

Fit for a Better World

Background analysis on export earnings in the primary sector

Ministry for Primary Industries

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Explanatory note

This document sets out analysis underpinning the Fit for a Better World Roadmap (the Roadmap). In particular, this paper explains the rationale and assumptions behind the target of generating an additional \$44 billion in export earnings over the next decade (2020 to 2030). The assumptions underpinning the Roadmap's export revenue target are based on the best information available at the time and assume the initiatives in the Roadmap are fully implemented.

Given the fluidity of the broader macroeconomic context from COVID-19, it is important the Roadmap, and its approach to driving sustainable growth, remains flexible. To that end, the mix of initiatives in the Roadmap will be reviewed every two years (commencing in 2022) as will the Roadmap's targets. Updates and adjustments will be made as needed.

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Overview

Purpose

1. This document sets out analysis underpinning the Fit for a Better World Roadmap (the Roadmap).¹ In particular, this paper explains the rationale and assumptions behind the target of generating an additional \$44 billion in export earnings over the next decade.
2. This paper is not a forecast of all possible activity in the sector over the next ten years, and how this might lead to different scenarios eventuating. Instead, it explains how the export growth target has been developed and provides a range of illustrative examples of how initiatives and interventions identified within the Roadmap may contribute towards meeting the target. The target is underpinned by the Ministry for Primary Industries' (MPI's) understanding of the food and fibres sector, existing known barriers to growth, and initiatives and interventions within the Roadmap that can help to unlock growth.
3. The Roadmap sets out a plan to grow jobs and boost growth across different parts of the food and fibres sector in ways that enhance the sector's inclusivity and sustainability. To do so, the Roadmap encourages sectors to be creative, innovative, and to build on transformation already taking place. Underscoring the Roadmap is a commitment to work with all parts of the food and fibres sector, both existing and emerging, to support growth.
4. The analysis in this paper reflects MPI's data analytics expertise and experience tracking trends across New Zealand's food and fibres sector, which includes producing quarterly assessments of their performance in the Situation and Outlook for Primary Industries (SOPI) reports.² This paper also reflects MPI's strong track record of partnering with New Zealand's food and fibres sector, and the first-hand understanding it has developed of the trends and developments influencing the sector, as well as what is needed to support and enable its growth.

The target to add \$44 billion in export earnings over the next decade

5. The Roadmap sets out a target for New Zealand's food and fibres sector of adding \$44 billion in export earnings over the next decade (from 2020 to 2030). This represents the potential to deliver approximately \$10 billion in additional export revenue per annum by 2030 above what would be achieved in the baseline scenario.
6. The export growth target in the Roadmap is based on an assessment of:
 - a. **The historical path for export growth** – which gives a sense of what can reasonably be expected
 - b. **Baseline growth/scenario** for New Zealand's food and fibres sector without full implementation of the initiatives in the Roadmap
 - c. **What is known now about the parts of the food and fibres sector** with high potential for growth.
7. This paper focuses on export revenue growth as a proxy for the productive and economic potential of the Roadmap. The Roadmap provides direct benefits towards the

¹ Ministry for Primary Industries. (2020). *Fit for a Better World: Accelerating our economic potential*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/41031-fit-for-a-better-world-accelerating-our-economic-potential>

² SOPI reports are available on the Ministry for Primary Industries website: <https://www.mpi.govt.nz/news-and-resources/economic-intelligence-unit/situation-and-outlook-for-primary-industries/sopi-reports/>

Government's targets for a productive, sustainable and inclusive economy – including the economic opportunities to move from 'volume to value', working within environmental limits, ensuring people are skilled and have meaningful career pathways, and maintaining New Zealand's vital regional economies.

8. Developing this target with reference to both the food and fibres sector's historical performance and its future potential, ensures a target that is both optimistic, in terms of lifting economic performance, while also being realistic, in light of current domestic and global uncertainties created by COVID-19.

Targeting export growth in a COVID-19 world

9. The COVID-19 pandemic has been the most significant challenge for the global society and economy since World War II.³ New Zealand recorded its biggest quarterly drop in GDP since 1991 – contracting by 1.6 percent,⁴ while Treasury data forecasts a rise in unemployment from 4.0 percent to 8.3 percent between 2019 and 2020.⁵ New Zealand's food and fibres sector has been hit by a range of practical, logistical and economic challenges during the immediate response to COVID-19.
10. Despite this, to date, New Zealand's food and fibres sector has played a vital role throughout the COVID-19 response by maintaining the production of food, bringing in export revenue, and by sustaining employment. With other key sectors (such as tourism and international education) being heavily affected by ongoing border restrictions,⁶ the food and fibres sector has continued to perform well. During Alert Level 4, export revenue from five of the six primary sectors included in this analysis⁷ remained 4 percent up on the same period last year, due to strong dairy and fruit exports and a weaker NZD.⁸ It is therefore anticipated that the sector will play an essential role in New Zealand's economic recovery.
11. Predicting the ongoing impacts of COVID-19 on New Zealand's food and fibres sector over the next ten years is difficult to do with a level of confidence due to the significant uncertainty of the virus's spread, the varying responses and recovery efforts by different countries and continents, and the potential rapid development of tools such as vaccines to mitigate and manage the virus. For this reason, Treasury, in BEFU May 2020, took the unprecedented step of presenting alternate economic forecast scenarios for the coming years, along with confidence bands around the forecasts to help illustrate the unprecedented levels of uncertainty.⁹
12. Previous significant shocks to the global economy impacted New Zealand's food and fibres sector in quite different and unpredictable ways. There are likely to be further

³ The World Bank. (2020). *COVID-19 to Plunge Global Economy into Worst Recession since World War II*.

⁴ Organisation for Economic Co-operation and Development. (2020). *OECD Quarterly National Accounts*.

⁵ New Zealand Treasury. (2020). *Budget Economic and Fiscal Update 2020*. Retrieved from:

<https://treasury.govt.nz/publications/efu/budget-economic-and-fiscal-update-2020>

⁶ New Zealand Treasury. (2020). *Budget Economic and Fiscal Update 2020*.

⁷ The forestry sector was particularly impacted by the COVID-19 outbreak and responses, first by China's lockdown, then by New Zealand's.

⁸ Ministry for Primary Industries. (2020). *Economic Update for the Primary Industries – June 2020*. Retrieved from: <https://www.mpi.govt.nz/news-and-resources/economic-intelligence-unit/situation-and-outlook-for-primary-industries/>

⁹ New Zealand Treasury. (2020). *Budget Economic and Fiscal Update 2020*.

unpredictable impacts on New Zealand's economy generally, and the food and fibres sector in particular, over the coming decade.

13. For example, New Zealand's experience of the global financial crisis (GFC) beginning in 2008 was shallow compared to other advanced economies. This was due in part to New Zealand's exposure to high-growth economies in China, Australia, and other markets in Asia. Continuing strong demand from these countries, further enabled by the Free Trade Agreement with China, allowed New Zealand's food and fibres exports to recover relatively quickly.¹⁰ This was despite widespread concerns about macroeconomic instability that were ultimately more manageable than initially thought.
14. However, the experience of the GFC stands in contrast to New Zealand's experience in the mid-1970s. While the 1973 oil price shock was expected to be short-lived, it ushered in a period of significant macroeconomic uncertainty. For New Zealand, this challenge was compounded by the United Kingdom's decision to join the European Economic Community, which meant shrinking export opportunities to New Zealand's main trading partner.¹¹
15. The common thread between these two historical examples is the unpredictable and varied nature of how global economic shocks can affect New Zealand's economy and the food and fibres sector. The impact of COVID-19 on this sector is similarly unpredictable: only time will tell for certain whether the impacts of the virus will fade in a year or two, or if this shock leads to persistent headwinds over the next decade and beyond.
16. Responding to times of considerable economic uncertainty requires new thinking and a deliberate, decisive and focused approach to lifting economic performance in order to survive and grow – including seizing opportunities to grow existing markets, developing and introducing new products, and adapting to change. That is why the Roadmap emphasises the need for flexibility and resilience, so the food and fibres sector can adapt quickly as new challenges and opportunities emerge over the next decade.

Caveats underpinning this document

17. The assumptions underpinning the Roadmap's export revenue target are based on the best information available at the time and assume the initiatives in the Roadmap are fully implemented.
18. Individual projects and innovations will be subject to an assessment of return on investment. Market conditions will influence how the initiatives perform and evolve as they are developed and implemented. The initiatives will be evaluated to ensure they continue to represent the best use of government investment and are well targeted. Given the fluidity of the broader macroeconomic context from COVID-19, it is important the Roadmap, and its approach to driving sustainable growth, remains flexible. To that end, the mix of initiatives in the Roadmap will be reviewed every two years (commencing in July 2022) as will the Roadmap's targets.
19. While there are several factors that can be controlled and influenced to help achieve the export earnings target, there are also factors that cannot be controlled that will have an uncertain impact on New Zealand's food and fibres sector over the coming years. Below

¹⁰ New Zealand Treasury. (2015). *New Zealand Economic and Financial Overview 2015*. Page 11. Retrieved from: <https://treasury.govt.nz/sites/default/files/2010-04/nzefo-15.pdf>

¹¹ New Zealand Treasury. (2012). *Structural Change in the New Zealand Economy, 1974 – 2012*. Page 8. Retrieved from: <https://treasury.govt.nz/sites/default/files/2012-09/ltfep-s1-04.pdf>

is an indicative list of the types of factors that can and cannot be controlled, that are expected to impact the food and fibres sector's economic performance.

Table 1: Summary of indicative factors acting on export growth

Factors that can be controlled include:	Factors that cannot be controlled include:
• Government spending on particular priorities, programmes or interventions to support growth and innovation. • Legislation and regulation to help unlock or support growth opportunities across the broader economy, environment, food and fibres sector, and for specific sectors. • Planning and implementing plans and strategies to help support and enable growth. • Influencing and investing in international relationships with trading partners overseas. • Sector leadership and coordination activities – including pan-sectoral engagement and supporting coordination across sectors. • Dissemination of information and guidance to support growth, innovation, and to help the food and fibres sector navigate systems and markets, including regulations, legislation, import and export requirements.	• Market demand changes for products due to factors such as the closing of overseas markets, changing consumer preference for products etc. • Weather events can disrupt production both in New Zealand and overseas, including droughts, floods, and other acute and sustained adverse weather. • Market access changes, while able to be influenced through engagement and negotiation, are a risk for small trade dependent countries such as New Zealand for both access to export markets and imports of materials. • Exchange rates fluctuate and can impact NZD-denominated returns even if overseas prices remain unchanged. • Supply chain disruptions, for example, due to natural disasters or pandemics, create abrupt challenges to the way goods and people move. • Commodity price fluctuations can cause wide swings in business profitability. • Private sector contributions: This document sets out how government can help contribute to export earnings growth – it doesn't capture the contributions and growth that may be driven solely from private sector organisations over the next ten years (these are dynamic and difficult to predict).

Existing investment means there is a strong base to start from

20. The initiatives outlined in the Roadmap will require significant investment in the food and fibres sector's growth over the next decade. However, it is important to note the sector is building on a strong base. Government has already invested significantly to support the transformation of the food and fibres sector over the past three years. This has included:

- a. \$122 million towards supporting farmer-led solutions as part of the \$229 million investment in the Productive and Sustainable Land Use programme

- b. \$480 million in forestry through the One Billion Trees Grants and Partnerships Fund and the Crown Forestry Joint Venture Programme
 - c. \$31 million to implement improved monitoring of fishing catch on commercial vessels and supporting new protections for Hector's and Māui dolphins.
21. Further investment was made in Budget 2020, including:
- a. \$25.3 million to attract and train recently unemployed New Zealanders to jobs in the food and fibres sector
 - b. \$15 million to redirect food to support vulnerable communities
 - c. \$45.3 million to help horticulture seize opportunities for growth.
22. These investments are a part of the Government's wider COVID-19 response and recovery package, which includes the \$12.1 billion Initial Economic Response Package¹² in March and the \$50 billion COVID Response and Recovery Fund in May as a part of Budget 2020.¹³ Notable initiatives funded through Budget 2020 include:¹⁴
- a. \$5.1 billion for the wage subsidy scheme and subsequent \$3.2 billion extension
 - b. \$2.8 billion income support package for vulnerable households
 - c. \$2.8 billion in support for businesses through changes in taxation
 - d. \$670 million for the Government Housing Build Programme
 - e. \$700 million for improving the health of New Zealand's waterways.
23. Funding has also been made available to support immediate implementation of several initiatives, by bringing forward \$84 million of Sustainable Food and Fibre Futures funding and reallocating \$11.6 million of One Billion Trees funding to invest in the Transforming Forestry and Wood Processing initiative.
24. These investments will support the immediate implementation of the Roadmap. Further investment will be needed over the coming years to enable the food and fibres sector to return more value from exports and to place the wellbeing of the natural world, communities and future generations at the heart of New Zealand's productive sectors.
25. In addition, the Roadmap builds on a broader foundation of work that is also occurring alongside investment that is also key to success. This includes maintaining a world-class biosecurity system, implementing workforce action plans, and wider environmental sustainability initiatives.
26. There are a number of strategies and plans that sit under, or will fall out of, the Roadmap. For example, the Government has prepared an Aquaculture Strategy to grow this sector significantly over the next decade or so. This strategy will focus on the specific aspirations and needs of the aquaculture sector, to support growth. Cross-cutting frameworks such as Te Taiao, with its focus on regenerative farming and maintaining the

¹² Robertson, G. (March 2020). *\$12.1 billion support for New Zealanders and business*. Retrieved from <https://www.beehive.govt.nz/release/121-billion-support-new-zealanders-and-business>

¹³ New Zealand Treasury. (2020). *Budget 2020 Summary of Initiatives: 29 May 2020*.

¹⁴ Detailed information for all initiatives under the Initial Economic Response Package and COVID Response and Recovery Fund is available here: <https://treasury.govt.nz/information-and-services/new-zealand-economy/covid-19-economic-response/package>

health and wellbeing of the natural world, will also play a key role in underpinning the Roadmap.¹⁵

27. Similarly, the MPI-led Wood Processing and Forestry and Food and Beverage Industry Transformation Plans (ITPs) will have a line of sight to the Roadmap, but drop down a level and identify options to transform these sectors specifically.¹⁶ One key focus of ITPs is on supporting a shift from volume to value, as outlined in the Government's Economic Plan.

How to use this document

28. This document should be read in conjunction with the Fit for a Better World Roadmap. Given the contribution it will make outside of just food and fibres exports, this document should also be read within the context of current Government policy settings, including for climate change, freshwater, food and fibres sector jobs and training, and also in the context of recent the investments through Budget 2020 noted above.
29. The following sections of this paper detail how the export growth target has been developed and provide indicative examples of the types of initiatives and interventions from the Roadmap that will contribute towards achieving it:
- a. **The potential for an additional \$44 billion over the next ten years** – this section explains baseline growth projections, the potential to achieve growth beyond this baseline, and how the Roadmap seeks to do so
 - b. **Baseline scenario and limits to further growth** – this section details the baseline growth scenario for the coming years, both across the food and fibres sector and by specific sectors
 - c. **The Roadmap has the potential to accelerate economic potential over the coming years** – this section summarises the Roadmap's contribution to accelerating economic potential, as well as barriers to growth and potential levers to address these barriers
 - d. **Sector specific summaries** – these sections outline how six specific sectors (horticulture, seafood, forestry, dairy, meat and wool, and processed foods, arable and other food and fibres exports) are expected to contribute towards the growth target over the coming ten years.

¹⁵ Te Taiao Working Group – Primary Sector Council. (2020). *Taiao Ora Tangata Ora – The Natural World and Our People are Healthy, A new way forward for Aotearoa New Zealand's food and fibres sector*.

¹⁶ Ministry of Business, Innovation and Employment. (2019). *Cabinet paper: Next steps on industry strategy*. Retrieved from: <https://www.mbie.govt.nz/dmsdocument/5947-next-steps-on-industry-strategy-proactiverelase-pdf>

Historical growth trends: based on predominantly favourable factors

30. New Zealand's food and fibres sector has seen strong growth in recent years, with average annual export revenue growth of 4.8 percent from 2009 to 2019. Approximately half of this growth over the past decade has been generated by volume growth in dairy products, logs, and beef, which will be difficult to sustain in the coming decade.¹⁷ In addition, commodity price trends have been generally favourable over the past decade, which is not guaranteed to continue, especially as volatile world markets respond to COVID-19.
31. Dairy production rose 35 percent from 2009 to 2019, with most growth occurring from 2009 to 2014. Since then, milk production has been nearly flat, with slightly falling dairy cow numbers offset by increasing productivity per cow. This trend is expected to continue due to declining investment, high debt levels in the sector, and the tightening of regulations for freshwater management in the 2017 National Policy Statement on Freshwater and the 2020 Healthy Waterways package. However, additional growth is likely in higher value dairy products like infant formula, UHT and nutritional products. In addition, contributions may also come from other dairy products in the coming years, such as sheep milk.
32. Meat and wool export revenue rose over the past decade despite falling sheep and beef cattle numbers. Lamb production has remained stable despite falling breeding ewe numbers, thanks to rising carcass weights and lambing rates. The dairy industry's growth has also indirectly boosted beef production, with over 40 percent of beef production now originating on dairy farms. Sheep and beef livestock numbers are expected to continue falling over the next decade, driven in part by change into other land uses, such as forestry. In addition, the dairy herd is expected to decline slightly over the next decade, so there will be fewer opportunities to increase beef production through dairy-origin beef.
33. Horticulture exports have grown in both volume and value over the last decade: kiwifruit, wine, apples and pear exports are the main growth areas now making up 80 percent of the \$6.1 billion total value in 2019. Industry growth has come from expanding production, introducing new varieties and improving yields across the board; this expansion with a focus on value is expected to continue.
34. Forestry harvest volumes have increased strongly over the last decade, with the maturing of 1990s plantings and strong log prices driven by Chinese demand. However, a decline in planting in the 2000s will result in stable harvestable wood volumes later this decade and decreasing wood availability in the 2030s. As a result, volume-led growth in forestry exports will not be possible to the same extent.
35. In addition, several smaller but high-growth categories have supplemented the success of pastoral and forestry exports – particularly horticulture, infant formula, and processed foods. In the baseline scenario, strong export growth in these products is expected to continue into the coming years.
36. Volume growth cannot be relied on to generate even greater returns across all sectors in the next decade. Therefore, the Roadmap proposes to transform the food and fibres sector by focusing on achieving higher returns from the existing production base, while also seeking diversification through new land uses and products.

¹⁷ Based on MPI analysis of export trade data from Statistics New Zealand.

37. Looking further back at growth rates over previous decades further illustrates the potential for New Zealand's food and fibres sector to sustain strong growth rates. For example, food and fibres sector export revenue grew by 6.3 percent per annum between 1999 and 2009, and by 3.5 percent between 1989 and 1999.¹⁸

¹⁸ Based on MPI analysis of export trade data from Statistics New Zealand.

Baseline future growth: multiple prevailing headwinds

38. The baseline projection assumes that food and fibres sector export revenue will grow from \$46 billion in 2019 to \$57 billion in 2030. This is a projected growth rate of 1.9 percent per annum. In the short term it is expected that the global recession will lead to zero growth in food and fibres exports in 2020 and 2021 before recovering in 2022 to a steady (but lower than historical trends) annual growth from 2023 to 2030.
39. The baseline projection is based on information from MPI's Situation and Outlook for Primary Industries December 2019,¹⁹ which forecasted export revenue to 2024. This forecast was revised lower for 2020 and 2021 to reflect changing market conditions in the wake of COVID-19. This forecast was then projected to 2030. This projection is consistent with MPI's input into other longer-term projections, such as the OECD-FAO Agricultural Outlook 2020-2029.²⁰
40. The baseline for food and fibres sector growth is significantly lower than the growth seen in previous decades for three key reasons. Firstly, historical growth has been fuelled by favourable exogenous factors such as commodity prices and a relatively benign climate. Secondly, other endogenous factors will limit the potential to grow by expanding volumes, including more ambitious regulations and targets on environmental performance for climate change and freshwater. The closure of the border to non-New Zealanders is likely to cause ongoing labour shortages in the base case, unless action is taken to attract New Zealanders into the sector. Thirdly, the global COVID-19 pandemic has materialised in a fluid and unprecedentedly bleak domestic and global economic outlook. This is illustrated by the fact that recent baseline forecasting by the World Bank envisions a 5.2 percent contraction in global GDP in 2020 – the deepest global recession in eight decades – before recovering to just over 1.0 percent growth in 2021.²¹
41. Domestic projections illustrate that COVID-19 will have a significant, while uncertain, impact on New Zealand's economy over the coming years. Analysis by Treasury predicts New Zealand real production GDP to fall sharply in the June 2020 quarter, resulting in an annual contraction of 4.6 percent over the June 2020 year, with annual real GDP falling a further 1.0 percent by June 2021.²² Following this period of contraction, economic activity is forecast to recover over the remainder of the forecast period, with real GDP growth expected to reach 8.6 percent in the year to June 2022 before easing to 4.6 percent growth in 2023 and 3.6 percent growth in 2024.²³
42. Historic trends of New Zealand's food and fibres sector performance, combined with known information about the prevailing headwinds, including those generated by COVID-19 and climate related factors (such as droughts), suggests that without continued transformation, the food and fibres sector will grow at a significantly slower rate than to date. Compared to other export orientated sectors of New Zealand's economy, such as

¹⁹ Ministry for Primary Industries. (2019). *Situation and Outlook for Primary Industries December 2019*.

Retrieved from: <https://www.mpi.govt.nz/dmsdocument/38930-situation-and-outlook-for-primary-industries-sopi-december-2019>

²⁰ OECD/FAO. (2020). *OECD-FAO Agricultural Outlook 2020-2029*. Retrieved from:

https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2020-2029_1112c23b-en

²¹ World Bank. (2020). *Global Economic Prospects – June 2020*. Retrieved from:

<https://www.worldbank.org/en/publication/global-economic-prospects>

²² New Zealand Treasury. (2020). *Budget Economic and Fiscal Update – 14 May 2020*. Page 3. Retrieved from:

<https://treasury.govt.nz/sites/default/files/2020-07/befu20-v2.pdf>

²³ New Zealand Treasury. (2020). *Budget Economic and Fiscal Update – 14 May 2020*. Page 3.

tourism and tertiary education that face contraction and a protracted and uncertain recovery path due to the border closures,²⁴ a baseline of 1.9 percent growth per annum would represent, in relative terms, strong growth for the food and fibres sector.

43. While the impacts of COVID-19 on future growth rates are uncertain, levels of growth over these recent decades illustrate the potential for New Zealand's food and fibres sector to generate and sustain levels of growth above 1.9 percent per annum (even in the context of previous significant shocks, such as the GFC).

²⁴ New Zealand Treasury. (2020). *Budget Economic and Fiscal Update – 14 May 2020*. Page 15.

The export growth target: ambitious and achievable

44. Based on the assessment of baseline and historical growth, in the alternative scenario the initiatives in the Roadmap could lift export revenue growth from 1.9 percent in the baseline to a target of 3.4 percent compounded annually.
45. As a result, it is estimated that the Roadmap has the potential to deliver approximately \$10 billion in additional export revenue per annum by 2030 above what would be achieved in the baseline scenario.

Table 2: Export revenue growth

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Primary industries	29,042	46,329	+4.8%	Baseline	57,000	1.9%
				Additional potential	+10,000	+1.5%
				Roadmap	67,000	3.4%

46. Assuming the impact of the Roadmap scales up incrementally over the next 10 years, the cumulative total of additional export revenue over the next decade could reach \$44 billion (Table 3).

Table 3: Cumulative total of export revenue growth

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Impact of Roadmap Export revenue (\$NZ million)	0	0	0	0	1,400	2,600	3,700	4,800	6,000	7,300	8,600	10,000
Cumulative impact of Roadmap Export revenue (\$NZ million)	0	0	0	0	1,400	4,000	7,700	12,500	18,500	25,800	34,400	44,400

47. Notwithstanding the anticipated impacts of COVID-19 and other prevailing headwinds over the coming years, targeting 3.4 percent annual growth is considered an ambitious yet achievable target. It relies on the transformation expected to be achieved by implementing the Roadmap. In particular, the growth rates achieved by New Zealand's food and fibres sector over recent decades, when factors within and outside the Government and the sector's control were predominantly favourable, are a useful comparator for the Roadmap's target if key factors within the Government's control are persistently, deliberately targeted to drive inclusive, productive and sustainable growth.
48. At a high-level, achieving this export growth target, particularly when New Zealand faces several significant headwinds, including from COVID-19, requires a transformation in two key areas:
- Shifting further to value:** Volume growth across all sectors cannot be relied on to generate even greater returns – a focus is needed on achieving higher value returns for New Zealand off the existing production base (while also noting that for some industries, continuing to build volume will still be the driver behind sector growth).
 - Growing a platform of sustainability:** Strong growth in exports should not come at the expense of environmental sustainability. Ensuring that sustainability is not only managed, but enhanced, while also striving towards the growth target will be vital.

49. Achieving these shifts will position New Zealand to be a strong global player in food and fibres as consumer demand, preferences and tastes evolve well beyond the next ten years, but there is work to do to achieve this – including by supporting investment, making sure that regulatory settings encourage resilience and innovation, and by building the workforce capabilities and skills needed to add additional value.
50. In addition to an expected increase in export revenue, the Roadmap is expected to help support the employment of 10,000 more New Zealanders in primary sector jobs over the next four years, and 10 percent more by 2030. Many of these jobs will be located in rural communities across New Zealand. This is expected to be a combination of employment growth and a reduction in the reliance on migrant labour.
51. Employment in the food and fibres sector is approximately 356,000 workers.²⁵ While employment growth is not expected to be as strong as it has been over the last four years, it is still expected to grow based on the long-term demand for food and fibres and the work the sector has been doing to employ more people, diversify their product mix, and develop new markets.

²⁵ Ministry for Primary Industries. (2017). *Human capability in the primary industries data: Part 1 – 2002 to 2017 – an overview*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/17638-human-capability-in-the-primary-industries-part-1-2002-to-2017-an-overview>

The Roadmap's initiatives: Overview

52. The Roadmap includes initiatives to accelerate the growth of new products, within certain existing and emerging sub-sectors, such as aquaculture and horticulture. It also includes initiatives that will unlock further value from New Zealand's larger and well-established food and fibres industries, and ensure they are more resilient physically and economically to the impacts of a changing natural environment and consumer and market pressures and volatility.

53. The potential contributions from across the Roadmap are summarised below – which splits out an indicative attribution of export growth by sector and Roadmap initiative.

Table 4: Indicative attribution of the additional \$10 billion in annual export revenue by 2030 by sector and initiative (NZ\$ million)

Roadmap initiative	Forestry	Seafood	Horticulture	Dairy	Meat and wool	Processed food, Arable, and Other	Total
Aquaculture strategy	0	2,000	0	0	0	0	2,000
New Product Development and Plant Health Environment Lab	0	0	1,200	0	0	0	1,200
Transform the forestry sector	2,500	0	0	0	0	0	2,500
Revitalising strong wool	0	0	0	0	500	0	500
Market access and development	100	100	600	600	500	100	2,000
Māori agribusiness development	0	0	400	0	0	200	600
Small scale water storage	0	0	300	100	100	0	500
Regenerative farming and Te Taiao	0	100	100	200	100	200	700
Total	2,600	2,200	2,600	900	1,200	500	10,000

54. In Table 4 above, several Roadmap initiatives have clear links with specific sectors, but others are expected to generate benefits across several sectors.²⁶

- a. **The aquaculture strategy** is expected to support \$2 billion in export earnings growth in the seafood sector over ten years by bringing forward the benefits of development and commercialisation of open ocean aquaculture and supporting existing aquaculture systems. This supports the potential for New Zealand aquaculture to generate \$3 billion in sales by 2035.²⁷
- b. **New product development and the Plant Health and Environment Lab** is expected to support growth in horticulture by accelerating new product development and facilitating the import of new plant genetic material for

²⁶ Note that the attribution of benefits across these initiatives and sectors (as set out in Table 4 above) are indicative only. This reflects the significant uncertainty in determining the growth profile and export earnings potentials of initiatives out to ten years.

²⁷ New Zealand Government. (2020). *The New Zealand Government Aquaculture Strategy*.

cultivation and commercialisation. Accelerating new plant varieties, that may have high value and demand domestically and internationally, can help to open new products and boost the value of horticultural exports.²⁸

- c. **Transforming the forestry sector** is expected to support growth for New Zealand forestry exports by diversifying markets and enabling development of high-value products.
- d. **Revitalising strong wool** aims to lift strong wool prices closer to fine wool by researching new markets and novel uses for wool, alongside initiatives to capture wool's inherent value as a sustainable and ethically produced fibre.²⁹
- e. **Market access and development** targets have been apportioned based on an indicative consideration of the growth potential of each sector, combined with the level of existing tariff and non-tariff trade barriers that could be removed to unlock export growth opportunities.³⁰ The dairy and meat sectors currently experience relatively high trade barriers, with relatively fewer trade barriers in seafood and forestry. Trade barriers are moderate in the horticulture sector, but due to the underlying profitability in that sector, modest improvements in terms of trade can unlock relatively large opportunities.
- f. **Expanding the Māori agribusiness** extension programme is expected to benefit export growth in the horticulture and processed food, arable, and other sectors. Horticulture is targeted to generate the largest gains, where existing Māori agribusiness assets can be leveraged for further growth.³¹
- g. **Small-scale water storage** is expected to improve water security in order to create opportunities for producers (farmers and growers) to access higher value land-use options, product supply chains, and higher value employment. Benefits are likely to accrue in the horticulture, dairy, and meat and wool sectors, as well as in building community resilience to climate pressures, and increasing water allocation and distribution efficiency and equity.
- h. **Regenerative farming and Te Taiao** is targeted to have benefits across a range of industries by providing a framework for producers to achieve regeneration and wellbeing of their natural resources. This initiative reflects the significant potential to create greater market value and increase export earnings by providing a clear point of difference for New Zealand products.³²

55. Additional detail on the points above is set out in the cross-cutting themes section and the sector-specific chapters contained in this document.

56. The growth profile from these initiatives may not evolve exactly as illustrated in this document. Indeed, in forging this ten-year path in a time of unprecedented global

²⁸ Plant and Food Research. (2011). *Discover, Innovate, Grow*. Retrieved from:

<https://www.plantandfood.co.nz/file/annual-report-discover-sep-2011.pdf>

²⁹ Ministry for Primary Industries. (2020). *Vision and Action for New Zealand's Wool Sector*. Retrieved from:

<https://www.mpi.govt.nz/dmsdocument/41079-vision-and-action-for-new-zealands-wool-sector-report>

³⁰ OECD. (2020). *Agricultural Policy Monitoring and Evaluation 2020*. Retrieved from:

<https://doi.org/10.1787/928181a8-en>

³¹ PwC. (2014). *Growing the Productive Base of Māori Land – Partial National Cost-Benefit Analysis*. Retrieved from: <https://www.agriculture.govt.nz/dmsdocument/4963/direct>

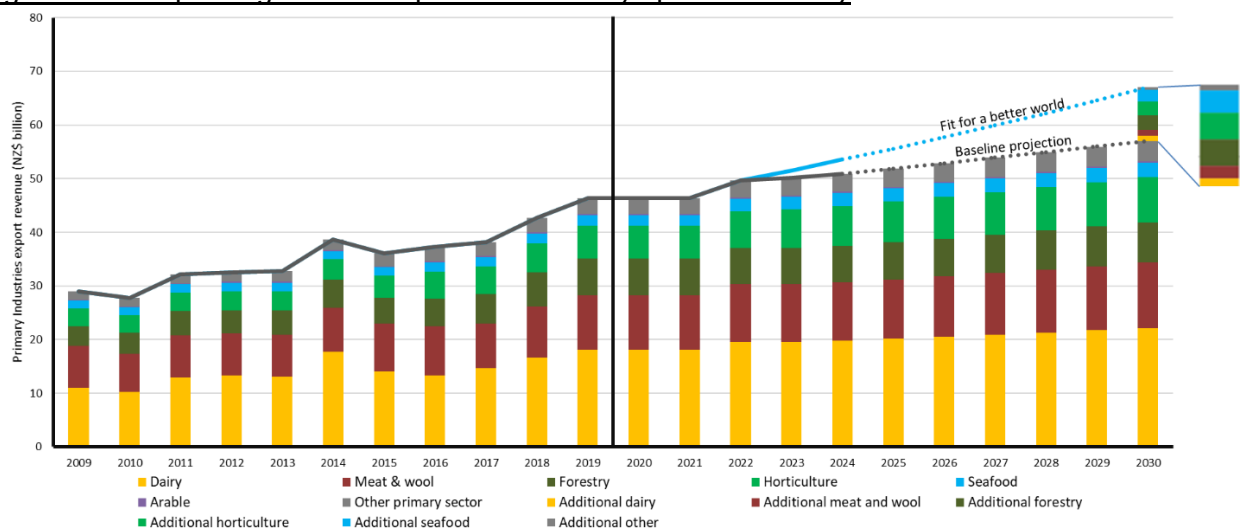
³² Te Taiao Working Group – Primary Sector Council. (2020). *Taiao Ora Tangata Ora – The Natural World and Our People are Healthy, A new way forward for Aotearoa New Zealand's food and fibres sector*.

economic uncertainty, initiatives within the Roadmap are certain to evolve in unpredictable ways. Some may underperform against indications in this document, and others may over-perform. Further new initiatives will evolve over time. However, the assumptions around the growth target, and the illustrative examples of initiatives that will contribute towards achieving it, are based on MPI's insights into New Zealand's primary sector trends, by sector and by market.

57. Achieving the export growth target is predicated on all of the initiatives in the Roadmap being implemented. No single initiative, or member of the food and fibres sector, will achieve the shift needed to achieve the export growth target.

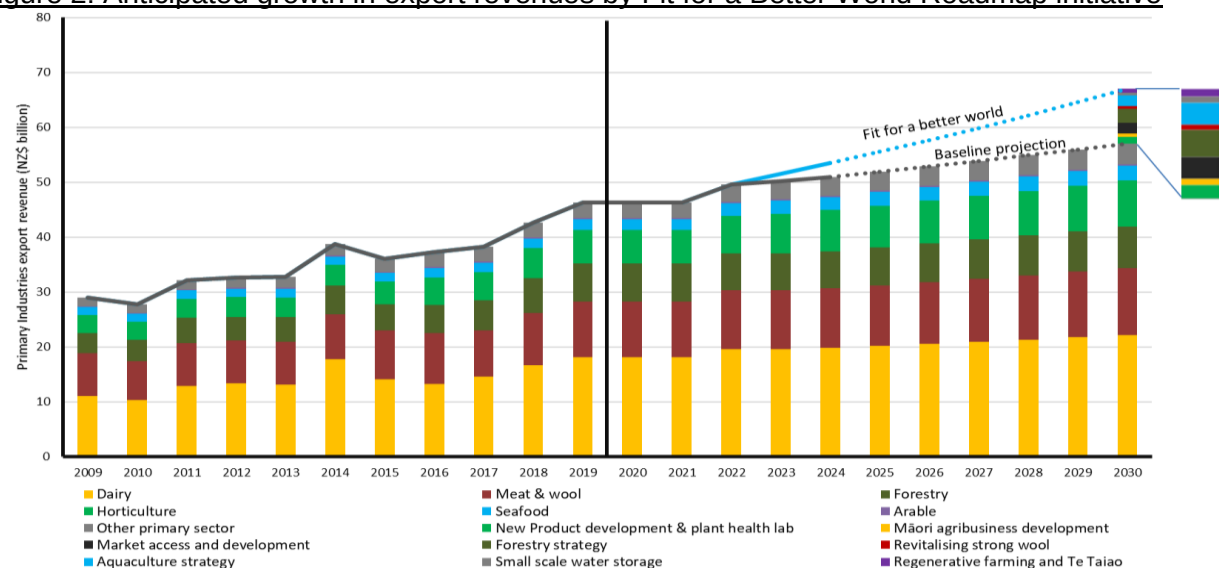
58. Assuming all initiatives are implemented, food and fibres export revenue is aimed to grow by 3.4 percent per annum, reaching \$67 billion in 2030. The forestry, aquaculture, and horticulture sectors are assumed to achieve the largest gains (see below in Figure 1).

Figure 1: Anticipated growth in export revenues by specific industry



59. Of the Roadmap initiatives set out in Table 4 – several of which contribute benefits across several sectors – the largest contributions towards the growth target are expected to come from the aquaculture strategy, transforming the forestry sector, and market access and development (as illustrated in Figure 2).

Figure 2: Anticipated growth in export revenues by Fit for a Better World Roadmap initiative



The Roadmap's initiatives: Cross-cutting

60. New Zealand's food and fibres sector cannot continue to rely on volume growth into the coming years to generate even greater returns across all sectors. While some sectors will continue to realise growth through increases in volume over the coming years, relying on volume increases across all sectors is not feasible given the physical and environmental limits of New Zealand's production base.
61. This is evident in analysis completed by Lincoln University in 2018, which showed that if New Zealand's economy were to grow by 2.0 percent per annum on average, and if the food and fibres sector was to maintain its current economic contribution in the structure of the economy with no other changes, the total value of production of the food and fibres sector would need to increase by 139 percent by 2060.³³ To achieve this, the sector's production output would need to double by 2051, if nothing else changed. This scenario would not be feasible given the potential environmental impacts and the limits of the existing production base.³⁴
62. Given that New Zealand is approaching the physical and environmental limit of what can be achieved from volume production alone, the need for a transformation and movement from volume to value is well understood. However, there are a number of barriers that cut right across the current system settings that make these shifts difficult to execute.
63. Providing more products that extract a premium requires a joined-up, cohesive and accessible research, innovation, investment, risk management and commercialisation pipeline to move products through from production to market. The ability to mitigate investment risk, while testing product development is key. To provide products to consumers in a way that meets their health needs and responds to their sustainability values requires production and processing systems that enhance health attributes and environmental performance and illustrate regenerative farming and the wellbeing of New Zealand's land, water, climate and living beings.
64. The ability to verify credence claims is key to extracting greater value out of some products. To get products to those willing to pay requires market access and the ability to meet international trade standards. To do all of these things well requires access to good data and information, from the health of natural resources, to effective land-use, to in-market and consumer insights. Extending this data, analysis and evidence and generating market and consumer understood credentials will be vital.
65. Food and fibres value chains take New Zealand products around the world, where consumer expectations about environmental integrity, animal wellbeing, fairness and food safety are accelerating.³⁵ Maintaining a strong New Zealand brand is vital for accessing consumers that value these attributes in key markets around the globe. Appealing to, and reaching, these consumers is particularly important given the significant uncertainty due to COVID-19.³⁶ Initiatives like the Te Taiao framework, with its strong focus on Mātauranga Māori and a relationship of respect and reciprocity with the natural world, provide a way for New Zealand's food and fibres producers to progress

³³ Lincoln University. (December 2018). *The New Zealand Food and Fibre Sector: A Situational Analysis, Agribusiness and Economics Research Unit*. Page 18.

³⁴ Lincoln University. (December 2018). *The New Zealand Food and Fibre Sector: A Situational Analysis, Agribusiness and Economics Research Unit*. Page 31.

³⁵ Te Taiao Working Group – Primary Sector Council. (2020). *Taiao Ora Tangata Ora – The Natural World and Our People are Healthy, A new way forward for Aotearoa New Zealand's food and fibres sector*. Page 22.

³⁶ KPMG. (2020). *The 'now normal' future – Food and fibre in a world emerging from Covid-19*. Page 5.

regenerative farming practices, illustrate their commitment to this, and be rewarded in the market through greater value and a New Zealand-specific point of difference.

66. Increased credentialing also requires access to higher levels of skill and capability and enhanced processes in businesses and workforces. Firm capability and workforce capability will be developed in parallel.
67. For these premiums to filter increasingly through the supply chain to producers and processors will require some significant changes in supply chain dynamics. Premiums are captured at the final consumer purchase point and do not typically filter far through supply chains. E-commerce and other approaches that shorten supply chains or enhance value propositions will also increase value to New Zealand.
68. Premiums dissipate over time to become basic market access requirements, so continuing refinement of product and attributes and evidence story will be required to secure, maintain and enhance any premium values. The Roadmap recognises this challenge and seeks to adjust and align the primary levers available to government – regulations and standards, investment and funding, education and advice.
69. The cross-cutting themes below represent a subset of levers and factors that may act across sectors to support growth in the coming years. It is by no means an exhaustive list of all cross-cutting factors to enable growth – others such as infrastructure development will also play an important cross-cutting role in supporting growth.

Regulatory settings

70. There are a number of regulatory systems that apply to the food and fibres sector. MPI is responsible for six regulatory systems: agriculture, animal welfare, biosecurity, fisheries, food safety and forestry. Regulatory systems enable or incentivise behaviours while managing the cost and risk of that behaviour. Up-to-date, respected, flexible and efficient regulation provides a sound and enabling platform for businesses to operate and for consumer confidence.
71. Behaviours, risk and best regulatory practice evolve over time. Regulatory settings need to be updated over time to ensure they balance desired behaviours and manage risk, while not becoming an unnecessary impediment to innovation and growth. MPI actively exercises its regulatory stewardship role and the health of each system is reassessed every four years. For a small trading country to maintain globally respected regulatory systems, sufficient regulatory certainty for investment and sufficient flexibility and adaptability for innovation and emerging enterprise, while being at the leading edge of consumer confidence, is a difficult and constantly evolving balance.
72. As well as using regulation to incentivise behaviour change, regulation is also used to verify production and processing methods to demonstrate safety, fitness for purpose and value. In this way, regulatory regimes underpin the ability of New Zealand to trade. A stable regulatory framework can also enhance investment certainty, reduce investment risk and ultimately encourage greater domestic and international investment.

Investment

73. While investment is a key driver for business growth, access to capital is an impediment to many businesses in New Zealand. Relatively underdeveloped financial markets make it difficult for innovative firms to attract resources at scale and grow at pace. Business

capital investment in New Zealand is low compared to other OECD countries, and as a result, firms may not have enough options to fund capital expenditure.³⁷

74. Without further incentives and action to support additional investment, some new and emerging products and sectors from New Zealand's food and fibres sector are unlikely to be viable or scalable. New Zealand's economy is predominantly made up of small to medium-sized businesses, where risk appetite is typically low.³⁸
75. The Government's Economic Plan has identified the need for further deepening pools of capital and has a number of actions underway that will address some capital pools issues but not those particular to primary industries and the SMEs within these sectors.³⁹
76. Investment in innovation is vital for productivity growth. Innovative firms experience faster growth in employment and output and a better chance of survival than firms that do not innovate.⁴⁰ To innovate, firms need to invest in research and development (R&D), retrain employees and promote new products to customers. Innovation is high-cost and high-risk and has uncertain impacts on firm performance. By international standards, New Zealand firms invest relatively little and perform poorly in commercialisation.⁴¹
77. While investment in R&D by New Zealand's food and fibres sector is growing, it still represents a small proportion of investment in R&D by New Zealand's business sector. In 2018, business sector spending on R&D totalled \$21.5 billion – of which the food and fibres sector spent approximately \$100 million (approximately 4.6 percent of overall spend).⁴²
78. Government investment in research, science and innovation in Budget 2020 of \$400 million over four years is intended to continue the use of the science system as a key component of New Zealand's recovery. Almost \$200 million is invested in CRIs and a further \$150 million will be available as a loan scheme to bolster research and development.⁴³
79. Investment in science and the equipment, other infrastructure and standards required to test an idea or product is expensive. In addition, for many innovators, transitioning from making and selling a small amount of product from a privately accessed facility to scale, is challenging.
80. The experience of MPI's Sustainable Food and Fibre Futures (SFF Futures) programme suggests that targeted government co-investment with industry can deliver a significant

³⁷ New Zealand Productivity Commission. (2020). *New Zealand firms: Reaching for the frontier*. Retrieved from: https://www.productivity.govt.nz/assets/Documents/990a36d674/Issues-paper_New-Zealand-firms.pdf

³⁸ Ministry of Business, Innovation and Employment. (2019). *Economic Plan: for a productive, sustainable and inclusive economy*. Retrieved from <https://www.mbie.govt.nz/assets/economic-plan.pdf>

³⁹ Ministry of Business, Innovation and Employment. (2019). *Economic Plan: for a productive, sustainable and inclusive economy*.

⁴⁰ New Zealand Productivity Commission. (2020).

⁴¹ New Zealand Productivity Commission. (2020).

⁴² Statistics New Zealand (2019). *Business spending on R&D up more than half a billion dollars*. Retrieved from: <https://www.stats.govt.nz/news/business-spending-on-r-and-d-up-more-than-half-a-billion-dollars#:~:text=Business%20sector%20spending%20was%20%242%2C150,up%20%24534%20million%20from%202016.>

⁴³ Ministry of Business, Innovation and Employment. (2020). *Budget initiatives*. Retrieved from <https://www.mbie.govt.nz/science-and-technology/science-and-innovation/agencies-policies-and-budget-initiatives/budget-initiatives/>

sustainable lift in export revenue growth. SFF Futures is a co-investment model between government and industry established in October 2018.

81. Building on the success of SFF Futures, MPI will accelerate planned investment to further increase the pace of industry innovation, value growth, and sustainability improvement. This will be enabled by bringing forward \$84 million in SFF Futures funding budgeted in future years.
82. Predecessors to SFF Futures were highly successful in supporting problem-solving and innovation in New Zealand's food and fibres sector. A study completed in 2014 by NZIER determined that, by leveraging private capital, the returns to New Zealand were 32 times the funding invested by government.⁴⁴ Recently completed projects that have been independently evaluated, validate this return on investment and highlight the significant potential the model has to rapidly grow the food and fibres sector.

A proven track record of transformation growth through MPI's innovation funding programmes

83. An independent evaluation of the Clearview Innovations programme⁴⁵ found that the Ballance Agri-Nutrients, the co-investor and lead for the programme, is now making a stronger commitment to innovation in its business than before the programme when its focus was exclusively on selling fertiliser. The evaluation found that products and services developed by the programme support the reduction in fertiliser, e-coli and sediment run-off to waterways.
84. An independent evaluation of the SPATnz programme concluded that overall, the programme has led to a transformational change for the industry. It has brought New Zealand forward as a world leader in mussel hatchery technology and processes, with potential for further step change for the industry. The key success is enhanced performance, consistency and quality of selectively bred mussels. BERL estimated that the SPATnz Programme would enable the creation of between 480 and 1,100 jobs and the addition of \$204 to \$485 million of sales per year to New Zealand's economy by 2026.⁴⁶ The programme has demonstrated the fundamental commercial benefits are above and beyond what was anticipated.⁴⁷
85. Separately, the Transforming Dairy Value Chain (TDVC) programme, supported through MPI co-investment, was established in 2011 by agreement between MPI and partners, DairyNZ and Fonterra and committed \$170 million over seven years to transform the dairy value chain by creating new products, increasing on-farm productivity, reducing environmental impacts, and improving agricultural education. An independent evaluation of the Transforming the Dairy Value Chain programme⁴⁸ found it was a broad and

⁴⁴ NZIER. (2014). *Economic Contribution of PGP: A cost-benefit analysis of potential impacts*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/4622-economic-contribution-of-pgp-a-cost-benefit-analysis-of-potential-impacts>

⁴⁵ Scarlatti & BakerAg. (February 2020). *Evaluation of the Balance Clearview Innovations Primary Growth Partnership Programme*. Retrieved from <https://www.mpi.govt.nz/dmsdocument/40067-clearview-innovations-public-summary-february-2020>

⁴⁶ BERL. (2010). *Scenarios of the wider economic impacts in 2026 of the new generation shellfish industry*.

⁴⁷ Maven Consulting. (June 2020). *SPATnz End of Programme Review*. This report will be published soon on the Ministry for Primary Industries website.

⁴⁸ Barton, B., Campbell, B., MacIntyre, P., Moore, D., & Murphy, S. (November 2019). *Review of the Transforming Dairy Value Chain Primary Growth Partnership*. Retrieved from

complex undertaking with audacious goals. It broke new ground for New Zealand and all parties involved as it demanded a level of collaboration not previously seen across industry, government and academia. The evaluation concluded that it was worth the effort and money with a \$1.86 billion valuation of net benefits.

86. An independent evaluation of the Marbled Grass-fed Beef programme found that overall the programme was successful and worthwhile for all parties involved. During the programme premiums paid to farmers for grass-fed wagyu over prime steer commodity prices ranged from \$0.80 to \$1.22 per kg throughout the life of the programme.⁴⁹
87. Since the launch of SFF Futures in 2018, MPI has received 175 applications seeking \$256 million in funding. Sixty-eight projects have been approved at \$39.5 million in total funding. Another 52 applications are currently undergoing assessment.
88. SFF Futures has revealed new opportunities in companies and sectors that have not traditionally applied for government funding. New and emerging sectors that MPI is seeing significant opportunities and interest in SFF Futures include seaweed, aquaculture, wool, hemp, and other new fibres, innovative new plant proteins, and nutraceuticals. These emerging sectors each have the potential to become a \$1 billion industry, and SFF Futures can support them to reach this potential faster.
89. SFF Futures will continue to work proactively with the food and fibres sector to jointly develop new high impact, outcome-focused programmes. Programmes will be designed to drive an uplift in the value and productivity of the food and fibres sector that will be sustained over the long-term and will be jointly funded by SFF Futures and sector members.

Increasing workforce capability and skills settings

90. The food and fibres sector's workforce needs are expected to expand over the next decade. With increased workforce needs, significantly constrained access to migrant workforces for specialist and seasonal labour needs while border restrictions remain in place, attracting and retaining New Zealanders will be critical for producers and processors to succeed.
91. Although the impact of COVID-19 has driven unemployment to very high rates by historic standards, employers will need to showcase the range of work and career opportunities available, and improve training and career pathways to attract new workers into the food and fibres sector.
92. Food and fibres producers and processors also need greater access to skills and leading-edge expertise to transform over the coming decade. There currently are insufficient people with the necessary higher order skills and expertise to add value to primary production processes and increase both sustainability and productivity. As sectors move to meeting consumers' fast-evolving needs and preferences, and rapidly adopt more innovation and utilise more technology, New Zealand will need higher skills

<https://www.mpi.govt.nz/dmsdocument/40124-transforming-dairy-value-chain-pgp-review-final-public-12-nov-2019-pdf>

⁴⁹ Nimmo-Bell & Associates: A Division of the Prime Group. (May 2020). *Evaluation of the Marbled Grass-fed Beef Programme: Final Report*. This report will be published soon on the Ministry for Primary Industries website.

and capability across the value chain and will need this knowledge to quickly diffuse across sectors and businesses.

93. Whilst a range of skills are needed, including higher skills in engineering, science, and management, tertiary graduates in agriculture, environmental and related studies remain important because they develop specialised skills and farm systems knowledge within a New Zealand context. However, the number of learners studying agriculture and horticulture has declined from 67,362 in 2013 to 45,557 in 2018.⁵⁰ In addition, the three-year retention rate of new entrants in the primary industries, at 29 percent, is slightly below the New Zealand average of 34 percent.⁵¹ This reinforces the need to improve the attractiveness of the industries to potential workers.
94. Budget 2020 included \$19.3 million over four years to address the food and fibres sector's workforce shortfall with job transition support and improved public information. This aims to promote career paths and support the employment of more New Zealanders into these jobs over the next four years by funding marketing and media campaigns, skills courses, and a skills and employment dataset to model workforce supply and demand. In addition to this funding, the Forest and Wood Processing Workforce Action Plan and the Food and Fibre Workforce Action Plan look to retain and attract people into long term forestry careers and remove barriers to people looking at careers in the sector.
95. A key reform programme is underway of the vocational education system which will make vocational education more responsive to the future needs of the sector. This reform programme seeks to bring a stronger focus to delivering the skills employers need to help their businesses thrive and grow.
96. The Roadmap seeks to employ 10,000 more New Zealanders in food and fibres sector jobs over the next four years. However, there are challenges in attracting and retaining people to work in the sector. These challenges range from information gaps and perception issues, including workplace conditions, education not being universally fit for purpose, accessible or backed by industry, and difficulties in upskilling and developing transferrable skills, keeping pace with changes in technology, and the seasonal nature of employment.

Addressing trade barriers and enhancing market access

97. The Roadmap scenario identifies that actions to remove trade barriers have the potential to provide a significant boost to the overall value of the food and fibres sector. Trade-related distortions to food and fibres sector exports cost New Zealand an estimated \$10 to \$15 billion per year pre-COVID-19, including through non-tariff measures (particularly for dairy and meat products), tariffs, and the significant volumes of domestic subsidies available to international competitors.⁵² The benefits of addressing trade barriers are particularly significant for industries that are major export earners, such as dairy and forestry.
98. In the post-COVID-19 world, it has become even more important to not only remove trade barriers, but also continue to open new trade opportunities, and reduce the costs imposed on the food and fibres sector by non-tariff barriers and pre-existing distortions.

⁵⁰ Horticulture New Zealand. (2019). *Skilled job creation crisis*. Retrieved from:

<https://www.hortnz.co.nz/news-events-and-media/mikes-blog/skilled-job-creation-crisis/>

⁵¹ Primary Industries Workforce. (2019). *Ministry for Primary Industries*. Retrieved from

<https://www.mpi.govt.nz/dmsdocument/29273/send>

⁵² Ministry for Primary Industries. (2020). *Fit for a Better World Roadmap*. Page 7.

99. The Roadmap will prioritise work to reduce distortions, including by delivering high quality free trade agreements (FTAs) with the UK and EU (currently under negotiation). These will potentially unlock new commercially meaningful access for the primary sectors by addressing tariff barriers into these two high value markets. In addition, in the medium-term New Zealand is working towards FTA negotiations with economies such as India – one of the fastest growing economies in the world.⁵³
100. Another key objective is improved implementation of existing FTAs including Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), in a manner that enhances opportunities for the food and fibres sector. This includes ensuring exporters have the tools and information they need to access tariff reductions that New Zealand has already negotiated and secured.
101. Through leveraging New Zealand's robust food safety and biosecurity regulatory systems and trusted international relationships, MPI, working with the Ministry for Foreign Affairs and Trade (MFAT) and industry, has been able to provide New Zealand's primary sectors with favourable access to many international markets, providing access to billions more potential customers. This favourable access has held off the imposition of a number of costly processing requirements. These costs are measured not just in capital expenditure and operational dollars, but also in the energy emissions and other environmental outcomes.
102. While current access is favourable, there is an ongoing need to maintain and improve the access, both to existing markets, and for new products, to new markets. The aim is not just to provide access but to provide commercial certainty, to minimise unnecessary compliance costs, to create the opportunity for innovation and to encourage the confidence to invest.
103. Investment in relationships is a key component in achieving the Government's objectives in its trade strategy for recovering from COVID-19. This includes providing exporters with access to a wide range of markets and reinforcing New Zealand's need for a functioning rules-based trading system. Alongside this, New Zealand is expanding and developing the network of regional and bilateral FTA's and pursuing leadership roles and active participation opportunities in international standards setting bodies.

Examples of recent market access successes include:

104. **Recognition of New Zealand's regulatory outcomes (equivalence):** MPI will continue to seek recognition of equivalence of biosecurity and food safety regulatory outcomes with trading partners, eliminating the need to replicate the many and varied requirements of export markets.⁵⁴ Such arrangements offer significant savings – not only through reduced complexity and compliance cost, but also through providing more certainty of ongoing access. This environment allows exporters greater confidence in the market, encouraging more investment and growth.
105. **Halal products:** Global Muslim spend on food is estimated at \$1.37 trillion in 2018, growing at 5.1 percent from 2017. Spend is forecast to grow by 6.3 percent per year to

⁵³ Ministry of Foreign Affairs and Trade. (2020). *New Zealand-India FTA*. Retrieved from: <https://www.mfat.govt.nz/en/trade/free-trade-agreements/agreements-under-negotiation/india/>

⁵⁴ New Zealand Food Safety Authority. (2010). *NZFSA Policy Statement on Food Safety Equivalence*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/23113-policy-statement-food-safety-equivalence>

reach \$2.0 trillion by 2024.⁵⁵ New Zealand is well positioned to supply this growing market, and to have MPI's export halal controls and export certification system formally recognised.

106. **Biosecurity controls for response:** MPI will continue to develop and implement arrangements with counterparts that pre-agree rules for trade in the event of a biosecurity response.⁵⁶ Existing agreements which recognise the ability to effectively control incursions, including the EU Veterinary agreement and pre-agreed fruit fly management zones allow trade to continue and / or resume more quickly in the event of an incursion. MPI Market Access will continue to build on the zoning agreement for animal diseases with Australian, Canadian and US counterparts, which will potentially facilitate a return to trade should a devastating animal disease such as foot-and-mouth occur.

Water storage

107. Water security is an increasing problem as the prevalence of droughts and inconsistent water availability creates concern across food and fibre sectors. A lack of reliability in water supply impacts negatively on the ability of businesses to plan effectively, while uncertainty around water security also serves as a barrier to diversification around alternative land uses that could reduce environmental footprints and reduce risks to weather, pest, and market events. At a sector level, a lack of water storage and security can result in animal welfare issues, business failure, disrupted supply chains, and higher prices for consumers.
108. The primary benefit of investment in improving water security through appropriately scaled water storage is more reliable water supplies (than would otherwise be provided naturally). This creates opportunities for producers to access higher value land-use options, product supply chains, and increase employment. This will also build community resilience to climate pressures and increases water allocation and distribution efficiency to maximise the benefits of reliable water to all.
109. A study by NZIER⁵⁷ estimated that on average, a hectare (ha) of irrigation supports approximately \$7,900 of revenue compared to its best non-irrigated alternative use. This is largely because much of the horticulture in drier areas of New Zealand would not exist. The impacts of water storage are particularly significant for dairy, horticulture, and sheep and beef farming.⁵⁸
110. Fit for a Better World estimates that small scale water storage has the potential to increase export earnings by \$500 million over the next decade – with this value attributed across the horticulture, dairy, and meat and wool sectors. Achieving this requires many of the other initiatives in the Fit for a Better World being realised – such as enabling land use to move to higher value horticulture, investment and the imposition of environmental limits, and improving the reliability and sustainability of pasture production in parts of

⁵⁵ Dinar Standard. (2020). *State of the Global Islamic Economy Report – 2019/20*.

⁵⁶ Ministry for Primary Industries. (2018). *The New Zealand Government Biosecurity Response Guide*. Retrieved from <https://www.mpi.govt.nz/dmsdocument/31917/direct>

⁵⁷ NZIER and AgFirst Consultants NZ Ltd. (2014). *Value of irrigation in New Zealand: An economy-wide assessment*. Retrieved from: <https://www.mpi.govt.nz/dmsdocument/5014/send>

⁵⁸ NZIER and AgFirst Consultants NZ Ltd. (2014). *Value of irrigation in New Zealand: An economy-wide assessment*.

New Zealand subject to more frequent droughts which also meets supply chain requirements for consistently high quality and timely product.

111. Alongside irrigation, and depending on the location and availability of water to store, storage can provide water for many other uses – stock water, so that animals can survive in dry conditions without needing access to waterways; creation of wetlands and aquifer recharge systems to assist water quality improvements and habitat; and rural community water supply to improve resilience and share the costs with productive uses.
112. If water storage is part of a wider catchment-based water and land management strategy, the following are also possible:
 - a. Effective and efficient regulation of land and water use to limits
 - b. Confidence provided to market in the authenticity of environmental, cultural and social claims
 - c. Trust and social licence of wider catchment community and mana whenua
 - d. Confident, empowered and responsible farmers and water users
 - e. Durable and flexible land and water management systems
 - f. Efficient and effective self-supporting funding system; and
 - g. Resilience and flexibility to durably manage the impacts of climate change.
113. The Government has invested \$134 million over the last two years in water storage initiatives. From 2006 to 2018, \$53 million was spent on water infrastructure investigations, design and sourcing capital via the Community Irrigation Fund and the subsequent Irrigation Acceleration Fund.
114. Building on progress to date, the Roadmap includes a focus on developing small scale water storage solutions to give farmers access to higher value land use options, product supply chains, and higher employment. This work will include ensuring that regulatory settings support investment. Improved water storage and security is key to business and community resilience as it enables farmers and growers to diversify and reduces exposure to drought and climate change events.

The Roadmap's initiatives: sector-specific

116. The following pages provide a series of illustrative examples of the Roadmap's initiatives from within specific key sectors and document their potential to contribute towards achieving the export target through specific initiatives – for example, the potential for commercialisation of new crops, plant varieties and products to accelerate growth within horticulture.

Horticulture

117. **\$2.6 billion in additional horticulture export revenue is targeted to be achieved**, driven primarily by investment in innovation leading to the development of new products and varieties.

Historical Trends

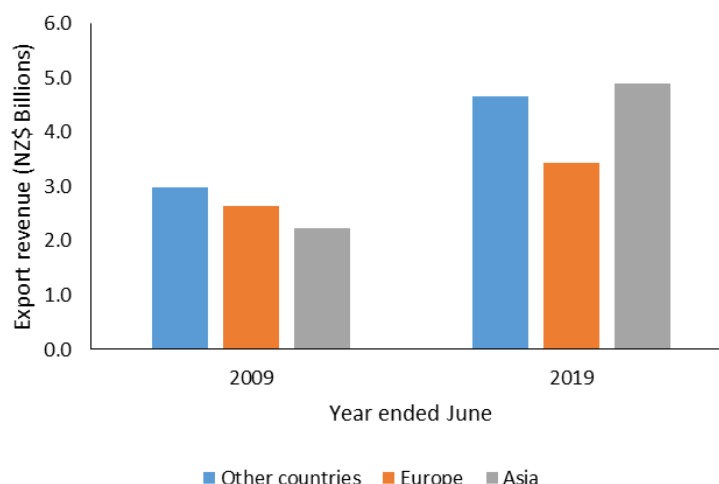
118. Horticulture and viticulture exports have grown from \$3.3 billion in 2009 to \$6.1 billion in 2019 thanks to increasing international demand for high-quality fruit and vegetables, and investment in new varieties aligned to consumer preferences.⁵⁹
119. The horticulture sector has been highly responsive to consumer demands, focusing on growing better-tasting produce with longer shelf-life. New cultivars of fruit developed in New Zealand in recent years are attracting export price premiums over older varieties. In 2019, the 'Envy' apple variety, developed in 2008, averaged \$3.62 per kg, 65 percent higher than the average apple price of \$2.20. Similarly, the export price of the Gold3 cultivar of Kiwifruit was \$5.25, compared with \$3.32 for the traditional Haywards green variety, and has been fundamental to the sector's recovery from the effects of the PSA disease since 2012.
120. The release of new potato and berry varieties from Plant and Food Research has diversified these product groups, improving yields and increasing the value of these sectors. Wine has led the way in the production of Sauvignon Blanc, and the sector is now altering winemaking techniques to produce lighter wines for consumers.
121. Horticulture is a rapidly growing share of the Māori economy. While only 2.9 percent of total horticultural land is in Māori-owned farms,⁶⁰ around 9 percent of kiwifruit land is owned by Māori entities.⁶¹ There are further opportunities to enable and expand Māori owned horticultural operations.
122. Favourable tariffs and strong relationships with trading partners have enabled growth of the horticulture sector. There has been a focus on market diversification, with the Asian market emerging as a major player in the last ten years.
123. The sector has also started to generate significant income from growing licensed varieties overseas. Apples and Pears New Zealand and Zespri (kiwifruit) work alongside foreign industries at a domestic level to grow New Zealand-licensed fruit offshore. This ensures New Zealand exporters can hold year-round shelf space in major supermarket chains in key markets.

⁵⁹ Ministry for Primary Industries. (2019). *Situation and Outlook Report – September 2019*. Page 6.

⁶⁰ Statistics New Zealand. (2019). *Taturanga umanga Māori: 2019*.

⁶¹ BERL. (2020). *Māori in Horticulture Report*. Retrieved from:
https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12343004

Figure 3: Horticulture export revenue (year ended June 2009 and 2019)



Statistics New Zealand Overseas Merchandise Trade

Baseline projection

124. The baseline projection is for horticulture export revenue to increase 2.9 percent annually from \$6.1 billion in 2019 to \$8.4 billion in 2030. In the baseline projection, horticulture exports are expected to grow in both volume and value, particularly for higher value varieties such as gold kiwifruit.

- a. The expansion of kiwifruit and apples is expected to continue, driven by expansion in plantings of highly profitable varieties, such as gold kiwifruit and dazzle apples. This is expected to continue at a moderate pace in the baseline, for example with Zespri's recent commercialisation of red kiwifruit.
- b. Wine production volumes are expected to grow more moderately, with opportunities for planting expansion in New Zealand's key export-orientated growing area, Marlborough, increasingly limited. Sector export revenue growth will be driven by targeting increased premiums through niche varieties, new wine styles and wines from other growing regions.
- c. Increasing market diversification for onions, potatoes and avocados will see these sectors grow in value.
- d. Smaller crops such as berries and cherries are expected to continue expanding, as they have in recent years.
- e. New Zealand's organic exports have increased 42 percent since 2015 to approximately \$355 million.⁶² The subset of these exports that fall under MPI's Official Organic Assurance Programme increased on average 12 percent per annum in the five years to 2019. This strong growth trend is expected to continue. If passed into law, an explicit purpose of the Organic

⁶² Organics Aotearoa New Zealand. (2018). *2018 New Zealand Organic Sector Market Report*. Page 5. Retrieved from https://nzkgi.org.nz/wp-content/uploads/2018/07/OANZ_Market-Report_2018_F.pdf

Products Bill currently before Parliament is to facilitate international trade in organics.

125. Consumers are increasingly looking to plant-based foods. Investments in innovation, diversification and market access will support the baseline projection.

Barriers to growth and how these can be addressed

126. Supporting sustainable growth from New Zealand's horticulture sector requires consideration of potential barriers to growth, as well as identification of potential levers available to addressing these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 5: Potential barriers to growth and levers – Horticulture

Potential barriers to growth	Levers available to addressing these barriers
Capital constraints to cultivar and new product development Growth of kiwifruit and apple export values has previously come on the back of new product development as well as investments in plant breeding (e.g. Zespri's Sungold kiwifruit earned \$1.3 billion in 2019), as well as development of new products). Other smaller horticulture sectors, like feijoas, persimmons, and berries, also have enormous potential to grow, yet often lack the resources to invest in such programmes. Commercial investors shy away from these types of investments because of higher risk of failure and free-rider problems. Accessing new cultivars also requires a current import health standard, and post-entry quarantine (PEQ) facilities – however, current capacity constraints of this system presents a barrier to accessing new cultivars.	Accelerated SFF Futures funding under 'Fit for a Better World' supports such opportunities by de-risking investment and creating scale of investment. Measures could include assisting with feasibility studies, collecting and evaluating overseas germplasm, assisting with establishing new breeding programmes (seed funding), and provide funding support for accelerating existing programmes. In order to address system capacity constraints, Budget 2020 has allocated funding for the development of import health standards and temporary PEQ facility extension. This will see new interim Level 3B Post Entry Quarantine (PEQ) greenhouse units providing secure containment for new imported plant varieties and breeding material. This will enable the introduction of imported plant material for the horticulture sector to develop new and innovative high-value crops and cultivars. A business case is under development for a new permanent PEQ facility.
Lack of labour and skills Availability of seasonal labour is a critical input for the sector, particularly for the larger export-based fruit industries like kiwifruit, apples and summer fruit. The sector needs more New Zealanders to enter clear career progression pathways along the supply chain.	The migrant workforce, particularly from the Recognised Seasonal Employer (RSE) scheme, is vital to the growth of the horticulture sector. However, border closures due to COVID-19 have highlighted the need to attract, train and retain more New Zealanders in horticulture jobs, and invest more in automation. MPI received \$19.3 million in Budget 2020 and \$6 million from the Government's

In 2014, MPI⁶³ projected that, to deliver on the horticulture sector's growth projections, employment in the sector will need to increase by 7,800, from 36,300 in 2012 to 44,100 in 2025. Most of this increase (5,800) is expected to occur on-farm, with sales and marketing and management also increasing. In 2014, MPI also projected that the industry needed to train an additional 26,300 workers over the next 13 years to replace the natural attrition of workers. Orchard ownership succession⁶⁴ is another area of concern as orchard values are increasingly becoming an entry barrier.	Redeployment Package for its Primary Sector Workforce Programme to place 10,000 people into jobs in the food and fibres sector. MPI is working closely with industry bodies, and relevant government agencies to deliver this.
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Roadmap scenario

127. The Roadmap has the potential to increase annual export growth to 5.5 percent per annum by unlocking an additional \$2.6 billion in annual export revenue by 2030. It is estimated that, of this growth, approximately:⁶⁵

- a. \$1.2 billion in further export revenue could come from accelerating new product development initiatives to commercialise new crops and varieties. Improvements to plant import systems and biosecurity facilities for importing new plant materials, including the Plant Health and Environment Lab (PHEL), can also facilitate the import of new plant genetic material for cultivation and commercialisation by New Zealand businesses
- b. \$100 million could be generated by leveraging New Zealand's international reputation as a trusted source of safe and healthy products to capture increased market premiums from credence claims across the horticulture sector
- c. \$200 to 400 million could be generated from expanding the Māori Agribusiness Extension Programme and other tools to support increased productivity and sustainability of whenua Māori, including the potential to diversify land-use and enable Māori landowners to move to higher-value horticultural crops
- d. \$300 million could be unlocked from the horticulture sector through the delivery of small-scale water-storage solutions. These solutions could assist in drought risk mitigation and incentivise investment in land-use change to high-value horticultural crops
- e. \$600 million could be generated from improved market access and addressing non-tariff trade barriers for horticulture.

⁶³ Ministry for Primary Industries. (2014). *Future capability needs for the primary industries in New Zealand*. Page 7. Retrieved from <https://www.mpi.govt.nz/dmsdocument/3893/direct>

⁶⁴ Ministry for Primary Industries. (2014). *Future capability needs for the primary industries in New Zealand*. Page 7.

⁶⁵ Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.

128. If all components of the Roadmap are successfully implemented, the potential export revenue from the horticulture sector could reach \$11.0 billion by 2030.

Table 6: Indicative summary of export revenue – Horticulture

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Horticulture	3,333	6,111	+6.2%	Baseline	8,400	2.9%
				Additional potential	+2,600	+2.6%
				Roadmap	11,000	5.5%

Seafood

129. **\$2.2 billion in additional seafood export revenue is targeted to be achieved**, driven primarily by accelerating the Government's aquaculture strategy outcomes, which capitalises on the existing opportunities for sustainable growth, especially in open ocean aquaculture.

Historical trends

130. Wild capture export volumes have fluctuated from year-to-year, but over the past 10 years have remained within a narrow range of 235 to 270 thousand tonnes.⁶⁶ This is largely a function of the Quota Management System (QMS) operating as intended to ensure fisheries stocks can be harvested sustainably. Much of the fluctuation arises from natural population dynamics in some fisheries, as well as market conditions driving increases and decreases in fishing effort.
131. Fisheries New Zealand manages commercial fisheries (388 species, species complexes, stocks or sub-stocks) through the QMS and the majority of fish stocks are performing well. Wild capture harvest levels are constrained by annual harvest limits for all quota managed species. Wild capture prices have increased 2.6 percent on average over the past 10 years, in line with inflation and moderate upward price pressure.⁶⁷ Globally, demand has outweighed supply, as supply is constrained by sustainability and environmental factors.
132. Aquaculture export revenue has grown by an average of 4.1 percent over the last 10 years.⁶⁸ Globally, aquaculture production is growing at a much greater rate than wild capture fisheries. Since 2016, aquaculture has been the main source of fish available for human consumption globally.
133. In New Zealand, aquaculture export volumes have remained relatively stable for the past 10 years, but prices have increased steadily over that time. In 2010 the sector achieved \$250 million in export revenue from 42 thousand tonnes of product, while in 2019 it achieved \$454 million from 39 thousand tonnes of export products.⁶⁹

Baseline projection

134. The baseline projection is for seafood export revenue to increase 2.9 percent per annum from \$2.0 billion in 2019 to \$2.7 billion in 2030. Aquaculture exports are expected to grow twice as fast as wild capture. Wild capture volumes are expected to remain near current levels as the fisheries continue to be managed sustainably.

Wild fisheries

135. Government initiatives to encourage good fishing practices and increasing the value of fisheries by encouraging innovation will provide opportunities for increasing revenue. These include:
- a. New monitoring and management practices in wild capture fisheries, such as electronic catch and position reporting of all commercial fishing, and on-board

⁶⁶ Ministry for Primary Industries. (2019). *Situation and Outlook for Primary Industries – September 2019*. Page 5. Retrieved from <https://www.mpi.govt.nz/dmsdocument/37074/direct>

⁶⁷ Statistics New Zealand Overseas Merchandise Trade.

⁶⁸ Statistics New Zealand Overseas Merchandise Trade.

⁶⁹ Statistics New Zealand Overseas Merchandise Trade.

cameras to verify fisher reporting of catch and interactions with protected species.

- b. Advances are also being made with new innovative fishing technologies and methods, which have the potential to improve the quality of harvested fish and reduce adverse impacts on incidentally caught fish, protected species and the environment. This includes the jointly developed MPI and industry 'Tiaki' modular harvesting and fish handling system, which reduce damage to fish and produce higher quality seafood. This can open new markets and opportunities for delivery of higher quality seafood to consumers.
- c. Improving value from seafood by-products, such as hoki fish skins, originally used for fish meal and pet food, are now being used to create high-tech fibres. New Zealand companies have created a high-tech nanofibre face mask and are looking to also provide topical medicines derived from by-products. Because the hoki skins are natural, sustainable, ethically-sourced and made in New Zealand, these products are attractive in overseas markets like China.

Aquaculture

136. In the aquaculture sector, pre-COVID-19 growth put the sector on track to reach \$1 billion in sales by 2025. A strong innovation programme and co-investment between government and industry have been key to this growth expectation.
137. The potential growth and export earnings opportunities for certain new aquaculture enterprises, such as open ocean aquaculture for finfish (e.g. salmon), could be substantial. A recently commissioned business case assessing the potential of open ocean aquaculture in New Zealand outlined this sector's potential to add \$8 billion in export revenue over the next 30 years, with the potential for 58,300 jobs once the sector is operating at full capacity.⁷⁰
138. The Government's Aquaculture Strategy, released in 2019, sets a goal of \$3 billion in aquaculture sales by 2035.⁷¹ Open ocean salmon aquaculture could become a \$2 billion industry alone by 2049.⁷² This growth aspiration is based on maximising the value of existing farms through research innovation, extending aquaculture into high-value land-based aquaculture and open ocean farming. Key areas identified for government action include:
- a. Promoting and ensuring sustainability to maintain New Zealand's reputation for high quality and safe aquaculture products;
 - b. Supporting the sector's extension into the open ocean and on land, which are transformational growth opportunities. Particular opportunities are high value finfish for open ocean aquaculture and land-based algae production. The Aquaculture Strategy's priorities to develop world-leading frameworks to

⁷⁰ EnviroStrat (prepared for New Zealand Trade and Enterprise). (2020). *Open Ocean Finfish Aquaculture: Business Case – February 2020*. Page 6. Retrieved from: <https://www.biosecurity.govt.nz/dmsdocument/40778/direct>

⁷¹ New Zealand Government. (2019). *Aquaculture Strategy*. Page 8. Retrieved from <https://www.mpi.govt.nz/dmsdocument/15895-the-governments-aquaculture-strategy-to-2025>

⁷² EnviroStrat (prepared for New Zealand Trade and Enterprise). (2020). *Open Ocean Finfish Aquaculture: Business Case – February 2020*

support and manage land based and open-ocean growth are key to unlocking this opportunity.

139. The Government and aquaculture sector continue to partner on innovation and research to promote value growth, sustainability, and resilience. An example is increasing the industry's capacity to produce juvenile oysters, mussels and salmon in designated hatcheries. For example, roll-out of hatchery-reared mussel spat could realise productivity gains of 40 to 80 percent across the sector.⁷³

Barriers to growth and how these can be addressed

140. Supporting sustainable growth from New Zealand seafood requires careful consideration of the potential barriers to growth, as well as identification of potential levers available to addressing these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 7: Potential barriers to growth and levers – Seafood

Potential barriers to growth	Levers available to addressing these barriers
Verifying credence claims Better fisheries information and verification has the potential to improve customer trust, enhance market access, and increase the potential value of New Zealand seafood products.⁷⁴ Expanding the on-board camera programme will help provide an efficient and effective approach to improving information and verification.	The government has provided a legislative framework to enable credence claims to be verified and support the sector's implementation and transition. Providing a framework for verifying credence claims can position the New Zealand seafood sector to capture any potential additional value or product premiums from verifiable credence claims.
Enabling infrastructure and investment in critical physical infrastructure Aquaculture is an emerging industry that has the potential to rapidly develop. However, physical and legislative infrastructure is required to unlock this growth. This includes critical physical infrastructure, such as wharves. Legislative infrastructure Growth in aquaculture requires a regulatory framework that ensures sustainable practices, delivers on iwi aspirations and promotes investment certainty. This is particularly crucial for the emerging and	The government can partner with the sector to invest in key physical infrastructure. Investment of more than \$140 million has already occurred via the PGF into aquaculture projects, including critical infrastructure such as wharves, processing facilities farming operations and for new species (kingfish and algae). Further investment in growth supporting infrastructure is well-mapped and existing government investment programmes can be applied to the next opportunities. The government is reviewing existing regulatory settings as they relate to open ocean aquaculture to ensure they are best set to support sustainable aquaculture development. Review and reform of the Resource Management Act also offers opportunity to improve the regulatory

⁷³ New Zealand Government. (2019). *Aquaculture Strategy*. Page 15. Retrieved from <https://www.mpi.govt.nz/dmsdocument/15895-the-governments-aquaculture-strategy-to-2025>

⁷⁴ A Van Helmond et al. (2019). *Electronic monitoring in fisheries: Lessons from global experiences and future opportunities*. Retrieved from: <https://onlinelibrary.wiley.com/doi/full/10.1111/faf.12425>

significant opportunity of open ocean aquaculture.	framework for existing aquaculture activities.
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Roadmap scenario

141. The Roadmap has the potential to build upon and accelerate current efforts to improve the value of fisheries and aquaculture, and position New Zealand as a world-leading source of sustainable, trusted and high-value products.
142. Aquaculture exports are expected to grow twice as fast as wild capture. In the aquaculture sector, pre-COVID-19 growth put the industry on track to reach \$1 billion in sales by 2025.⁷⁵ A strong innovation programme and co-investment between government and sector has been key to this growth expectation. Wild capture volumes are expected to remain near current levels as the fisheries continue to be managed sustainably.
143. New monitoring and management practices in wild capture fisheries could support innovation and better environmental performance, supporting the potential to develop higher value seafood products. These practices include electronic catch and position reporting of all commercial fishing,⁷⁶ and on-board cameras to verify fisher reporting of catch and protected species.⁷⁷ Advances are also being made with new innovative fishing technologies and methods, which have the potential to improve the quality of harvested fish and better target selected fish, protected species and the wider marine environment. This could open new markets and opportunities for delivery of higher quality seafood to consumers.
144. Opportunities in the aquaculture space include producing high-value finfish through open ocean aquaculture, algae through land-based production, and increasing the industry's capacity to produce juvenile oysters, mussels and salmon in designated hatcheries. Investment in wharf and hatchery infrastructure could enable the roll-out of hatchery-reared mussel spat that could realise productivity gains of 40 to 80 percent across the sector.
145. There is the potential to increase export growth to 8.7 percent per annum by unlocking an additional \$2.2 billion in annual export revenue by 2030 from the seafood sector. It is estimated that, of this growth, approximately:⁷⁸
- a. \$2.0 billion could come from accelerating the aquaculture strategy's outcomes to bring forward benefits, of which:
 - i. \$1.4 billion from the development and commercialisation of open ocean aquaculture

⁷⁵ New Zealand Government. (2019). *Aquaculture Strategy*. Page 5. Retrieved from

<https://www.mpi.govt.nz/dmsdocument/15895-the-governments-aquaculture-strategy-to-2025>

⁷⁶ Ministry for Primary Industries. (2020). *Electronic catch and position reporting*. Retrieved from:

<https://www.fisheries.govt.nz/protection-and-response/sustainable-fisheries/strengthening-fisheries-management/fisheries-change-programme/electronic-catch-and-position-reporting/>

⁷⁷ Ministry for Primary Industries. (2020). *Digital monitoring of commercial fishing*. Retrieved from:

<https://www.fisheries.govt.nz/protection-and-response/sustainable-fisheries/strengthening-fisheries-management/fisheries-change-programme/digital-monitoring-of-commercial-fishing/>

⁷⁸ Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.

- ii. \$600 million from projects supporting existing aquaculture systems, including securing reliable mussel spat and juvenile salmon supplies, farm trials for innovative products such as seaweed, and physical infrastructure development to unlock known consented growth.
- b. \$100 million could come from improved market access, addressing non-tariff barriers, lowering tariffs through trade agreements, and reducing trade-distorting measures
- a. \$100 million as exporters are increasingly able to capture market premiums, based on demonstrating and promoting New Zealand's sustainable fishery production system and the health and quality attributes of New Zealand seafood.

146. If all components of the Roadmap are successfully implemented, the potential export revenue from the seafood sector could reach \$4.9 billion by 2030.

Table 8: Indicative summary of export revenue – Seafood

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Seafood	1,460	1,963	+3.0%	Baseline	2,700	2.9%
				Additional potential	+2,200	+5.8%
				Roadmap	4,900	8.7%

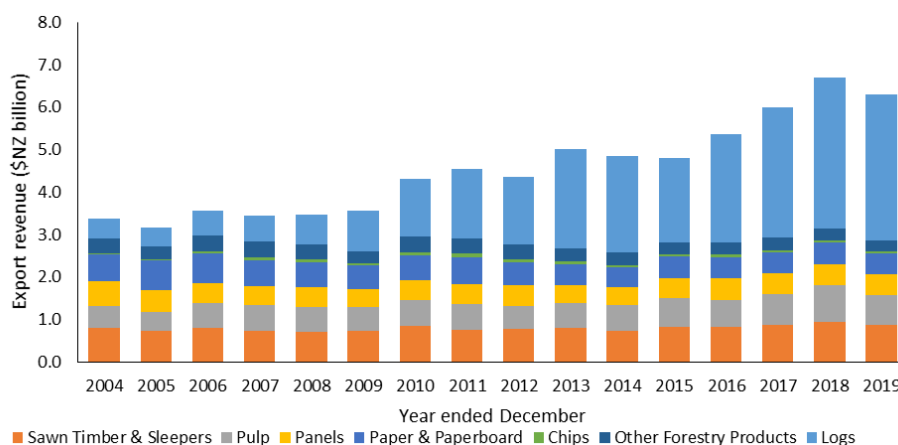
Forestry

147. **\$2.6 billion in additional forestry export revenue could be achieved**, driven primarily by the initiative to transform the forestry sector, which aims to switch New Zealand's export profile away from logs and towards higher-value timber products, as well as improved market access.

Historical growth and baseline projection

148. New Zealand's plantation forest estate covers approximately 1.7 million hectares, with 90 percent of this area being under radiata pine.⁷⁹ The planted area increased rapidly by an average of 42,000 hectares per annum between 1970 and the year 2000 (an overall increase of 280 percent in three decades).⁸⁰ This increase in planted area has enabled New Zealand's forestry sector to sustainably increase harvest volumes three fold since 1990, and for the sector to become a major contributor to export activity.
149. Over the past 20 years New Zealand has been experiencing net deforestation and therefore a reduction in the total amount of forest land. Today, New Zealand's forest estate is around 73,000 ha smaller than in it was in 2000. However, due to programmes such as One Billion Trees and the Emissions Trading Scheme, new forest planting is starting to increase and there was 22,000 ha of new planting in 2019.⁸¹
150. Harvest volumes have increased strongly over the last decade, with the maturing of 1990s plantings, the recovery in the global economy (post GFC) and positive pricing conditions, particularly in the Chinese market. Over this period, the volume of logs going to domestic processing has remained steady. The increased harvest has predominantly gone to export markets, driven by high log prices and strong international demand. Log exports have grown from 24 percent of forestry exports in 2009 to 55 percent in 2019.⁸²

Figure 4: Export share of forestry products to all destinations (2004 to 2019)



Source: Statistics New Zealand Overseas Merchandise Trade statistics

⁷⁹ Ministry for Primary Industries. (2020). *New Zealand's Forests*. Retrieved from <https://www.mpi.govt.nz/growing-and-harvesting/forestry/new-zealand-forests-and-the-forest-industry/new-zealands-forests/>

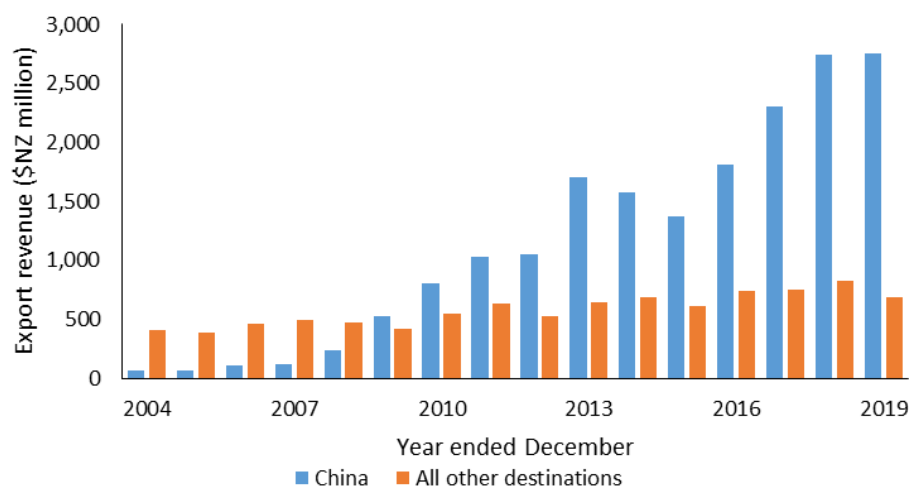
⁸⁰ Te Uru Rākau. (2019). *National Exotic Forest Description 2019*.

⁸¹ For scale, 22,000 ha equates to 0.25% of the total area of sheep and beef land in NZ.

⁸² Ministry for Primary Industries. (2019). *Situation Outlook for Primary Industries – December 2019*. Page 18.

151. China is New Zealand's largest export market for forestry products. In 2019, 80 percent of all logs exported from New Zealand were sent to China.⁸³ The reliance on a single market for a large proportion of log exports makes the sector vulnerable to economic shocks and disruption. The recent volatility in log export prices and China's lockdown highlight this vulnerability. This experience also highlights the potential benefits of increasing domestic processing and diversifying export markets.

Figure 5: Log export revenue by destination (2004 to 2019)



Source: Statistics New Zealand Overseas Merchandise Trade

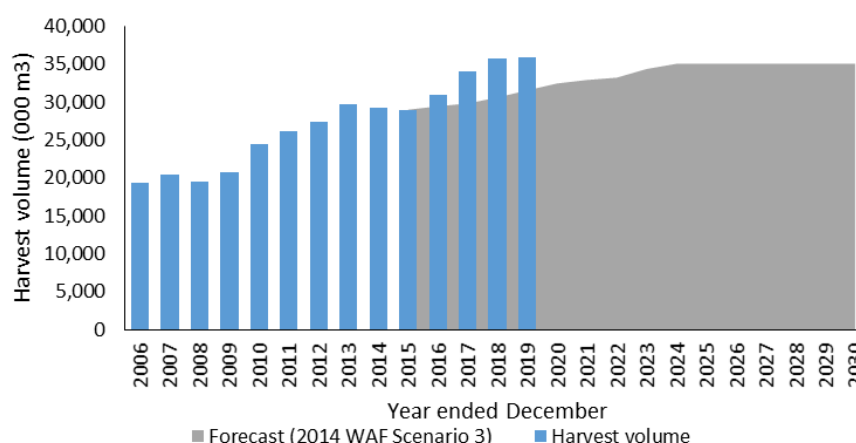
152. The baseline projection is for forestry export revenue to increase 0.8 percent per annum from \$6.9 billion in 2019 to \$7.5 billion in 2030.

153. The potential for further growth in harvest volumes is constrained in the short term: the plantation estate stabilised in the early 2000s, and then experienced a period of net deforestation in the early 2010s.⁸⁴ Recently, improved log prices, coupled with the promotion of forestry by the Government and increased investor interest in carbon forestry, has seen renewed interest in afforestation. This new investment, even if it is in short rotation crops for chip and pulp, will not boost harvest levels until the later 2030s. Increasing value from the forest estate, will therefore rest increasingly on adding value to (or better utilising) the current resource.

⁸³ Ministry for Primary Industries. (2019). *Situation Outlook for Primary Industries – December 2019*. Page 18.

⁸⁴ Te Uru Rākau. (2019). *National Exotic Forest Description 2019*.

Figure 6: Actual and forecast harvest volumes (2006 - 2030)



Source: MPI Wood Availability Forecast 2014 (Retrieved from: <https://www.mpi.govt.nz/dmsdocument/14221-wood-availability-forecasts-new-zealand-2014-2050>)

154. The pace of technological change in the wood processing sector internationally has increased steadily over the past generation. To keep pace with these developments and enable domestic processing to continue to grow requires investment in industry leading technology and upskilling of staff. Processing plants need to be reconfigured to optimise production efficiencies and be of a scale where producers can competitively match the prices of principal competitors.

155. The challenge of rising costs and falling prices in the processing sector has driven a trend towards increased automation and scale of production and seen the restructuring and closure of many medium-sized mills. Alongside the trend towards fewer, larger mills, there are also opportunities to develop new sectors around engineered timber, specialised timber products and the bioeconomy.

Barriers to growth and how these can be addressed

156. Supporting sustainable growth from the forestry sector requires careful consideration of the potential barriers to growth, as well as identification of potential levers available to addressing these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 9: Potential barriers to growth and levers – Forestry

Potential barriers to growth	Levers available to addressing these barriers
The fragmented nature of investment within the forestry sector⁸⁵ A fragmented and siloed approach to investment in the forestry sector has resulted in the lack of a strategic and coordinated approach to investment and lost opportunities to develop assets in a	Through the development of an Industry Transformation Plan, in partnership with the sector, there is an opportunity for government to improve coordination and to drive more strategic investment in the sector. A coordinated regional approach to investment would increase returns on

⁸⁵ Ministry for Primary Industries, Agriculture and Investment Services. (2019). *Cabinet paper: Preparing the forest system for the future*. Retrieved from: <https://www.agriculture.govt.nz/dmsdocument/38234/direct>

way that increases efficiency, innovation and value.	existing forest resources, by reducing costs and supporting more complete use of the log, including waste products. It would improve value capture as a larger wood processing sector would generate more woody biomass (e.g. sawdust, wood chip) for further value-add in downstream industries (e.g. traditional products such as Medium Density Fibreboard and newer products such as wood-based insulation batts). Opportunity also exists in regional clusters for the co-location of processing assets and the development of shared infrastructure (e.g. shared heat plants) that reduce capital cost and increase efficiency.
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Roadmap scenario

157. Transforming New Zealand's forest estate to deliver greater economic and environmental value requires forest species, harvest regimes and locations to:

- be well-matched to land capability and deliver environmental benefits/avoid downstream impacts
- support development of domestic processing, new and higher value products, and use of residuals to make versatile low-carbon products that support New Zealand's transition to a low-emissions, circular bioeconomy.

158. In the next 10 years there is significant opportunity for a further 8.8 million m³ (40 percent of current export logs) to be processed domestically. There is also an opportunity for the recovery and utilisation of approximately 3 million m³ forest residues which are currently left in-forest (and in some regions create issues for downstream infrastructure when mobilised as slash). This is likely to increase with climate change with an anticipated increase in the intensity and frequency of high rainfall events in New Zealand. This increased utilisation has the potential to increase export earnings and regional jobs.

159. Developing an Industry Transformation Plan for Forestry and Wood Processing could for the first time provide industry with a coordinated and evidence-based plan to harness this underlying opportunity.

160. The opportunity is to grow the wood processing sector in New Zealand to support the move towards a low carbon economy, support the growth of regional economies and increase the value of export products. The key opportunities include increasing the production and use of wood-based construction material for both the domestic and export markets, and a focus on those materials where radiata pine can compete internationally, such as cross laminated timber (CLT), glue laminated products, clear wood for appearance grade fittings, treated timber, and wood insulation.

161. Actions which could stimulate the use of wood in the built environment include the development of low carbon construction guidelines,⁸⁶ and a virtual centre for excellence

⁸⁶ Ministry of Business, Innovation and Employment. (2019). *Sustainable Construction – Construction Procurement Guidelines*.

for timber design that assists specifiers, builders and designers use timber in more applications.

162. The development of regional manufacturing clusters that improve the efficiency of wood processing in specific regions will be necessary in order to ensure the New Zealand wood processing sector remains competitive in a globally competitive market. The Industry Transformation Plan will chart a pathway to improving efficiency through co-location of complementary manufacturing facilities.
163. The forestry sector can make a substantial contribution to de-carbonising the economy as well as increasing export revenue. There are opportunities to increase value capture through wood processing in New Zealand, such as generating woody biomass for downstream sectors, thereby reducing emissions from alternate materials and increasing stored carbon in the built environment, and the development of a bioeconomy based on better use of wood residues (3 million m³ pa of in forest residues plus a potential increase of up to 4 million m³ pa from increased domestic processing of logs).
164. Potential exists for New Zealand to explore biocrude oil, a base product that can be made into a wide range of low carbon products including biofuel, bioplastics, biochemical and biomaterials. Further processing of bio-crude can make liquid biofuels that substitute diesel, aviation and marine fuels. Similarly, other technologies can value add woody biomass to replace coal. Some technologies also have the potential to utilise multiple waste streams, i.e. woody residues and municipal waste.
165. The Roadmap has the potential to increase export growth to 3.5 percent per annum by unlocking an additional \$2.6 billion in annual export revenue by 2030 from the forestry sector. It is estimated that, of this growth, approximately:⁸⁷
- a. \$2.5 billion in potential export earnings growth could be enabled by the strategy to transform the forestry sector, including:
 - i. \$2.0 billion from switching 40 percent of current log export volumes to higher value sawn timber, veneer, panel, and pulp product exports, and by developing Regional Manufacturing Clusters that create a more internationally competitive and economically resilient wood products industry.
 - ii. \$500 million generated by the sector converting woody residues to high-value products, such as solid and liquid fuels or wood-based insulation.
 - b. \$100 million could come from improved market access and trade negotiations to address non-tariff barriers and reduce trade-distorting measures in relation to wood products.
166. If all components of the Roadmap are successfully implemented, the potential export revenue from the forestry sector could reach \$10.1 billion by 2030.

⁸⁷ Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.

Table 10: Indicative summary of export revenue – Forestry

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)		2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Forestry	3,615	6,883	+6.7%	Baseline	7,500	0.8%
				Additional potential	+2,600	+2.7%
				Roadmap	10,100	3.5%

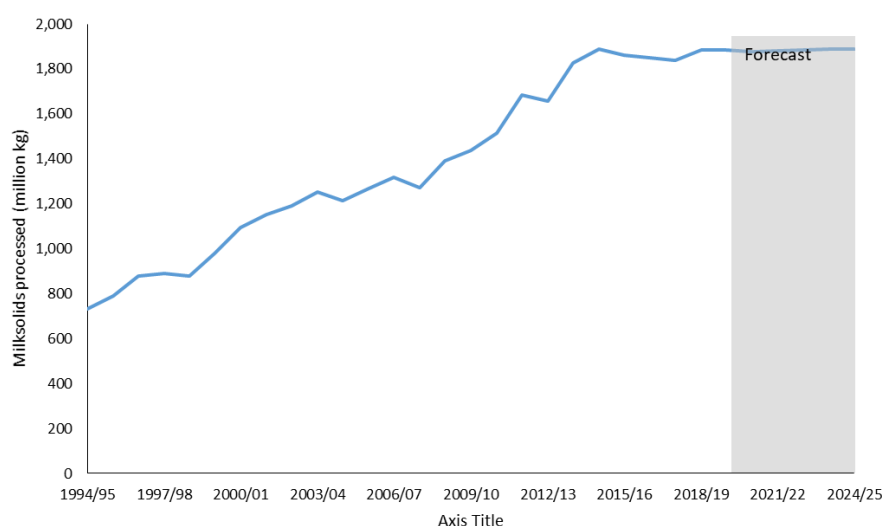
Dairy

167. **\$0.9 billion in additional dairy export revenue is targeted to be achieved**, driven primarily by opportunities for reducing barriers to trade.

Historical growth and baseline projection

168. Dairy production growth over the past two decades focused on expansion and intensification supported by capital investment, which has resulted in a highly indebted dairy farming sector. This growth was driven by strong demand and high prices for dairy commodities such as whole milk powder (WMP) in developing economies, particularly China.
169. Over the past decade, this expansion has resulted in the number of dairy cows increasing 16 percent and milk production increasing 35 percent.⁸⁸ However, all of this growth occurred prior to 2015. Since 2015 milk production has stabilised, with slightly falling dairy cow numbers offset by rising productivity per cow.

Figure 7: Milk solids processed (million kg)

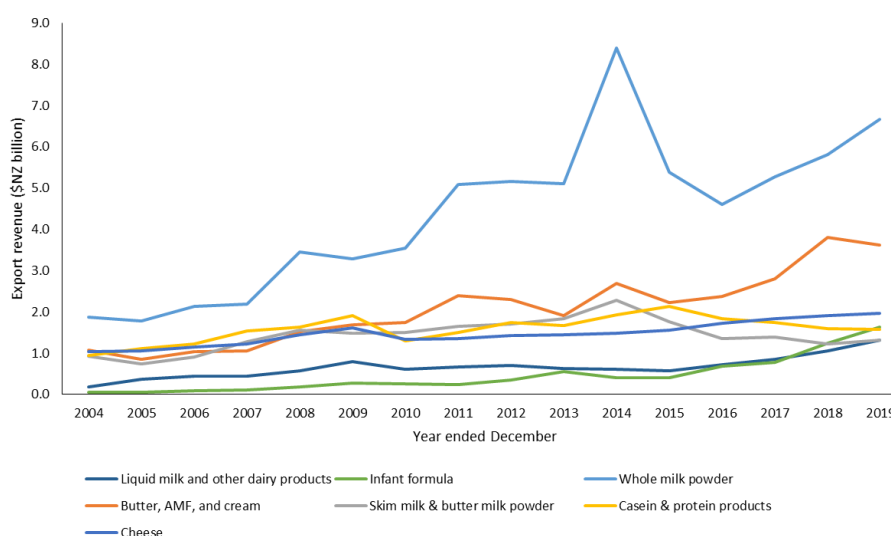


Source: LIC and Dairy New Zealand. (2019). New Zealand Dairy Statistics, 2018-19

170. New Zealand's Free Trade Agreement with China has driven much of the demand for WMP. Since 2014, New Zealand's export product mix has evolved slightly as more raw milk is manufactured into export products such as infant formula, long-life liquid milk (UHT) and other consumer focused products.
171. The figure below shows the growth in WMP from 2008 as well as the more recent growth in infant formula and UHT, which both began accelerating in 2017.

⁸⁸ LIC and Dairy New Zealand. (2019). *New Zealand Dairy Statistics, 2018-19*. Retrieved from https://www.dairynz.co.nz/media/5792471/nz_dairy_statistics_2018-19_web_v2.pdf

Figure 8: Dairy export revenue by product (2004 – 2019) \$NZ Billion



Source: Statistics New Zealand Overseas Merchandise Trade

172. Recently a more balanced supply and demand trade environment alongside reduced access to capital has encouraged a change in focus from growth (i.e. more cows on more land) to a production focus through feed intensification. Both domestic and international customer expectations will require changes in environmental stewardship to drive further value growth in exports.

173. The baseline projection is for dairy export revenue to increase 1.9 percent per annum from \$18.1 billion in 2019 to \$22.2 billion in 2030.

174. In the baseline, milk production is expected to be nearly flat over the next decade, with slightly falling dairy cow numbers offset by increasing productivity per cow. Investment in dairy farming expansion has slowed over the past five years due to tighter policies for environmental limits through the National Policy Statement on Freshwater 2017, and this is expected to be reinforced by the *Action for Healthy Waterways*. Export revenue is expected to increase incrementally in line with commodity price trends, and some additional growth in higher value products such as infant formula and UHT milk.

Barriers to growth and how these can be addressed

175. Supporting sustainable growth from the dairy sector requires careful consideration of the potential barriers to growth, as well as identification of potential levers available to addressing these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 11: Potential barriers to growth and levers – Dairy

Potential barriers to growth	Levers available to addressing these barriers
Tariffs Currently, New Zealand only has access to 13 percent of global consumers at a tariff of less than 10 percent. If global dairy tariffs were eliminated, the value of New Zealand	Free trade agreements with other markets, with effective terms for dairy products, would help to address these trade barriers of tariffs.

dairy exports would increase by \$1.3 billion.⁸⁹	
Changing pace of technology and knowledge gaps in farming practice Farmers face a range of challenges and influences that can frustrate the productive and sustainable performance of their land. Expectations and requirements continue to evolve, along with technology, and farmers need support to ensure they understand and can implement best practice.⁹⁰ The genetic gain resulting from animal evaluation delivers significant economic benefits to the New Zealand dairy industry, estimated at around \$300 million per annum.⁹¹ DairyNZ has estimated that over a 10-year period genetic improvement would add \$257,730 to the bottom line of an individual farmer with an average-sized dairy herd.⁹² The dairy sector's ability to achieve optimal rates of genetic gain in the future depends on an ongoing supply of, and access to, essential data.	The Government can supply education, funding and support to ensure that dairy farmers are able to apply best practice in their own contexts. Other levers include providing integrated policy and regulatory settings which recognise multiple objectives and impacts, and investment in research to further inform best practice. In terms of funding support, government can also look for opportunities to accelerate the development of innovative dairy initiatives, that may have significant growth and productivity potential, by investing in these initiatives through the SFF Futures programme.
Environmental constraints & productivity opportunities Dairy farming has a number of flow-on environmental impacts and there are new policies in place to both improve freshwater quality and reduce biogenic emissions, which may cumulatively constrain future total stock numbers. In addition to enabling further value generation, achieving further economic growth sustainably will necessitate a significant increasing in focus on maximising the efficiency of herds, including by improved genetics.	The Government has options to support improved data sharing to increase the productivity and reduce the environmental footprint of the national dairy herd, including co-investment with the sector, and the development of any further regulatory refinements that may be necessary. Herd improvement supports the performance and productivity of the dairy industry. Farmers have traditionally contributed and shared information collected from herd testing concerning many generations of dairy cows to support selective breeding and herd management decisions both to improve their own on-farm performance and to promote genetic gain across the national dairy herd.

⁸⁹ NZIER. (2017). *Dairy trade's economic contribution to New Zealand*. Retrieved from https://nzier.org.nz/static/media/filer_public/29/33/29336237-3350-40ce-9933-a5a59d25bd31/dairy_economic_contribution_update_final_21_february_2017.pdf

⁹⁰ Ministry for Primary Industries. (2020). *MPI's Farm Systems Change project*. Retrieved from <https://www.mpi.govt.nz/growing-and-harvesting/dairy/farm-systems-change/>

⁹¹ P Amer. (2012). *Cost Benefit Implications of a New National Breeding Objective for the New Zealand Dairy Industry*.

⁹² Dairy New Zealand. (2014). *Value of Genetic Improvement – DairyNZ Technical Series, Issue 22*.

	Benefits of herd improvement include more efficient conversion of feed to milk production, better calving and animal health, and breeding of animals that have less environmental impact (for example, lower excretion of nitrogen and resilience to climatic conditions). ⁹³
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Roadmap scenario

176. The Roadmap has the potential to increase export growth to 2.2 percent per annum by unlocking an additional \$0.9 billion in annual export revenue from the dairy sector by 2030. It is estimated that, of this growth, approximately:⁹⁴

- a. \$600 million could come from improved market access, addressing non-tariff barriers, lowering tariffs through trade agreements, and reducing trade-distorting measures
- b. \$100 million could come from the delivery of small-scale water storage solutions, which can mitigate drought risk and incentivise dairy farmers to diversify land use and support financial resilience
- c. \$100 – 200 million could come from the implementation of regenerative agricultural systems that will help to support improved market returns for credence attributes unique to New Zealand production systems.

177. If all components of the Roadmap are successfully implemented, the potential export revenue from the dairy sector could reach \$23.1 billion by 2030.

Table 12: Indicative summary of export growth – Dairy

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Dairy	11,036	18,107	+5.1%	Baseline	22,200	1.9%
				Additional potential	+900	+0.3%
				Roadmap	23,100	2.2%

⁹³ New Zealand Dairy. (2009). *Herd Improvement Database Review Anderson Committee Report*. Retrieved from <https://pdfs.semanticscholar.org/9e8f/cf260523c19eceb409691b634326c2db898e.pdf>

⁹⁴ Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.

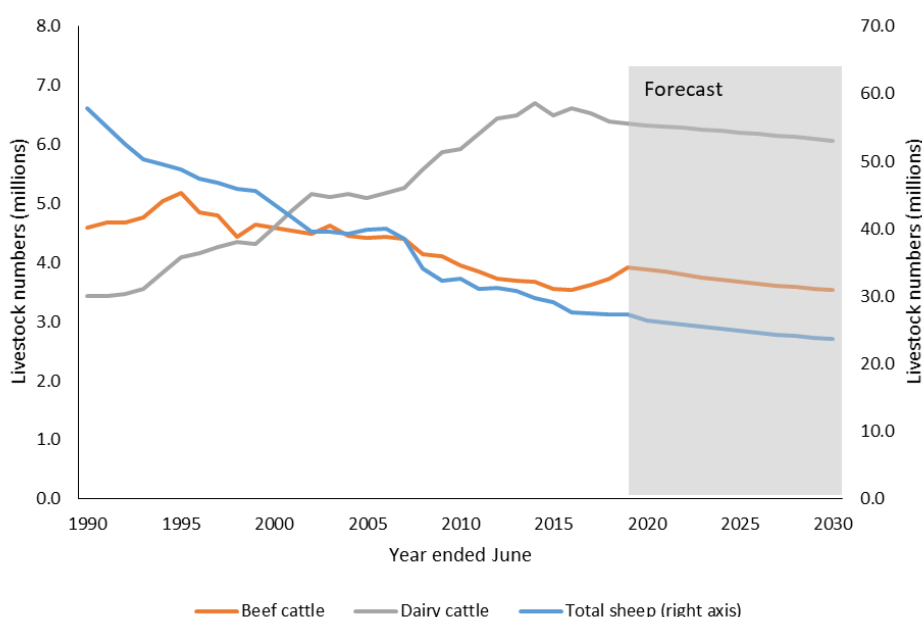
Meat and wool

178. **\$1.2 billion in additional meat and wool export revenue is targeted to be achieved**, driven primarily by opportunities for reducing barriers to trade, and revitalising the market potential of strong wool.

Historical growth and baseline projection

179. New Zealand's meat and wool sector has been contracting for more than three decades as a result of change into other land uses such as dairy cattle farming for milk production, dairy farming support and forestry.

Figure 9: Livestock numbers (1990 – 2030) in millions



Source: Statistics New Zealand Agricultural Production Survey, LIC.

180. However, over that time the industry has adapted and evolved to maintain high levels of productivity throughout the supply chain despite the land constraints. For example, the total number of sheep has halved since 1990 whilst lamb production fell only 5 percent. In addition, beef production has been supported by the growing dairy sector up to 2014. Cull dairy cows and heifers now make up a significant portion of overall beef production, and cattle of dairy origin, including dairy/beef crosses, are often raised on sheep and beef farms.⁹⁵
181. The meat sector's focus on increasing diversity of products and markets has enabled it to capture opportunities presented by a growing global population creating increased demand for animal protein. This has led to high prices for both beef and lamb in key overseas markets. Recently the sector has placed increasing emphasis on the end customer and ensuring consistency of supply and quality to meet those demands.
182. China has emerged as a major export destination for a wide range of products from the sector. The Chinese market has provided value through both providing competition for what is a limited resource, but also in maximising value of all parts of the animal. African Swine Fever has created further opportunity for both beef and lamb products as

⁹⁵ Statistics New Zealand. (2020). *New Zealand Agricultural Production Survey*.

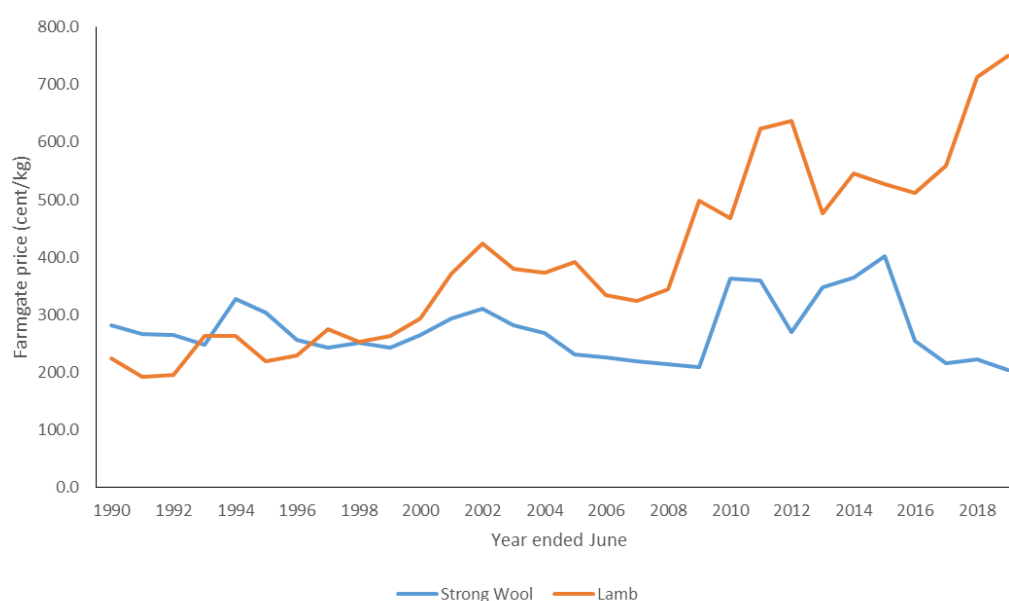
pork becomes a less accessible option for consumers in China. A challenge for the sector is to cement these gains as this market recovers from both African Swine Fever and COVID-19.

183. New Zealand is the third largest global producer of wool despite production declining alongside the sheep population.⁹⁶ Since 1990, prices for New Zealand strong wool have been in decline in real terms despite falling supply. Competition from synthetic substitutes for traditional wool products has been an influential factor. Since the beginning of 2020 and the onset of the COVID-19 pandemic, strong wool prices have fallen dramatically. This is due to shutdowns of manufacturing plants in China and Europe which may be slow to reopen.

184. The New Zealand fine wool sector has been able to continue to leverage the product's characteristics as a high quality, sustainable natural fibre to capture value through its use in high-value fabrics and apparel. Consequently, prices for fine wool in real terms have increased 50 percent since 1990.

185. The baseline projection is for meat and wool export revenue to increase 1.7 percent per annum from \$10.2 billion in 2019 to \$12.2 billion in 2030.

Figure 10: Farm gate prices for strong wool and lamb (1990 – 2019)



Source: Beef + Lamb New Zealand

186. In the baseline, sheep and beef livestock numbers are expected to decline slightly over the next decade in a continuation of the trends of the past 30 years. Competition from other land uses, particularly forestry, is likely to constrain volume growth opportunities.

187. Therefore, meat and wool export revenue growth is projected to be sourced from increases in productivity, incremental price growth, and the continued growth of wool and some other co-products, including pet food, blood products, and edible offal.

⁹⁶ Beef and Lamb New Zealand. (2018). *Compendium of New Zealand Farm Facts*. Retrieved from <https://beeflambnz.com/knowledge-hub/PDF/compendium-farm-facts>

Barriers to growth and how these can be addressed

188. Supporting sustainable growth from New Zealand's meat and wool sectors requires careful consideration of the potential barriers to growth, as well as identification of potential levers available to address these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 13: Potential barriers to growth and levers – Meat and wool

Potential barriers to growth	Levers available to addressing these barriers
Barriers to market access The meat sector faces significant tariff barriers. In some markets, tariffs can be so high that the cost of New Zealand product becomes uncompetitive, so negotiating FTAs is essential to unlocking the potential of those markets. Over \$NZ250 million of tariffs are currently applied to New Zealand meat exports.⁹⁷	Addressing trade barriers through work such as negotiation of FTAs is a significant way of addressing barriers to market access for New Zealand meat. There has been progress in addressing these – with New Zealand FTAs saving the red meat sector over \$NZ350 million in tariffs in 2018.⁹⁸
Lower market competitiveness of wool products The Wool Industry Project Action Group's report 'Vision and Action for New Zealand's Wool Sector' has analysed two decades of data on all aspects of the wool sector and found that increased competition from synthetic fibres has led to the strong wool sector's long-term contraction. Fragmented wool sector The Wool Industry Project Action Group report recommends actions to address three areas of weakness which are constraining sector growth - strategic direction, sector capability, and governance and co-ordination.	The government will support the industry to identify areas for investment, and explore specific co-investment opportunities to transform the sector, using the wool report as a rallying point. Co-investment opportunities could include investment to accelerate innovative meat and wool initiatives, that have high-growth potential, through the SFF Futures programme.

Roadmap scenario

189. The Roadmap has the potential to increase export growth to 2.5 percent per annum by unlocking an additional \$1.2 billion in annual export revenue from the meat and wool sector by 2030. It is estimated that, of this growth, approximately:⁹⁹

⁹⁷ Beef and Lamb New Zealand. (2020). *Trade policy*. Retrieved from <https://beeflambnz.com/your-levies-work/trade-policy>

⁹⁸ Beef and Lamb New Zealand. (2020).

⁹⁹ Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.

- a. \$500 million could come from potential gains by revitalising the strong wool sector. This programme aims to lift strong wool prices closer to fine wool by researching new markets and novel uses for wool, alongside initiatives to capture wool's inherent value as a sustainable and ethically produced natural fibre
- b. \$500 million could come from addressing non-tariff barriers, lowering tariffs through trade agreements, and reducing trade-distorting measures
- c. \$100 million could come from the delivery of small-scale water storage solutions, which can mitigate drought risk and incentivise sheep and beef farmers to diversify land use and support financial resilience
- d. \$100 million could come from increased use of regenerative agriculture and establishment of Te Taiao which would enable exporters and producers to capture increased returns for New Zealand's unique animal production systems and reputation for safe and quality products.

190. If all components of the Roadmap are successfully implemented, the potential export revenue from the meat and wool sector could reach \$13.4 billion by 2030.

Table 14: Indicative summary of export growth – Meat and wool

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Meat and wool	7,820	10,176	+2.7%	Baseline	12,200	1.7%
				Additional potential	+1,200	+0.8%
				Roadmap	13,400	2.5%

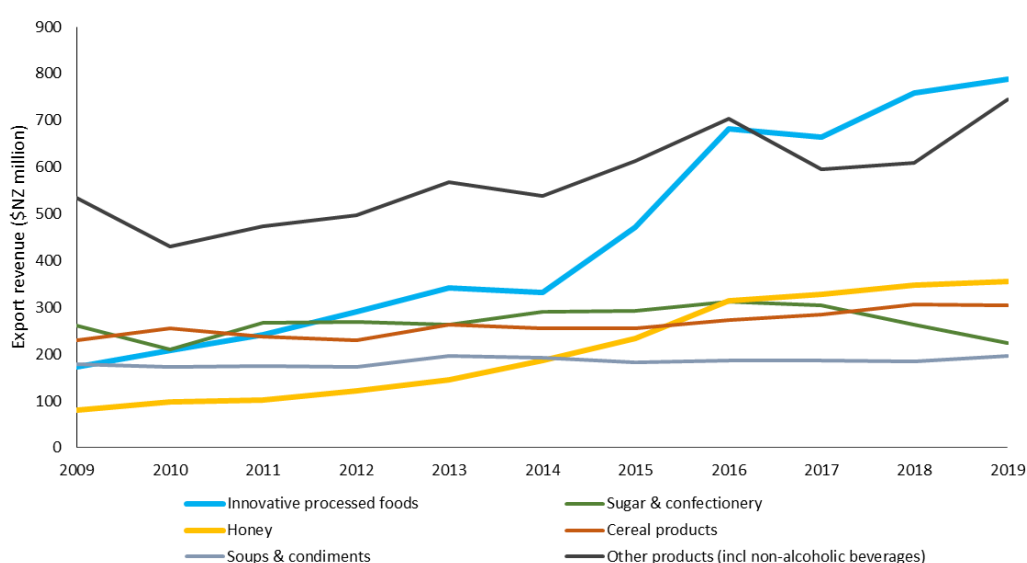
Processed food, arable & other food and fibres exports

191. **\$500 million in additional processed food, arable and other food and fibres export revenue is targeted to be achieved**, driven primarily by opportunities for increased productivity from Māori agribusiness and by reducing barriers to trade.

Historical growth and baseline projection

192. Other primary industry exports include processed food, live animals, honey, and arable products. Exports of these products reached \$3.1 billion in 2019. Strong export growth over the past decade was concentrated in honey, innovative processed foods, and non-alcoholic beverages.

Figure 11: Honey and processed food export revenue (2009 – 2019)



Source: Statistics Overseas Merchandise Trade

193. The baseline projection is for other export revenue to increase 2.4 percent per annum from \$3.1 billion in 2019 to \$4.0 billion in 2030.
194. Most processed food export growth has been concentrated in the innovative processed foods category, where exports have more than quadrupled in the past decade from \$172 million to \$788 million. This category includes nutritional supplements, prepared meals, and blended milk-based products. Non-alcoholic beverages have also been a strong source of export growth in recent years.
195. By comparison, other processed foods have experienced much lower growth rates. Combined exports of confectionery, chocolate, cereal products, soups and condiments, and other processed foods increased by just 2.0 percent per annum over the past 10 years. Much of the two-way trade in these products is facilitated by the shared food safety system with Australia.
196. Australia remains a vital market for other processed foods, but it is a mature market with strong domestic competitors and represents lower growth potential overall. Higher growth markets in Asia can potentially be new sources of export growth for these products.

197. In the baseline scenario, innovative processed foods and non-alcoholic beverages are the products most likely to drive further growth in this sector.
198. Honey export revenue has more than quadrupled over the past decade, increasing from just \$81 million in 2009 to \$355 million in 2019. The rapid ascent of mānuka honey is the main driver behind this transformation.¹⁰⁰
199. Much of this growth occurred in the first half of the decade, with growth tapering off in recent years due to a string of poor production seasons. In addition, export price growth has eased as the industry worked to implement MPI's science-based definition of mānuka honey. In the baseline scenario, honey export revenue is expected to stabilise near current levels, which is consistent with recent trends.
200. The arable sector is largely focussed on the domestic market for both human consumption and animal feed, as New Zealand lacks the scale needed to be cost competitive in global grain markets. New Zealand also imports wheat from Australia. However, arable growers have established a profitable niche in providing counter-seasonal seeds for propagation to the Northern Hemisphere. This trade takes advantage of New Zealand's ideal growing conditions, biosecurity settings, and reliable supply – particularly for vegetable and ryegrass seeds.
201. Arable export revenue is expected to grow moderately over the next decade. The main constraint on further expansion is land availability. Seed growers require large buffers of non-seed producing land to prevent inadvertent cross-pollination. There is little scope for New Zealand grain producers to compete in export markets with the likes of Australia and North America, but there is scope to reduce wheat imports if domestic consumer preferences shift towards domestically-grown grains.

Barriers to growth and how these can be addressed

202. Supporting sustainable growth from New Zealand's processed food, arable and other food and fibres exports requires careful consideration of the potential barriers to growth, as well as identification of potential levers available to addressing these barriers. Illustrative examples of barriers to growth are set out below (note that these are not comprehensive of all barriers in this sector):

Table 15: Potential barriers and levers – Processed food, arable and other food and fibres

Potential barriers to growth	Levers available to addressing these barriers
High costs of innovation (perceived and actual) and their impact on attitudes to innovation The costs and risks of innovation, production (including scaling up), and commercialisation are, or are perceived to be, high.¹⁰¹	Ongoing Government support for the New Zealand Food Innovation Network (NZFIN), including further development and coordination of the added-value food and beverage ecosystem. NZFIN provides access to equipment and support via the food hubs for firms to test, develop and scale-up their products through the

¹⁰⁰ Ministry for Primary Industries. (2013 & 2019) *Apiculture SOPI reports*. Retrieved from <https://www.mpi.govt.nz/news-and-resources/economic-intelligence-unit/farm-monitoring/>

¹⁰¹ Ministry of Business, Innovation and Employment. (2019). *Beyond commodities: Manufacturing into the future*. Retrieved from <https://www.mbie.govt.nz/assets/f0f81b6194/new-zealand-manufacturing-sector-report-2018.pdf>

	prototype, product and market validation stages of commercialisation. Joint investment would also assist, including into market research, consumer insights, and business case development to ensure that food businesses are well connected to consumers and better able to penetrate and be competitive in foreign markets.
Regulatory uncertainty The regulatory regimes for dietary supplements and natural health products are uncertain, constraining product development and export opportunities. Policy development for New Zealand's dietary supplements regime was undertaken in the late 1970's and early 1980's based on a product market that looked very different to today. Since this time, the range of products has expanded enormously and now encompasses a wide range of wellness products based on both traditional and novel natural or nature-like substances. The Dietary Supplements Regulations have not kept pace with the market as it has expanded.	The Ministry of Health has been developing a fit-for-purpose 'natural products' regulatory scheme. The regime is intended to provide greater assurance to consumers about the safety and quality of the products, clarity for manufacturers and product developers and assurances for export. The Natural Health Products Bill (Ministry of Health-led) will introduce a risk-proportional regulatory scheme for a range of natural health and wellness products. This Bill will also provide for a standardised approach to export verification, which is important as many overseas markets are demanding this additional assurance. It will also increase the number and type of health benefit claims that could be made in advertising and marketing of natural health products, allowing the sector to further distinguish their products in the market.
Inflexibility of existing legislation towards e-Commerce New Zealand's legislative requirements have been developed to facilitate traditional trade which has been predominantly in the form of bulk consignments of single commodities (business to business). The requirements do not specifically consider how best to enable trade to countries, such as China, that have recently adopted Cross Border E-Commerce (CBEC) policies in which products sold online can go to customers via specific streamlined import channels – either directly or through customs-bonded warehouses. Exporting countries with export requirements that align with the CBEC policies of the destination country will have a comparative advantage over exporting	The Government could facilitate growth in e-commerce through operational improvements (incl. within Food Safety NZ) and potential legislative amendments, to simplify and harmonise regulatory requirements where possible to ensure the most consistent, robust, and enabling regulatory regime is in place to facilitate for e-Commerce. At an operational level, MPI can review and refine export requirements for primary sector commodities in the areas of greatest opportunity to facilitate cross border e-commerce trade.

countries with traditional export requirements. Therefore, imports from countries with flexible and aligned export requirements will be able to reach customers in a similar timeframe to domestically produced products.

The multiple legislative regimes (Food, Wine, Animal Products Acts) may also add complexity and costs for mixed product consignments.

Roadmap scenario

203. The Roadmap has the potential to increase export growth to 3.5 percent per annum by unlocking an additional \$400 - 500 million in annual export revenue by 2030 from the processed food sector. It is estimated that, of this growth, approximately:¹⁰²

- a. \$200 million could come from increasing the support provided to Māori Agribusiness to increase productivity and sustainability of whenua Māori
- b. \$100 million could come from improved market access, to address non-tariff barriers, lowering tariffs through trade agreements, and reducing trade-distorting measures
- c. \$100 - 200 million could come from improved domestic legislation to enable businesses to leverage New Zealand's reputation for being a trusted source of healthy and safe food products. This is expected to result in improved market returns for product attributes unique to New Zealand production systems.

204. If all components of the Roadmap are successfully implemented, the potential export revenue from the processed food, arable and other food and fibres exports could reach \$4.5 billion by 2030.

Table 16: Indicative summary of export growth - Processed food, arable and other food and fibres

	2009 Export revenue (NZ\$ million)	2019 Export revenue (NZ\$ million)	2009-19 % annual growth (CAGR)	Scenario	2030 Export revenue (NZ\$ million)	2019-30 % annual growth (CAGR)
Other	1,779	3,088	+5.7%	Baseline	4,000	2.4%
				Additional potential	+500	+1.1%
				Roadmap	4,500	3.5%

¹⁰² Note that these figures represent an assumed approximate distribution of export earnings growth across these initiatives. Given the uncertainty of considering growth over a ten-year horizon, the initiatives and their contributions to the growth target will be monitored and evaluated over the next ten years.