



Solid foundations

Dairy's economic
contribution to New
Zealand

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Key points

New Zealand's largest goods producing sector

- Dairy accounted for \$11.3 billion¹ (3.2%) of GDP in the year to March 2023.
- Of this, dairy farming contributes \$8 billion (2.2% of GDP) and dairy processing contributes \$3.4bn (0.9%).
- Māori businesses own around \$4.9b billion in assets in the dairy sector.

Dairy employs almost 55,000 people...

- The dairy sector sustained 54,787 jobs as at March 2023, with 38,462 on farm and 16,325 in dairy processing.
- The number of dairy processing jobs has grown at an average rate of 3.2% per year since 2019. The wider manufacturing sector, by contrast, has lost jobs at an average rate of 0.2% per year.
- The primary sector as a whole has seen employment contract by an average of 2.2% per year since 2019. Dairy farming jobs have been more resilient, falling by a more moderate 0.8% per year.
- Māori made up 16.5% of dairy farming employees and self-employed, up from 12.7% in 2015. The number of Māori employees has risen from 3,693 in 2015 to 4,040 in 2021.

... and is a cornerstone employer in many regions

- In Waimate, one in three jobs are in the dairy sector.
- Dairy also has a high employment share in South Taranaki (1 in 4 jobs), Westland (1 in 4.5 jobs), Southland (1 in 5 jobs), and Matamata-Piako (1 in 6.5 jobs).

The dairy sector pumps \$3.6bn directly into workers' pockets...

- Median wages for dairy processing and dairy farming are higher than those in other comparable manufacturing and land-based industries. Total dairy processing wages were \$2.2bn in the year to March 2023.
- Median wages in dairy processing reached \$90,000 in 2023, having grown at an average rate of 3.4% per year between 2019 and 2023.
- Dairy farming wages have reached parity with the national median wage of \$59,000 and have grown at an average 8.6% per year since 2019. Total dairy farming wages were \$1.4bn in the year to March 2023.

¹ Figures are rounded to 1 decimal place. Totals may not add due to rounding.



...providing a big boost to regional economic spending

- Dairy's high median wages amplify high employment shares in many regional economies. In Waimate, wages paid by the dairy sector made up 52% of total wages paid in the district.
- The share was similarly high in South Taranaki (41%), Westland (44%), Southland (28%), and Matamata-Piako (24%).

The gender pay gap is decreasing in dairy processing;

- The gender wage gap has been steadily falling in dairy processing, from -35% in 2000 to -21% in 2021.
- As the female share of processing employment continues to grow (from 29% to 35% over this period) and more women are given the opportunity to develop greater skills and experience, the gap can be expected to close further.
- Limited long term progress has been made in closing the gender pay gap on-farm, although the gap is trending in the right direction over the past six years. Greater retention of female employees to support their skills development will be crucial for maintaining this trend.

Dairy generates \$25.7bn of exports: 1 in 4 of every export dollar New Zealand earns

- The value of dairy exports has risen 45% (or \$7.9bn) in the five years to April 2023, and now tops \$25.7bn.
- Businesses operated by Māori authorities exported \$207 million in milk powder, butter, and cheese in 2021 (latest data available).
- Dairy generates more than one in every four dollars of New Zealand's foreign exchange receipts from goods and services exports.
- It is New Zealand's largest goods exporter by a significant margin, accounting for 35% of goods exports.

Individual dairy products are larger than many other export sectors

- With a combined \$4.6 billion in exports, butter, AMF and dairy spreads alone are larger than horticulture (\$3.8bn) and wine exports (\$2.8bn).
- Protein products exports (\$3.4bn) alone exceed New Zealand's exports of electrical machinery (\$2.3bn), seafood (\$1.9bn), and aluminium (\$1.6bn).
- Three dairy product groups have each increased their export revenue by more than \$1bn since 2019 – whole milk powder, skim milk powder, and protein products.



New Zealand exports dairy products to over 140 markets, and is less concentrated in major markets than commonly perceived

- 54.1% of dairy sector exports are sold to its top five markets. This is the lowest concentration of New Zealand's top 10 export sectors by some margin.
- Wood (89.4% of exports to its five biggest markets) has the highest concentration, followed by wine (85.2%), aluminium (78.3%), meat (72.4%), seafood (71.2%), and electrical machinery (63.9%).

Dairy farming is a shock absorber for regional economies, maintaining local spending even when milk prices drop

- Dairy farmers spent \$7.9bn on goods and services in the local economy in the year to March 2023, on top of \$8bn in returns to land, labour, and capital.
- The level of spend has been stable and consistent over time, even as milk prices have fluctuated. Price volatility is absorbed in dairy farmers' profits, while farms kept purchasing inputs from the wider economy.
- Dairy farming is a top 10 purchaser in 1/3rd of all industries, representing 31.5% of GDP.
- Farmers' purchases support economic activity and jobs in sectors including:
 - Fertiliser and pesticide manufacturing (\$256m GDP and 801 jobs supported)
 - Banking and financing, financial asset investing (\$383m GDP and 1,323 jobs)
 - Pharmaceutical, cleaning, and other chemical manufacturing (\$134m GDP and 1,203 jobs)

Dairy processors bought \$24.6bn of goods and services from farms and firms in the year to March 2023

- This is on top of generating \$3.8bn in returns to land, capital, and labour.
- Processors' spending included \$5bn in inputs other than raw milk, supporting economic activity and jobs in a range of industries such as:
 - Road transport and freight services (\$450m GDP and 4,785 jobs supported by dairy processing.)
 - Polymer and rubber product manufacturing (\$168m GDP and 1,231 jobs supported by dairy processing.)
 - Advertising, market research, and management services (\$129m GDP and 1,292 jobs supported by dairy processing.)
- Dairy processing is a top 10 purchaser in ¼ all of industries, representing 19% of GDP.



Smaller national herd, bigger efficiency gains

- The number of dairy cows peaked in 2015 at just over 5 million. Since then, it has fallen 3.5%.
- Production per cow has continued to increase, rising an average 2.4% per annum between 2015 and 2022.
- This has helped to drive increases in export value per cow. Nominal value per cow has risen 56.9% since 2018. Adjusted for inflation, real values per cow have risen 19.7%.

Despite its success, dairy faces a range of barriers to export growth...

- Much of the global dairy market remains highly constrained by tariffs:
 - 57% of global dairy consumption takes place behind tariff barriers greater than 20%.
 - 87% of dairy consumption is behind a barrier of 10% or more.
- While New Zealand's bilateral and regional trade agreements have been highly beneficial, a range of tariffs still apply to dairy exports under them. We estimate tariffs paid on our dairy exports to our top 20 markets are around \$1.5bn.
- In addition, we estimate non-tariff measures impose costs of around \$7.8bn on New Zealand dairy exports.
- Additional government efforts to reduce tariffs and non-tariff measures would generate higher prices and returns to New Zealand farmers and processors.

...as well as risks to its supply chain resilience

- The dairy sector also faces material risks to its economic resilience from potential disruptions in its transport supply chains.
- It has limited port options due to the size of vessels it needs to achieve scale economies (85% of exports go via Tauranga, Lyttleton and Otago).
- Rail and road freight links to ports are also both vulnerable to disruption.
 - The road network converges on multiple chokepoints, many of which dairy relies on to get fresh milk to processing plants. Delays at these chokepoints can cost industries hundreds of thousands of dollars per day.
 - Rail access to the Port of Tauranga, the largest dairy export port in New Zealand, is reliant on a single rail line, the East Coast Main Trunk.
- Continued improvements in the efficiency of ports, aligned with greater investments in more reliable and resilient road and rail networks would provide the dairy sector with a stronger foundation for maintaining its international competitiveness and growing its contribution to New Zealand's economy.



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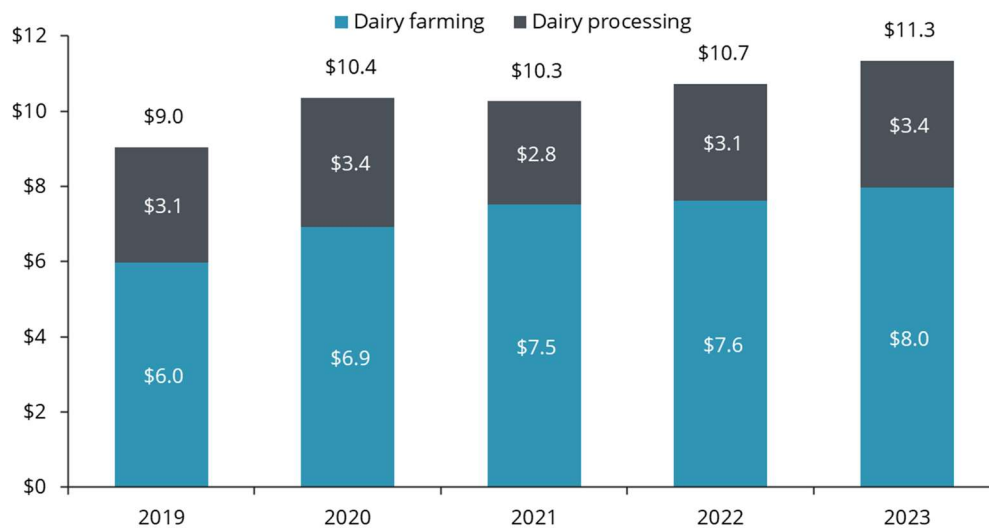
1. Economic contribution

1.1. Dairy's contribution to GDP

Dairy directly added \$11.3 bn to the NZ economy in 2023.

The dairy sector contributed just over \$11.3 billion to New Zealand's GDP in the year to March 2023. This represented 3.2% of total GDP. Of this, dairy farming contributes \$8.0 billion (2.2% of GDP) and dairy processing contributes \$3.4 billion (0.9%).

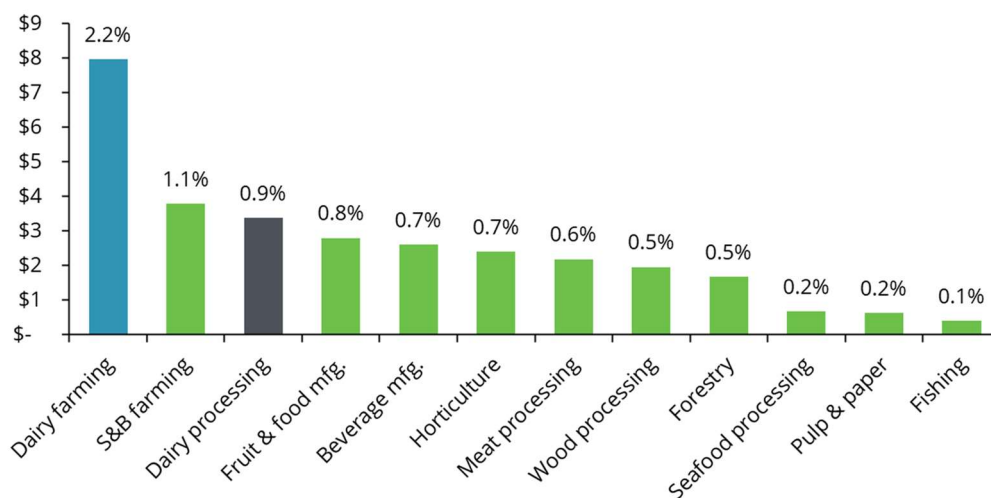
FIGURE 1: DAIRY SECTOR CONTRIBUTION TO GDP, \$B, NOMINAL, YEAR TO MARCH



Source: Statistics New Zealand, Sense Partners

This makes Dairy the largest goods producing industry in NZ.

FIGURE 2: INDUSTRY VALUE ADDED, \$B, YEAR TO MARCH 2023



Source: Statistics New Zealand, Sense Partners



The contribution made by dairy farming, at \$8 billion, is the largest of all goods producing sectors, in both the primary sector and manufacturing. Sheep and beef farming, at \$3.8 billion in GDP (1.1% of the total) was a relatively distant second. Dairy processing alone is the third largest goods producing sector in the country, at \$3.4 billion.

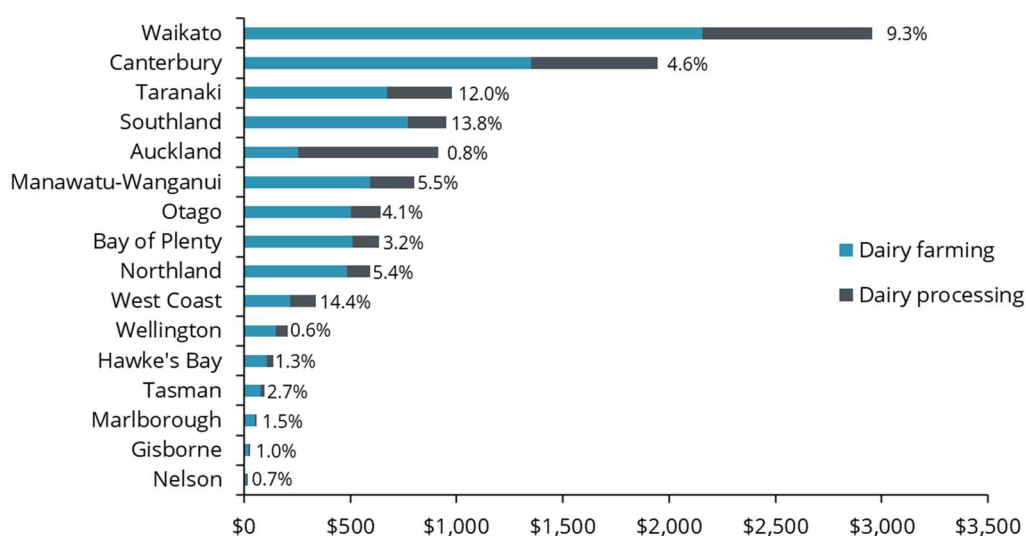
Dairy is a major contributor to many regional economies.

The dairy sector, as a land based activity, is naturally spread out over the country. By contrast, sectors like manufacturing and services tend to be concentrated in larger cities. This means that the dairy sector makes an important contribution to spreading economic activity across regional New Zealand.

Dairy plays a prominent role in regions like Southland, where it represents 13.8% of regional GDP. The West Coast (14.4%) and Taranaki (12.0%) have similarly high shares of economic activity coming from the dairy sector.

Even in regions with high GDP from other activities, Dairy continues to play a prominent role. Of Waikato's GDP of \$31.8bn, 9.3% came directly from Dairy, while Canterbury drew 4.6% of its \$42.4bn GDP from the sector.

FIGURE 3: REGIONAL GDP CONTRIBUTION, \$M, YEAR TO MARCH 2023



Source: Statistics New Zealand, Sense Partners

Dairy is the largest sector in three regions, the West Coast, Taranaki, and Southland. In the Waikato, with the largest dairy sector by GDP, only the professional services sector is larger. Of 54 sectors, Dairy is among the 10 largest in nine regions.

Only in major cities (Auckland and Wellington) and areas dominated by Horticulture (Gisborne, Hawke's Bay, Tasman, and Nelson) is Dairy a smaller sector.

GDP from dairy exceeded \$2.9 billion in the Waikato and neared \$2 billion in Canterbury. In Southland and Taranaki, the contribution was over \$1 billion, and more than half a billion in Manawatu and Otago.



1.2. Dairy's contribution to employment

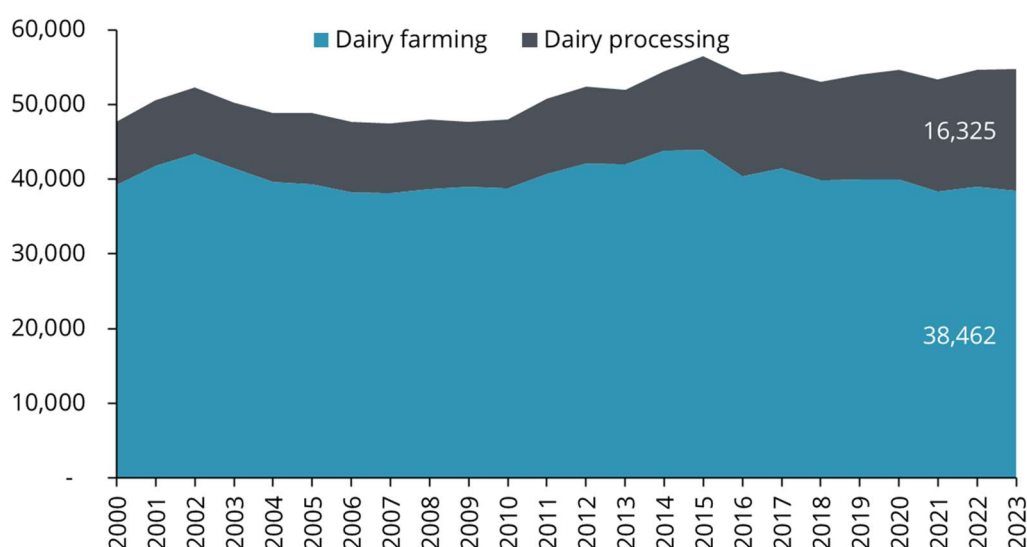
The dairy sector has sustained a stable number of jobs since 2015

The dairy sector generated 54,787 jobs in the year to March 2023.²

Employment in dairy processing has increased, rising 16.9% from 13,960 jobs in 2019 to 16,325 in 2023. This, combined with a slight decrease in farming employment, has seen processing's share of total dairy employment rise from 25.9% in 2018 to 29.8%.

Despite labour shortages, dairy production has remained steady, implying improved on-farm productivity.

FIGURE 4: DAIRY SECTOR EMPLOYMENT, YEAR TO MARCH



Source: Statistics New Zealand, Sense Partners

Dairy has achieved gains in jobs that the wider primary sector hasn't

Over the long term, the dairy sector has proven to be a source of growth in employment.

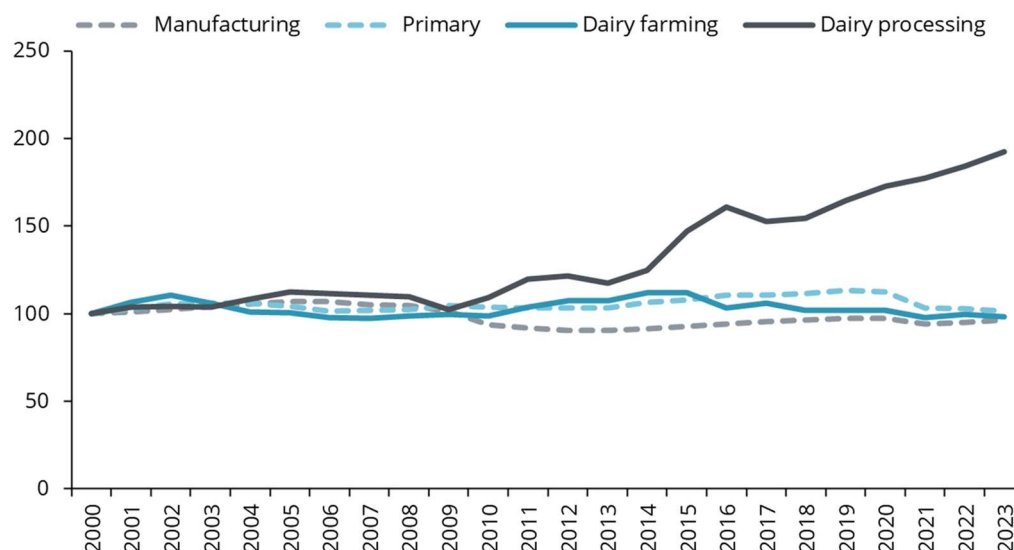
Jobs in dairy processing have grown by 92% since 2000 (Figure 5). This compares very favourably with the wider primary and manufacturing sectors. The primary sector has only grown 1.5% since 2000, while manufacturing jobs are down by 3.6%.

The number of dairy farming jobs has been largely steady. Job numbers are currently down 3.8% since 2000, but the total has ebbed and flowed.

² This is the number of unique jobs recorded by Statistics New Zealand. Some individuals may work multiple jobs, meaning the number of people employed is lower.



FIGURE 5: EMPLOYMENT INDEX BY INDUSTRY, 2000 = 100, YEAR TO MARCH



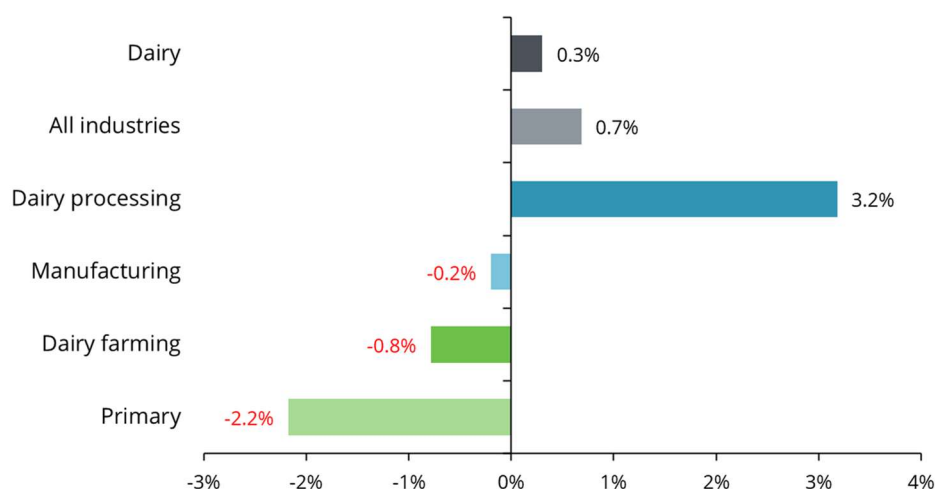
Source: Statistics New Zealand, Sense Partners

When looking at recent growth rates, the Dairy sector as a whole is lagging total jobs growth. However, this is due to the large role played by the services sector in economic activity.

Dairy processing is outperforming the wider manufacturing sector, growing an average 3.2% per year since 2019. This compares well to the average reduction of 0.2% per year experienced in the manufacturing sector.

While dairy farming employment has been falling in recent years (-0.8% per year on average), the annual rate is half that of the wider primary sector (-2.2%).

FIGURE 6: AVERAGE ANNUAL JOBS GROWTH, YEAR TO APRIL 2019-2023



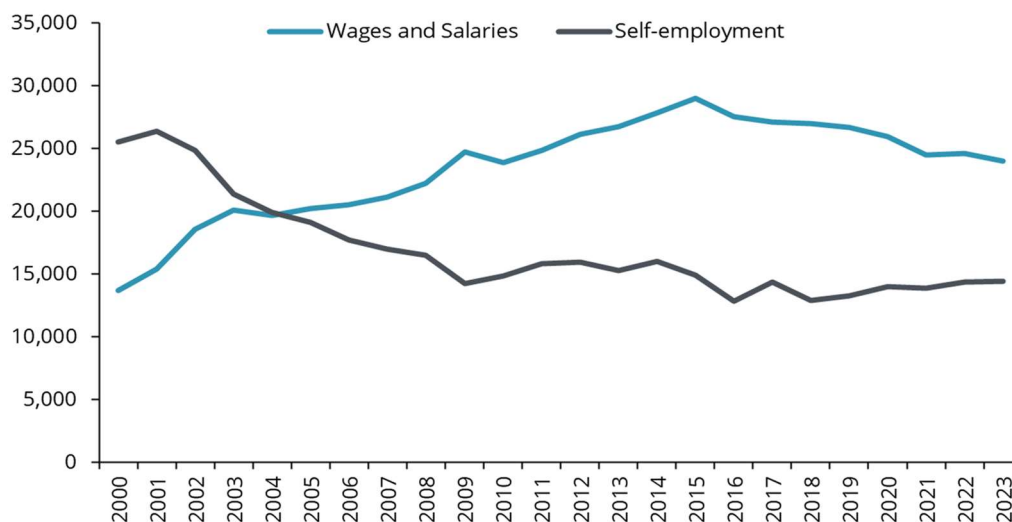
Source: Statistics New Zealand, Sense Partners



Labour shortages and wage rises are placing pressure on farmers

The reductions in dairy farming employment have primarily been in waged and salaried employees, with jobs down 10.1% since 2019 (Figure 7). In part this reflects the challenges of finding workers, rather than a reduction in the level of employment the sector can sustain.

FIGURE 7: DAIRY FARMING: WORKERS PAID WAGES/SALARIES VS SELF-EMPLOYMENT



Source: Statistics New Zealand, Sense Partners

Federated Farmers have run an employment survey in the dairy farming sector. Challenges in attracting and retaining employees is a key theme in the results. High labour costs mean that employers face tough choices between employing sufficient staff, at high cost, and paying themselves well. Over half of respondents were paying themselves less than staff, with 11% not paying themselves at all.

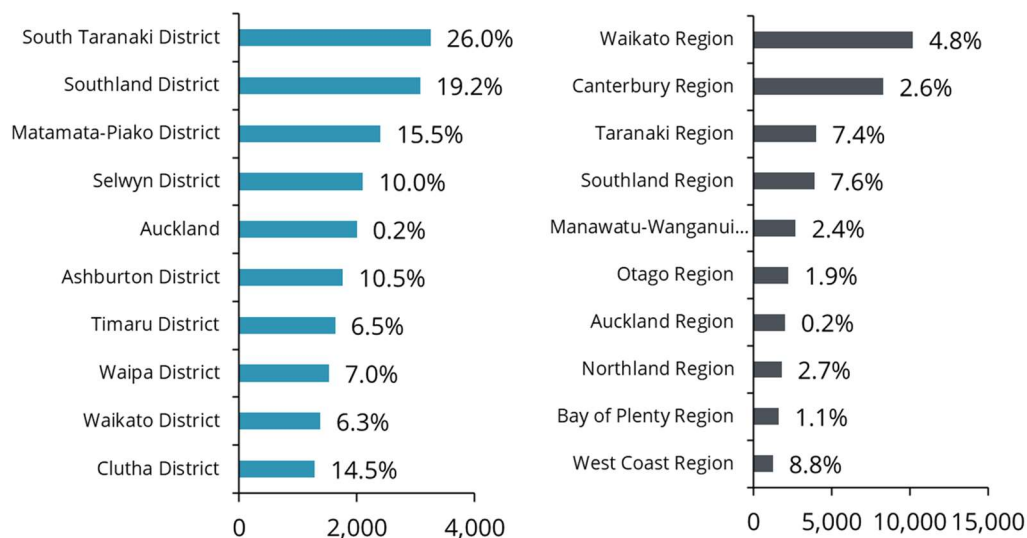
Dairy is a cornerstone employer in many regions

The dairy sector is a major employer in many parts of the country. Figure 8 below shows the top 10 districts and regions for dairy sector jobs. The label along each column shows the dairy sector's share of total jobs in that area.

At a district level, South Taranaki has the highest number of dairy employees, at 3,250. These dairy farming and processing jobs represent 26% of all jobs in the region. With over 10,000 dairy workers, the Waikato is home to approximately 18% of dairy's total workforce.



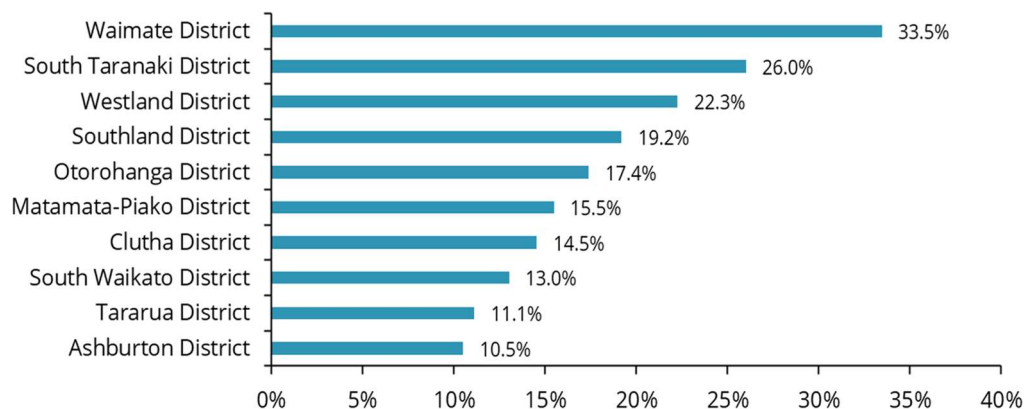
FIGURE 8: COUNT OF DAIRY EMPLOYEES, TOP 10 DISTRICTS AND REGIONS



Source: Statistics New Zealand, Sense Partners

Figure 9 shows the top 10 districts by share of dairy employment. 1 in 3 people in Waimate district are employed in the dairy sector. Dairy employs more than 20% of workers in both South Taranaki and Westland districts. There are a further eight districts where dairy accounts for more than 1 in every 10 jobs.

FIGURE 9: DAIRY SHARE OF TOTAL EMPLOYEES, TOP 10 DISTRICTS



Source: Statistics New Zealand, Sense Partners

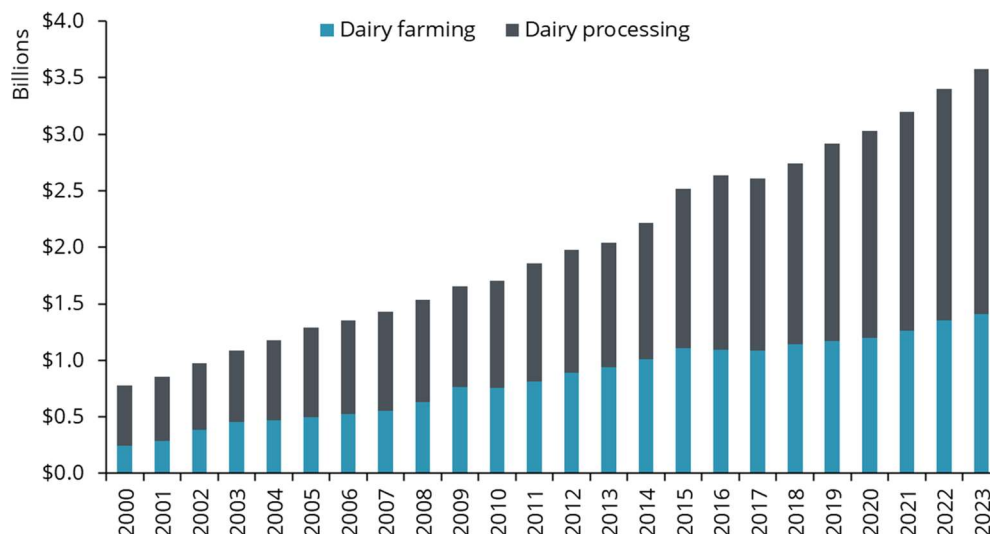


1.3. Dairy's contribution to wages and income

Dairy paid \$3.6bn in wages across New Zealand in 2023

The dairy sector paid \$3.6 billion in wages across New Zealand in the year to March 2023. Of this, \$1.4 billion came from dairy farming, up 20% since 2019. The remainder, \$2.2 billion, came from processing, up 24% since 2019.

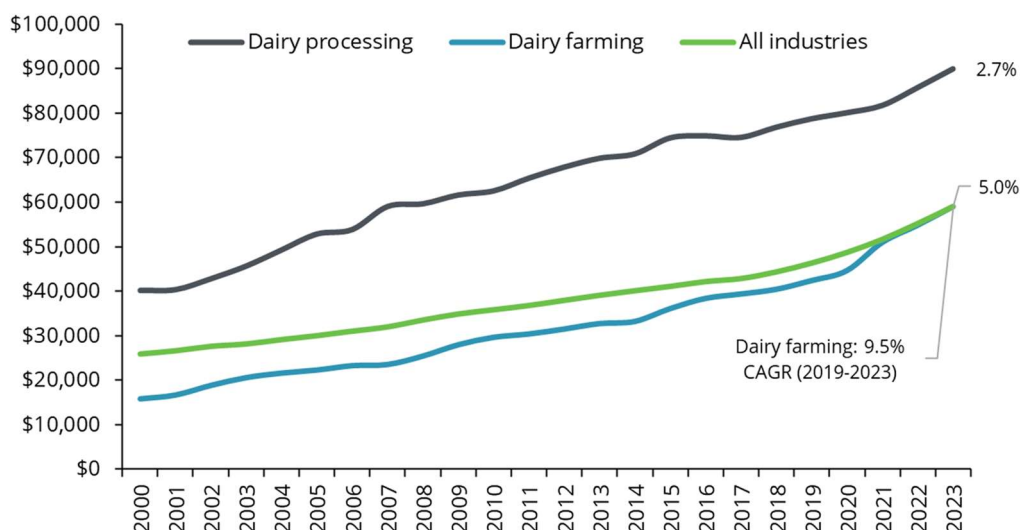
FIGURE 10: DAIRY SECTOR TOTAL WAGES PAID, YEAR TO MARCH



Source: Statistics New Zealand, Sense Partners

Dairy farming wages have caught up to the national average

FIGURE 11: DAIRY SECTOR MEDIAN WAGES, YEAR TO MARCH



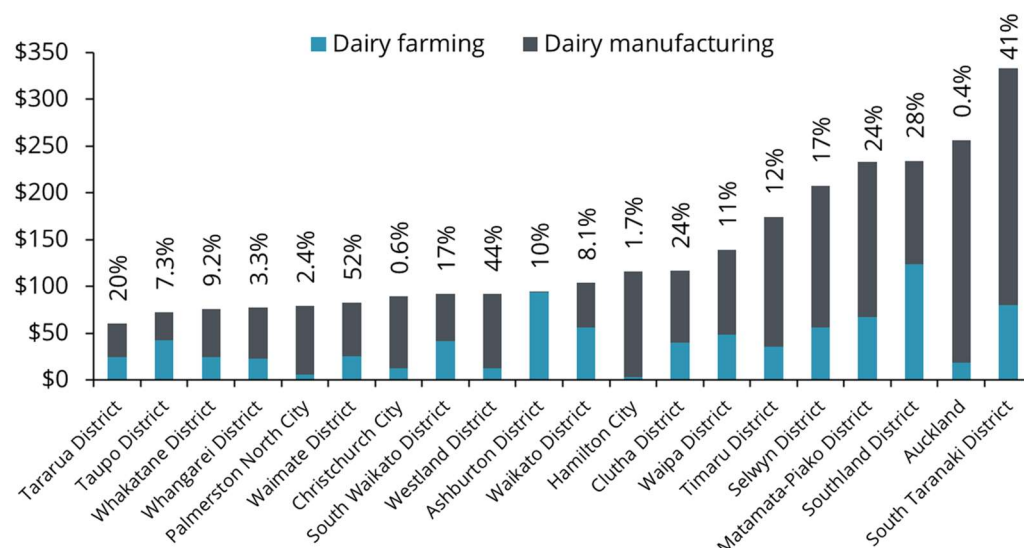
Source: Statistics New Zealand, Sense Partners



The dairy farming median wage has grown an average 9.5% between 2019 and 2023, outpacing average wage growth of 5% in the wider economy. The median dairy farming wage now sits at \$59,000 – the same as the median wage for all sectors.

Higher wages amplify the value of dairy employment for local economies

FIGURE 12: DAIRY SECTOR TOTAL WAGES PAID, TOP 20 TA, 2022³



Source: Statistics New Zealand, Sense Partners

Looking across New Zealand, the higher wages in the dairy sector amplify the value of dairy employment to communities:

- While dairy makes up 33.5% of employment in Waimate, its share of wages sits at 52%.
- For South Taranaki, a high concentration of dairy processing jobs at Whareroa, combined with the high median wage in dairy processing, means the 26% employment share is translated into a 41% share of wages paid in the district.
- The same is true for the Southland district where dairy provides 5.4% of jobs and accounts for 28% of wages.

Dairy pays more than comparable sectors...

Figure 13 below shows median wages across sectors similar to dairy. These are sectors that are likely to locate in similar areas to dairy, and where there is a reasonable chance of transferrable skills. We can see that wages in both farming and processing are considerably higher than comparable sectors:

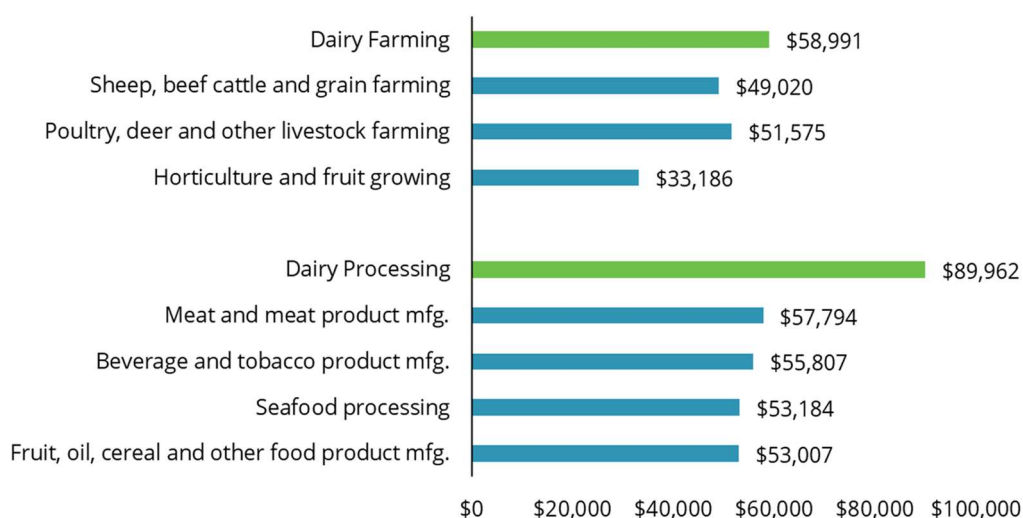
³ Detailed employment data for Territorial Authorities is only available for 2022.



- The median wage for dairy farming, at almost \$59,000, was 14.4% higher than poultry and deer farming.
- Dairy processing jobs enjoy a substantial wage premium. At almost \$90,000, they are 55.7% higher than the meat processing sector.

These high wages give the dairy sector a comparative advantage in attracting employees compared to these similar sectors. For regional economies, a higher concentration of dairy relative to these other sectors will provide a larger economic boost.

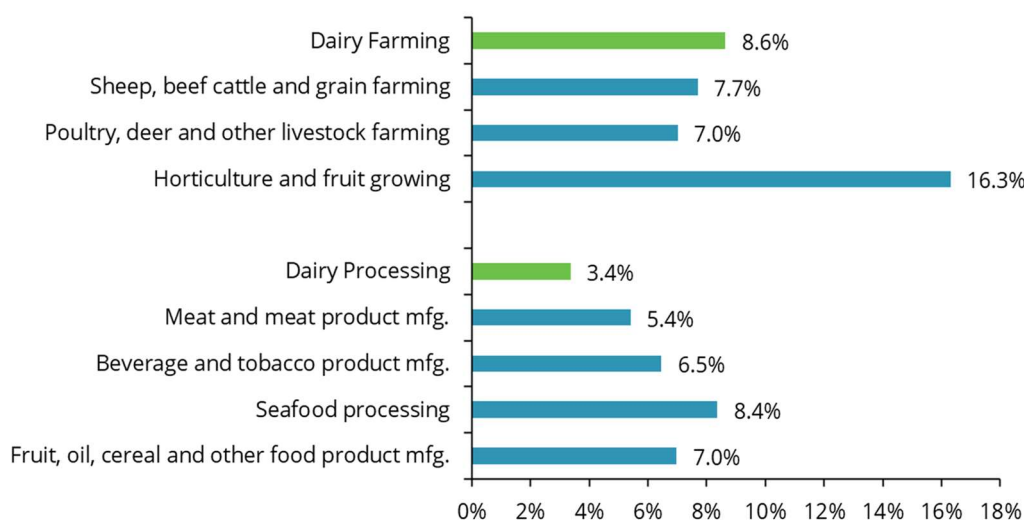
FIGURE 13: MEDIAN WAGES ACROSS COMPARABLE SECTORS, YEAR TO MARCH 2023



Source: Statistics New Zealand, Sense Partners

...which is prompting other sectors to up their game

FIGURE 14: AVERAGE ANNUAL GROWTH IN MEDIAN WAGES, 2019 – 2023



Source: Statistics New Zealand, Sense Partners



Dairy farming boosted wages at a faster rate than most, at 8.6% per annum on average. Higher wage growth in the horticulture sector is occurring in the context of considerably lower median wages.

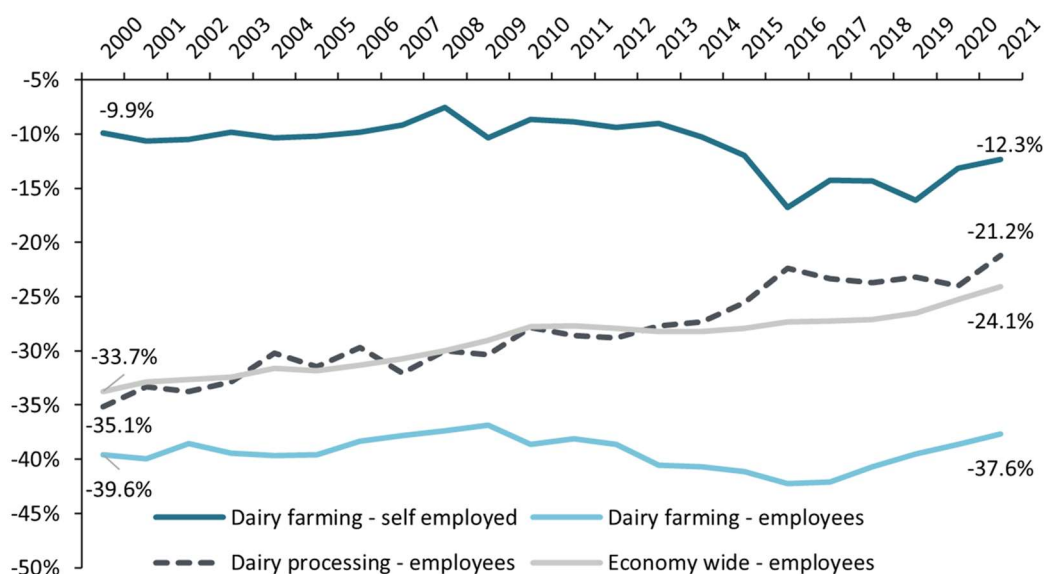
Wage growth in dairy processing has averaged 3.4% per annum since 2019. The existing high wages in dairy processing mean the modest 3.4% rise equates to an annual average gain of \$2,790. This is compared to \$3,089 in beverage and tobacco processing, \$2,746 in meat processing, \$3,653 in seafood processing, and \$3,129 in fruit, oil, cereal and other product processing. Despite higher gains in some sectors, there remains a considerable wage premium in dairy processing.

The gender wage gap is falling steadily in dairy processing

The pay gap in dairy processing employment has fallen from -35% in 2000 to -21% in 2021. At the same time, the female share of employment in processing has risen from 29% to 35%. This is a positive trend that has seen the sector achieve a lower wage gap than the economy-wide average.

The wage gap is likely partly due to disparities in seniority and experience. To sustain this progress, the sector will need to ensure that new female employees are retained within the sector and given the opportunity to develop skills and experience. As the female workforce achieves this, we would expect the wage gap to continue falling.

FIGURE 15: AVERAGE WAGE GAP (FEMALES RELATIVE TO MALES)

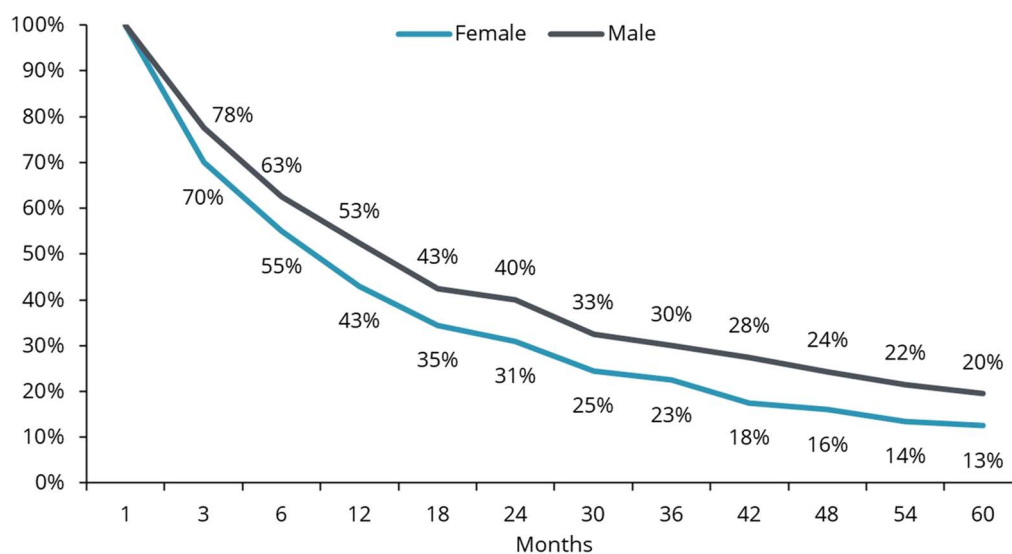


Source: Statistics New Zealand, Sense Partners

For dairy farming, the wage gap in employees over the last two decades has moved around an average of 39%. The female share of employment has risen from 26% to 30%, reflecting some progress in bringing females into the sector. However, the retention rate for females remains below that of males (Figure 16). Retaining females in the sector is key to enabling females to build up experience and seniority in the sector, helping to lower the wage gap.



FIGURE 16: DAIRY FARMING RETENTION RATES



Source: Muka Tangata



1.4. Dairy and the Māori economy

Data on the Māori economy is relatively sparse. In recent years, a more concerted effort has been made by government agencies and industry groups to collect a wider range of data, however the frequency and pace of collection remains an issue.

Māori dairy assets amount to \$4.9bn

In 2018, Māori businesses owned \$4.9b billion in assets in the dairy sector.⁴ This estimate was split across self-employed (\$537m), employers (\$1,579m), and collectives (\$2,749m). A separate analysis by Chapman Tripp in 2017 estimated 10% of dairy production assets were owned by Māori.⁵

In 2021, 11% of dairy farming businesses (859 businesses) were Māori owned. This share has been stable since 2018, the earliest year for which data is available.⁶

Māori employment on-farm is rising

In terms of employment, 7% of dairy farms (589) were significant employers of Māori,⁷ a share that has also been stable since 2018.

In 2021, Muka Tangata report that Māori made up 16.5% of dairy farming employees and self-employed, up from 12.7% in 2015. Applying this proportion to our estimate of total employment, the number of Māori employees has risen from 3,693 in 2015 to 4,040 in 2021.

Māori businesses exported \$207m in dairy products in 2021

According to Statistics New Zealand, businesses operated by Māori authorities⁸ exported \$207 million in milk powder, butter, and cheese in 2021. This was an increase of 35.3% on 2020.⁹

Grassland farms operated by Māori owned businesses made up 3% of total grassland farmland, however the average size of each farm, at 569 ha, was 3.8 times larger than the New Zealand wide farm average of 148 ha.

Māori owned farms made up 1.4% of the dairy herd - 87,900 cattle, of which 72,100 were milking cows and heifers.

⁴ BERL (2021) *Te Ōhanga Māori 2018: The Māori Economy 2018*.

⁵ Chapman Tripp (2017) *Te Ao Māori: Trends and insights*

⁶ Muka Tangata (2023) *WDC Dashboard*. <https://www.sweetanalytics.co.nz/portals/wdc-dashboard-muka-tangata/>

⁷ Defined as a business in which 75% of employees are of Māori ethnicity or descent.

⁸ Statistics New Zealand defines Māori authorities as "businesses involved in the collective management of assets held by Māori."

⁹ Statistics New Zealand (2022) *Tatauranga umanga Māori – Statistics on Māori businesses: 2021*.

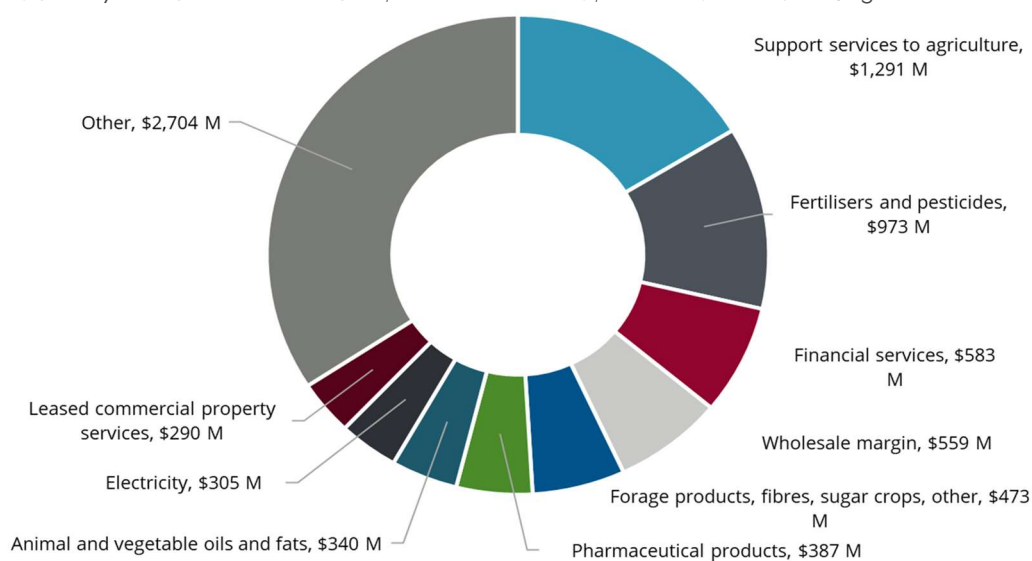


1.5. Dairy's support of other industries

Dairy boosts economic activity in a diverse range of sectors

Dairy farmers spent just over \$15.7 billion on inputs in the year to March 2023. This is made up of \$7.9 billion purchasing goods and services in the wider economy, with an additional \$8 billion in returns to land, labour, and capital. This included \$1.3 billion in agricultural support services, \$983m on fertilisers and pesticides, and \$583m in financial services.

FIGURE 17: INPUT EXPENDITURE, DAIRY FARMING, YEAR TO MARCH 2023



Source: Statistics New Zealand, Sense Partners

Dairy farming is a top 10 purchaser in 35 industries representing 31.5% of GDP

Agriculture, forestry, and fishing support services has a total GDP of \$2.9 billion in the year to March 2023. Of the sector's total output, 22.2% is purchased by dairy farmers. This equates to \$632m in GDP supported by dairy farming and 7,729 jobs in the sector directly supported by dairy farming, out of a total of 34,891 jobs.

Some other examples include:

- Fertiliser and pesticide manufacturing (52% dairy share, \$256m GDP and 801 jobs supported by dairy farming.)
- Banking and financing, financial asset investing (3.3% dairy share, \$383m GDP and 1,323 jobs supported by dairy farming.)
- Sheep, beef cattle, and grain farming (4.4% dairy share, \$213m GDP and 1,110 jobs supported by dairy farming.)
- Pharmaceutical, cleaning, and other chemical manufacturing (18.6% dairy share, \$134m GDP and 1,203 jobs supported by dairy farming.)

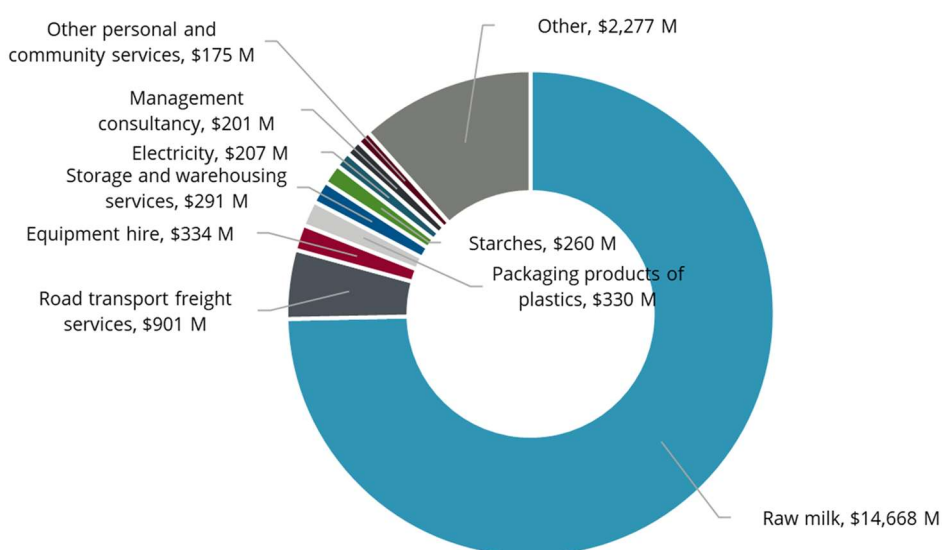


- Legal and accounting services (2.6% dairy share, \$176m GDP and 1,172 jobs supported by dairy farming.)

Dairy processors spent \$5.0bn beyond the farm gate

Dairy processors, as would be expected, are major consumers of raw milk, spending over \$19.6 billion on dairy farming's key output in the year to March 2023. However, the sector spent an additional \$5.0bn on goods and services from the wider economy. This is on top of \$3.8bn in returns to capital, land, and labour.

FIGURE 18: INPUT EXPENDITURE, DAIRY MANUFACTURING, YEAR TO MARCH 2023



Source: Statistics New Zealand, Sense Partners

Dairy processing is a top 10 purchaser in 25 industries representing 18.8% of GDP

Some examples from among the dairy processing sectors top sources of inputs include:

- Road transport and freight services (9.7% dairy share, \$450m GDP and 4,785 jobs supported by dairy processing.)
- Equipment rental and hiring services (6.5% dairy share, \$243m GDP and 907 jobs supported by dairy processing.)
- Polymer and rubber product manufacturing (9.0% dairy share, \$168m GDP and 1,231 jobs supported by dairy processing.)
- Warehousing and storage services (22.7% dairy share, \$174m GDP and 1,831 jobs supported by dairy processing.)
- Advertising, market research, and management services (1.9% dairy share, \$129m GDP and 1,292 jobs supported by dairy processing.)



2. Export update

2.1. Dairy's role in our export economy

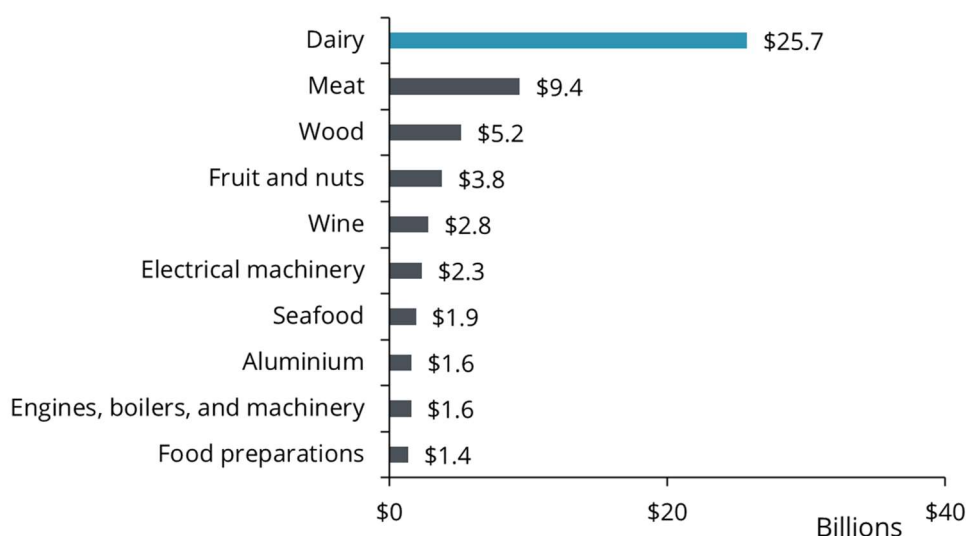
Dairy remains our largest export earner

Dairy exports in the 12 months to April 2023 amounted to \$25.7 billion. This represented 35.3% of goods exports for the period, and 27.3% of total goods and services trade.

Dairy is New Zealand's largest goods exporting sector in New Zealand by quite some margin. Dairy export earnings were approximately 2.8 times those from meat, approximately 9.2 times wine, and greater than meat, wood, fruit, wine, and seafood combined.

Dairy exports are over 3.4 times that of our largest services export, tourism. This of course reflects the impact of the COVID-19 pandemic. However, even prior to Covid exports of travel services, including personal, business, and education related travel, peaked at \$15.9 billion in export revenue in the year to March 2020.¹⁰ In that same year, dairy exports reached \$19.9 billion in revenue, 1.25 times greater.

FIGURE 19: TOP 10 GOODS EXPORTS, YEAR TO APRIL 2023



Source: Statistics New Zealand, Sense Partners

¹⁰ Statistics New Zealand (2023) *New Zealand International Trade*.

https://statisticsnz.shinyapps.io/trade_dashboard/

This includes a period at the start of the year in which travel was being impacted by the COVID-19 pandemic.

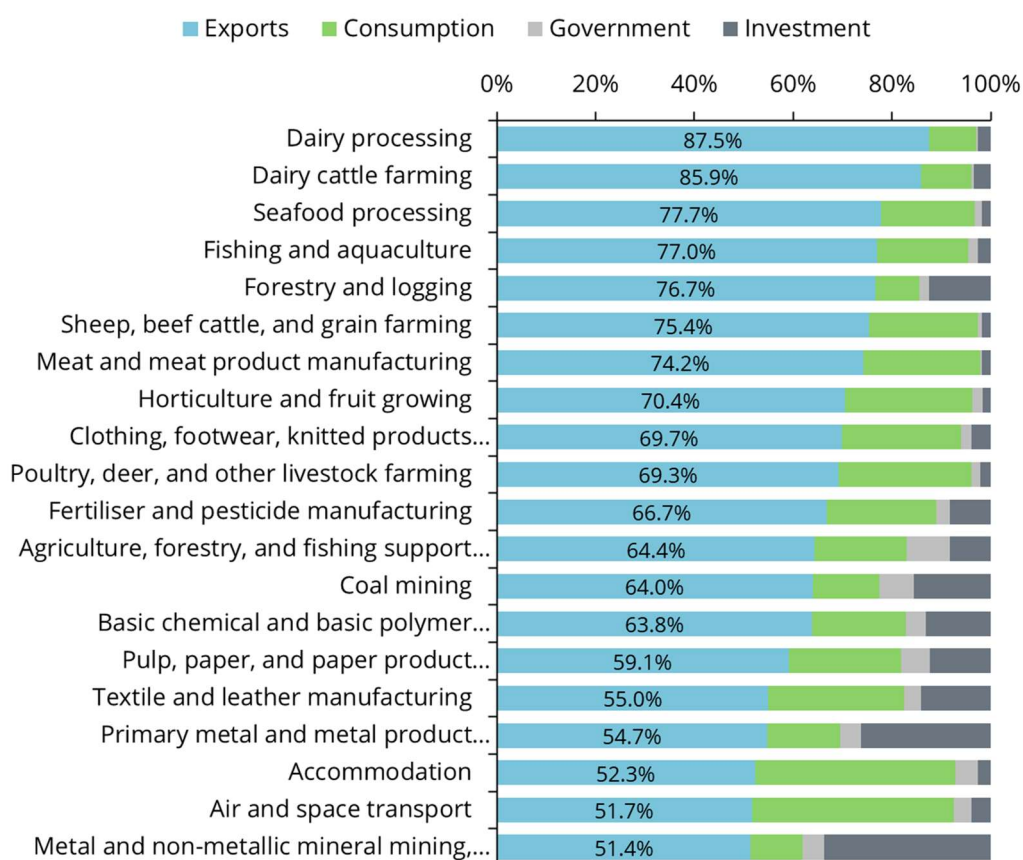


Dairy remains the most globally connected sector in NZ

87.5% of dairy processing output by value is exported, making it the most globally connected industry in New Zealand. Dairy farming is not far behind, with 85.9% of output value ultimately exported.

The remainder is consumed in the domestic market, either by households (10.3%) or through government catering (less than 0.3%). A small portion (3.5%) registers as investment in the form of accumulating inventories. This is indicative of the strength of dairy as our largest export sector, and the scale of production relative to domestic demand.

FIGURE 20: ULTIMATE DISPOSITION BY INDUSTRY, YEAR TO MARCH 2020



Source: Statistics New Zealand, Sense Partners

Dairy's share of goods exports trended upward during COVID-19

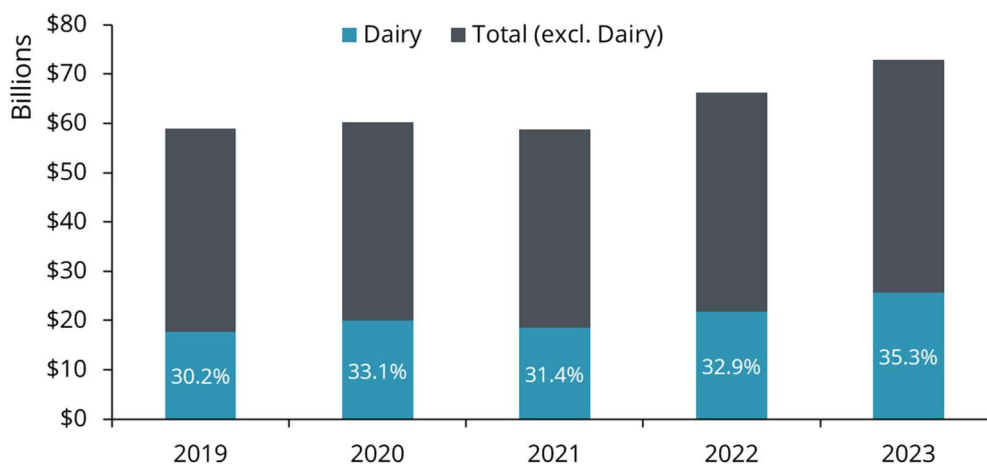
Total New Zealand goods exports have grown 24% in the five years to April 2023, an average of 5.4% per annum. This represents an increase of \$13.9 billion. The dairy sector has driven much of this growth.

Excluding dairy, goods exports have grown 15% over the same timeframe, a gain of \$6.0 billion. Dairy exports have grown 45%, an average 9.6% each year, more than double the rate of other exports (3.5%). The dairy sector has added \$7.9 billion to exports in that time.



This export success is translating into an increasing share of New Zealand's total goods exports. Dairy exports now represent 35.3% of goods exports, up from 30.2% in the year to April 2019.

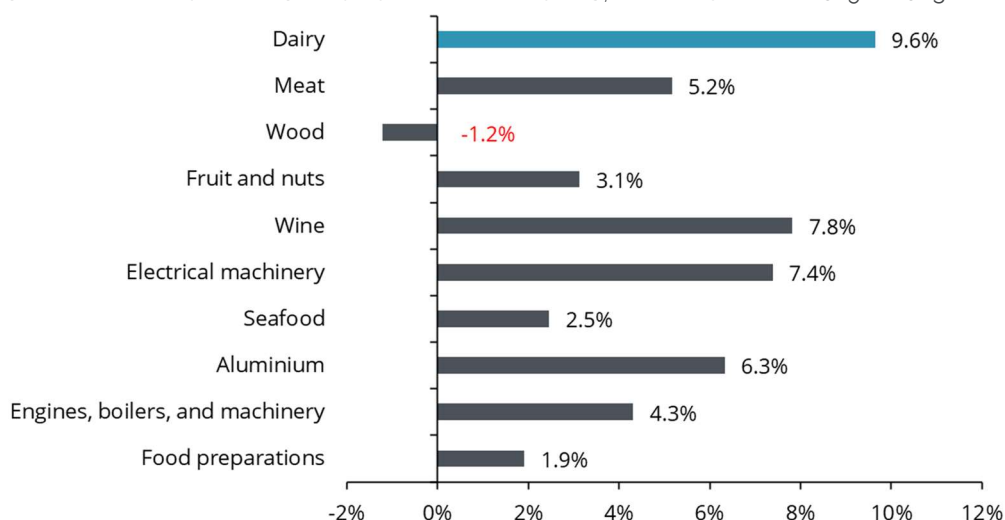
FIGURE 21: DAIRY SHARE OF GOODS EXPORTS, YEAR TO APRIL



Source: Statistics New Zealand, Sense Partners

Dairy has been the fastest growing goods exporting sector...

FIGURE 22: AVERAGE ANNUAL GROWTH IN EXPORTS, YEAR TO APRIL 2019 – 2023



Source: Statistics New Zealand, Sense Partners

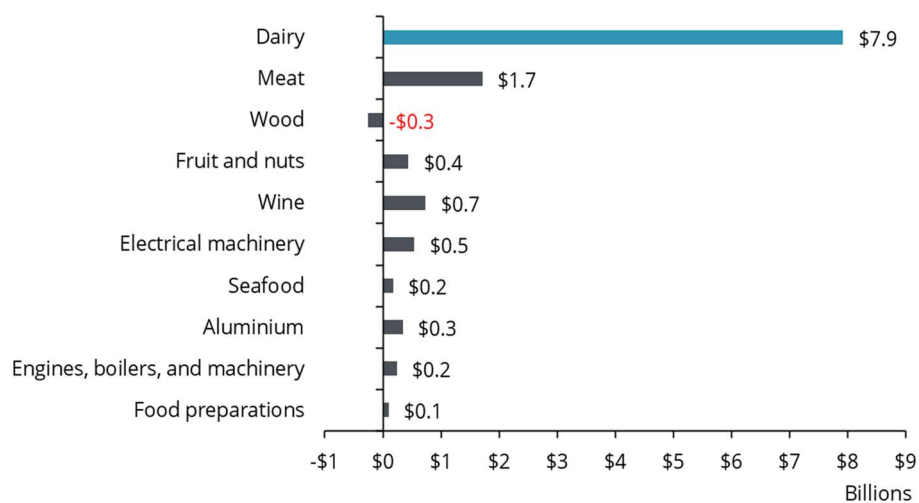
...and has added \$7.9B in export revenue since 2019

Dairy's high growth rate translates to an increase in export revenue of \$7.9 billion since 2019. This is an order of magnitude greater than any other sector. Dairy has *added* more export revenue over the past five years than any other sector, except meat, earned in the year to April 2023.

The export revenue growth from dairy also exceeds the combined growth of the next nine biggest goods export sectors combined.



FIGURE 23: CHANGE IN GOODS EXPORTS, YEAR TO APRIL 2019 – 2023



Source: Statistics New Zealand, Sense Partners

Dairy's growth has exceeded expectations. In 2020, the Ministry for Primary Industries published the 'Fit for A Better World Roadmap'. The report set a goal for dairy export revenues to reach \$23.1 billion by 2030.¹¹ The sector's 2023 export result of \$25.7 billion bettered the 2030 target by \$2.6 billion.

¹¹ Ministry for Primary Industries (2020) *Fit for a Better World: Background analysis n export earnings in the primary sector*. <https://www.mpi.govt.nz/dmsdocument/41319-Fit-for-a-better-world-Background-analysis-on-export-earnings-in-the-primary-sector>



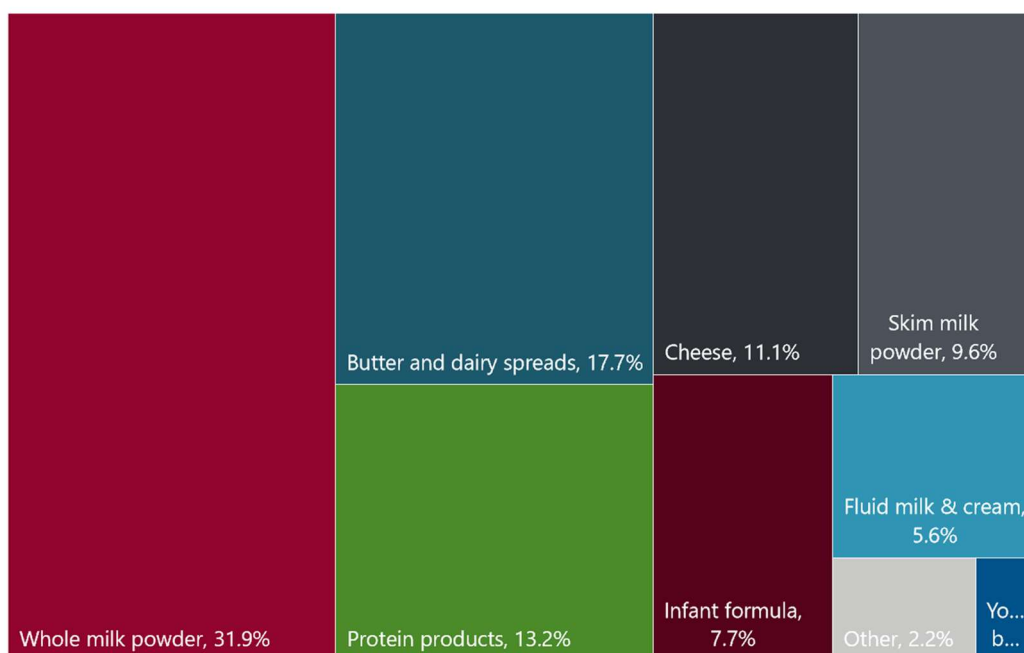
1.5. What the dairy sector sells

The dairy export product mix continues to evolve

Whole milk powder, at 31.6% of dairy exports by value, remains our largest dairy product export. While this share is down from the product's 36.9% share in 2019, exports have grown 25.2% in that same time. This reflects a level of diversification in dairy product exports that has seen the whole milk powder share fall from as high as 40% in 2015.

The falling share reflects the strong growth in several other product groups. The top gainer was protein products,¹² up 120% (\$1.9 billion) since 2019 to achieve \$3.4 billion in exports in 2023. Its share has consequently risen from 8.6% to 13.2%.

FIGURE 24: EXPORTS BY PRODUCT GROUP, YEAR TO APRIL 2023



Source: Statistics New Zealand, Sense Partners

Individual dairy products would be major export sectors in their own right

Some dairy products would be major export industries in their own right if considered individually:

- With \$4.6 billion in exports, butter and dairy spreads are larger than horticulture (\$3.8 billion), and wine exports (\$2.8 billion).
- Protein products (\$3.4 billion) exceed electrical machinery (\$2.3 billion), seafood (\$1.9 billion), and aluminium (\$1.6 billion).

¹² Protein products include whey (0404), casein (3501), and caseinates (3502).



Three dairy products - whole milk powder, skim milk powder, and protein products - have each **added** more than \$1 billion in export revenue since 2019. Exports of fluid milk and cream (\$1.4 billion) have grown sharply from \$814m in 2019.

TABLE 1: EXPORTS BY PRODUCT GROUP, YEAR TO MARCH 2023

Product group	Share (2023)	Export revenue (2023)	Growth (2019-2023)
Whole milk powder	31.9%	\$8.2B	25.2%
Butter and dairy spreads	17.7%	\$4.6B	21.3%
Protein products	13.2%	\$3.4B	120.3%
Cheese	11.1%	\$2.9B	47.7%
Skim milk powder	9.6%	\$2.5B	116.4%
Infant formula	7.7%	\$2.0B	31.4%
Fluid milk & cream	5.6%	\$1.4B	76.1%
Other	2.2%	\$0.6B	49.1%
Yoghurt, buttermilk, and kephir	0.9%	\$0.2B	55.3%

Source: Statistics New Zealand, Sense Partners



1.6. Where the dairy sector sells

China is driving growth in dairy exports, but gains are widespread

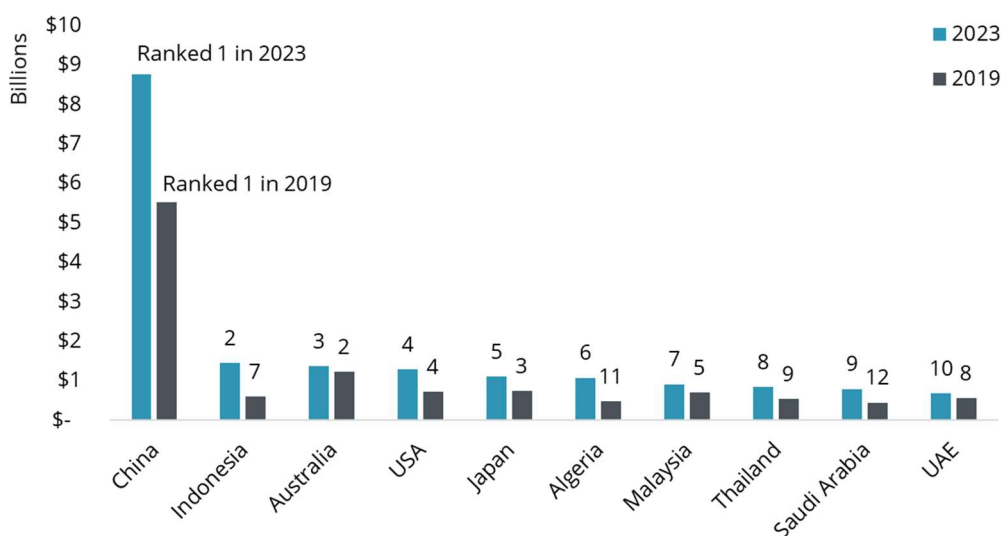
Over the 2019-2023 period our fastest growing major dairy export markets (greater than \$100m in 2023) were Sudan (+191% to \$121.2m), Guatemala (+178% to \$112.5m), Indonesia (+145% to \$1.4bn), and Algeria (+127% to \$1.1bn).

The largest dollar gain was in China, with an increase of \$3.3bn (+37%) between the year to April 2019 and 2023. An additional 11 markets recorded gains greater than \$200m, and 4 markets gained more than \$100m. Indonesia (up \$848.9m), Algeria (up \$594.9m), and the USA (up \$555.5m) each netted gains in excess of half a billion dollars, while exports to the EU increased \$218.6m (64%).

All of our 10 largest markets in 2023 have recorded gains greater than \$100m since 2019. More than half of our total markets achieved growth in revenue. 85 of 140 (61%) markets recorded gains totalling \$8.8bn, while the remaining 55 markets recorded losses totalling just \$900m.

Exports to Russia fell 89% to \$14.9m, as exporters responded to the Russian invasion of Ukraine. Sizeable falls were also seen in Chile (-52% to \$51.2m), Sri Lanka (-45% to \$216.7m), Hong Kong (-19% to \$402m), Peru (-16% to \$11.5m), and Egypt (-16% to \$233.2m).

FIGURE 25: TOP 10 DAIRY EXPORT MARKETS, YEAR TO APRIL 2023



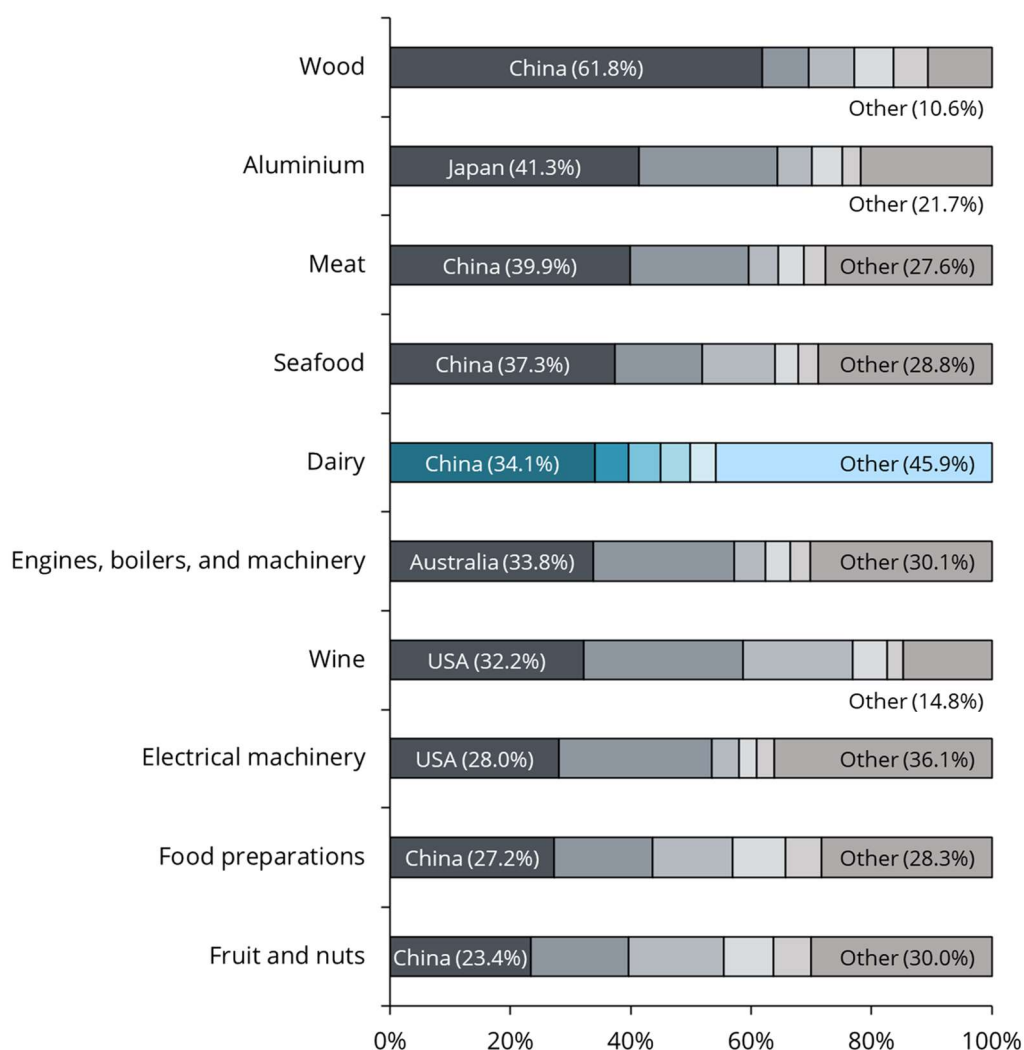
Source: Statistics New Zealand, Sense Partners

Dairy has a more diverse and less concentrated customer base

54.1% of dairy sector exports are sold to the top five markets. This is the lowest concentration of all New Zealand top 10 export sectors by some margin. Wood (89.4%) has the highest concentration, followed by wine (85.2%), aluminium (78.3%), meat (72.4%), seafood (71.2%), and electrical machinery (63.9%).



FIGURE 26: SHARE OF EXPORTS BY EXPORT DESTINATION, YEAR TO APRIL 2023



Source: Statistics New Zealand, Sense Partners

New Zealand dairy products are exported to 140 different markets. Engines, boilers, and machinery sold to 169 markets, and electrical machinery sold to 191 markets. All other top 10 goods export sectors sold to fewer markets than dairy, some by a considerable margin. Meat products were exported to 98 markets, wood to 77 markets, fruit and nuts to 80 markets, and wine to 116 markets.



TABLE 2: SHARE OF EXPORTS BY EXPORT DESTINATION, YEAR TO APRIL 2023

Product	1 st	2 nd	3 rd	4 th	5 th	Other
Wood	China (61.8%)	Japan (7.8%)	USA (7.6%)	Korea (6.6%)	Australia (5.7%)	Other (10.6%)
Aluminium	Japan (41.3%)	Korea (23.1%)	Netherlands (5.6%)	Australia (5.1%)	USA (3.0%)	Other (21.7%)
Meat	China (39.9%)	USA (19.7%)	Japan (4.8%)	Netherlands (4.3%)	UK (3.7%)	Other (27.6%)
Seafood	China (37.3%)	USA (14.6%)	Australia (12.1%)	Japan (3.8%)	Spain (3.4%)	Other (28.8%)
Dairy	China (34.1%)	Indonesia (5.6%)	Australia (5.3%)	USA (4.9%)	Japan (4.2%)	Other (45.9%)
Engines, boilers, and machinery	Australia (33.8%)	USA (23.4%)	UK (5.1%)	Canada (4.2%)	Chile (3.4%)	Other (30.1%)
Wine	USA (32.2%)	Australia (26.5%)	UK (18.2%)	Canada (5.8%)	Germany (2.6%)	Other (14.8%)
Electrical machinery	USA (28.0%)	Australia (25.5%)	Fiji (4.5%)	Korea (3.0%)	UK (2.9%)	Other (36.1%)
Food preparations	China (27.2%)	USA (16.4%)	Indonesia (13.3%)	Australia (8.8%)	Japan (6.0%)	Other (28.3%)
Fruit and nuts	China (23.4%)	EU - other (16.3%)	Japan (15.8%)	Taiwan (8.2%)	USA (6.4%)	Other (30.0%)

Source: Statistics New Zealand, Sense Partners



1.7. The barriers Dairy faces

High tariffs stand between us and the world's largest consumers

Table 3 below shows the 20 largest consumers of dairy products in the world. India, consuming the equivalent of 258.4 bn litres of milk each year accounts for 26.8% of global consumption. They apply an average 31.7% tariff against imports of New Zealand dairy products.

The next largest consumer is the EU, at 16.4% of global consumption. These consumers are behind an even higher tariff barrier, with an average 46.7% applied to New Zealand dairy products.

In total, 56.8% of global consumption takes place behind tariff barriers greater than 20%. 86.8% of consumption is behind a barrier of 10% or more. Only 7.8% of consumption is behind a barrier of less than 1%.

Progress in accessing major dairy markets is best reflected in the tariffs applied by China. At just 0.3%, this is a low barrier to accessing the world's 5th largest dairy market. This is a key reason that China is our largest market, taking 34% of our exports by value. There are still major gains to be made from successfully lowering tariff barriers into other major markets.

TABLE 3: TOP 20 DAIRY CONSUMERS AND THE TARIFFS THEY APPLY TO NZ DAIRY

Country	Dairy consumption (Billion Litres equivalent)	Share	Average dairy tariff
India	258.4	26.4%	31.7%
EU27	158.3	16.2%	46.7%
USA	91.4	9.3%	11.6%
Pakistan	56.9	5.8%	18.4%
China	51.0	5.2%	0.3%
Brazil	32.6	3.3%	16.9%
Russia	30.7	3.1%	12.5%
Turkey	17.4	1.8%	106.6%
UK	16.8	1.7%	48.8%
Mexico	16.7	1.7%	18.2%
Bangladesh	10.7	1.1%	21.5%
Uzbekistan	10.4	1.1%	12.0%
Sudan	10.1	1.0%	32.9%
Canada	9.8	1.0%	110.8%
Egypt	9.7	1.0%	6.9%
Argentina	9.5	1.0%	16.9%
Iran	9.3	1.0%	28.3%



Country	Dairy consumption (Billion Litres equivalent)	Share	Average dairy tariff
Japan	8.8	0.9%	25.3%
Ukraine	8.2	0.8%	8.6%
Australia	8.0	0.8%	0.0%

Source: Global Trade Atlas, Statistics New Zealand, World Bank, Sense Partners

Tariffs impose a \$1.5b cost on NZ dairy trade

TABLE 4: TOP 20 NZ DAIRY EXPORT MARKETS AND THE TARIFFS FACED

Destination	Value (NZD) & share (%)	Duties paid ¹³	Average duties paid	Average tariff for all dairy
China	\$8.76 B (34.1%)	\$219 M	6.6%	1.6%
Indonesia	\$1.43 B (5.6%)	\$31.2 M	2.2%	0.8%
Australia	\$1.36 B (5.3%)		0.0%	0.0%
USA	\$1.27 B (4.9%)	\$97.1 M	7.7%	19.6%
Japan	\$1.09 B (4.2%)	\$116 M	10.6%	25.3%
Algeria	\$1.06 B (4.1%)	\$57.9 M	5.4%	21.6%
Malaysia	\$0.90 B (3.5%)	\$6.55 M	0.7%	3.9%
Thailand	\$0.84 B (3.3%)	\$20.6 M	2.5%	15.0%
Saudi Arabia	\$0.78 B (3.0%)	\$38.9 M	5.0%	4.8%
UAE	\$0.67 B (2.6%)	\$33.4 M	5.0%	4.8%
Taiwan	\$0.66 B (2.6%)	\$0.33 M	0.1%	0.9%
Philippines	\$0.64 B (2.5%)		0.0%	0.3%
Singapore	\$0.61 B (2.4%)		0.0%	0.0%
EU 27	\$0.58 B (2.3%)	\$213 M	36.7%	46.7%
Korea	\$0.57 B (2.2%)	\$181 M	31.6%	46.8%
Viet Nam	\$0.54 B (2.1%)	\$1.11 M	0.2%	0.7%
Mexico	\$0.48 B (1.9%)	\$52.7 M	10.9%	18.2%
Hong Kong	\$0.40 B (1.6%)		0.0%	0.0%
Bangladesh	\$0.35 B (1.4%)	\$53.8 M	15.3%	21.5%

¹³ Note this table is based on MFN or FTA tariff rates (where applicable) and does not include product that may have been eligible for tariff reductions as part of import for re-export programmes, or temporary tariff reductions.



Destination	Value (NZD) & share (%)	Duties paid ¹³	Average duties paid	Average tariff for all dairy
Egypt	\$0.23 B (0.9%)	\$9.35 M	4.0%	6.9%
Total	\$25.7 B (100%)	\$1.52 B	5.9%	

Source: Statistics New Zealand, World Bank, FAO¹⁴, Sense Partners

Table 4 above shows the tariffs paid, in NZD, on New Zealand dairy products sent to our 20 largest markets. On \$25.7bn in total dairy exports, our trade partners levied roughly \$1.52bn in tariffs, equivalent to 5.1% of total value.

If tariffs applied on New Zealand products were lowered, demand for our products would likely rise. However, with no expected increases in milk production in New Zealand, and thus an inelastic supply, this higher demand would translate into higher prices. If these tariffs were lifted, much of this additional value would likely accrue to producers and processors here in New Zealand.

The final column of the table also shows the average tariff each country applies to all dairy products, including those we don't actually sell. This average is typically higher than the average duties faced by New Zealand products, reflecting the trade-chilling effects on New Zealand of high tariffs on some products. We tend to sell products that face lower tariffs.

This means that persistently high tariffs on some types of dairy product can prevent us from diversifying within markets. Our ability to offer a wider range of products is limited by the presence of higher tariffs outside our major export products.

Tariff barriers are likely even higher than these estimates

A key issue in trade analysis is estimating ad valorem equivalents (AVE). These represent tariffs as a percentage applied to the value of the goods being traded, as we have shown in Table 4 above. For example, Japan applies a 25% tariff to imports of some types of fluid milk.

However, tariffs are often made up of a monetary value per unit. For example, the USA applies a tariff of \$1.56 per kg of some types of whole milk powder.¹⁵ We can convert this to an AVE by looking at the tariff as a percent of the total value of each kg. The problem here is that this estimate is sensitive to changes in prices and exchange rates. The implied trade barrier may fluctuate over time, without any actual change in trade policy.

Where there is no trade in a good, this AVE cannot be estimated. No trade in a good may often signal there is an extremely high tariff barrier. Given this, excluding these products would underestimate the scale of tariff barriers. Accounting for tariff rate quotas (TRQs) is another challenge, with any single number unlikely to meaningfully capture the scale of this particular type of barrier.

¹⁴ FAO data is supplemented with production statistics from national statistics agencies where available.

¹⁵ 0402.21.90



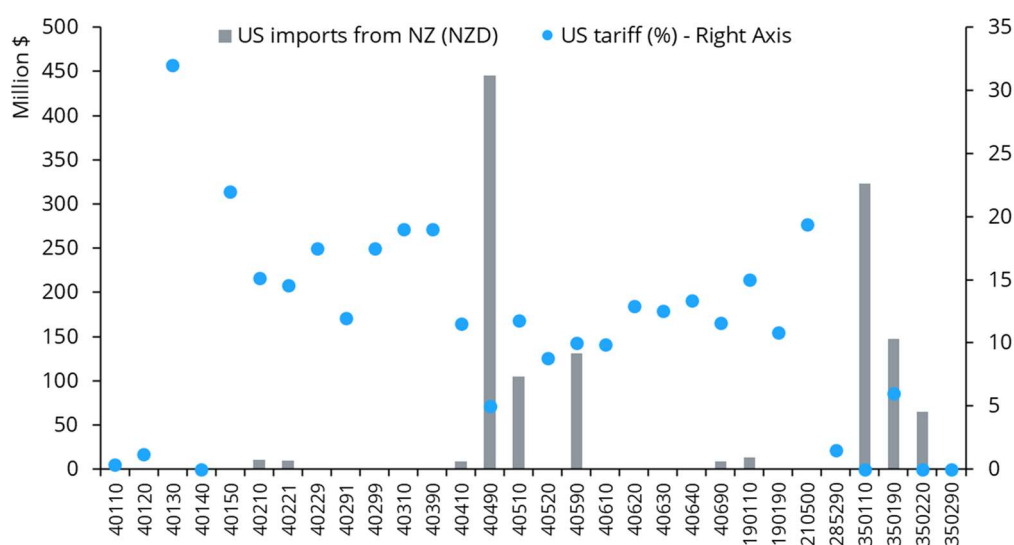
What this means is that the average tariffs we estimate in Table 4 above are likely an underestimate of the true scale of barriers. This is particularly so in the case of Japan. Japanese tariffs under the CPTPP agreement include a complex array of combined quotas with both ad valorem and monetary components. Japanese Most Favoured Nation (MFN) average tariffs for dairy products were as high as 81.6% in 2022.¹⁶

Out-of-quota tariffs in the US prohibit trade in our main dairy goods

The US is currently New Zealand's 4th largest dairy export market by value. Trade is dominated by high value proteins that are mostly subject to zero tariffs or tariffs less than 5%. Modest volumes of core dairy products enter via small WTO quotas with a lower in-quota tariff rate (IQTR). These core products, such as milkfat, powders, or cheese, typically dominate our trade with other markets. Yet the high out of quota tariff rate (OQTR) they face is prohibitive to trade outside some of specialised organic or retail applications.

For example, the US has a small WTO quota for butter (6,977MT, which represents 0.7% of domestic consumption of 985,000 MT) available to all countries with an IQTR of \$123/MT. Any volume of trade outside of this incurs an OQTR of \$1,541/MT. This demonstrates the importance of maintaining New Zealand's long held ambition of an FTA with the US. Reducing these barriers to trade will create a level playing field across the full range of New Zealand's dairy exports.

FIGURE 27: AVERAGE TARIFFS BY HS6 PRODUCT – USA, YEAR TO APRIL 2023



Source: Statistics New Zealand, World Bank, Sense Partners

¹⁶ World Trade Organisation (2023) World Tariff Profiles 2023 - Japan

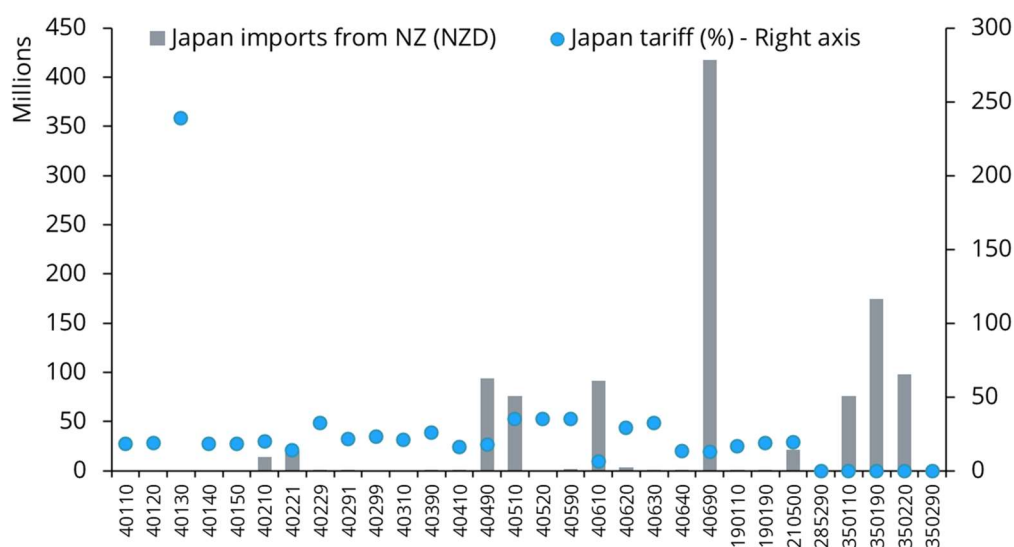
There is unfinished business in accessing the Japanese market

Japan is currently New Zealand's 5th largest dairy export market by value. As one of the largest dairy importers in the world, Japan is an important strategic market for New Zealand. The Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPP), which was concluded in 2017, provides some modest access into Japan. For example, a number of protein products became duty free on entry into force and most cheeses will be duty free by 2033.

However, CPTPP has not fundamentally changed the overall level of protection afforded to the Japanese dairy sector. Access to the Japanese market remains constrained by high tariffs and limited WTO quotas for other core dairy products. For example, even with CPTPP in place, butter access into Japan is highly constrained by a 3,719MT CPTPP quota, where the IQTR drops to 35% by 2029.

As a result, New Zealand's dairy trade with Japan tracks closely to the access provided under CPTPP, with trade dominated by cheese and proteins. This demonstrates the critical role of removing tariffs to support trade, the importance of addressing unfinished business in CPTPP, and looking for opportunities to enhance access into this high value market.

FIGURE 28: AVERAGE TARIFFS BY HS6 PRODUCT – JAPAN, YEAR TO APRIL 2023



Source: Statistics New Zealand, World Bank, Sense Partners

Existing trade agreements continue to deliver tariff reductions

Further tariff reductions are in the pipeline. This includes reductions from new agreements, such as the NZ-UK FTA.¹⁷ This agreement eliminates tariffs on most dairy products in gradual increments. Milk powders, for example, will have their tariff reduced in four equal increments

¹⁷ Ministry of Foreign Affairs and Trade (2022) *NZ-UK FTA: Chapter 2, Annex 2A, Subsection 2B-2-2*.



over 4 years, until they become duty free. Butters and Cheese are given a tariff rate quota that is gradually lifted over 6 years until it is eliminated.

However, older agreements are also still bringing in reductions. The 2008 New Zealand-China FTA included safeguards on imports of dairy products.¹⁸ These safeguards implemented higher tariffs if imports exceeded certain quantities. Most of these have expired, with the final safeguard on whole and skim milk powders lifting at the end of 2023. We estimate this could save up to \$219m each year compared to the year to April 2023.

The New Zealand-Thailand Closer Economic Partnership (CEP) is also due to deliver more tariff reductions for dairy.¹⁹ By 2025, a full 20 years after the agreement came into force, tariff rate quotas on fluid milk and skim milk powders will be lifted. Skim milk powders are currently subject to a 210% tariff when out of quota, a prohibitive barrier that ensures the quota is binding. After 2025, these products will enjoy tariff free access to the Thai market.

Our existing trade agreements with Japan (under CPTPP) and Korea (Korea-New Zealand FTA) will likewise bring further tariff reductions over time. This includes the removal of tariff rate quotas on milk fats into Korea by 2024, and tariff free access for cheese into Japan by 2033. While many products will remain subject to tariff rate quotas, many of these will be lowered.

Non-tariff measures cost \$7.8bn, the equivalent of 30% of Dairy exports

Research by Sense Partners on behalf of the Ministry of Foreign Affairs and Trade has analysed the impact of non-tariff measures on New Zealand's exports.²⁰ This research estimated that NTMs imposed a \$5.4 billion cost on dairy products in 2019.

This amounted to 30.3% of exports in that year (\$17.8 billion). Assuming a steady proportion, this may equate to a \$7.8 billion cost in 2023.

Non-tariff measures include sanitary and phytosanitary measures (largely focused on food safety), technical regulations (like packaging requirements), licensing and paperwork, bans and prohibitions, and price controls, among many other requirements.

NTMs will typically impose some form of cost on exporters, though this cost will vary between markets and across products. However, certain NTMs may promote consumer confidence, such as by ensuring high food safety standards. This can lead to consumers paying more for more of our dairy exports. In this way, NTMs can be a boost to trade.

To give a sense of their prevalence, Table 5 below shows the average number of NTMs applied against New Zealand dairy exports for eight select product groupings in our top 10 markets. The count of NTMs by itself lacks important information about their actual impacts. As discussed above, some of these could be having a positive impact. China imposes the highest number of NTMs, on average, of our top 10 markets and yet is our largest market.

¹⁸ Ministry of Foreign Affairs and Trade (2008) *NZ-China FTA: Annex 2: Special Agricultural Safeguard Measures*

¹⁹ Ministry of Foreign Affairs and Trade (2005) *NZ-Thailand CEP Agreement: Annex 1.3: Tariff Quotas for Products under Category TRQ.*

²⁰ Sense Partners (2022) *Non-tariff measures: Impacts, trends, and effects on exports from New Zealand.*



TABLE 5: AVERAGE NUMBER OF NTMS APPLIED TO NZ DAIRY EXPORTS

Country	Whole milk powder	Skim milk powder	Butter & milkfats	Cheese	Casein & Caseinates	Whey protein concentrate	Condensed milk	Fluid milk
China	8.5	8.5	6.7	7.4	7.3	11.0	7.8	7.5
Indonesia	5.6	5.6	6.9	6.8	1.2	5.4	5.5	4.1
Australia	4.1	3.8	3.9	3.9	2.4	3.8	3.8	4.2
USA	8.5	7.7	6.7	8.5	2.7	7.4	8.7	7.8
Japan	3.0	2.6	2.8	2.7	3.3	2.1	3.1	2.6
Algeria	2.4	2.4	2.2	1.9	2.0	1.9	2.5	2.6
Malaysia	1.5	1.5	1.5	1.5	1.0	1.5	1.5	1.6
Thailand	3.6	3.5	4.9	5.1	1.7	2.2	3.5	3.2
Saudi Arabia	4.2	4.2	4.2	4.2	4.3	4.2	5.3	4.2
UAE	3.4	3.4	3.4	3.4	2.8	3.6	4.5	3.5

Source: UN TRAINS, Sense Partners

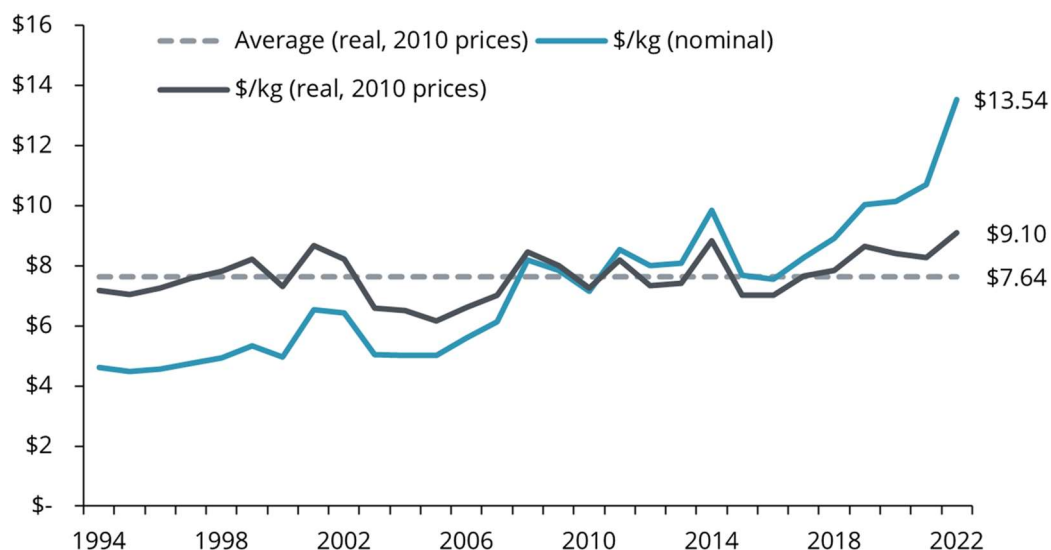


1.8. Trends in dairy exports

Despite inflation, real export value is rising

Figure 29 below shows export revenue dollars per kilogram of dairy milk solids produced in New Zealand. Nominal values, unadjusted for inflation, have increased rapidly since 2018, rising 51.8% from \$8.92 to \$13.54 per kg. While inflation, measured with the StatsNZ Dairy Cattle Farming PPI, has been high, real milk values are still rising. Real value per kg has risen 15.9% to \$9.10 since 2018 and is sitting 19% above the long-term average of \$7.64.

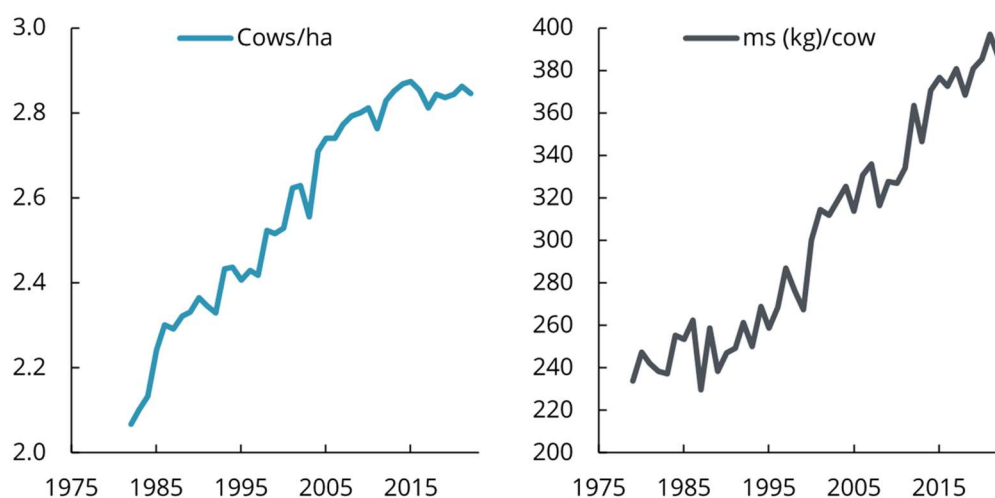
FIGURE 29: EXPORT REVENUE PER KG MILK SOLIDS PRODUCED, YEAR TO DECEMBER



Source: DCANZ, Statistics New Zealand, Sense Partners

Efficiency in the sector is decoupling value from the herd size

FIGURE 30: COWS PER HECTARE, AND MILK SOLIDS PER COW



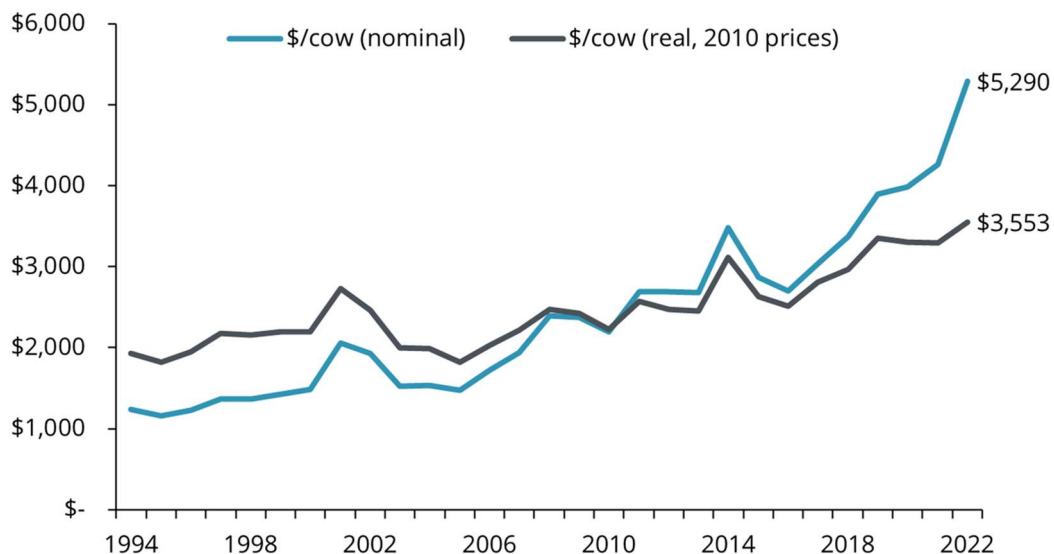
Source: Dairy NZ, Statistics New Zealand, Sense Partners



The number of dairy cows in the national herd peaked in 2015 at just over 5 million. Since then, it has fallen 3.5%. Likewise, the intensity of dairy farming, measured in cows per hectare, has flattened out at 2.85. Despite this, production per cow has continued to increase, rising an average 2.4% per annum between 2015 and 2022 to reach 386kg of milk solids per cow.

This has helped to drive an increase in real export value per cow. Nominal value per cow has risen 56.9% since 2018. Adjusted for inflation, real values have risen 19.7%.

FIGURE 31: EXPORT REVENUE PER COW, YEAR TO JUNE



Source: DCANZ, Statistics New Zealand, Sense Partners



2. Resilience

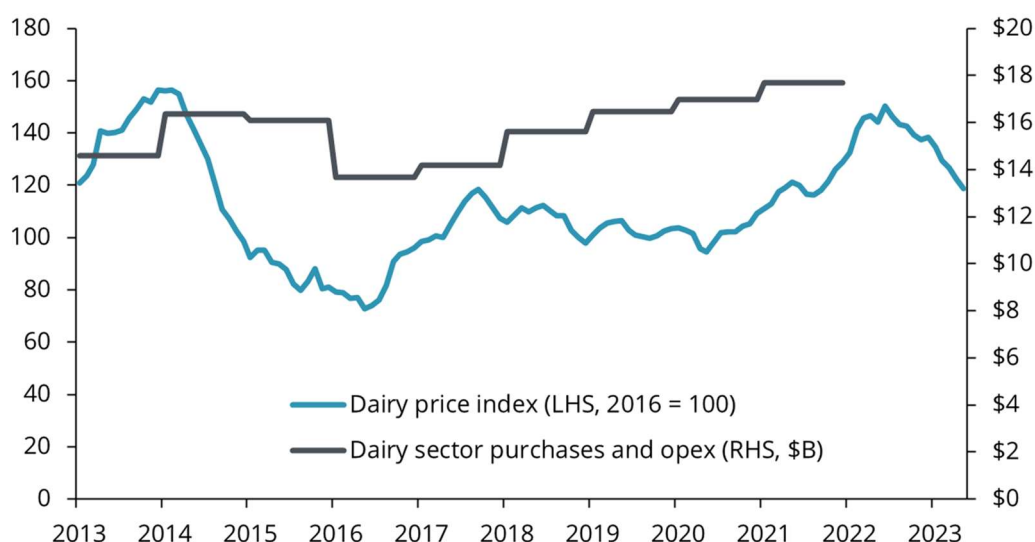
2.1. Dairy makes a foundational contribution

Dairy is exposed to global commodity cycles...

The standard deviation of the dairy price index, measured as a percentage of the index average, is 18.9%. This gives an indication of how volatile global dairy prices can be. For example, between February 2014 and May 2016, the index fell 53.5%.

This is partly due to the impacts of a surge in purchases and stockpiling in Asian markets in 2014, driving up prices. This was followed by a significant fall in purchases, as the stockpiling of 2014 was drawn down at the expense of new purchases. In addition, dairy export sanctions were applied against Russia after the occupation of Crimea.

FIGURE 32: DAIRY PRICE INDEX AND DAIRY SECTOR PURCHASES AND OPEX



Source: FAO, Statistics New Zealand, Sense Partners

...yet purchases inputs at a steady pace, acting as a shock absorber

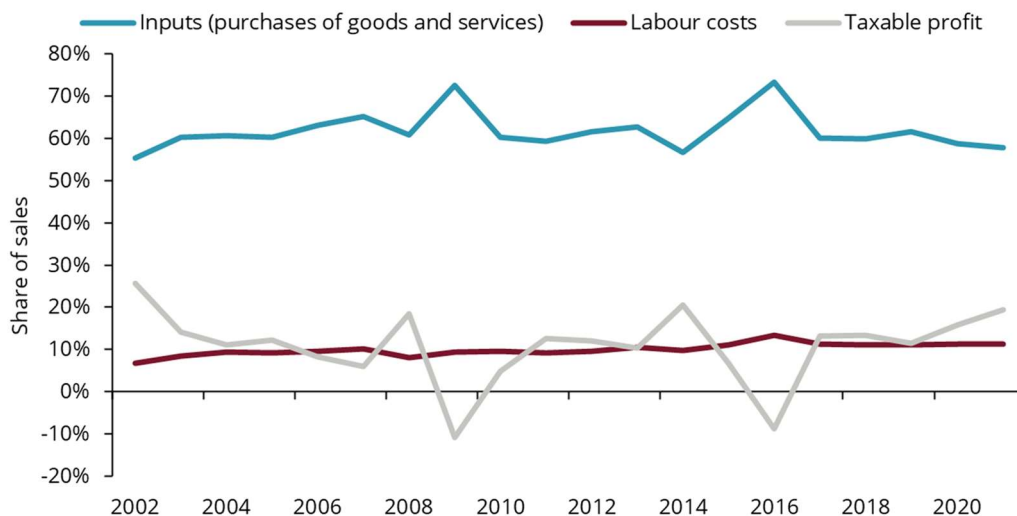
This volatility in dairy prices did not translate into a similar level of volatility in dairy economic activity. Dairy purchases and operating expenses remained relatively stable, with a standard deviation of 8%. While there inevitably is some impact from sharp falls in prices, dairy farmers must keep their farms running in the meantime. This means continued jobs and spending in the local economy. Indeed, total dairy sector purchases did not fall between 2017 and 2021.



Figure 33 below shows the share of dairy revenue directed to purchases of inputs, labour costs, and profit. The share directed to labour is relatively stable over time, between 8% and 13%. Bumper years have seen boosts to spending on inputs, but there is little downside in other years. It is taxable profit that takes the hit. This is where dairy farmers are absorbing the shock of milk price volatility, continuing to spend in the region and drive the local economy.



FIGURE 33: USE OF REVENUE – DAIRY SECTOR



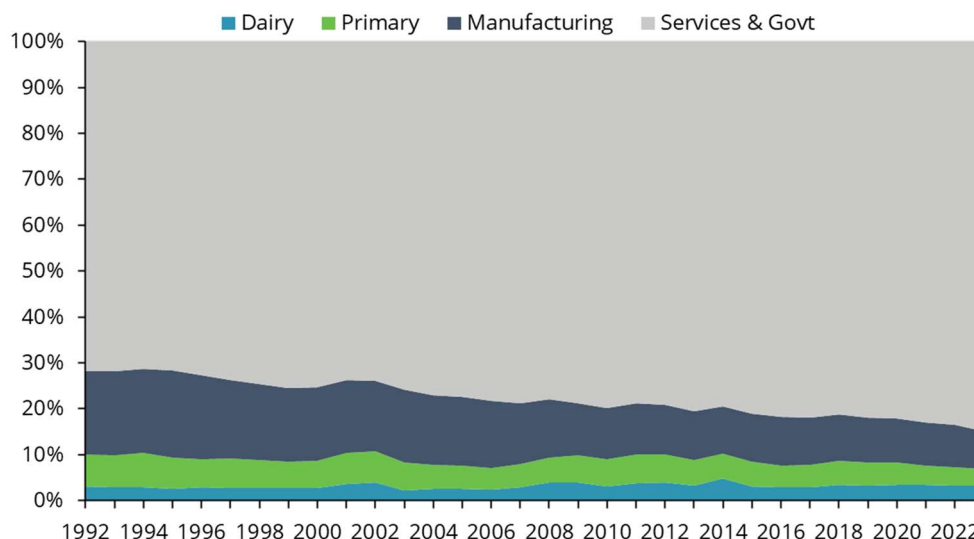
Source: Statistics New Zealand, Sense Partners

Dairy remains a long-term, steady foundation for the economy

Over the long term, the New Zealand economy has been transitioning toward services. Manufacturing's share of GDP has fallen from 18.2% in 1992 to just 8.1% in the year to March 2023, while services has risen from 71.8% to 84.9%. The primary sector as a whole has fallen from 10.1% to 7.0%. Yet dairy has retained its share, edging up from 3.1% to 3.2%.

While other components of the economy change over time, dairy remains a consistent share. This reflects our comparative advantage in the sector globally, and the success of dairy in growing export revenue, and providing sticky jobs with high median wages across the country.

FIGURE 34: SHARE OF GDP BY SECTOR, YEAR TO MARCH



Source: Statistics New Zealand, Sense Partners



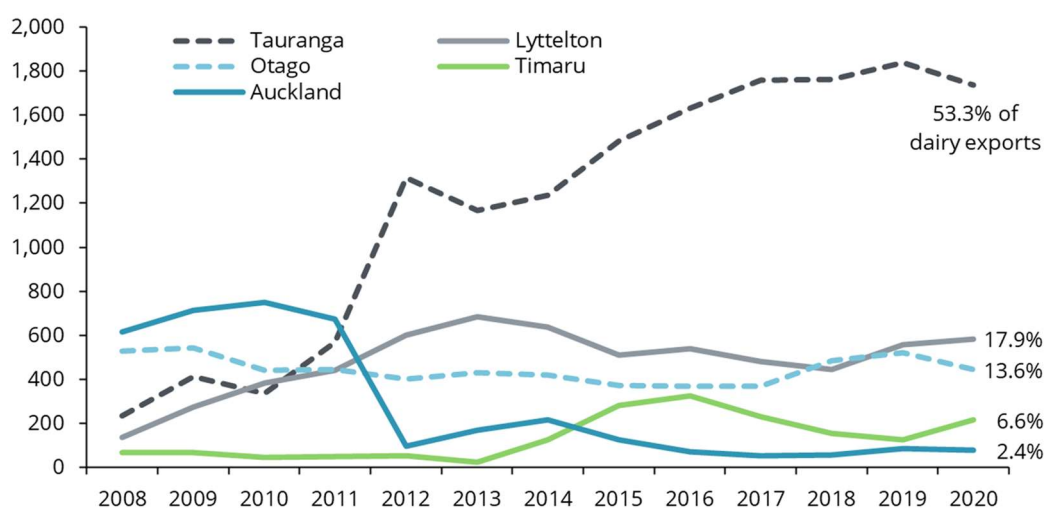
2.2. A resilient contribution needs resilient infrastructure

Achieving efficiency means investing in resilience

Almost all dairy exports are shipped by sea freight, making port infrastructure a key link in a competitive dairy supply chain. Tauranga is the primary export gateway for dairy, with 53.3% of dairy exports by weight moving through the port in 2020.

This has risen from just 14.9% in 2010 due to a reallocation of exports from Auckland to Tauranga. In 2010, 750,600 tonnes of dairy product were exported via Ports of Auckland, and 336,700 tonnes were exported via Port of Tauranga. Exports out of Auckland fell to just 77,800 tonnes in 2020, while those out of Tauranga rose to over 1.7m tonnes.

FIGURE 35: DAIRY EXPORTS, TOP 4 PORTS AND AUCKLAND, THOUSAND TONNES



Source: Ministry of Transport, Sense Partners

This is part of a global trend toward larger, more efficient ships. In 2021, 63% of container ships visiting NZ ports had a capacity of 4,000 TEU (twenty-foot equivalent unit) or more, up from just 2% in 2012. The Port of Tauranga is already servicing vessels with capacities up to 11,300 TEU, with the potential for up to 13,500 TEU vessels.²¹

The economies of scale enabled by large vessels making fewer stops at more efficient ports helps to reduce shipping costs. These savings are important to ensure New Zealand exporters remain connected to, and competitive within, global markets.

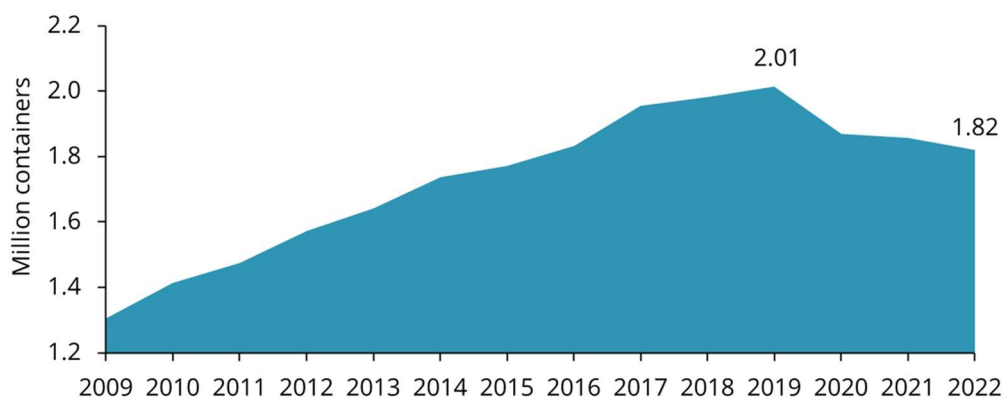
Maintaining the infrastructure to service such large vessels in a few “backup” locations is likely to be cost prohibitive. This drives the focus toward investing in resilience in ‘plant to ship’ infrastructure, ensuring our most efficient ports are resilient to disruption.

²¹ ANZ Research (2021) *NZ Insight: Freight challenges*



Recovering port productivity is essential to wider export performance

FIGURE 36: TOTAL CONTAINER THROUGHPUT OF NZ PORTS



Source: Ministry of Transport, Sense Partners

Due to the Covid-19 epidemic, the total number of containers processed by New Zealand ports fell 9.7% between 2019 and 2022, after strong growth through the prior decade. Figure 37 below shows ship handling rates for the three largest dairy export ports, and Auckland. Ship handling measures how many containers are moved on and off a ship each hour and indicates the overall productivity of the port.²²

The Covid-19 pandemic triggered substantial falls in ship handling across most major ports, which have yet to recover. Much of this fall in productivity has been the result of a fall in the number of vessels visiting New Zealand ports. This was largely due to delays in major ports overseas causing ships to run behind schedule. Shipping companies opted to skip smaller destinations in order to make up for lost time.

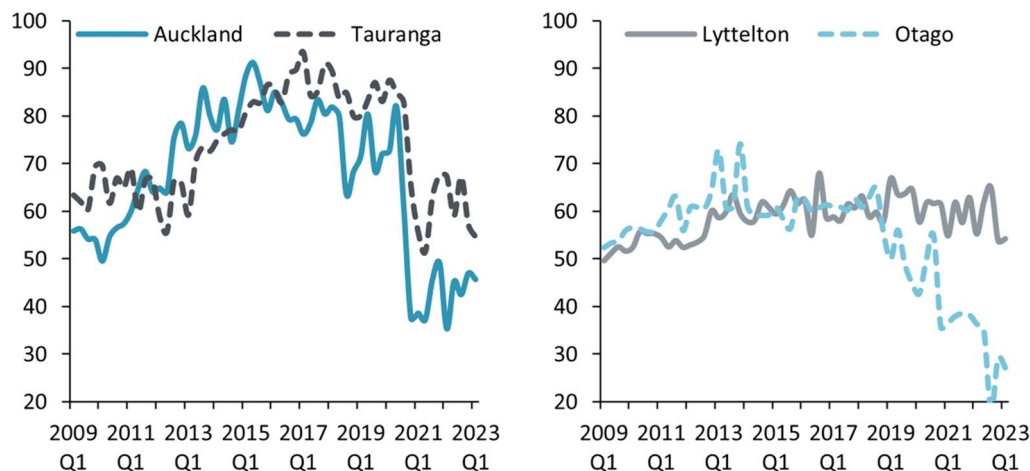
Total container ship visits fell 31% between 2019 and 2022, with the highest fall (51%) in Port Chalmers (Otago). Visits to Timaru fell, 49%, Tauranga fell 22%, and those to Lyttelton fell 14%. Visits have yet to show any recovery since the pandemic disruption.

Almost all dairy exports leave the country via maritime shipping. The volume of milk produced is not expected to increase. However, growth in other export industries will start to challenge dairy for space on deck. Accommodating this growth, while preserving dairy exports at their current volume, will be a challenge without improvements in port efficiency.

²² Ministry of Transport (2023) *Freight Information Gathering System: Port container handling*.



FIGURE 37: SHIP HANDLING RATES



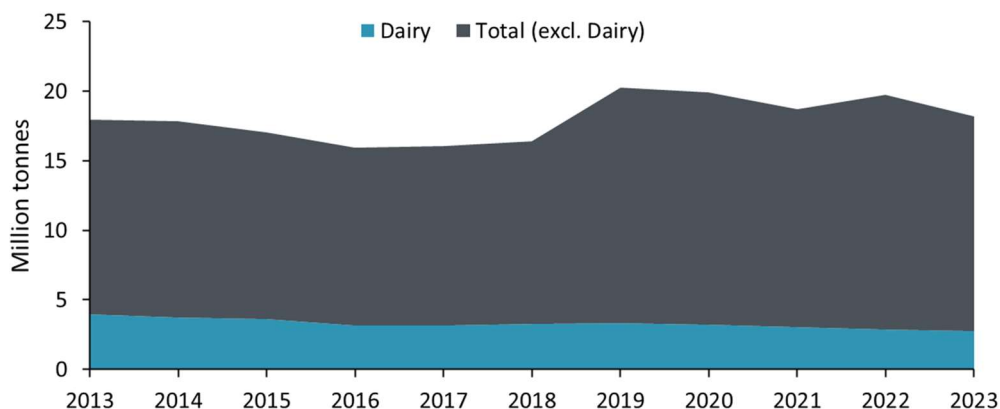
Source: Ministry of Transport, Sense Partners

Key rail links often lack a secondary route, pushing freight roadside

Resilience at the port of export is crucial. But this counts for little if access to the port itself is blocked off. Rail provides a potentially cost effective and environmentally friendly option to move dairy from the processing plant to the port.

However, where the main rail route is disrupted, the alternative is either road freight or no freight (i.e., lost production, missed or delayed shipments, and unhappy customers).

FIGURE 38: TOTAL FREIGHT MOVEMENTS BY RAIL, YEAR TO MARCH



Source: Ministry of Transport, Sense Partners

Rail access to the Port of Tauranga, the largest dairy export port in New Zealand, is reliant on a single rail line, the East Coast Main Trunk (ECMT). This is a particularly crucial link for dairy processors in Taranaki. Between 2019 and 2023, processors in the region experienced 9 rail



outages of durations between 1 and 9 days.²³ Approximately 23% of total freight movements between Waikato and the Bay of Plenty are carried via rail on the ECMT.²⁴

Switching even a portion of this to road could impose a large cost, particularly as trucks either have to cross up and over the Kaimai Range or detour north via SH2, incurring higher operating costs. Part of this increased cost would also come from having to compete with existing road freight customers in the event of an outage on one of the rail lines.

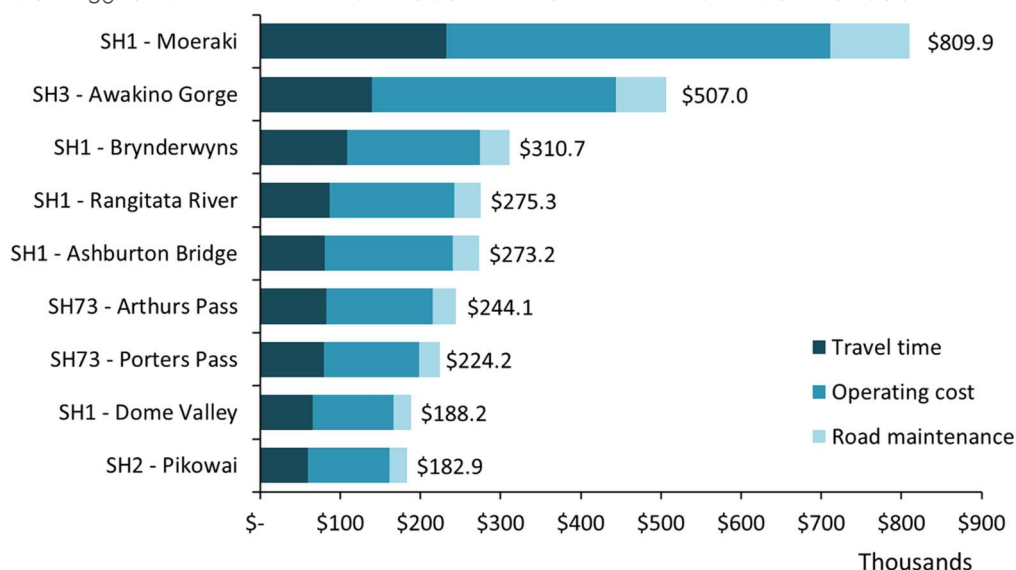
Despite rail's potential cost efficiency, it has been losing ground to road freight transport, particularly for dairy. The total volume of dairy products carried by rail has fallen 43% (1.2 million tonnes) since 2013.²⁵ An improvement in the cost efficiency of rail may help to reverse this trend, but consideration needs to be given to the resilience of the network.

The road network is vulnerable to costly closures on key routes

Liquid milk is typically processed within the region it is produced. Freight movements of liquid milk (all modes) tend to largely be within-region. The exception is Manawatu-Whanganui, which sends most (~82% in 2017/18) of its liquid milk to Taranaki.²⁶

With farms dispersed across the countryside, milk tanker trucks are the only feasible option in transporting milk to the processing plant. These trucks rely on the rural road network, and the State Highway spine.

FIGURE 39: SHORT TERM FREIGHT COST IMPACT PER DAY OF ROUTE CLOSURE



Source: Waka Kotahi, Mobile Roads, Sense Partners

²³ Information on rail outages supplied by DCANZ members

²⁴ Ministry of Transport (2019) *National Freight Demand Study 2017/18*.

<https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf>

²⁵ Ministry of Transport (2023) *Freight Information Gathering System*.

²⁶ Ministry of Transport (2019) *National Freight Demand Study 2017/18*.

<https://www.transport.govt.nz/assets/Uploads/Report/NFDS3-Final-Report-Oct2019-Rev1.pdf>



A key issue facing this essential network is the relative vulnerability of rural road transport to disruption. There are many points where the network converges on chokepoints, with alternatives limited to long detours. In some areas, such as SH60 over Takaka Hill, or SH67 north of Westport, there are no alternatives at all.

DCANZ stakeholders have identified several key routes considered a risk. These are prone to disruption, and their alternatives come at a significant cost. Due to their commercially sensitive nature, these costs have not been provided for publication. However, we have used procedures and data from the Waka Kotahi Monetised Benefits and Costs Manual to estimate approximate cost impacts on total freight traffic arising from disruption to these routes.

We look at three main cost impacts: the value of freight travel time (including the driver's pay), the additional vehicle operating costs (such as fuel and maintenance), and additional road maintenance costs. We have used Road User Charges as a proxy for the additional road maintenance costs. The results are shown in in Figure 39 above.

This analysis only considers the upfront impact on transport and road maintenance costs. Consistent or repeated disruption on key routes may end up deterring investment and capping economic development over the longer term.

The cost is also based on present traffic volumes. For regions with poor roading infrastructure, such as the West Coast and Northland, historically weak transport infrastructure may have contributed to lower growth. The lower dollar cost on these routes, such as Arthurs Pass (\$240,000) versus SH1 at Moeraki (\$809,000), is in part the result of this lower past growth reflected in lower present truck traffic volumes.

For producers in remote areas, such as the West Coast, alternatives to some key routes may exceed 800km each way. Such a route is too costly to act as a feasible alternative. If the main route is closed, milk production is either diverted to other producers, or lost altogether.

Dairy export performance depends on reliable farm-to-port infrastructure

Reliable and resilient infrastructure is essential. Not only for export growth, but even to maintain our current export position, producers need to be able to get their products to customers. In a global supply chain that remains built around just-in-time delivery, reliably on-time delivery is key. The impacts of climate change are already testing the resilience of New Zealand's infrastructure.

Disruption to infrastructure may jeopardise our reputation as a reliable supplier, with negative implications for growing export value. Supply chains for both ambient temperature and refrigerated products are relevant to dairy. The ability to pivot the dairy product mix across either format is important for the industry to pursue added value opportunities.

We also need to avoid a tunnel-vision focus on the movement of processed products. The key input, fresh dairy milk off the farm, must be transported to the factory and processed within a



few hours of milking. Achieving this is dependent on the road network: 11,000km of State Highways connecting 65,600km of rural roads.²⁷

Ensuring this network is robust to disruption is a major challenge. However, it is a challenge that must be tackled. Resilient infrastructure is key to sustaining dairy production, exports, and the sector's foundational contribution to the New Zealand economy.

²⁷ Waka Kotahi (2023) *State Highway frequently asked questions*.



3. Appendices

Dairy GDP by region

TABLE 6: DAIRY GDP BY REGION

Region	Dairy GDP	Share of total GDP
Nelson	\$19.4m	0.7%
Gisborne	\$29.8m	1.0%
Marlborough	\$58.7m	1.5%
Tasman	\$96.0m	2.7%
Hawke's Bay	\$137 m	1.3%
Wellington	\$208 m	0.6%
West Coast	\$339 m	14.4%
Northland	\$594 m	5.4%
Bay of Plenty	\$635 m	3.2%
Otago	\$644 m	4.1%
Manawatu-Wanganui	\$801 m	5.5%
Auckland	\$915 m	0.8%
Southland	\$953 m	13.8%
Taranaki	\$976 m	12.0%
Canterbury	\$1,945 m	4.6%
Waikato	\$2,954 m	9.3%

Source: Statistics New Zealand, Sense Partners

Dairy jobs by district

TABLE 7: DAIRY JOBS BY DISTRICT (EXCLUDING SELF-EMPLOYED)

District	Farming jobs	Processing jobs	Share of total
Ashburton District	1750	6	10.5%
Auckland	350	1650	0.2%
Buller District	240	..	6.3%
Carterton District	120	..	3.8%
Central Hawke's Bay District	220	..	3.6%
Central Otago District	50	..	0.3%
Christchurch City	240	530	0.3%
Clutha District	750	530	14.5%
Dunedin City	190	3	0.3%
Far North District	360	21	1.8%



District	Farming jobs	Processing jobs	Share of total
Gisborne District	45	35	0.3%
Gore District	260	95	5.5%
Grey District	190	..	2.9%
Hamilton City	60	780	0.8%
Hastings District	100	55	0.3%
Hauraki District	520	40	9.2%
Horowhenua District	430	0	4.2%
Hurunui District	410	9	8.8%
Invercargill City	250	180	1.5%
Kaikoura District	55	..	3.8%
Kaipara District	460	140	8.6%
Kapiti Coast District	45	12	0.4%
Kawerau District	0	..	0.0%
Lower Hutt City	6	40	0.1%
Mackenzie District	110	..	5.4%
Manawatu District	520	3	5.2%
Marlborough District	95	9	0.4%
Masterton District	90	3	0.8%
Matamata-Piako District	1250	1150	15.5%
Napier City	0	6	0.0%
Nelson City	15	12	0.1%
New Plymouth District	490	6	1.3%
Opotiki District	130	..	3.4%
Otorohanga District	600	..	17.4%
Palmerston North City	110	510	1.1%
Porirua City	0	..	0.0%
Queenstown-Lakes District	45	9	0.2%
Rangitikei District	220	..	3.9%
Rotorua District	660	40	2.1%
Ruapehu District	85	..	1.5%
Selwyn District	1050	1050	10.0%
South Taranaki District	1500	1750	26.0%
South Waikato District	770	350	13.0%



District	Farming jobs	Processing jobs	Share of total
South Wairarapa District	170	6	5.4%
Southland District	2300	770	19.2%
Stratford District	250	..	7.8%
Tararua District	450	250	11.1%
Tasman District	290	120	1.7%
Taupo District	790	210	5.7%
Tauranga City	45	9	0.1%
Thames-Coromandel District	85	9	0.9%
Timaru District	670	960	6.5%
Upper Hutt City	3	..	0.0%
Waikato District	1050	330	6.3%
Waimakariri District	470	12	2.7%
Waimate District	470	400	33.5%
Waipa District	900	630	7.0%
Wairoa District	18	..	0.5%
Waitaki District	650	130	7.3%
Waitomo District	200	..	4.8%
Wellington City	0	12	0.0%
Western Bay of Plenty District	350	3	1.9%
Westland District	240	550	22.3%
Whakatane District	450	360	5.7%
Whanganui District	95	30	0.7%
Whangarei District	420	380	2.1%

Source: Statistics New Zealand, Sense Partners



Dairy wages by district

TABLE 8: DAIRY WAGES BY DISTRICT

District	Farming wages	Processing wages	Share of total
Ashburton District	\$93.9m	\$0.9m	9.8%
Auckland	\$18.8m	\$237.9m	0.4%
Buller District	\$12.9m	\$0.0m	6.1%
Carterton District	\$6.4m	\$0.0m	3.9%
Central Hawke's Bay District	\$11.8m	\$0.0m	3.9%
Central Otago District	\$2.7m	\$0.0m	0.4%
Christchurch City	\$12.9m	\$76.4m	0.6%
Clutha District	\$40.2m	\$76.4m	24.2%
Dunedin City	\$10.2m	\$0.4m	0.3%
Far North District	\$19.3m	\$3.0m	2.1%
Gisborne District	\$2.4m	\$5.0m	0.6%
Gore District	\$14.0m	\$13.7m	8.3%
Grey District	\$10.2m	\$0.0m	2.5%
Hamilton City	\$3.2m	\$112.5m	1.7%
Hastings District	\$5.4m	\$7.9m	0.5%
Hauraki District	\$27.9m	\$5.8m	10.1%
Horowhenua District	\$23.1m	\$0.0m	4.3%
Hurunui District	\$22.0m	\$1.3m	10.0%
Invercargill City	\$13.4m	\$26.0m	2.3%
Kaikoura District	\$3.0m	\$0.0m	4.1%
Kaipara District	\$24.7m	\$20.2m	11.7%
Kapiti Coast District	\$2.4m	\$1.7m	0.5%
Kawerau District	\$0.0m	\$0.0m	0.0%
Lower Hutt City	\$0.3m	\$5.8m	0.2%
Mackenzie District	\$5.9m	\$0.0m	5.4%
Manawatu District	\$27.9m	\$0.4m	5.1%
Marlborough District	\$5.1m	\$1.3m	0.5%
Masterton District	\$4.8m	\$0.4m	0.9%
Matamata-Piako District	\$67.1m	\$165.8m	24.4%
Napier City	\$0.0m	\$0.9m	0.1%



District	Farming wages	Processing wages	Share of total
Nelson City	\$0.8m	\$1.7m	0.2%
New Plymouth District	\$26.3m	\$0.9m	1.1%
Opotiki District	\$7.0m	\$0.0m	3.8%
Otorohanga District	\$32.2m	\$0.0m	16.2%
Palmerston North City	\$5.9m	\$73.5m	2.4%
Porirua City	\$0.0m	\$0.0m	0.0%
Queenstown-Lakes District	\$2.4m	\$1.3m	0.3%
Rangitikei District	\$11.8m	\$0.0m	4.4%
Rotorua District	\$35.4m	\$5.8m	2.2%
Ruapehu District	\$4.6m	\$0.0m	1.5%
Selwyn District	\$56.3m	\$151.4m	16.9%
South Taranaki District	\$80.5m	\$252.3m	41.4%
South Waikato District	\$41.3m	\$50.5m	17.0%
South Wairarapa District	\$9.1m	\$0.9m	6.6%
Southland District	\$123.4m	\$111.0m	28.0%
Stratford District	\$13.4m	\$0.0m	8.3%
Tararua District	\$24.1m	\$36.0m	20.1%
Tasman District	\$15.6m	\$17.3m	2.7%
Taupo District	\$42.4m	\$30.3m	7.3%
Tauranga City	\$2.4m	\$1.3m	0.1%
Thames-Coromandel District	\$4.6m	\$1.3m	1.2%
Timaru District	\$36.0m	\$138.4m	12.1%
Upper Hutt City	\$0.2m	\$0.0m	0.0%
Waikato District	\$56.3m	\$47.6m	8.1%
Waimakariri District	\$25.2m	\$1.7m	3.0%
Waimate District	\$25.2m	\$57.7m	52.0%
Waipa District	\$48.3m	\$90.8m	11.4%
Wairoa District	\$1.0m	\$0.0m	0.6%
Waitaki District	\$34.9m	\$18.7m	9.0%
Waitomo District	\$10.7m	\$0.0m	5.0%
Wellington City	\$0.0m	\$1.7m	0.0%
Western Bay of Plenty District	\$18.8m	\$0.4m	1.8%
Westland District	\$12.9m	\$79.3m	43.9%



District	Farming wages	Processing wages	Share of total
Whakatane District	\$24.1m	\$51.9m	9.2%
Whanganui District	\$5.1m	\$4.3m	0.9%
Whangarei District	\$22.5m	\$54.8m	3.3%

Source: Statistics New Zealand, Sense Partners



Estimated Dairy GDP by Territorial Authority

TABLE 9: ESTIMATED DAIRY GDP BY TERRITORIAL AUTHORITY

Territorial Authority	Dairy GDP	Share
Far North District	\$ 144.6 m	4.2%
Whangarei District	\$ 241.3 m	3.8%
Kaipara District	\$ 207.9 m	17.8%
Auckland	\$ 919.2 m	0.8%
Thames-Coromandel District	\$ 29.6 m	1.9%
Hauraki District	\$ 177.6 m	19.7%
Waikato District	\$ 415.6 m	12.9%
Matamata-Piako District	\$ 667.6 m	29.1%
Hamilton City	\$ 197.5 m	1.3%
Waipa District	\$ 435.4 m	13.4%
Otorohanga District	\$ 194.4 m	38.1%
South Waikato District	\$ 329.4 m	25.9%
Waitomo District	\$ 64.8 m	10.6%
Taupo District	\$ 303.9 m	11.8%
Western Bay of Plenty District	\$ 150.4 m	5.4%
Tauranga City	\$ 22.0 m	0.2%
Rotorua District	\$ 294.1 m	6.1%
Whakatane District	\$ 302.8 m	14.4%
Kawerau District	\$ -	0.0%
Opotiki District	\$ 55.5 m	9.8%
Gisborne District	\$ 29.9 m	0.9%
Wairoa District	\$ 5.7 m	1.2%
Hastings District	\$ 54.5 m	0.8%
Napier City	\$ 2.5 m	0.1%
Central Hawke's Bay District	\$ 69.7 m	8.4%
New Plymouth District	\$ 148.6 m	2.7%
Stratford District	\$ 75.3 m	16.5%
South Taranaki District	\$ 755.6 m	42.4%



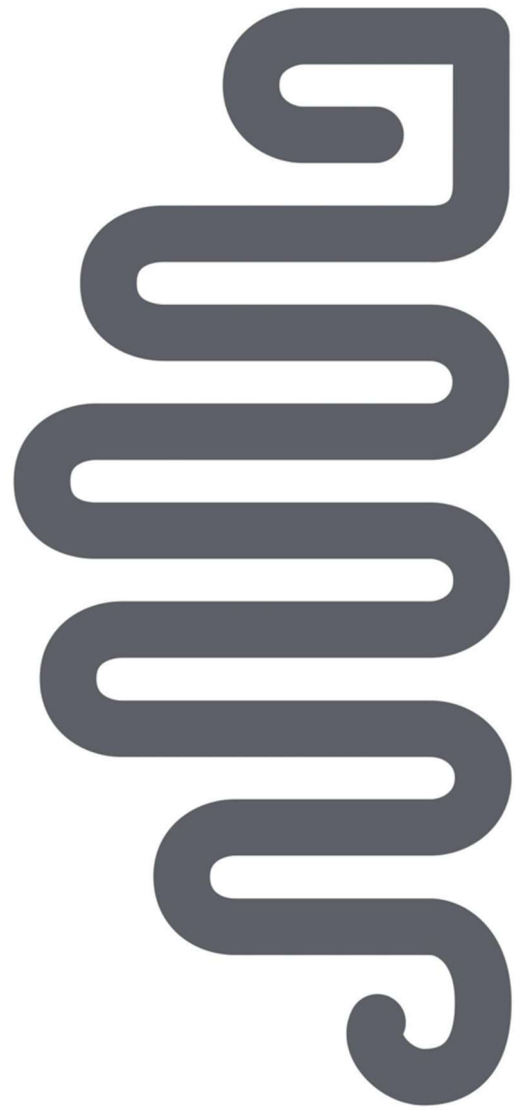
Ruapehu District	\$ 26.7 m	3.5%
Whanganui District	\$ 37.8 m	1.4%
Rangitikei District	\$ 69.0 m	8.8%
Manawatu District	\$ 163.9 m	11.7%
Palmerston North City	\$ 169.7 m	2.2%
Tararua District	\$ 207.4 m	23.6%
Horowhenua District	\$ 134.9 m	9.4%
Kapiti Coast District	\$ 25.1 m	1.3%
Porirua City	\$ -	0.0%
Upper Hutt City	\$ 1.1 m	0.1%
Lower Hutt City	\$ 33.3 m	0.5%
Wellington City	\$ 9.4 m	0.0%
Masterton District	\$ 33.9 m	2.1%
Carterton District	\$ 42.0 m	10.0%
South Wairarapa District	\$ 64.2 m	15.1%
Tasman District	\$ 96.5 m	2.5%
Nelson City	\$ 19.5 m	0.6%
Marlborough District	\$ 59.0 m	1.4%
Kaikoura District	\$ 14.1 m	7.2%
Buller District	\$ 77.5 m	12.3%
Grey District	\$ 61.4 m	5.6%
Westland District	\$ 199.1 m	33.8%
Hurunui District	\$ 106.9 m	16.6%
Waimakariri District	\$ 122.9 m	5.2%
Christchurch City	\$ 166.9 m	0.6%
Selwyn District	\$ 478.1 m	16.7%
Ashburton District	\$ 450.0 m	19.9%
Timaru District	\$ 362.7 m	10.8%
Mackenzie District	\$ 28.2 m	10.2%
Waimate District	\$ 200.1 m	56.8%
Waitaki District	\$ 192.6 m	13.3%



SOLID FOUNDATIONS DAIRY'S ECONOMIC CONTRIBUTION TO NEW ZEALAND

Central Otago District	\$ 16.4 m	0.8%
Queenstown-Lakes District	\$ 16.6 m	0.5%
Dunedin City	\$ 62.9 m	0.7%
Clutha District	\$ 354.7 m	28.7%
Southland District	\$ 759.8 m	34.7%
Gore District	\$ 87.3 m	10.0%
Invercargill City	\$ 99.5 m	2.5%

Source: Statistics New Zealand, Sense Partners



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DATA LOGIC ACTION