MUKA TANGATA
People, Food and Fibre
Workforce Development Council

Initial Sector Workforce Development Plan

2022

Forewords from Erin and Jeremy

"Nā to rourou, nā taku rourou, ka ora ai te iwi
With your food basket, and my food basket – the people will flourish."

Muka Tangata, the Workforce Development Council for People, Food and Fibre, exists to enhance vocational education and training to meet the needs of the food and fibre sector. We are focused on developing a well-functioning labour market in which industries can access the skills they require to meet their current and future needs. We want a sector that delivers fair and equitable outcomes for all, including those who have been traditionally underserved, and where learners and employees can reach their full potential and capabilities.

Hearing the voices of the food and fibre sector through engagement with our partners – industry, tangata whenua, training providers, and learners – is at the heart of our work. And the way we work is grounded in honouring Te Tiriti o Waitangi and supporting Māori Crown relations.

In our first year, we have focussed on making connections across the sector – meeting directly with organisations and industry leaders, and through a series of hui – with the purpose of establishing relationships that we can build on. Our priority has been to introduce ourselves as the sector's representative for vocational education, connect specifically with iwi and hāpū Māori organisations to ensure that the aspirations of Māori in the food and fibre sector are clearly heard, and to make connections with representatives from key entities in the sector.

It is with great delight that we present this initial Workforce Development Plan for the food and fibre sector.

This initial Food and Fibre Sector Workforce Development Plan takes a whole-of-sector approach. It acknowledges what we've heard about the challenges and opportunities across the food and fibre sector – the role of technology; attracting and retaining workers in a tight labour market; wellbeing, the environment, and sustainability; and supporting Māori businesses and learners to be successful. And it looks to the first steps for addressing those focus areas, setting an agenda for action for all the sector.

This Plan is the culmination of our research, analysis, and engagement with the sector during our first year of operation. The Plan gives voice to our industries, setting out the challenges and opportunities we face and the actions we are individually and collectively going to take to bring about transformational change that meets the future environmental, cultural, and workforce needs of Aotearoa New Zealand.

This is just a starting point. Over the next year we will develop Workforce Development Plans for each of the 14 industries we represent, informed through engagement with industry and regional leaders, including iwi Māori, to implement practical solutions to improve vocational education and training for our sector. This Plan provides a great platform as we begin engaging with our partners on creating those individual plans, testing and refining as we go.

We look forward to continue working with all our partners to identify and implement solutions that meet your needs.

Erin Simpson
Chair Muka Tangata Council

Jeremy Baker
Chief Executive Muka Tangata

Content

Executive Summary

Background

The Government is undertaking significant reforms to the vocational education sector. The Reform of Vocational Education (RoVE) is designed to create a unified and cohesive vocational education and training system that ensures that those undertaking vocational education build valuable skills that are needed by industry – both now and into the future.

As part of these reforms, Workforce Development Councils (WDCs) have been established to provide bottom-up advice on vocational education from an industry perspective.

Muka Tangata, the People, Food and Fibre Workforce Development Council, is the WDC for the food and fibre sector. Muka Tangata facilitates and channels industry voice to ensure that food and fibre industries can access the skills they require to meet their current and future needs. The foundational framework is based on honouring Te Tiriti o Waitangi, supporting Māori Crown relations, and helping ensure fair and equitable outcomes for all.

Workforce Development Plans (WDPs), a new feature of the vocational education reforms, are intended to provide the evidence base around the current and future needs of the workforce and map out the changes and actions needed within the vocational education system to meet these challenges head on. Proposed actions also aim to contribute to achieving the objectives of the Tertiary Education Strategy – placing learners at the centre of the system, and ensuring barrier-free access to education opportunities, by providing quality teaching and leadership that is relevant to the future of learning and work.

WDPs are a plan for the whole of food and fibre, including all those involved in vocational education and training. The success of workplace planning is dependent on employers, providers and industry associations working together in an alliance that supports the collective interests of the sector.

This is Muka Tangata's first Workforce Development Plan. It is based on a series of regional consultations with 300 people with an interest in food and fibre vocational education and training; an analysis of existing publicly available statistics on the sector and its workforce; and a review of existing reports completed over the past decade. It sets out, at a high level, the changes needed in vocational education and training to help the sector better meet current and future skills challenges.

What's in the Plan?

The Plan sets out a high-level picture of the food and fibre sector (see Section Two). The sector is economically important for New Zealand – it makes a significant contribution to GDP and is responsible for employing a significant proportion of the workforce. It also has importance for the Māori economy – the biggest share of the Māori asset base in New Zealand is in agriculture, forestry and fishing.

A considerable amount of training and skills development occurs in the sector, but not all of this is within the scope of the formal vocational education and training system. We need to understand the skills ecosystem and how it operates in order to improve skills and career pathways. This will help to attract people into the industry and overcome some of the challenges currently being faced in meeting labour demand.

A number of opportunities and challenges for the provision of vocational education and training for the food and fibre sector have been identified (see Section Three). These arise from:

- honouring Te Tiriti o Waitangi by making sure that Māori learners are supported to succeed, and that the needs of Māori businesses are met
- difficulties in recruitment and retention, especially in a tight labour market
- the ways in which sustainability, environmental concerns, and wellbeing are reshaping the sector
- being agile in our response to the ways in which digital and agricultural technologies are changing ways of working.

How will the Plan change things?

Section Four of the Plan identifies what things can be done, both collectively and individually, to address those challenges and opportunities, including specific actions and focus areas for Muka Tangata.

- Improving our **analysis and advice** by building on the existing evidence base and addressing data gaps, for example, around the vocational education system
- Building genuine partnerships and developing our understanding of the **needs and aspirations of Māori** within the sector
- Working closely with the sector to build better understanding of the **specific qualification and training needs in each industry** and to test out solutions to start to meet these needs
- Better understand the barriers for **under-served learners** and working with others to better met their needs within the vocational education system.

Over the next year, we will be working with providers, industry bodies, government agencies and other partners to get feedback on the actions proposed and refine the detail. We will also engage with organisations in different industry segments (for example, seafood, horticulture, forestry) to consult on how the high-level challenges are experienced in their specific segments and how they can be addressed.

1. Introduction to Muka Tangata and workforce development

1.1. The reform of the Vocational Education Sector (RoVE) is underway

- The Government is undertaking significant reforms to the vocational education sector
- Workforce Development Councils have been created to give industry a greater voice in vocational education
- Muka Tangata is the Workforce Development Council set up to support vocational education in the food and fibre sector

Since 2018, a progressive reform of the vocational education and training system in New Zealand has been undertaken. Known as RoVE (Reform of Vocational Education), the reforms are designed to create a unified and cohesive vocational education and training system that ensures that those undertaking vocational education build valuable skills that are needed by industry – both now and into the future.[1]

As part of these reforms, six Workforce Development Councils (WDCs) have been established, alongside Regional Skills Leadership Groups (RSLGs), to provide bottom-up advice on vocational education from an industry and regional perspective.

The functions of WDCs[2] are:

- Leadership: on skills and workforce issues by identifying current and future needs and advocating for these needs to be met
- Developing and setting standards, capstone assessments and qualifications
- Endorsing programmes and moderating assessments
- Advice and representation: with industry and to the Tertiary Education Commission (TEC).

[1] See www.tec.govt.nz/rove/reform-of-vocational-education/ for more detail on the reforms
[2] As set out in S.366 of the Education and Training Act 2020

1.1.1. Muka Tangata has been set up to support vocational education in the food and fibre sector

Muka Tangata, the People, Food and Fibre Workforce Development Council,[3] represents food and fibre industries including dairy, sheep, beef, deer, pork, poultry, and other livestock farming; arable farming; horticulture; viticulture and winemaking; forestry, silviculture and harvesting; fishing, aquaculture and seafood processing; equine and racing; sports turf management; veterinary; and food and fibre support industries.

Muka Tangata sphere of operation is in relation to sub-degree level courses and qualifications for these industries.

Our functions include:

- facilitating and channelling industry voice
- contributing to the creation of a sustainable, globally engaged, and adaptive New Zealand
- contributing to an education system that provides opportunities for everyone to reach their full potential and capabilities, including those who have been traditionally underserved by the education system
- honouring Te Tiriti o Waitangi and supporting Māori Crown relations
- helping ensure fair and equitable outcomes for all
- supporting responses to New Zealand's current and future workforce needs, taking into account the challenges posed by issues such as climate change, global sustainability goals, emerging technologies and the changing nature of work
- contributing to a well-functioning labour market system in which the specified industries can access the skills they require to meet their current and future needs.[4]

[3] Established by Order in Council (OiC) in 2021 under Section 363 of the Education and Training Act 2020

[4] Education (Muka Tangata–People, Food, and Fibre Workforce Development Council) Order 2021

1.1.2. Workforce Development Plans provide evidence and direction for the sector's vocational education provision

- Workforce Development plans are a new feature of the vocational education reforms
- They provide the evidence base around the current and future needs of the workforce and map out what changes and actions need to be taken to meet the needs and opportunities within the vocational education system

A key function for WDCs is skills leadership and advice. This includes research and analysis on current and future skills and workforce needs, and planning how these can be met. One of the ways that WDCs do this is through the development of Workforce Development Plans (WDPs). The purpose of WDPs[5] is:

- To capture current and future industry skill and workforce needs and provide an overview of:
    - Industry context, for example, key challenges and opportunities
    - The activities required to meet current and future skill requirements
    - Outcomes industry seek for its workforce development
    - Anticipated labour market changes and their effect on future skill requirements
- To drive action to ensure the skills and workforce development needs of industry are met
- A tool to help WDCs to coordinate industry efforts to improve the match between skills supply and industry demand, and future-proof skills pipelines.

Workforce development planning is a new process for vocational education and this plan is the first that has been completed by Muka Tangata.

Its development and content has been based on three components:

- Honouring Te Tiriti o Waitangi. Our focus is on ways in which Māori flourish at all levels in the food and fibre sector industries. To achieve that vision we have started engagement to understand whānau, hapū and iwi aspirations and needs and how we build them into our entire work programme.
- A series of consultations, conducted as part of our Food and Fibre Futures project, attended by around 300 people in 14 hui around the country during May 2022. These workshops involved looking at some of the drivers affecting the industry and the implications for vocational education and training.
- An analysis of existing publicly available statistics on the sector and its workforce, and a review of a range of existing reports completed over the past decade.

The WDP suggests a plan of action for the sector as a whole. While it includes specific actions to be taken by Muka Tangata, it also includes suggestions that will need to be considered by providers, industry bodies and employers if progress is to be made. Talking to our industry partners about the issues included in this plan is a key focus for Muka Tangata's work. We will do this over the next year, along with completing WDPs for different industries (for example, seafood, horticulture, forestry) and on strategic issues facing the sector.

[5] Ohu Mahi (2021) Skills and Workforce Leadership Plans: An introduction

2. Industry overview

2.1. The food and fibre sector occupies a unique place in New Zealand's economy

- The food and fibre sector is critical to New Zealand's economy and is expected to account for 11.1% of GDP, 81.8% of exports and 13.8% of the workforce in the year to 30 June 2022
- COVID-19 immigration restrictions and supply chain issues have been disruptive for the sector, though exports have continued to perform strongly
- There are a range of global and national trends and market shifts underway that will have significant impacts on the sector and the skills required by the workforce

2.1.1. Food and fibre is economically important and comprises a significant portion of the workforce

The food and fibre sector is integral to New Zealand's economy and recovery from COVID-19. Industries making up the sector have a long history in New Zealand and have been particularly important in supporting and shaping rural communities. In the year to 30 June 2022, food and fibre is expected to account for 11.1% of New Zealand's GDP; and 81.8% of New Zealand exports (worth $52.2 billion).[6] While our remit focusses primarily on production workforces (except for seafood processing and some support services), understanding the entire food and fibre sector provides valuable context and will help us to understand vocational pathways across the sector.

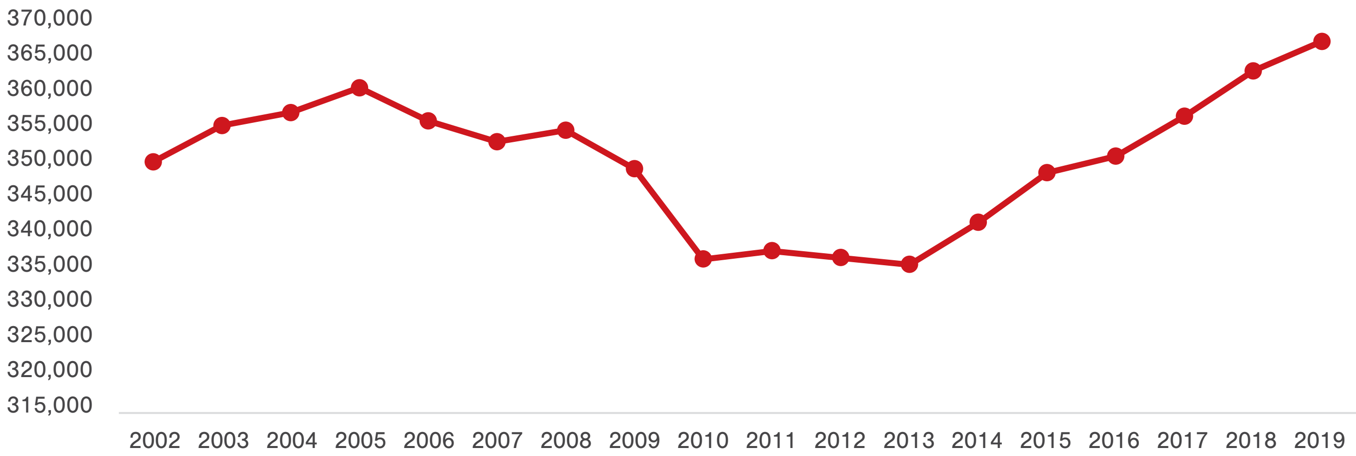
The food and fibre sector accounts for about 1 out of every 7 jobs in New Zealand.[7] In 2019 the sector employed around 367,000 people. As shown in Figure 1, between 2013 and 2019 there was an increase of around 30,000 people in the workforce. However, there was a reduction in the production workforce of just over 1000 employees over the same time period. The increase in the total workforce between 2013 and 2019 was largely driven by increases in the support services and processing/commercialisation workforces.

[6] MPI (2022) www.mpi.govt.nz/resources-and-forms/economic-intelligence/situation-and-outlook-for-primary-industries/

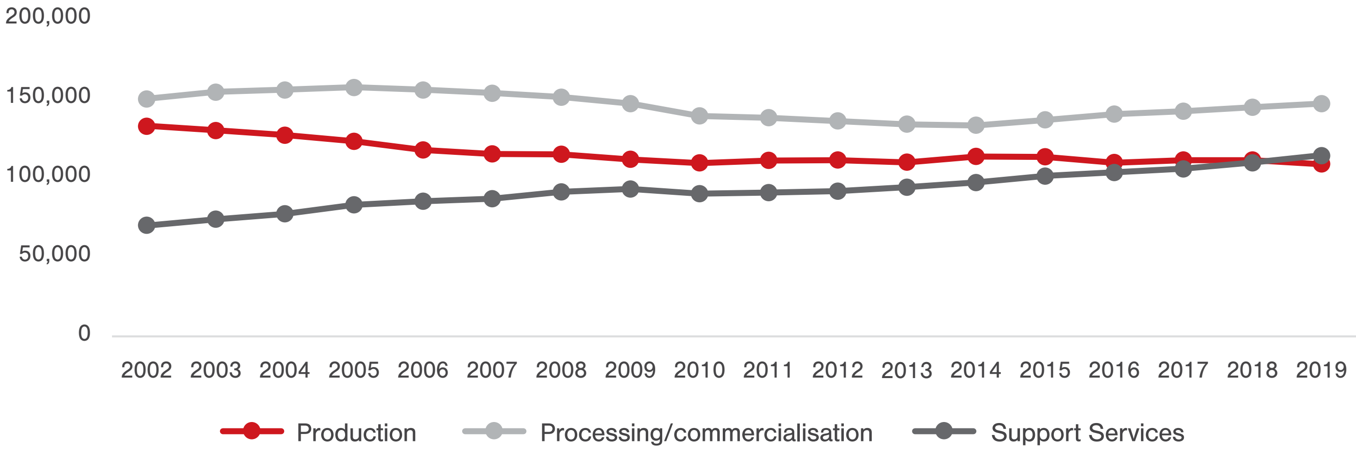
[7] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

Figure 1: Employment counts for the food and fibre sector (a) total and (b) by workforce, 2002-2019

a)



b)



Source: Ministry for Primary Industries Food and Fibre snapshot data - www.mpi.govt.nz/funding-rural-support/future-skills/

2.1.2. The sector has faced workforce and logistical challenges from COVID-19 but continues to show strong export growth

Like other industries, the food and fibre sector in New Zealand has faced a range of challenges brought about by the COVID-19 global pandemic. Two factors have been particularly relevant:

- Border closures have restricted the access of food and fibre businesses to migrant workers, while the domestic labour market has been tight. This has impacted on both the ability of some workplaces to employ workers whose skills are in demand internationally, and the availability of workers to undertake seasonal work.[8] Many food and fibre workplaces were challenged in finding ways to respond to these labour shortages.
- Disruptions to supply chains and international trade have resulted in backlogs as a result of port closures and the imposition of stricter hygiene requirements. Economic recovery has also resulted in increased demand for freight and spiralling costs. This has had a direct impact on New Zealand producers, by increasing operating costs and reducing ability to restock shelves and source inputs for production.

Despite challenges posed by COVID-19, food and fibre sector exports performed better than expected.[9] Export revenue reached $52 billion for the year to 31 March 2022, and is expected to rise to $56.8 billion by 30 June 2026. This growth is driven largely by short-term global supply constraints and recovering demand. Uncertainty about the medium-term future remains however, due to uneven vaccine penetration rates across the world, the possibility of further outbreaks, and the speed with which the world experiences economic recovery.

2.1.3. The food and fibre sector is operating in a rapidly changing environment

There are many external factors influencing businesses operating in food and fibre. They include changes in consumer demand and international trade, as well as changes in government policy settings. For example:

- *International trends in consumer preferences:* These include more interest in plant-based diets, and a willingness to pay higher prices for high quality food products. There is increasing demand from Asian markets, and free-trade deals between New Zealand and the United Kingdom and the European Union has recently been negotiated, which may lead to other changes in consumer demand.
- *Increasing added value:* In some markets consumers have become more willing to pay higher prices for added value products. In some parts of food and fibre industries, there are demands for specialised products – for example, goods produced using natural fibres, wood-based furniture.
- *Migration policy re-balance:* The government is currently re-balancing immigration settings to attract high-skilled workers – a group that is in high demand internationally. There will be a corresponding reduction in the numbers of migrants available to fill lower-skilled jobs.
- *New technology and automation:* While new technology is impacting on jobs right across the economy, there are particular impacts for the food and fibre sector. For example, the agritech sector is experiencing significant growth; and scientific advances are resulting in the development of new products and services.
- *Sustainability:* Climate change, the move to a low emissions economy, and concerns about water quality and loss of biodiversity are contributing to the imperative for more sustainable systems of production. Consumers want assurances that the products that they buy have been made in ways that are environmentally and socially sustainable, and with due respect being given to worker rights and animal health and safety.

The rapidly changing external environment has implications for the skills needed by the workforce, and the content of vocational education. Vocational education and training has a vital role to play in ensuring that the sector has available to it the skills to respond to changing needs, and can realise the opportunities available to it to improve productivity over time.

Implications

- The number and scale of the changes and challenges facing the sector requires adaptation in both qualifications and training provision. A specific challenge for Muka Tangata is to identify the specific changes that are needed and to work with all partners to implement them in a way that helps to meet current and future skills needs

[8] Border closures were mitigated to some extent by the Primary Industries Border Class Exceptions policy; and by some increased flexibility in the operation of the Recognised Seasonal Employer (RSE) scheme.

[9] MPI (2022) www.mpi.govt.nz/resources-and-forms/economic-intelligence/situation-and-outlook-for-primary-industries/

2.2. Food and fibre businesses are consolidating into those with larger workforces

- Around a quarter of those working in the industry are self-employed but there is a trend towards larger businesses with greater numbers of employees
- Māori are significant asset and business owners within the food and fibre sector and their presence is expected to grow
- Labour productivity has held up and export revenue is forecast to increase 9% in 2022

2.2.1 There is a high rate of self-employment across the sector but the trend is towards larger business sizes

Around a quarter of people working in food and fibre are self-employed,[10] higher than the average of 10% in all industries. The rate of self-employment is highest in dairy (where 28% of the workforce are self-employed) and for red meat and wool (30%). While a high proportion of businesses are operated by people who are self-employed and with no employees,[11] there is an increasing number of businesses employing more than 20 and more than 50 employees.[12,13] For example, the Statistical Business Register shows an increase of 60 enterprises (30% growth) in agriculture, forestry and fishing employing 50 or more employees in the last ten years.[14] Whilst there are an increasing number of larger businesses some of these still operate in small units. More investigation needs to happen in how these larger businesses are structured and what this may mean for training requirements.

2.2.2. Iwi and hapū Māori have substantial assets and interests in food and fibre businesses

As tangata whenua and as one of two partners in Te Tiriti o Waitangi, ownership of the natural resources that underpin much of the primary sector has a special significance for Māori. While Treaty settlements have returned some land confiscated or sold during New Zealand's colonial history, as at June 2018, only 5.7% of land was in Māori ownership.[15]

There has been rapid and significant change in the economic significance of Māori business and Māori ownership of the asset base in food and fibre industries.[16] Iwi and hapū Māori have substantial assets in food and fibre businesses. In 2018, the financial value of the Māori asset base across the New Zealand economy totaled $68.7 billion, with the biggest share of this being in agriculture, forestry and fishing industries ($23.4 billion - an increase of $12 billion since 2013). This included significant assets in sheep and beef farming ($8.6 billion), dairy ($4.9 billion), forestry ($4.3 billion), and seafood ($2.9 billion). Of the natural resource-based assets in agriculture, horticulture, forestry, and fishing, more than half ($14.4 billion) are situated in four rohe: Waikato, Te Moana a Toi-Waiariki, Waitaha, and Te Tai Hauāuru.

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[10] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[11] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[12] Stats NZ (2017-2022) Business Operations Survey 2016-2021 www.stats.govt.nz/insights?filters=Business%20operations%20survey%2CInformation%20releases

[13] Stats NZ (2021) www.stats.govt.nz/information-releases/new-zealand-business-demography-statistics-at-february-2021

[14] It is worth noting here that the available business data is limited. The Business Operations Survey only includes businesses employing 6 or more employees and the Statistical Business Register only includes economically significant enterprises – usually those with a GST turnover greater than $30,000 per year. Still these two sources together point to an increasing number of businesses with 20 or 50+ employees.

[15] BERL and Reserve Bank of New Zealand (2021) Te Ōhanga Māori 2018; TheMāori Economy 2018 berl.co.nz/sites/default/files/2021-01/Te%20%C5%8Changa%20M%C4%81ori%202018.pdf

[16] BERL and Reserve Bank of New Zealand (2021) Te Ōhanga Māori 2018; TheMāori Economy 2018 https://berl.co.nz/sites/default/files/2021-01/Te%20%C5%8Changa%20M%C4%81ori%202018.pdf

Implications

- Training provision needs to recognise both the current high proportion of self-employed workers and the trend towards businesses with larger workforces
- We need to build a better understanding of Māori businesses and asset holders and their aspirations within the food and fibre sector

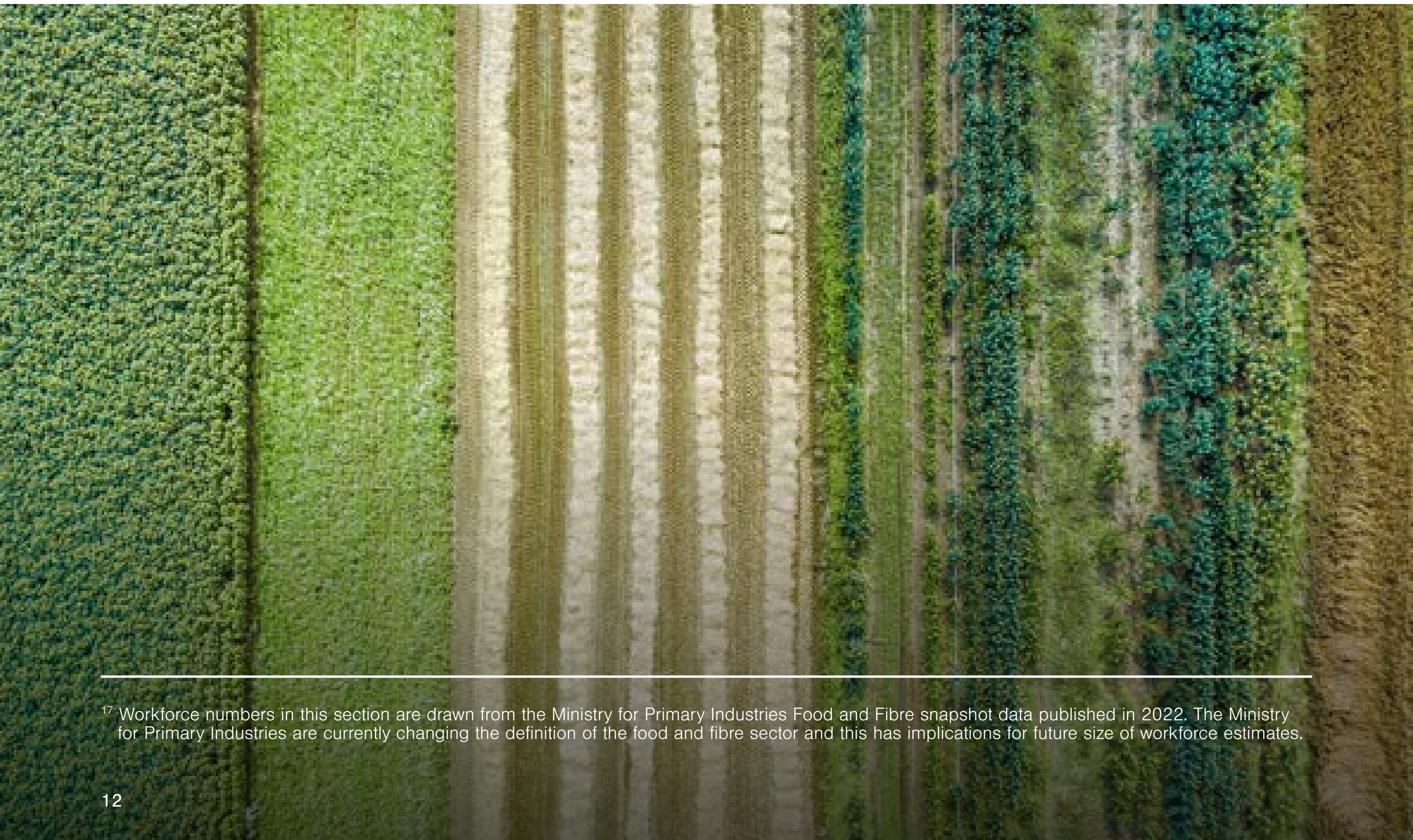
2.3. The food and fibre workforce is becoming increasingly diverse

- The food and fibre workforce has been growing. In 2019 it reached 367,000 people (29% working in production, 40% in processing and commercialisation, and 31% in support services). However, this trend is not uniform across industries and parts of the value chain
- The food and fibre sector is a significant employer, particularly in rural areas, and industries tend to be geographically clustered
- Demand for labour is high, but wage growth is not keeping pace with inflation
- The sector is becoming more demographically diverse and Māori are a significant and growing part of the workforce
- Most new entrants to the sector are from New Zealand, but migrants are significant in key areas

2.3.1. The workforce is growing – but not evenly across industries

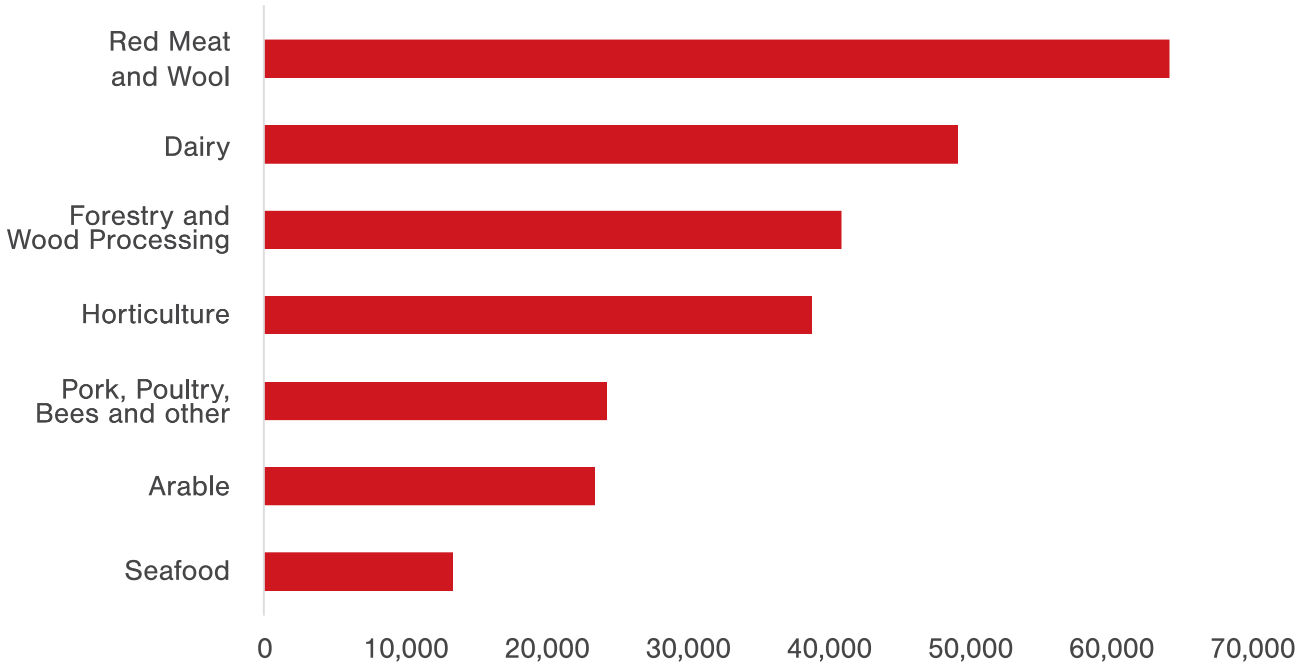
Between 2013-2019 the food and fibre workforce has been growing. In 2019 it reached 367,000 people.[17] Workforce numbers vary by industry segment, as shown in Figure 2. In 2019 apart from support services, red meat and wool had the largest workforce; followed by dairy; forestry; pork, poultry, bees and other; arable; and seafood. Across the sector as a whole, around 29% of the workforce are employed in production jobs, 40% are employed in processing and commercialisation functions and the remaining 31% are employed in support services.

The rate of workforce growth varies across the sector, and in different parts of the value chain, as can be seen in Figure 3. Not all parts of the food and fibre sector have experienced the recent workforce growth. Between 2013 and 2019 there were decreases in the numbers employed in red meat and wool; in dairy production; seafood processing/commercialisation; and arable production. The seafood production workforce experienced by far the largest proportional increase in size, increasing by 75% between 2013 and 2019 (from 1,870 employees to 3,285).



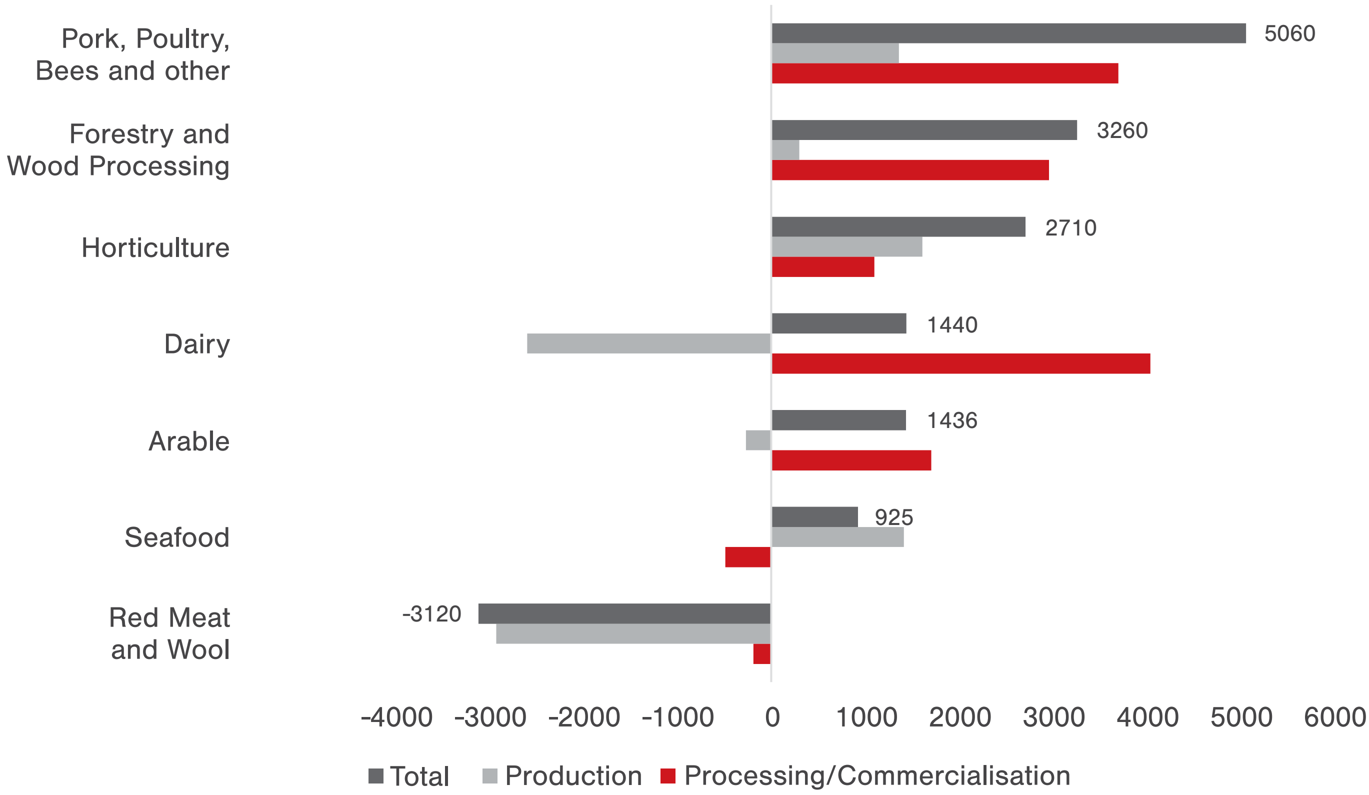
[17] Workforce numbers in this section are drawn from the Ministry for Primary Industries Food and Fibre snapshot data published in 2022. The Ministry for Primary Industries are currently changing the definition of the food and fibre sector and this has implications for future size of workforce estimates.

Figure 2. Workforce size by industry, 2019



Source: Ministry for Primary Industries Food and Fibre snapshot data- www.mpi.govt.nz/funding-rural-support/future-skills/

Figure 3. Changes in workforce size by industry, 2013-2019



Source: Ministry for Primary Industries Food and Fibre snapshot data- www.mpi.govt.nz/funding-rural-support/future-skills/

Note: data labels show absolute change in the estimated total workforce between 2013 and 2019

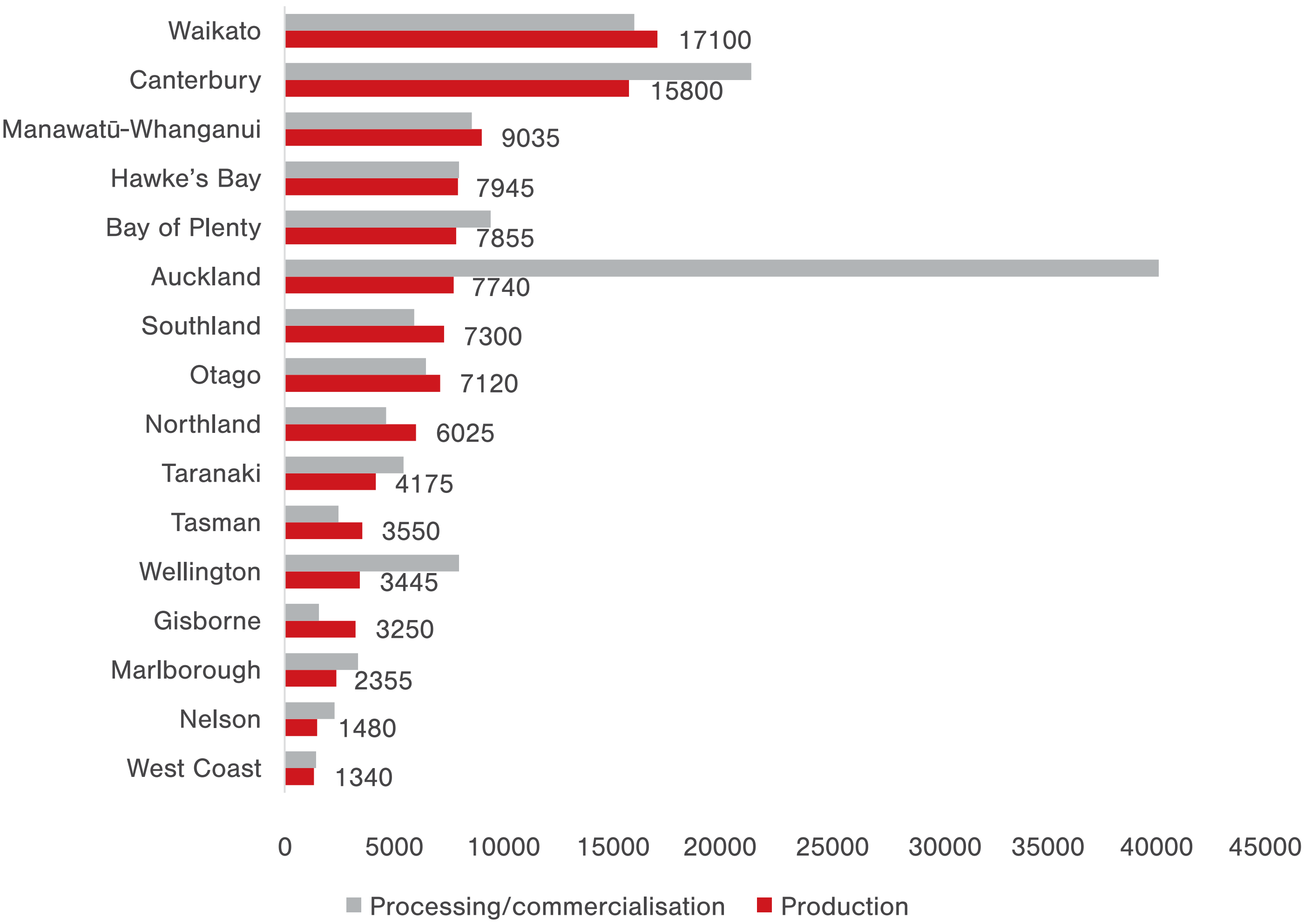
2.3.2. Workforces for food and fibre industries tend to be clustered in specific regions

There are regional differences in the distribution of food and fibre sector jobs. While the number of employees is highest in Auckland, Canterbury and Waikato, the number of food and fibre employees as a proportion of the total workforce is highest in Southland and Tasman. In 2019 it was estimated that food and fibre jobs accounted for 28% of the workforce in Southland, and just 8% in Wellington.[18]

While Auckland has the largest number of employees, many of these work in processing/commercialisation and support service roles. Figure 4 shows the Production and Processing/commercialisation workforces by region in 2019.[19]

Regional employment tends to be associated with industry clusters – such as aquaculture and viticulture in Marlborough and Tasman/Nelson, and dairy in Taranaki and the Waikato.

Figure 4. Production and Processing/commercialisation workforce counts by region, 2019



Source: Ministry for Primary Industries Food and Fibre snapshot data- www.mpi.govt.nz/funding-rural-support/future-skills/

Note: data labels show estimated production workforce for each region in 2019. A small number of people (<2%) could not be placed in regions.

[18] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[19] We can not currently include support service role estimates by region. MPI are currently revising how they categorise the sector and are moving away from the categorisation of 'support services'.

2.3.3. Despite labour shortages, wage growth is not keeping pace with inflation

While there have been labour shortages and a high demand for labour, across the economy as a whole annual wage growth was half the rate of CPI inflation for the year to 31 March 2022.[20] Annual inflation reached a 30-year high of 6.9% in the March 2022 quarter.[21] The high rate of CPI inflation means that it costs more to purchase goods and services. In the medium term, wages are expected to increase so workers are compensated for the rising cost of living. Producers and growers are likely to face increased cost pressures as wages rise.[22]

[20] MPI (2022) www.mpi.govt.nz/dmsdocument/51754-Situation-and-Outlook-for-Primary-Industries-SOPI-June-2022

[21] Stats NZ (2022) www.stats.govt.nz/news/annual-inflation-reaches-30-year-high-of-6-9-percent

[22] MPI (2022) www.mpi.govt.nz/dmsdocument/51754-Situation-and-Outlook-for-Primary-Industries-SOPI-June-2022

2.3.4. Workforce diversity is increasing

The food and fibre workforce has a higher proportion of Māori and Pacific peoples than the total New Zealand workforce, and the majority of the workforce are men.

Nearly one in five food and fibre workers (19%) identify as Māori. This is higher than the percentage of people who identify as Māori in the general New Zealand working age population. Māori are more strongly represented in some industries than others. In 2019 Māori made up 23% of the workforce in forestry, and in red meat and wool; 20% of the seafood workforce; 16% of the horticulture workforce and pork, poultry, bees and other workforce; and 14% of the workforces in dairy and arable.[23]

The Māori food and fibre workforce is growing. In 2016 it was estimated that 40,412 food and fibre employees identified as Māori, increasing to 47,381 by 2019. As shown in Table 1, growth has occurred in all regions over the period 2016-2019, in some cases quite substantially.

Table 1. The regional distribution of the Māori workforce, 2016-2019

Region	2016	2017	2018	2019	Increase 2016 - 2019	%increase
Auckland	4396	4321	5074	5152	756	17.2
Bay of Plenty	4510	4720	5095	5150	640	14.2
Canterbury	2805	2815	3635	3625	820	29.2
Gisborne	2164	2377	2484	2483	319	14.7
Hawke's Bay	4639	4660	4914	4950	311	6.7
Manawatū-Whanganui	4080	4195	4679	4634	554	13.6
Marlborough	608	643	781	801	193	31.7
Nelson	408	628	646	528	120	29.4
Northland	2815	3117	3419	3554	739	26.3
Otago	1184	1281	1555	1525	341	28.8
Southland	1941	1894	2134	2145	204	10.5
Taranaki	2039	1964	2230	2217	178	8.7
Tasman	465	494	599	619	154	33.1
Waikato	6400	6580	7525	7645	1245	19.5
Wellington	1705	1755	2020	2012	307	18.0
West Coast	253	234	351	341	88	34.8
Total	40412	41678	47141	47381	6969	17.2

Source: Ministry for Primary Industries Food and Fibre snapshot data- www.mpi.govt.nz/funding-rural-support/future-skills/

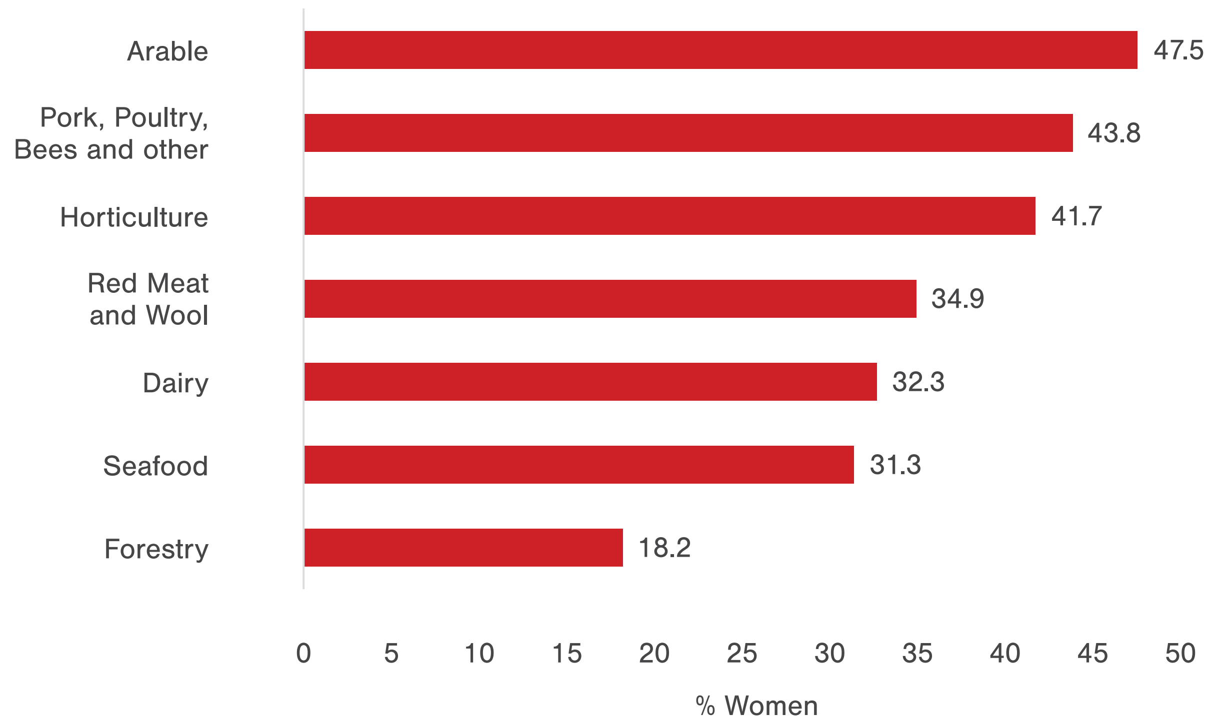
[23] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

In 2019 the proportion of Pacific peoples in the food and fibre workforce was higher (8.7%)[24] than the proportion of Pacific peoples in the national labour force (6.5%),[25] although this varies by sector. For example, 14.4% of the horticulture workforce identified as Pacific peoples, compared to 2.9% of the dairy workforce.[26]

There is a higher proportion of Pacific peoples in processing/commercialisation and a lower proportion in production sectors, with the exception of horticulture.[27] This may be partially explained by geography, as two-thirds of the Pacific peoples population reside in Auckland,[28] where there is a large processing/commercialisation workforce and the largest horticulture production workforce.

Men make up almost two thirds of the food and fibre workforce, but the number and proportion of women working in the sector has increased. Between 2013 and 2019 an additional 8,000 women joined the food and fibre workforce (excluding those working in support services). Figure 5 shows that women continue to be better represented in some industries than others. In 2019 women made up half of the arable workforce, compared to just under one fifth of the forestry workforce.

Figure 5: Percentage of women workers by industry, 2019



Source: Ministry for Primary Industries Food and Fibre snapshot data- www.mpi.govt.nz/funding-rural-support/future-skills/

[24] MPI (2021) Human Capability in the primary industries report, Part 1. Accessed from www.mpi.govt.nz/funding-rural-support/future-skills/

[25] MBiE (2020) Labour market statistics snapshot – December 2019. Accessed from www.mbie.govt.nz/dmsdocument/11271-labour-market-statistics-snapshot-december-2019

[26] MPI (2021) Human Capability in the primary industries report, Part 1. Accessed from www.mpi.govt.nz/funding-rural-support/future-skills/

[27] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[28] Stats NZ (2018) www.stats.govt.nz/tools/2018-census-ethnic-group-summaries/pacific-peoples

2.3.5. Most new entrants to the sector are from New Zealand, but migrants are significant in key areas

Analysis of new entrants into the food and fibre sector showed that of the 50,000 new entrants in the year ending March 2016, just over a third (35%) were from people moving from other industries, over a quarter (28%) were people moving to New Zealand from overseas, and the rest were made up of inflows from education (17%), beneficiaries (5%) and others including those out of the labour force (14%).[29]

New entrants from other industries tend to come from accommodation and food services; retail trade; and administrative and support services. Unlike the other sectors, for horticulture the main source of new entrants (41%) was people coming from overseas.

Implications

- We need better data and evidence on current and future workforce numbers and skills requirements – this needs to be sensitive to the unique trends within different industries, geographies and communities
- Greater understanding is needed on the reasons for the distribution of the workforce by gender and ethnicity, and the role that vocational education could play in reducing barriers to employment where these exist

2.4. Data on vocational education within food and fibre is limited

- Whilst there are some rich data sources on vocational education within the food and fibre sector, much of the data is currently fragmented or Muka Tangata does not yet have access to it. This is a priority for us to work on over the next year
- Available data is focused primarily on formal industry training and qualifications, but other forms of training and upskilling are important (and highly valued) across the sector
- There are increasing numbers of people in the sector with formal qualifications, but these are still skewed towards the lower levels and apprenticeship rates are low compared to other sectors
- Initial analysis suggests there may be gaps in some demographic groups taking up vocational education
- The sector has highlighted skills gaps as an issue – both for employers and for vocational education providers. They have also noted that there are gaps in provision in industries such as shearing and forestry

2.4.1. There are multiple training pathways within the food and fibre sector

There is a wide variety of types of vocational education provision in the sector. These include programmes designed to provide a transition from school to work, formal industry training, non-formal training programmes offered by industry organisations and private providers, and informal training. Some information is available on the incidence of training that is being delivered within the formal system, and we are embarking on more detailed analysis of this. However, there are large gaps in knowledge about the incidence of non-formal and informal training, and the extent to which existing knowledge and skills are recognised as transferable skills that can facilitate mobility across the sector.

[29] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

School-to-work transitions

Secondary school students and those who have recently left school have opportunities to gain skills through the Primary Industries Vocational Pathway.[30] These are programmes of study at Levels 1-3 that enable those participating to demonstrate they have skills needed to undertake work within the sector. Initiatives like Trades Academies, the Gateway Programme and STAR (Secondary Tertiary Alignment Resource) are aimed at year 11-13 students enrolled in schools. They provide students with the prospect to study for NCEA credits and frequently incorporate the expectation of work experience. In 2020 there were 1,829 primary industry pathways enrolments from 181 schools, representing 19.2% of total Trade Academy enrolments.[31]

Industry training

Industry training supports structured employment-related training that leads to the awarding of qualifications on the New Zealand Qualifications Framework (NZQF). The RoVE reforms have resulted in substantial changes to the industry training system, including the establishment of Muka Tangata as one of six WDCs. Muka Tangata has the responsibility of setting standards, developing qualifications, endorsing programmes of learning, moderating assessments, and working with providers to ensure continuous improvement in the quality of industry training in the food and fibre sector.

Muka Tangata is currently responsible for qualifications at Levels 2-6, with a range of credit values, across a range of food and fibre sector industries. The subject matter of most qualifications falls into the New Zealand Standard Classification of Education (NZSCED) field of Agriculture, Environmental and Related Studies. It includes 39 qualifications in agriculture (including strands in dairy farming, arable, meat, and poultry), 10 qualifications in forestry, and 11 qualifications in horticulture and viticulture. Qualifications in other NZSCED areas include engineering and related technologies; veterinary studies; and architecture and urban environment.

[30] www.careers.govt.nz/courses/secondary-school-study-and-training-options/what-is-vocational-pathways/

[31] Ministry of Education and TEC (2021) *Briefing to the Primary Production Committee: Update on Matters Relating the Vocational Education in Agriculture* www.parliament.nz/resource/en-NZ/53SCPP_EVI_109465_PP1117/4c1bd5d032bf787273e5c489a86f8225c7dfeac3

Informal learning

There is also a significant amount of informal learning that occurs in food and fibre workplaces. It occurs for example, when people absorb skills and knowledge that are relevant to working in the industry through work or life experiences (for example, through working on a farm). Currently, we have little information on the prevalence of initiatives that are in place to recognise skills and knowledge that has been gained through informal and non-formal learning processes. However, feedback received from our partners suggests that we need to better understand its prevalence, and the impact that its presence (or absence) has on the interest and willingness of learners to engage in formal learning. Muka Tangata is working with the Food and Fibre CoVE to explore these issues in further detail.

Non - formal education and training

In addition to formal training, a considerable amount of non-formal training occurs in the food and fibre sector. Most of the key industry associations, for example, deliver continuing education in areas of technical knowledge (for example, genetics, applications of new technologies, regulatory changes) and also in topics where there is policy interest (for example, climate change, managing biodiversity, biosecurity). This continuing education takes the form of webinars, discussion groups, extension networks, workshops, conferences, and structured learning modules. There is a reasonably high level of participation in these courses, which tend to be short and applied in nature. The industry places high value on these courses because they are short and highly relevant to immediate learning needs. Getting a better understanding of the range and nature of non-formal education opportunities and exploring how these interface with the formal vocational education and training system is a priority for Muka Tangata over the next year.

2.4.2. The numbers of those with formal food and fibre sector qualifications has started to increase and there is increasing investment in education and training in the sector

The number of learners enrolled in agriculture qualifications[32] has increased recently, reversing some of the declines in the period through to 2018.[33] So whilst the pipeline of skilled labour is now improving, it is not yet up to 2016 levels in some areas. We are not sure how much government initiatives such as fees free, the Targeted Training and Apprenticeship Fund established in July 2020, and the Apprenticeship Boost Initiative are contributing to increased enrolments. This is an area that requires further investigation across industries.

Table 2. Agricultural vocational learners enrolled by NZQF level, 2016-2019

NZQF Level	2016	2017	2018	2019	2020	% Change 5 years	% Change 1 year
3	12,695	12,120	11,765	12,075	13,380	5%	11%
4	8,640	8,230	7,570	8,665	9,855	14%	14%
5	795	720	750	775	730	-8%	-6%
6	175	165	115	120	105	-40%	-13%
Total (distinct)	21,025	20,000	18,945	20,305	23,080	10%	14%

Source: MoE and TEC *Briefing to the Primary Production Committee: Update on Matters Relating to Vocational Training in Agriculture* www.parliament.nz/resource/en-NZ/53SCPP_EVI_109465_PP1117/4c1bd5d032bf787273e5c489a86f8225c7dfeac3

MPI analysis of those aged 15-29[34] showed that those in the food and fibre sector tended to have significantly lower level of qualifications than 15–29-year-olds in New Zealand on average. For 71% of the food and fibre workforce,[35] the highest level of qualification held was at Level 1-3. The analysis also shows that the production workforce has qualifications that are, on average, lower than those held by those in the processing/commercialisation workforce.

The TEC has recognised the need for increased investment in education and training for the food and fibre sector, with proposed growth of 10% to 2025 and 2032. Approved Apprenticeships and related pathways have been identified as particularly important, with a target of 10,000 learners at Level 4 proposed for 2023.[36] Levels 5-6 provision related to management capability and sector specific degree and post-graduate qualifications have also been identified as a priority.

[32] It should be noted that in this context the category of "Agriculture qualifications" is a NZ Standard Classification of Education (NZSCED) classification and does not map exactly to Muka Tangata's 'Food and Fibre' remit.

[33] Ministry of Education and TEC (2021) Briefing to the Primary Production Committee: Update on Matters Relating the Vocational Education in Agriculture www.parliament.nz/resource/en-NZ/53SCPP_EVI_109465_PP1117/4c1bd5d032bf787273e5c489a86f8225c7dfeac3

[34] MPI restricted their analysis to this age cohort as this was the only group for which reliable data was available for comparison. MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[35] Note MPI's definition of the Food and Fibre workforce is broader than Muka Tangata's remit and includes more of the processing and commercialisation workforce.

[36] www.tec.govt.nz/assets/Forms-templates-and-guides/Investment-toolkit-2021/Food-and-Fibre-Sector-Investment-Brief.pdf

The new Unified Funding System (UFS) being introduced as part of the RoVE changes will provide more than $850 million per year for vocational education and training provision from 1 January 2023, on an ongoing basis. This new system will see a 70% increase in the funding rate for work-based provision in the food and fibre sector. Changes to support learners in our sector include:[37]

- $316 million of funding that will top up and extend the Apprenticeship Boost Initiative, Mana in Mahi, and Māori Trades Training to lift economic inclusion and support employment opportunities by helping businesses take on apprentices
- $19 million increase in funding for vocational education in the food and fibre sector
- $40 million to help transformation in the forestry, wood processing, food and beverage, and fisheries sectors
- $155 million towards supporting job opportunities for Māori by continuing the Cadetships Programme and encouraging public sector procurement opportunities for Māori businesses.

2.4.3. Initial analysis of learners suggests that some groups are underrepresented compared to their numbers in the food and fibre workforce

Across both industry trainees and apprentices, the demographic characteristics of learners vary across the wider food and fibre workforce. As might be expected the age profile of learners is skewed towards those in the 20-29 and 30-39 age brackets. Māori appear well represented within current learners, while those who identify as Pacific peoples are less well represented. There is a significant gender imbalance in both the current trainees and apprentices with men outnumbering women by nearly 5 to 1. This is particularly skewed in some areas with men comprising 96% of trainees and apprenticeships in Forestry Studies.[38]

Box 1: The impact of COVID-19 on education

COVID-19 restrictions resulted in a shift towards remote learning using on-line learning platforms. Across the OECD, this has resulted in educational gaps and disengagement from learning, particularly for students from disadvantaged backgrounds.[39] This may be caused by a variety of factors including personal resilience and self-efficacy, lack of access to digital devices or broadband, having a quiet place to study or parental engagement with learning.[40] COVID-19 is also believed to have contributed to increased levels of social and psychological stress that has impacted on student learning and wellbeing.

Internationally, it has also been suggested that vocational education and training may have been worse hit than general education.[41] Vocational education and training tends to rely more heavily on practical training and has faced issues in adjusting to remote learning because of the difficulty in conducting assessments. Vocational education and training programmes that include a work-based component have also faced disruptions because of workplace closures. Whether this was the case for food and fibre vocational education and training in New Zealand is unknown.

[37] www.mukatangata.nz/latest-news/new-blog-postmuka-tangata-welcomes-the-unified-funding-system-and-opportunities-for-food-and-fibre-industry/

[38] MoE (2022) www.educationcounts.govt.nz/statistics/new-zealands-workplace-based-learners

[39] OECD (2020a) The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings. www.oecd.org/coronavirus/policy-responses/the-impact-of-covid-19-on-student-equity-and-inclusion-supporting-vulnerable-students-during-school-closures-and-school-re-openings-d593b5c8/

[40] OECD (2020b) School Education during COVID-19 – Were teachers and students ready? Country note: New Zealand www.oecd.org/education/New-Zealand-coronavirus-education-country-note.pdf

[41] Schleicher, A. (2020) The impact of COVID-19 on education: Insights from Education at a Glance 2020 www.oecd.org/education/the-impact-of-covid-19-on-education-insights-education-at-a-glance-2020.pdf

2.4.4. The sector has highlighted that gaps in provision in some areas are causing issues

From Muka Tangata's initial engagement with the sector, gaps in foundation skills (e.g. numeracy, literacy, language) and general work/life skills have been noted by both employers and training providers.

New Zealand has historically had high levels of literacy, numeracy and problem-solving skills compared to the adult population of other OECD countries.[42] However, there has been an increasing focus on the gaps in foundation skills amongst young people with a recent OECD report finding that only 65% of 15-year-olds in New Zealand met basic standards of proficiency in both reading and mathematics.[43] It is expected that COVID-19 may exacerbate these trends due to the disruptions in learning since the start of the pandemic (See Box 1). For employers in the food and fibre sector, these gaps can mean that employees struggle with some workplace tasks. For those providing vocational education, assessment of levels of foundation skills is needed, as are routes to upskill in these areas so that learners are able to access the industry-specific training opportunities.

The sector has also highlighted gaps in particular areas of training provision. Both shearing and forestry have been identified as areas where provision is potentially lacking. Work is needed to understand the reasons for this – for example, whether provision is not fit-for-purpose provision or whether there is poor uptake. The Forestry and Wood Processing Workforce Action Plan[44] notes falling enrolments in industry training may reflect that the existing training provision isn't meeting the industry's requirements. Within shearing, an investment of $1.86m over two years was provided to fund the creation of a new pilot training programme.[45] This investment should help provide insights on the best way to meet the training needs of this industry over the longer term.

Implications

- A lack of foundation skills may mean that learners and potential learners do not have the capability to enrol or complete qualifications – we need to work with providers and employers to see how these barriers can be addressed
- To promote a higher skilled workforce we need to look at a range of flexible methods of upskilling at all career stages and how existing experience can be recognised, including the prevalence of systems in place for recognising prior learning
- We need to build our data and analysis of learners and volumes within the formal vocational education system
- We also need to better understand the industry needs currently being met through non-formal and informal learning, to ensure that the formal and non-formal systems can work together better
- We will work with training providers and employers to understand their strengths and where they need support to deliver quality vocational education
- We need to understand why groups within our workforce may be underrepresented in taking up vocational education and what solutions might better meet their needs
- Gaps in training provision on shearing and forestry will be included in our Investment Advice to the Tertiary Education Commission and we will work with our partners in those industries to determine what solutions would best build training capacity

[42] See OECD Survey of Adult Skills (PIAAC) 2018 data indicators

[43] www.unicef-irc.org/publications/pdf/Report-Card-16-Worlds-of-Influence-child-wellbeing.pdf, PISA 2018 data

[44] www.mpi.govt.nz/dmsdocument/40366-Forestry-Wood-Processing-Workforce-Action-Plan-20202024

[45] www.beehive.govt.nz/release/pgf-delivers-more-jobs-and-skills-training-regions

3. Challenges and opportunities raised by the food and fibre sector

Muka Tangata has existed for only a few months. During this time, Muka Tangata has prioritised listening to what the food and fibre sector says is important. We have reviewed key strategies, analysis and think-pieces by both Government and the sector. We also engaged directly with industry in our 14 hui across the motu to hear directly how those in the sector saw key trends playing out. Across all of these, four key themes were highlighted:

- Honouring Te Tiriti o Waitangi and supporting Māori learners and Māori businesses to succeed is crucial
- Recruitment and retention are front of mind in a tight labour market
- Sustainability, environmental concerns, and wellbeing are reshaping the sector
- Technology is disrupting the nature of work and the skills required.

This section sets out what we heard from the food and fibre sector partners with whom we met.

3.1. Honouring Te Tiriti o Waitangi and supporting Māori learners and Māori businesses to succeed is crucial

- Both as business owners and as a significant portion of the workforce – Māori are recognised as increasingly important to the food and fibre sector. Te ao Māori perspectives could provide solutions for the whole sector
- Understanding and addressing the needs of Māori learners –particularly rangatahi – was highlighted as a priority in our initial industry engagements

3.1.1. Incorporating te ao Māori is seen as important – both to support the needs of Māori in the sector and for the solutions new perspectives could bring

As noted in Section 2, both the Māori asset base and the Māori workforce are significant for the food and fibre sector, with the demographic projections indicating that Māori will become an increasingly significant part of the future workforce.

From our engagement with the sector, tino rangatiratanga and mana motuhake came through strongly as themes from industry. Māori were described as the ‘sleeping giant’ within the sector with a sense that they were coming increasingly to the fore – strengthened through a renewed focus on Te Tiriti o Waitangi.

Those within the sector also highlighted how te ao Māori perspectives and values were also shaping solutions to pressing issues. For example, it was suggested that understanding the history of how particular resources had been protected and used was important for developing future plans for sustainability and environmental protection. Concepts of guardianship and acting as kaitiaki were highlighted as useful ways of putting the focus on sustainability.

Iwi were also seen as taking a leading role in looking at ways to manage seasonality of employment. This was being approached with the dual lens of managing both a tight labour market and also enabling Māori to return to their whenua. A number of iwi and Māori businesses are exploring how their kaimahi can move between different parts of the food and fibre system, or even across to other sectors with different seasonal peaks within the same area.

3.1.2. Understanding and addressing the needs of Māori learners is a priority for the sector

Understanding and addressing the needs of Māori learners, particularly for rangatahi, came through as a key priority for the industry in our hui. Consultation around the motu undertaken by Regional Skills Leadership Groups echoed this and improving levels of learner success is a key outcome for the Tertiary Education Strategy.

We currently have empirical gaps in what we know about Māori learners in food and fibre workplaces. We earlier noted that there is reasonable representation of Māori within the workforce and in vocational education and training statistics for the sector. We have less understanding of whether Māori employees have similar access to training as non-Māori, whether they are completing their qualifications at the same rate (and at what level), the industry sub-sectors that they are learning in, and whether post-study outcomes are similar or different for Māori and non-Māori.

Figure 6: Te Ako Tiketike model

Understanding barriers to learning and definitions of success for Māori learners is also important. In this area, we need to consider the extent to which COVID-19 may have increased barriers to learning for rangatahi because of pre-existing digital divides.[46] We also need to understand the impact of negative messaging and low expectations experienced during schooling and how that may influence attitudes towards participation in vocational education and training.[47]

It is important that we understand the factors or conditions that facilitate the success of Māori learners in vocational education.

A meta-analysis of a range of studies across the tertiary education sector[48] suggests engagement with Māori pedagogies is essential. Traditional values of whānaungatanga, manaakitanga and whakapapa underpin these. In practice, this requires developing meaningful and respectful relationships,[49] ensuring that learning is relevant; tuakana-teina methods of mentoring; ensuring that learners are equipped with the tools that they need to achieve; recognising the validity and relevance of Mātauraga Māori; and inclusion of te reo and tikanga as part of the model of instruction. Across a range of spheres this has been developed into a model for learner success.[50]

Implications

- We need to better understand the vocational education and training needs of Māori businesses and Māori staff
- We need to build our knowledge of the needs of Māori learners and the factors contributing to their success

[46] See for example, Hunia,R., Saim, S., McNaughton, S., Menzies, R., Gluckman, P., and Bardsley, A. (2020) *Addressing Rangatahi Education: Challenges after COVID-19* Koi Tū The Centre for Informed Futures, University of Auckland

[47] Tokona Te Raki (2021) Puta I Tua: Future Skills Strategy www.maorifutures.co.nz/wp-content/uploads/2021/06/Puta-i-Tua-Strategy.pdf

[48] Sciascia, A (2017) *Māori learner success in tertiary education: Highlighs from Ako Aotearoa supported reesearch projects.* ako.ac.nz/assets/Reports/Synthesis-reports/SYNTHESIS-REPORT-Maori-learner-success-in-tertiary-education-Highlights-from-Ako-Aotearoa-supported-research-projects.pdf

[49] For example, between learners and tutors, employers and employees, and institutions and stakeholders

[50] Kerehoma, C., Connor, J., Garrow, L., Young, C. (undated) *A model for successful Māori learners in workplace settings.* Ako Aotearoa.

3.2 Recruitment and retention are front of mind in a tight labour market

- Despite the workforce reporting high levels of satisfaction, parts of the sector have low retention rates
- Job insecurity, lack of career pathways, health and safety, isolation and gaps in managerial skills and pastoral care have all been highlighted as areas that need to be addressed to support recruitment and retention
- The sector has opportunities to use vocational education to support recruitment into the sector and to promote retention and growth of its workforce

People and workforce issues are central for food and fibre. There is significant work underway to understand and tackle existing issues within the sector. The Primary Industries Skills Leaders Working Group, a collaboration across industry, government and the education sector, developed the Food and Fibre Skills Action Plan 2019-2022.[51] This action plan is currently being implemented and Muka Tangata is closely involved with many of these initiatives. In addition to noting the need for an improved evidence base, the action plan highlights three key areas: attraction, employment and education. These areas also came through strongly in our recent engagement with industry and are explored in more detail below.

3.2.1. The sector needs both positive and informed routes into industry

With a tight labour market, attracting, retaining and retraining staff is seen as key for the sector – especially as border restrictions have disrupted the supply of seasonal workers over recent years and a rise in remote working has offered those in rural communities alternative career options outside of the food and fibre sector.

Despite high self-reported levels of satisfaction within the workforce,[52] the food and fibre sector is viewed as being a tough, isolating place to work and one which is not easy for those with caring responsibilities.[53]

Over recent years, there have been a variety of initiatives (across the industry and by different government agencies) designed to attract both school leavers and career changers into the industry. These have included advertising campaigns to promote food and fibre career possibilities, exposure at careers expos for secondary and tertiary education students, the establishment of jobs boards and web sites focused on the need for a wide range of skills, and the opportunity for skills acquisition and career advancement. MPI has reported some success from the recent Opportunity Grows Here campaign with 90% of those who had seen the campaign saying they had 'thought' or 'done something different'.[54]

The Pathways into Primary Industries (PiPI) programme research suggests ways to attract and retain new entrants (see Box 2). These include equipping potential entrants with better understanding of the realities and opportunities of working in the sector; connecting to their interests; providing opportunities to test out existing skills within 'real world' situations; and better mentoring and support for new entrants.

Understanding the specific needs and aspirations of Māori joining the industry are also crucial. Research has pointed to the need for whānau and hapū also to have access to career planning information so that they can become involved in these conversations, particularly where there are opportunities to strengthen whakapapa ties between rangatahi and iwi/hapū Māori.[55]

More broadly, whilst diversity in the sector is improving, there are opportunities to target both recruitment and training pathways into the sector to groups that are currently underrepresented (such as women, older people, and people who are on benefits or underemployed).

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[51] Primary Industries Skills Leaders Working Group (2019) www.mpi.govt.nz/dmsdocument/37751-Food-fibre-skills-action-plan-20192022

[52] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot The Survey of Working Life conducted in 2018 found that 90% of people working in the food and fibre sector were satisfied or very satisfied with their job. In respect of the range of factors that contribute to job satisfaction, 75% of food and fibre workers are satisfied or very satisfied with their work-life balance, 87% report having a good or very good relationship with their colleagues and manager

[53] Primary ITO (2021) Pathways into Primary Industries: Phase Two report pipi.ac.nz/insights/. This was a survey with 445 respondents. It found that more than half were of the view that jobs in primary industries involved working on your own a lot, long hours and tough working conditions. In contrast, fewer than a quarter of respondents agreed that industry jobs were well paid, provided good working conditions or a supportive or healthy working environment, or were suitable for people who were primary carers of children. Note that the survey was open to all New Zealanders over the age of 15, and respondents were recruited vis social media.

[54] MPI (2022) www.mpi.govt.nz/dmsdocument/51766-Fit-for-a-Better-World-2022-progress-update

[55] Tokona Te Raki (2021) Puta I Tua: Future Skills Strategy www.maorifutures.co.nz/wp-content/uploads/2021/06/Puta-i-Tua-Strategy.pdf

Box 2: Why do people join food and fibre and why do they stay?

The Pathways into Primary Industries (PiPI) programme being undertaken by the Primary Industry Training Organisation aims to better understand the range of paths that people take to join the industry, the factors that they take into account when making a decision to join or not, and the influences that impact on the likelihood that new entrants will stay in the industry. The research has delivered some interesting findings in these areas, including:

- The biggest barrier to entry is a lack of understanding about what a career in the industry is really like with “real-life stories” being the most compelling. In addition, primary industries are seen as being quite segmented and there is little understanding about how people can build a career pathway across diverse areas.
- The opportunity to make use of practical skills is a big drawcard for many people, as is the interest in participating in food production systems that are connected to people’s values and interests – whether that be animal welfare, land use, increased organic production or use of plant-based products or naturally occurring substances in cosmetics.
- New entrants coming in from other industries may experience a lack of confidence about having the right skills for the industry, or about not being able to manage some parts of the job. Opportunities to test these out in a real-world situation might provide potential entrants with a chance to understand whether they wish to take a risk by making a career change. In addition, there is a need to build simpler and more cohesive career pathways across different parts of the sector to provide potential entrants with an understanding of how they might advance over time.
- It is clear that a successful transition into primary sector employment, whether from school or from another industry, is crucial to retention over the longer term. One of the keys to this is ensuring that new entrants have access to buddies or mentors to provide them with the pastoral care that they might need to settle into work. Given the high proportion of roles in primary sector workplaces that are isolated, providing support to new entrants and those looking for a sounding board to discuss their experiences and career ambitions could help people to settle into the industry at higher rates than they do currently.

Primary ITO (2021) Pathways into Primary Industries: Phase Two report

3.2.2. Building supportive and inclusive workplaces is important for staff and employers

Retention rates across the sector are behind the national average, and are particularly low within the horticulture and seafood industries.[56] Building supportive and inclusive workplaces has been highlighted as key to making sure that people feel safe, engaged and valued within the workplace. Within the food and fibre sector, the following areas have been highlighted as particularly important:

- *Health and Safety:* A lot of work in primary industries requires robust management of risks such as exposure to biological and chemical hazards, fatigue, and the potential for accidents involving vehicles, machinery and equipment. Psychosocial hazards (including stress, bullying and harassment; and cultural safety) have also been identified as a major risk to overall wellbeing. Worksafe's Health Safety Attitudes and Behaviour Survey suggests that there is a higher tolerance of risk in primary industries in New Zealand than in many others.[57] This results in higher levels of accidents and injuries – which is likely to have downstream effects for the attractiveness of employment in the industry for workers and their whānau. Improved health and safety training is needed to reduce the extent of harm experienced by workers in food and fibre.
- *Managerial capability:* Research across many industries shows that having a good boss and supportive colleagues are amongst the most important factors that most people look for in a job. On the whole, however, food and fibre businesses are not considered to be good employers.[58] Additional pastoral support may be needed for new entrants, who may be young and with little experience of workplaces, or those transferring from other industries who may lack confidence that they have the needed skills and experience. Improving managerial capability and practices (particularly in the areas of communications and human resources) has been identified as a priority in the Food and Fibre Skills Action Plan and was also emphasised by participants in our regional hui during May 2022.
- *Inclusive workplaces:* Some demographic groups are under-represented in the industry. Creating inclusive workplaces goes beyond hiring diversity. Te Mahere Whai Mahi Māori (the Māori Employment Action Plan)[59] draws attention to the ways in which workplace practices (for example, hours of work and rosters) can influence people's ability to participate in the labour market and in some types of employment. It also highlights how workplace policies and practices can inadvertently contribute to the perspectives of Māori workers being accorded less value in the workplace. Over recent years a considerable amount of research has been undertaken considering strategies for creating and maintaining diverse workplaces, but many of these assume an office-based environment.

[56] MPI (2022) Food and Fibre Workforce: Snapshot www.mpi.govt.nz/dmsdocument/50932-Food-and-fibre-workforce-Snapshot

[57] Neilson (2018) Health and Safety Attitudes and Behaviours in the New Zealand Workforce A Survey of Workers and Employers 2017 Cross-Sector report. www.worksafe.govt.nz/dmsdocument/4092-2017-attitudes-and-behaviours-survey-cross-sector-report

[58] UMR (2017) *New Zealander's views of the primary sector.* Referenced in Primary Industries Skills Leaders Working Group (2019) *Food and Fibre SKills Action Plan.* www.mpi.govt.nz/dmsdocument/37751-Food-fibre-skills-action-plan-20192022

[59] MBIE (2022) Te Mahere Whai Mahi Māori www.mbie.govt.nz/dmsdocument/18759-te-mahere-whai-mahi-maori-maori-employment-action-plan-english

3.2.3. There needs to be clear career pathways supported by relevant skills and qualifications

Clear career pathways and ongoing skills development have been repeatedly raised by the sector. This includes both upskilling within an industry and the ability to move between parts of the sector. Recognition of skills and qualifications across different parts of the sector opens up possibilities for managing seasonality of employment and broadens the range of options for workers who don't wish to be constrained by narrow career paths.

As outlined in section 2.4, the education profile of the food and fibre workforce is skewed towards lower levels of the New Zealand Qualifications Framework (NZQF). This contributes to a perception that the majority of jobs in the industry are low-skilled and do not offer much of an opportunity for capability development. Perceived lack of skills pathways also contributes to low retention of people who have aspirations for a career. The perceived low level of skills in many areas means that food and fibre is not attractive as a career choice for people who already have higher levels of qualification, and do not see opportunities for advancement.

The sector needs higher level skills. Currently, the qualifications distribution in production parts of the value chain are lower than that in the processing and commercialisation and support services areas. However, these areas are the ones where highest employment growth is. In addition, the growing importance of agritech developments in science across the board, and sustainability challenges also require a broader range of skills, including the technological competence to be able to operate digital tools and resources, and specialist science and technology knowledge.

Box 3: What the sector told us - priorities for building effective career pathways

Simply increasing the volume of qualifications or targeting higher level qualifications is unlikely on its own to achieve the changes that are needed to strengthen vocational education and training in food and fibre. From our engagement with the sector, flexibility, accessibility, recognition and transferability were also seen as priorities for building effective career pathways.

This includes:

- Accessibility of provider-based training for employees that fits around their existing work commitments. It can be difficult for both employees and employers to find suitable times to attend block courses, and in some cases, rural infrastructure can make on-line learning difficult.
- Foundation skills – such as literacy, numeracy, digital skills and English language skills – may be needed by some learners in order to be able to complete qualifications.
- At lower levels, qualifications can lock people in to narrow skills pathways in a specific sector. There is an appetite for examining ways to build pathways across qualifications in different parts of the food and fibre sector so that people have a range of vocational pathways available to them.
- In some areas, a focus on work-based training has been called for. This includes recognising the opportunities available for explicit, deliberate and structured learning at the workplace. Importantly, however, it includes ensuring that work-based training is of high quality. For this to occur, good relationships need to be established between learners, workplace trainers/ employers, and training providers. It requires explicit commitments between employers and employees to build in time for training to happen; and for employers to build the capacity and skills to provide training. There is also a need to ensure that learners have training supports– for example, from whānau; access to foundation skills learning.
- Micro-credentials are seen to be needed in some areas, particularly where workers with existing qualifications transfer into new areas, and for those wanting to up-skill mid-career. Continuing to develop and support the development and delivery of priority micro-credentials that meet pressing needs across the food and fibre sector has been identified as a priority in the *Food and Fibre Skills Action Plan* and were also noted as a priority in TECs 2022 Investment brief.
- Recognition of Prior Learning (RPL) or Recognition of Current Competence (RCC) mechanisms need to be put in place to recognise skills but where workers and managers do not have formal qualifications. Building a picture of the incidence of these programmes across the country is a high priority for Muka Tangata. This may also require some new thinking about professional development pathways and the role of extension courses and other non-formal training offered by industry-based organisations. Our priority is building career pathways that meet the needs of learners and industry.
- Where training, or part of training programmes, is provider-based, training locations should be easy to get to. Similarly, training should respond to regional labour market needs.
- Some parts of the food and fibre sector are well served in terms of the content of training courses, while in others, such as shearing and forestry, there is a general absence of high-quality provision.
- Food and fibre qualifications tend to be relatively technical in nature and content. Increasingly, there is a need for qualifications within the Levels 4-6 range that provide employers and the self-employed to build management capability skills. This includes foundation business skills such as budgeting and financial management, planning and logistics, communication, and human resource management.

3.2.4. Migrant labour is seen as critical to the sector and these workers also need to be supported

Despite the interruption from COVID-19 border closures, the high rate of growth of the sector means that it will continue to be reliant on migrant labour for the foreseeable future, both to meet seasonal demands and to fill specialist positions that have high levels of skills requirements.

With New Zealand experiencing decreasing levels of unemployment from 2012 onwards, there has been increasing reliance on migrants holding temporary visas (including Recognised Seasonal Employers (RSE), Working Holiday, Essential Skills and specialist skills (such as Fishing Crew) visas) as a means of managing seasonal demand. This has been particularly the case in horticulture where 41% of the workforce are migrants.

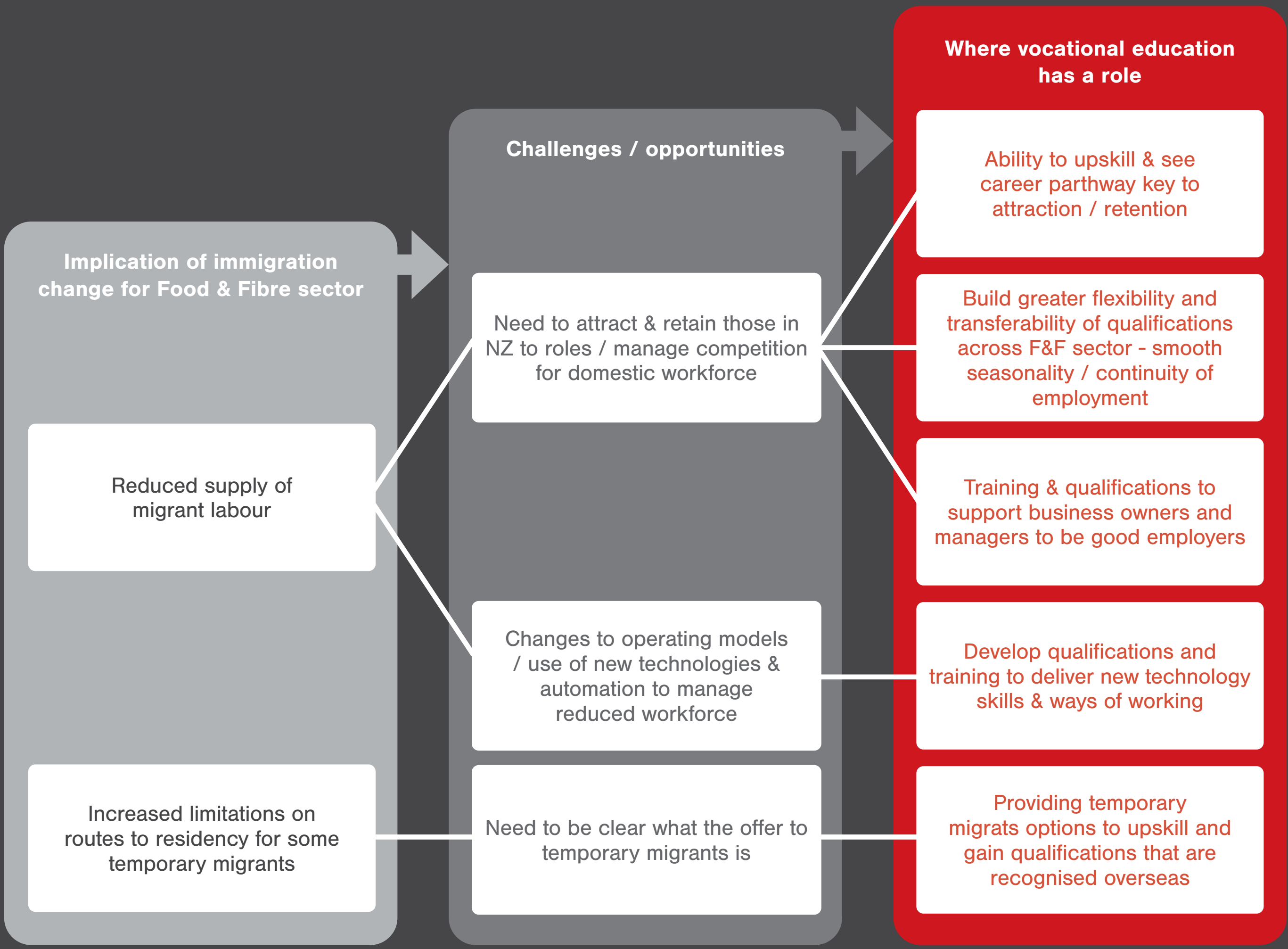
The need for additional workers to meet seasonal labour demand is inherent to the nature of the sector. In some instances, such as the RSE scheme, employment of migrant workers has other benefits, such as the transfer of remittances to Pacific countries and the training of workers in skills that can be used in their home countries. Nevertheless, increasing reliance on migrants has been accompanied by concerns about low pay rates and migrant exploitation across primary sector workplaces, and a perception that the industry views these workers as disposable. This has resulted in the government seeking to “re-balance” its immigration policy settings in favour of high-skilled migrants (see Box 4). The implications for food and fibre workplaces are that fewer temporary visas will be issued as a means of meeting seasonal demand, although they will still be available for higher-skilled occupations needed by the industry.

Box4: Immigration rebalancing – implications for the food and fibre sector

The Government has strongly signalled its intent to refocus migration on high-skilled migrants as part of the ‘Immigration Rebalance’ announced in May 2022. It wants to shift Aotearoa from relying on growing numbers of lower-skilled migrant workers and to focus on growing skills at home.

For some businesses in the food and fibre sector this may require a shift in their operating model and a new approach to developing the workforce. Vocational education will support the transition in the following ways:

Figure 7: Immigration Rebalance and vocational education for the food and fibre sector



Key immigration changes

A ‘Green List’ is being developed that specifies occupations eligible for priority ‘fast track’ and 2-year ‘work to residence’ visas. Occupations are based on occupation codes and require formal qualifications.

- Essential Skills Work visas will close in July 2022 and Accredited Employer Work visas will open for applications. Accredited Employer work visas typically require:
    - workers to earn over the median wage of $27.76ph (adjusted annually)
    - evidence that the role has been advertised and there are no New Zealand citizens or residents available to do the role.
    - in 2023 all employers will need to be accredited to employ any migrant – including those with open work rights (e.g. working holidaymakers or students)
- Foreign Fishing Crew visas will also need to meet the median wage threshold of $27.76ph (adjusted annually)
- From December 2022, partners of temporary migrant workers will be granted visitors visas, but if they wish to work, they will need to qualify for an Accredited Employer Work Visa in their own right.
- It is recognised that transition support will be needed for businesses and existing migrants. In some areas (for example seafood) specific sector agreements will provide for short term or ongoing need for access to lower-paid migrants. 20,000 existing migrants with visas expiring before 2023 will be granted a 6-month extension or new 2-year visa.

The timing of peak seasonal requirements varies across different industry workforces.[60] Border closures as a result of COVID-19 impacted on the ability of many food and fibre workplaces to recruit sufficient seasonal labour. In some cases, employers cooperated in a local area, or across production and processing parts of the industry, to establish new forms of rostering or alternative forms of work organisation that resulted in longer periods of employment and made them more attractive to local residents. Further research is needed to follow up on the success of these models, whether there are barriers to their wider takeup, and any implications for vocational education and training.

Implications

- Training and qualifications need to be delivered in a way that is inclusive and culturally appropriate and there needs to be appropriate support and pastoral care to support new entrants to the sector
- We need to build the capability of leaders so that they have the skills to create a safe, inclusive and positive work environment
- We need to build and communicate clear career pathways that are supported by qualifications that allow flexibility to move across the sector, and recognise that there are benefits to the industry of a skilled labour force even when workers are transient
- To maintain a supply of labour during seasonal peaks, workers and employers will both benefit from skills and qualifications that are transferable both within the sector and overseas
- We need to better understand how non-formal and informal learning supports the skills pipeline and how formal and informal learning can work together better, including improved systems for recognising where workers have existing skills

[60] MPI (undated) Understanding the composition of primary sector workforces over a year www.mpi.govt.nz/dmsdocument/45601-Monthly-composition-of-the-Primary-Sector-workforces-over-a-year-

3.3. Sustainability, environmental concerns, and wellbeing are reshaping the sector

- New legislation and emissions targets along with consumer demand for sustainability will change the production and processing of land and sea-based products, and contribute to a focus on premium products
- Job losses are predicted for agriculture in the short and longer term accompanied by short-term increases in forestry plantation jobs and increasing demand for on-farm advisory services
- Participants at our regional hui raised the importance of wellbeing and resilience of communities, especially those more reliant on food and fibre businesses

There are many challenges facing the food and fibre sector that emanate from the external environment, but which impact on the sector in fundamental ways. Over recent decades, global concern with climate change and the need to lower carbon emissions has been at centre stage, and within New Zealand the role of the agriculture sector in this has been a matter for discussion and debate. At the same time, the consequences of a growth at all costs mentality on water, land and biodiversity were receiving attention. These debates quickly evolved more broadly into calls for improved attention to sustainability across economic, environmental social and cultural dimensions. There is a need to take action to safeguard our land and natural resources, but this needs to be strategic to ensure the wellbeing of New Zealanders in rural and remote communities and those working in the food and fibre sector.

3.3.1. Sustainability is now at the heart of plans for the sector

Sustainability and safety of food systems is becoming more important, in the face of greater awareness of social and ecological issues associated with food production, changes in consumer preferences, and improved technology and innovation.[61] Many farmers and producers in New Zealand have a clear focus on the long-term health of their land, animals and people. New Zealand already has a reputation as a clean, green and safe producer.[62] Continuing to build on this reputation presents an opportunity for balancing growth and sustainability of natural and people resources.[63]

Sustainability is at the heart of the 2019 Fit for a Better World strategy,[64] a plan developed by the Primary Sector Council to shift the primary sector in the direction of production that is naturally and ethically produced by 2030. At the heart of the strategy is the concept of te taiao – respect and reciprocity with the natural world so that the health of the climate, land, water and living systems comes first. This concept also brings with it the understanding that the wellbeing of whānau, communities and businesses is intimately tied up with the wellbeing of the environmental and natural resources. This change in the way that we do things has implications for vocational training and education. In technical terms there may be a need to consider alternative ways of producing and processing land and sea based products. In addition, concepts and assumptions that underpin production systems need to be based on a concern for long term viability and wellbeing for future generations.

[61] Koi Tū: The Centre for Informed Futures. (2020). The future of food and the primary sector: The journey to sustainability. The University of Auckland

[62] Ministry for the Environment (2022). Te hau mārohi ki anamata Towards a productive, sustainable and inclusive economy: Aotearoa New Zealand's first emissions reduction plan. New Zealand Government.

[63] Ministry for Primary Industries. (2020). Fit for a Better World - Accelerating our economic potential. New Zealand Government. www.mpi.govt.nz/

[64] Ministry for Primary Industries. (2020). Fit for a Better World - Accelerating our economic potential. New Zealand Government. www.mpi.govt.nz/

3.3.2. Managing climate change and moving to a carbon neutral economy will require changes and new skills within the sector

Large increases in global greenhouse gas[65] emissions in the last 50-60 years have contributed to significant changes to New Zealand's climate. We are experiencing increases in adverse weather events including flooding and drought, temperatures are increasing, seasons are changing, sea levels are rising and oceans are becoming warmer and more acidic.[66] These changes have a direct impact on the food and fibre sector both in terms of profitability and sustainability.

Large reductions to emissions are needed to limit future warming. Under the Paris Agreement New Zealand has set a Nationally Determined Contribution (NDC) of reducing net emissions by 50% below gross 2005 levels for the period 2021-30. Government has set into law a target for net zero greenhouse gas emissions by 2050 (except biogenic methane) and a 24-47% reduction in biological methane.[67] To achieve these targets the government has put forward an emissions reduction plan that includes some specific actions for the food and fibre sector.

These actions include:

- incentivising farmers to reduce their impact on the climate by being the first in the world to introduce a price on agricultural emissions from 2025
- establishing a Centre for Climate Action on Agricultural Emissions to accelerate getting emissions-reduction tools, practices and technologies on farm
- working alongside farmers with climate-focused farm advisory and extension services
- funding tikanga-based agriculture programmes to support the aspirations of Māori
- increasing the value of our forestry sector by supporting low-emissions products and accelerating the bioenergy market.

[65] Greenhouse gases include carbon dioxide, methane, nitrous oxide and fluorinated gases. Different gases have different 'global warming potential' and last in the atmosphere for different amounts of time. For example, carbon dioxide has much less of a warming effect than methane, but stays in the atmosphere for thousands of years whereas methane lasts for ~12 years on average.

[66] Ministry for the Environment & Stats NZ (2020). New Zealand's Environmental Reporting Series: Our atmosphere and climate 2020. Available from environment.govt.nz/ and www.stats.govt.nz.

[67] Ministry for the Environment.(2022). Te hau mārohi ki anamata Towards a productive, sustainable and inclusive economy: Aotearoa New Zealand's first emissions reduction plan. New Zealand Government.

The Emission Trading Scheme (ETS)[68] also gives landowners a financial benefit for the carbon their trees remove from the atmosphere.

He Waka Eke Noa[69] outlines the Primary Sectors commitment to work with government and iwi/Māori to reduce agricultural greenhouse gas emissions. *He Waka Eke Noa* proposes a 5-year programme of action aimed at ensuring farmers and growers are equipped with the knowledge and tools they need to deliver emissions reductions while maintaining food production, competitiveness internationally and profitability.

Across all these challenges there are implications for the skills and capabilities within the workforce. These include practical skills to adapt working practices to manage the impact of climate change, new production methods and tools to mitigate future emissions and the increasing requirements to monitor environmental impacts. Those managing workplaces will need to be increasingly savvy about the regulatory environment they operate in as well as being able to maximise the efficiency and profitability of their workplace through tapping into environmental incentive schemes.

An analysis by Sapere looks at the impact of implementing the Climate Change Commission's advice on emissions budgets on labour market and skills requirements.[70] This analysis estimates job losses in agriculture for the sector in the short and longer term. There is also an expected shift in land use from pastoral farming to horticulture and a short-term increase in jobs related to forestry plantation. Due to the changes in legislative requirements, with farmers needing to report their emissions, there will be an increased demand for on-farm advisory services to improve farm management. Training providers will need to be ready to increase capacity to support this shift and provide people with the necessary skills for employment. This also presents an opportunity to (re)train those in communities that have experienced job losses.

[68] www.mpi.govt.nz/funding-rural-support/environment-and-natural-resources/emissions-trading-scheme/about-the-emissions-trading-scheme/#how

[69] He Waka Eke Noa (2019) Our future in Our Hands: Primary Sector climate change Commitment. hewakaekenoa.nz/

[70] Davies, P., Comendant, C., & Hartmann, Z. (2021), The impacts of Climate Change on Skills needs: An Exploratory Analysis. Sapere. www.thinksapere.com

3.3.3. There is increasing focus on community resilience and wellbeing

Community resilience and wellbeing are a critical part of ensuring New Zealand's sustainability. From our engagement with the sector, there is a strong sense of the interconnectedness between food and fibre businesses, their workforces and the communities in which they operate. This is particularly true for Māori communities where iwi, hapū and whānau are centred around whenua and marae located in provincial and rural centres.

Wellbeing is central to current New Zealand government policy and two key frameworks (the Living Standards Framework (LSF) and He Ara Waiora) are used to understand the drivers of wellbeing).[71] Meaningful employment, having knowledge and skills, and sufficient income are key aspects of these frameworks.

The Wellbeing Report,[72] based on the LSF framework, monitors how well New Zealand is doing against identified wellbeing indicators. 2022 results suggest that while New Zealand as a whole has proved resilient given the impact of COVID-19 over the past two years, there are some areas in which we are not doing so well. These include psychological wellbeing and suicide rates, school attendance and achievement, rental affordability, rates of youth who are not in education training and employment, safety, incomes, working long hours and Riverine E. coli.

Results also show that young people fare less well on many indicators of wellbeing, raising concern for potential wellbeing impacts in the future. In particular, in the knowledge and skills domain, rates of skill acquisition for children are worsening in comparison to those internationally, and disparities between ethnicities are large and increasing.

The reported analysis did not compare the wellbeing of people in provincial, rural and remote communities compared to those living in urban areas. Some of the concerns that we heard at our hui related to access to meaningful employment and training opportunities (particularly for rangatahi), stress and mental health and access to services. Wellbeing impacts of decision-making in a range of policy areas have consequences for vocational education and training, and rural and remote communities supported through change to minimise these consequences.

Implications

- Qualifications and training will need to equip the workforce with skills to manage new sustainability and environmental changes
- Our work must be done in partnership with communities to ensure that their needs are met and reflected in our recommendations for vocational education and training
- Training and qualifications should be delivered in a way that is aligned to the needs of diverse communities and incorporate both support and skills development to build resilience and wellbeing

[71] The Treasury. (2021). The Living standards Framework 2021. New Zealand Government; The Treasury (2021) He Ara Waiora – brief overview A3

[72] Under the Public Finance Act 2022, the Treasury is required to publish a Wellbeing report every four years starting from 2022. This report has not yet been published but initial results have been released in a speech by the Treasury Secretary. See The Treasury. (2022). www.treasury.govt.nz/sites/default/files/2022-04/sp-wellbeing-aotearoa-new-zealand-12apr22.pdf

3.4. Technology is disrupting the nature of work and the skills required

- The increasing importance of agritech will mean a reduction in the number of low-skilled jobs and an increasing need for digital literacy and related skills
- Technology provides an opportunity to develop new ways of approaching education and training provision, but it is important that a focus on quality and improving learner outcomes is kept at the forefront

Changes in technology have had a massive impact on our lives. They are disrupting existing business models, work organisation and production systems in all areas of the economy, including in food and fibre. New technology influences the sector through:

- Biotechnologies, in which biological processes are harnessed to find new solutions to existing problems.
  The application of biotechnologies in food and fibre is widespread, including improving animal welfare, increasing crop yield, increasing resistance of plants and animals to pests and disease, contributing to sustainability, bio-based fuels and many others.
- Digital technologies such as robotics and machine learning that provide new ways of working and contribute to increased productivity at all stages of the value chain. Automation, for example, can reduce reliance on manual labour (for example, sowing and harvesting of crops, harvesting and packing), particularly where tasks are hazardous. Other forms of digital technology can improve the accuracy of primary sector monitoring systems (for example, standards for reduction of environmental hazards and emissions, quality of land and water).

3.4.1. Agritech and the demand for digital skills is growing

Agritech (agricultural technologies) refers to the manufacturing, biotech and digital-based technology companies that are creating product, service, IP and value chain solutions for the agriculture, horticulture, aquaculture, apiculture and fishing industries, with the aim of improving yield, efficiency, profitability, sustainability, reliability, quality or adding any other kind of value.[73] Agritech, is an increasingly significant part of the food and fibre sector in New Zealand, and the government's Agritech Industry Transformation Plan (ITP) has been put out to facilitate the uptake of new agritech technologies.

The Agritech ITP proposes actions in four areas, including short term projects with high impact and longer-term investments directed towards growing the whole ecosystem (for example, by increasing research capacity).

The four areas are:

- Understanding the New Zealand agritech sector in the context of what is happening globally – including learning from global agritech leaders and promoting the take up of global opportunities by New Zealand firms
- Commercialisation of New Zealand developed intellectual property, including speeding up the time taken for research ideas to be prototyped and turned into new products and services Importantly, this also involves testing new products and services in food and fibre production environments in New Zealand, with a view to improving productivity in the sector
- Increasing capital investment in the sector
- Developing standards and regulations for data interoperability, so that as new products and services are developed they are compatible with each other. This is particularly important so that end users can achieve the productivity improvements that these innovations have the potential to deliver.

[73] MBIE (2020) Agritech Industry Transformation Plan www.mbie.govt.nz/dmsdocument/11572-growing-innovative-industries-in-new-zealand-agritech-industry-transformation-plan-july-2020-pdf

The plan also includes a workstream on workforce skills, and a spotlight is placed on the need for people with specialist skills. There is a global shortage of people with specialist skills in the fields of IT, software development, data management, robotics and agricultural and horticultural science. We cannot rely solely on migrants to fill these specialist positions, and there is a need to increase our investment in growing these skills in the domestic workforce, through both vocational education and training and university-level courses.

The increasing importance of agritech has implications that are broader than simply the need for specialists. Agritech is likely to impact on the future of work in food and fibre more generally, as noted in the workforce skills area of the plan.

- *The impact of agritech on the workforce:* Over time, it is expected that agritechnologies will impact on the nature and number of jobs within the industry. There is some risk that routine and low-skilled jobs will reduce in number, as is the case in other industries. Understanding the nature of the changes that are occurring in advance of a wide-spread roll out will allow the existing workforce to be up-skilled in order to be able to take on new roles.
- *The need for a workforce with general skills to use agritech:* Increased use of digital and biotechnology in food and fibre workplaces will require an increasing level of digital literacy, so that the workforce can understand and make use of these technologies in their day-to-day work. There will also be the need for related skills such as data management and analysis, to interpret and make use of results from digital production and monitoring systems.

The need for improved levels of digital literacy is not limited to areas in which agritech is being introduced. Digital technologies are increasingly being used on a day-to-day basis across the food and fibre sector for gaining access to up-to-date information, to inform decision-making, tracking and monitoring, diagnosis of common diseases and pests and access to advisory services. Mobile phone applications have transformed the lives of many people in the sector, allowing access to a range of services at low or no cost. On the other hand, this can lead to a digital divide, with some large parts of New Zealand (for example, parts of Te Tai Tokerau and Tairāwhiti) lacking the broadband infrastructure to be able to make use of these technologies reliably and consistently.

The increasing use of agritech and the common use of digital technology involves two challenges for food and fibre vocational education and training. Firstly, there will be fewer lower-skilled jobs in the future. There is an urgent need to up-skill the existing workforce to be able to take on new roles, so that their knowledge and experience is not lost to the industry. Secondly, in order to maintain relevance for the future needs of workplaces, food and fibre training programmes and qualifications will need to ensure that learners at all levels have a basic level of digital literacy, and that the development of those skills are mainstreamed in all areas and all levels of vocational education and training for the sector.

3.4.2. Technology also provides opportunities and challenges to how training can be delivered

Education and training providers throughout all levels of the education system are making use of technology in developing new learning models and changing forms of delivery. There is no doubt that digital technologies can improve access to education and training. However, it is essential that efficiency gains are not achieved at the expense of the quality of teaching and learning

Throughout our regional hui undertaken in May 2022, the increased application of technology for education and training was viewed with some wariness. There are several reasons for this. Issues around a reliable broadband service and the digital divide have already been mentioned. In addition, on-line learning was not seen as being a panacea. In an industry where people may be physically and geographically at a distance from others, on-line learning can contribute to feelings of isolation. Block courses, virtual classrooms and use of social media are better able to contribute to social connection and support amongst cohort groups. These connections make a contribution to the learning process. In addition, while on-line learning might be suitable for some theoretical content, others questioned how effectively it could deliver learning in areas where practical experience is necessary for skill development.

The key to the use of technology to support high quality training provision and improving learning lies in testing alternative models of training provision, so that the effectiveness of different models for learner success is able to be evaluated. This is an area of development in which Muka Tangata expects to be involved with over future years.

Implications

- Qualifications and training will need to equip the workforce with skills to maximise the benefits from technological advances and to have the digital skills to succeed
- Digital channels could complement industry preferences for workplace-based learning, but we need to make sure their use doesn't lead to further inequalities of access
- Quality assurance and moderation activities will need to reflect technology changes and support education providers to deliver training to both current industry standards and best andragogical practices

4. Where next? – actions and focus areas

This report summarises priority areas of focus for vocational education and training for the food and fibre sector identified from feedback with partners, and existing research and analysis. In this final section, we propose actions and focus areas for the year ahead. While it includes some specific actions for Muka Tangata, the agenda is one for the sector as a whole. Over the next year, we will use it within our engagements with industry, providers, learners and tangata whenua and test and refine it as we go. In particular as we engage with partners to develop industry specific WDPs, we will consider how the high-level challenges identified in this plan play out for different segments.

In future we intend for workforce plans to be live and dynamic on our website where the latest data and analysis are available and where we can provide ongoing updates to our work and roadmap.

4.1. Analysis and Advice

A first step for developing potential improvements for vocational education and training in the sector is building the evidence base around what is happening at the moment and making that evidence easily accessible to our partners. Priorities for our work over the next year include:

- Work with data from TEC and providers to build up our knowledge of current training provision, the characteristics of learners, learning and career pathways, transitions in and out of the sector
- Providing this information to partners to inform discussions and engagements at industry level, so that industry partners, providers and learners can propose vocational education solutions that best meet their needs. These will be reflected in foundational industry workforce development plans
- Mapping the skills ecosystem industry level, including information on non-formal as well as formal education and training, and systems place for recognising skills. The purpose of this is to understand the relationship between formal and informal learning and to contribute to building career pathways that are flexible, innovative and recognise transferable skills
- We will continue to work with MPI, the Food and Fibres Partnership Group and the Food and Fibre CoVE to increase the stock of knowledge and data available on the workforce and on effectiveness in vocational education and training for the sector
- Building tools and resources that will make this data and evidence easily accessible to the sector.

4.2. Māori partnerships and perspectives

Muka Tangata Orders In Council require us to work towards an education system that "honours Te Tiriti o Waitangi and supports Māori Crown relations". Our engagement with the sector has also signalled that meeting the needs of Māori businesses and learners is crucial. To do this, our priorities over the next year will include:

- Continuing to build our relationship with the Federation of Māori Authorities
- Building genuine partnerships with iwi and hapū across the food and fibre sector to understand their aspirations
- Completing an initial literature review on Māori learner success and undertaking analysis of how well the vocational education and training system performs for Māori learners
- Undertaking a targeted "For rangatahi, by rangatahi" engagement to better understand the education and training needs of rangatahi
- Working in partnership with iwi and Māori partners on particular projects and initiatives. Two we hope to kick off shortly are:
    - Having a shared staff resource with Federation of Māori Authorities
    - Working in partnership with Te Rūnanga o Ngāti Awa to analyse Stats NZ data on learners and the workforce in food and fibre industries.

4.3. Qualifications, training delivery and quality assurance

Our initial engagements emphasised the need for the vocational education and training system to be based on the two fundamentals of transferable, fit-for-purpose credentials that meet the needs of industry and learners, and training delivery that is high quality, flexible, meets learner needs and helps them to overcome barriers to learning.

A good deal of the work that Muka Tangata does on a day-to-day basis contributes to continuous improvement in these areas. Over the next year, in association with industry and providers, we will continue to review qualifications, undertake moderation activities, identify gaps in training provision and work with providers to improve the quality of training delivery. New activities in these areas that we are in the process of implementing include the development of Skills Standards and Programme Endorsement.

At the same time, the RoVE reforms were aimed at achieving transformational change in vocational education and training, and feedback from our partners indicates that this is a high priority for food and fibre. In particular, as we have noted throughout this plan, the industry is looking for relevant and fit-for purpose qualifications and training provision that allows learners to develop careers within the industry, including transferability across industry sectors.

Over the next year Muka Tangata will be working in collaboration with the sector to rework the existing system to achieve this transformation. Among the priorities that will guide what we do, we will be giving consideration to:

- Developing a picture of the training and skills ecosystems in industries that includes formal and non-formal learning, so that we can understand how the two can work in seamless and complementary way
- Exploring a coherent approach to all food and fibre qualifications, standards and mico-credentials so that they support workforce mobility, career pathways and ongoing lifelong learning
- Working with NZQA and with industry to design a system for micro-credentials that responds to priority industry needs and allows stackability of micro-credentials alongside qualifications
- Exploring the prevalence of skills recognition systems that allow learners to develop flexible career pathways within and across the sector, that provide opportunities for meaningful employment at all stages of an employee's life
- Work with providers to assess or evaluate the appropriateness of different modes of delivery for meeting the varying needs of learners, industries or local labour markets.

4.4. Equity and inclusion

Muka Tangata is required to make sure that the needs of underserved learners are better met within the vocational education system. We have noted earlier in this plan that some groups are better represented in employment and training, and this would suggest the existence of barriers to labour market and training participation that need to be better understood.

Improving equity and being more inclusive is essential for food and fibre workplaces to be able to recruit and retain the work force that they need to meet increasing labour demand. In support of this, over the next year we will work closely with providers and work-based trainers to:

- understand their Learner Success Plans, including the ready availability of effective pastoral support, wrap-around services, and the importance of social, whānau and community connections
- provide the results of our own research into factors associated with learner success
- ensure that diagnostic and support services are available where gaps in foundation or life skills present a barrier to learning

At the same time, Muka Tangata is also of the view that the learner voice is sometimes lost in policy-decisions on vocational education and training. We noted earlier in this section that we will be embarking on a "For rangatahi, by rangatahi" engagement to better understand the education and training needs of this group.

5. Next Steps

The completion of our first WDP is the first step in an iterative process of workforce development planning that will form the basis of our ongoing engagement with our partners across the sector.

As we noted in Section One, this is a plan of action for the sector as a whole. The high level suggestions that are proposed will be used as a basis for discussion over the remainder of 2022. In particular, they will be used to inform more detailed conversations across 14 industries,[74] with a view to developing industry-specific workforce development plans that involve all aspects of Muka Tangata functions. These plans will include more specific actions that have been agreed with the sector, to guide qualifications and standards development, provider programme delivery, quality assurance, and advice and solutions for industry issues. We aim to have these completed by March 2023.

The iterative nature of the process is demonstrated by the fact that these 14 industry plans will be used as a basis for identification of cross-sector issues and actions. These will feed into an updated sector-wide plan in 2023 that will inform our advice to TEC on the investment needed for vocational education and training for the sector.

Over time, it is expected that this iterative process, based on ongoing collaboration between Muka Tangata, employers, providers, iwi and hapū and industry associations that will result in tangible improvements in outcomes for learners and employers, and ensure the sector is able to meet changing skills in the future.

Muka Tangata looks forward to continuing these conversations.

[74] Those 14 industries are: seafood; forestry; dairy; sheep, beef, deer and wool; fruit; grapes and wine; vegetables; equine; poultry pork and other livestock; apiculture; nursery; arable, veterinary; and support services.

MUKA TANGATA

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