live in poverty, yet by 2030 it is estimated that 30 percent of the workforce age population in New Zealand will be Māori, Pacific Peoples or Asian, and in 2050, that percentage will be 50 percent.

Many training providers do not ‘connect all of the dots’ when it comes to governance training for Māori land owners, and lack access to pools of Māori students and potential workforce. There is limited evidence that the current education, training and extension services have the capability or capacity to support land owners and their employees to reduce greenhouse gas emissions or a change of land use. The education system does not have the agility and is not incentivising Māori youth in current training, let alone re-training. Few extension services are engaging with Māori at scale and programmes targeting Māori land owners appear short-term and underfunded. Addressing these issues requires considerable support at governance, management and staff levels, and across education, training and extension service providers. In the following sections, we explore this in further detail.

8.1 Governance and management capability development

8.1.1 Governance

In Section 2, we discussed the complexity of Māori land ownership, including considerations around ownership structures and land development. Most Māori freehold land has multiple owners, with some blocks having several hundred. The collective ownership creates obvious challenges for managing the land, and a number of specific forms of governance or management structure are provided under Te Ture Whenua Māori Act 1993, including Māori Land Trusts, Māori Incorporations and Māori Reservations.

Māori Land Trusts, such as Ahu Whenua Trusts, Whenua Tōpū Trusts, Pūtea Trusts, Whānau Trusts, and Kaitiaki Trust, are a means by which multiple owners of Māori land can manage the land. Under any of these trusts, one or more people (trustees) are the legal owners of the land and have a duty to manage the land for the benefit of all the other owners of the land (beneficiaries). As at June 2018, 70.4 percent of Māori land ownership structures were Māori Land Trusts.

A further 27.7 percent were Māori Reservations. A Māori Reservation may be created from Māori freehold or general land for the purposes of village site, marae or meeting place, an urupā (burial ground), or a place of cultural, historical, or scenic interest, or for any other specified purpose. Māori Reservations are also managed by trustees, normally appointed by the Māori Land Court, for beneficiaries, who may include owners, descendants, a hapū, or the wider community.

Māori Incorporations make up only 1.9 percent of Māori land management structures, but they manage some of the largest blocks of land and are effective ways of managing land collectively for commercial purposes. Māori Incorporations have their own legal identity, separate from all the individual owners and beneficiaries, and are governed by management committees.

With over 8,000 of these land management structures in place, there are thousands of trustees and committee members making strategic and governance decisions about the utilisation and care of Māori freehold land. Most are volunteers and may hold the role for extended periods of time with little training, support or succession planning in place. In some of the larger entities, kaitiaki have responsibility for commercial agribusinesses that are comparable to New Zealand's largest private farms. Large tracts of Māori are unoccupied or unimproved, are isolated, of poor quality, or are landlocked or have no road access. The sale of Māori land is subject to a number of significant restrictions (inalienability), which also include leasing or mortgaging the land. This results in a lack of access to finance or capital to use for land development.

In short, there are significant and complicated issues facing those governing Māori land that are distinct to those governing general or private land. Despite these additional considerations, there are no formal government funded skills and training programmes in place for developing the capability of those charged with managing Māori land for the wider pool of beneficiaries.

The Level 4 New Zealand Certificate in Māori Governance was launched in 2018, and is only available in Rotorua, Taupō, Tauranga, and Whakatāne (Waiariki) through Toi Ohomai, and New Plymouth (Aotea) through WITT. Large portions of the country are not able to access this 17 week training, including Te Tai Tokerau, Waikato-Maniapoto, Tairāwhiti, Tākitimu, the southern part of Aotea, and Te Waipounamu (representing well over 60 percent of Māori land). Corporate and private governance trainings are prohibitively expensive for all but the most well established Māori land structures, and none appeared to cover the complexity of Māori land ownership. There is no attendance data available yet on the Level 4 certificate, and data on Māori engagement with other agribusiness governance trainings is either not collected or not accessible.

The FOMA governance initiative 'Conducting Business in Your Sector' was a response to building crucial capability for Māori land owners at the governance level, alongside of the operational capability build. One of the key learnings from the FOMA Performance Plus and Tūhono Whenua Horticulture Ltd initiatives was that capability building is essential to any programme around extension and productivity.

8.1.2 Management

A good connection between the governance and management or operations of a land owning entity is vital. Strong support from governance is crucial to management performance. How management values the skills and input of their governance team is the foundation of an effective and productive relationship. Lack of buy-in to a governance strategy by management, or lack of management skill to implement changes necessitated by a strategy, can be an impediment to developing under-utilised land or increasing performance from utilised land. In a nutshell, governance and management need to be in the same waka and row it in the same direction.

When exploring agribusiness management trainings, the uptake by Māori is low with just 3 percent (155 people) of Māori studying Agriculture, Environmental and Related Studies in 2017 enrolling in Level 5-7 trainings and 5 percent (305) enrolling in Bachelor's degrees. The data does not allow further breakdown to agriculture studies so the number studying that subject specifically is much less.

Until 2018, Taratahi Institute of Agriculture offered Level 5 trainings, including the Diploma in Agribusiness Management, and Massey University and Lincoln University Diploma in Agriculture courses. The liquidation and closure of Taratahi in early 2019 has created a vast gap in Level 5 course provision. It is inevitable that Level 5-7 figures for 2019 will tell a different story to the 2017 statistics, and Māori will be disadvantaged further by the lack of options and choice, as will the wider agricultural sector. Taratahi faced financial and operational pressures caused by declining student numbers and resulting funding reduction it received for its educational business. It is unclear what will happen to the eight farms Taratahi owned and managed throughout the country, and to the students whose qualifications were not yet completed.

SIT and Primary ITO both offer the New Zealand Diploma in Agribusiness Management (Level 5), by distance learning and modules in various locations, respectively. Without the wide accessibility of these modules, such management training would be inaccessible to the large majority of Māori interested in a career in agribusiness management. The SIT programme is a recent addition following the collapse of Taratahi with no available enrolment data at present. We are unable to access data specifically on Māori engagement in the Primary ITO modules to ascertain where Māori are undertaking trainings, so are unable to identify if it is meeting training needs across all areas. The low uptake would suggest there are perceived or real barriers to enrolment and participation. Neither of these trainings appear to specifically consider agribusiness management with a Māori land owning entity.

Level 5 trainings that cover Mātauranga Māori and environmental management are offered by Te Wānanga O Raukawa in Ōtaki (Aotea) and Te Whare Wānanga o Awanuiārangi in Whakatāne (Waiariki). All Wānanga trainings referred to in Section 4.1.2 are full-time, thus would be inaccessible to the majority of managers working on Māori land. While they discuss environmental sustainability and land use, there is no specific reference to agricultural land use. Māori engagement in environmental studies is even lower than agriculture, with just 14 percent (770 people) of Māori studying Agriculture, Environmental and Related Studies enrolled in environmental studies in 2017.

It would appear that trainings operate in silos, in that agriculture trainings focus on livestock and pasture, for example, and do not address the wider context of land ownership, cultural values, or environmental concerns, and the Wānanga courses focus on the Māori approach to caring for the environment but do not address how this sits in relation to land use and balancing kaitiakitanga with whakatipu rawa. There are questions around whether all Māori Land Court areas have broad availability of and accessibility to Level 5-7 trainings, and where these trainings do exist, Māori are not engaging in numbers that would indicate these trainings work for them in content or approach. This creates considerable gaps in capability development for agribusiness land managers of Māori land.

8.1.3 Extension services

Regulatory drivers for reducing greenhouse gas emissions are looking to transforming agricultural production methods, including low-emissions practices and land use diversification. No governance or management trainings appear to directly address the change in business models and operations these concerns require.

Some extension services are addressing these climate change and sustainability issues, such as the Extension 350 pilot in Northland and RMPP Action Network. The nature of such groups, with a blend of advisors, mentors and participants, allows for agility in supporting adopting new technologies and practices and diversifying land use to reduce greenhouse gas emissions. On the whole, the focus of these programmes is driven by the farms that are participating in them and it is likely participants in Extension 350 clusters and Action Groups will be discussing sustainability, land use, and productivity.

RMPP was one of only two extension services that responded to our request for data on Māori engagement, AWDT being the other. They do not track ethnicity of farmers or ownership type of farms participating in the programme so are unable to say how many Māori land owners or managers are part of Action Groups, although anecdotally they know Māori are engaged based on facilitator feedback. However, they do advise that there are around five potential Action Groups in the pipeline with Māori farm owners, including Post-Settlement Governance Entities, Māori freehold land owners, and privately owned Māori farms. These groups may be smaller than the 7-9 farm groupings of other Action Groups.

Although extension services are varied and the concept itself is dynamic, they frequently focus on providing advice for established farmers. Overseas research has found that less commercial farmers are often not serviced well by extension services, and women, youth and indigenous people are often underserved by these services. There is no publicly available source of data for Māori land owner engagement with extension services that would help us understand whether that is the case in New Zealand.

8.2 Education and training provision for staff

There are two questions being considered in this research. The first is whether the current needs of the agricultural sector are being met regarding training staff in low emission farm practices and sustainable business models, and the second is around the capability of training providers to support a shift towards horticulture. While this research has investigated the current provision of education and training for staff in the agricultural sector, there is a wider concern around ongoing delivery of such training given the collapse of two agricultural education providers in recent times. This reflects on the wider issue of the readiness of current providers to support a potential increased shift towards horticulture by land owners.

The challenge posed by the second question is that this is a fundamental shift in land use that requires staff with different skill sets and experience. Staff working in the agricultural sector may not be the same people interested in working in the horticultural sector, and are likely to be a different cohort. Training provision for frontline primary sector workers is part of a broader conversation about the future of work in New Zealand and potential for growth in the horticultural sector that may result in a demand for qualified local staff.

More importantly, the aspirations of the land owners and the suitability of the land to be utilised for different purposes need to be considered. Some land owners have fully unutilised land, inaccessible land, or land that is not able to be utilised for horticulture due to its LUC status. As such, this report does not consider an increased shift towards horticulture by Māori land owners to be an easy response to the issue of reducing greenhouse gas emissions.

The concerns around qualifications are deeper than whether providers are situated in proximity to the location of Māori land, although from available information, it is difficult to surmise that current education and training is serving Māori agricultural students well. Data on apprentices and trainees suggests that some areas are not well supplied with relevant training, particularly Te Tai Tokerau,

Waikato-Maniapoto, Tairāwhiti, and Tākitimu, despite high levels of primary sector employment in those areas and high Māori populations.

In areas that do appear to be well served by the available training schemes, particularly Te Waipounamu, the 2017 data shows Māori students are not employed at the same rates as some other students. Only 41 percent of Māori studying agriculture and related studies were employed as Agricultural Professionals, while 51 percent of Europeans and 55 percent of Asians students were in concurrent employment. The outlook was considerably worse for Pacific Peoples with 7 percent working while studying. Without a deeper dive, it is impossible to ascertain what might lie underneath the discrepancies.

There are also questions around the appropriateness of the throughput model, where funding is based on the number of students and qualifications granted, and whether the way training providers currently deliver courses meet the needs of Māori students. The current tertiary funding model does not allow for developing mixed models of delivery, with wraparound services, mentoring (tuakana/teina models), and pastoral care for Māori in study. Mixed models (see Section 4.4) have had good levels of success, but are often funded in the short-term as pilots or initiatives, with no long-term funding or established programmes. Capable NZ, which offers work placed or experience assessments, is not yet offering primary sector options.

A note about Te Kāuta

Te Kāuta was an initiative between Primary ITO and FOMA that sought to address issues of training deficiencies within the Māori agribusiness sector. Launched in 2013, it developed and offered governance, management, and staff training courses for Māori across all sectors of the primary industry. In that first year, Te Kāuta implemented trainings with Kono (Wakatū) in Nelson, Awanui Huka Pac in Tauranga, and Ngāti Awa in Whakatāne, and formed a strategic partnership with Te Arawa Primary Sector Inc. It also recruited 189 Māori into primary sector trainings, and provided advice and support to a number of Māori farming entities.

In 2014 Primary ITO underwent a merger, and progress on Te Kāuta appeared to stall with no mention of it in 2015 and 2016 annual reports. A review was commissioned of Primary ITO's Māori engagement strategy seeking commentary from the primary sector on the effectiveness of the Te Kāuta initiative. The 2014 annual report states an intention to further progress conversations with Māori governance and reposition Primary ITO and Te Kāuta investment to better meet the needs of Māori, and industry. The Primary ITO Investment Plan 2018-2019 talks about the "former Te Kāuta approach" and lays out a Māori Strategy, 'Grow Māori', as a Primary ITO-wide initiative intended to build bicultural capability. Grow Māori has seven priority sectors – dairy farming, dairy processing, sheep & beef farming, meat processing, wool harvesting, seafood and horticulture – and two secondary sectors – viticulture and apiculture.

The strategy covers four focus areas:

- Our Industry Partners: We will provide strategic leadership across the primary industries to maximise collective impact and alignment in growing the Māori workforce
- Our Customers: We will significantly increase the number of Māori businesses we work with in the primary industries to grow the Māori workforce
- Our Learners: We will attract, train and retain more Māori at all levels in the primary industries
- Our People: We will build the bicultural capability and organisational culture of Primary ITO.

9 Recommendations

Given the results of the data analysis and discussion, we make the following recommendations.

- 1) There are insufficient resources currently allocated to support Māori land owners in changing land use practices. We recommend that any funds arising from climate policy proposals (e.g. a levy charged on land owners) have a ring-fenced and protected provision apportioned for use with Māori land and land owners. A protected allocation will ensure an ongoing funding pool to enable Māori land owners determine and implement their climate change responses.
- 2) Pilot programmes working with Māori land owners, managers and staff, including mixed-method trainings, show considerable success in effecting change and improving productivity. However, the lack of ongoing funding and the short-termism of some funding means programmes are limited in scale and providers are not able to provide continuing support to participants. This fragmented funding approach is a risk to viable development of Māori land and to the capacity building of kaitiaki, managers and staff. Having targeted and sustainable sources of funding, such as ring-fenced resourcing as described above, will allow programmes to be delivered continuously and sustainably.
- 3) On the whole, the data indicates education, training and extension services are currently not fit-for-purpose for Māori needs, and mainstream services appear to have limited ability to be agile in their approach. It is debateable as to whether the needs of Māori are being met by current services in developing governance capability or upskilling on best practices in farming. It is also questionable whether the capacity and capability exists to assist land owners to diversify land use, where the land is able to support such changes. Furthermore, education and training options are largely silo-ed with little or no integration of Mātauranga Māori approaches and with sustainable practices in the primary sector being a separate qualification, rather than integrated into agriculture and horticulture qualifications.

FOMA's Performance Plus programme would not have the levels of success it had if it wasn't a Māori peak organisation with the relevant understanding of Māori needs, and significant networks in the agricultural sector. The Productivity Commission's report on a low-emissions economy (Section 3.3) endorsed the need for Māori-specific approaches. Māori land owners and those working on Māori land need bespoke solutions to addressing climate change issues on their land due to the complexities around land ownership structures and governance, and land use classification. We recommend bespoke solutions for Māori land regarding climate change be developed by Māori for Māori, working with Māori land owners in relation to their specific land use considerations and needs.

- 4) There are systemic pipeline issues around Māori youth engagement in science and science-related subjects, including agriculture and horticulture, in secondary and tertiary studies. In addition, the networks required to connect Māori to training opportunities are not well established within industry and training organisations. Increasing understanding of poor engagement of Māori in mainstream agricultural education, training and extension services requires further research to adequately unpack the complexities that the data hints at.