

Australian Dairy Situation Analysis

Appendix B

May 2019



Introduction

Context

By the early-2000s favourable seasonal conditions and productivity growth supported by strong uptake of new technology and improved farm practices has driven more than a decade of strong growth. Investment was strong and confidence was generally high. Milk production was above 11 billion litres and Australian exports were 16 per cent of world trade volumes, placing Australia as the third largest dairy exporter.



However, the past 20 years have presented new challenges for the Australian dairy industry:

- Increased market and climate volatility has made the operating environment more complex for all parts of the industry.
- Recent drought events have widely impacted dairy regions, driving farm exits higher in general, but particularly in the Murray region and northern states.
- Productivity growth has slowed, increasing the difficulty of managing conditions in which input costs have increased faster than milk prices.
- Despite growth in some years, the overall milk production volume has declined to levels not seen since the mid-1990s.
- Many manufacturers are short of milk, resulting in higher costs as plants are underutilised.
- There is a growing milk shortfall in traditionally 'domestic market' focused regions (NSW/QLD) which is being filled by traditionally 'export market' regions (VIC).
- The Australian share of global trade in dairy products is now six per cent and we are the world's fourth largest exporter, leading some to question our relevance on the global market.

This Industry Situation Analysis draws on a broad range of knowledge, history and experience to combine commentary and considerations on range of topics. This material is intended to be a conversation-starter for consultation forums online, and also those scheduled in dairy regions as part of the Australian Dairy Plan.

Key external factors

- Australia has the most variable climate on Earth and is now notably drier in dairy regions.
- Despite significant progress, the international trade environment remains distorted and many of our competitors continue to benefit from significant levels of government support.
- Australian dairy markets are open to supply from international competitors and imports are increasing. Currency exchange rates have changed considerably, which influences our competitive positioning.
- Expectations of dairy customers, retailers and food manufacturers related to animal welfare and the environment are growing. The dairy industry is responding with greater transparency, goal setting, and consumer engagement.
- Competition for inputs such as irrigation water are rising, and the availability of labour (from entry level to Farm Manager level) is limited and can often be difficult to retain.
- Growing regulation creates additional restrictions and costs to the industry (e.g. labelling – country of origin, health star rating; proposed mandatory Dairy Code of Conduct).

Key internal factors

- Farm profitability is essential for milk production growth and supply chain efficiency, but flatter production curves, while suiting manufacturer supply needs, have increased production costs on farm.
- Yet farm profitability varies significantly across regions and many farms are not achieving a sustainable return on investment.
- The collapse of the Murray Goulburn Cooperative following a recent market downturn has shaken farmers' confidence and trust in their processors, driving a reduction in supplier loyalty.
- Confidence in traditional industry advocacy structures has been challenged and new ways of supporting the Australian dairy industry have emerged.
- Industry is well served in RD&E capability, providing innovations to lift overall performance, however uptake more broadly in the industry could be significantly improved.
- The rising complexity of dairy farming is highlighting areas where increased skill levels are required and our ability to attract and retain capable people is critical to ongoing success.
- This rising complexity is stimulating change in farming systems and structures, but sometimes this change compromises profitability and cost competitiveness.
- Highly profitable farms with different production systems in different regions shared the common characteristic of business operators with excellent technical, people and business skills.

Consequential impacts

- Limitations on our ability to meet the growth needs of customers has impacted the industry's reputation as a relevant and reliable supplier.
- Critical mass of farmers and milk supply volumes in some regions is now a concern for processors with milk transportation costs increasing.
- Reduced farm numbers is affecting service providers in the dairy regions as their customer base is diminishing.
- Confidence amongst normally resilient industry participants is impacted, and the tone of reporting on the dairy industry tends to now focus more on challenges rather than strengths and opportunities.
- Collaboration is reduced as manufacturers compete to secure milk supply in a shrinking milk pool and environment where farmer loyalty to one processor is diminished.

A better future

The ability of the industry to adapt and adjust to the changing conditions has been testament to its resilience over many decades. There are still many positive factors that point toward a better future:

- Strong domestic and international growth in demand for dairy and current price forecasts are positive.
- Customers are discerning and are prepared to pay a premium for quality dairy Australian products.
- We have many efficient farmers who have been successfully operating under some of the lowest levels of government support across the OECD.
- We have world-class RD&E infrastructure and support in delivering important innovations.

- The trading environment for Australian dairy has improved through completion of Free Trade Agreements and the removal of export subsidies via the World Trade Organisation (WTO).
- We have a diverse, highly competitive dairy manufacturing base who are committed to the industry.
- While markets and climate will remain volatile, this volatility also offers 'upside' potential if we utilise the current and developing tools to anticipate and respond to volatility.

Despite the current challenges, the prospects for further progress in the industry are significant but the path to a better future will require concerted and sustained collective industry action.

The Australian Dairy Plan offers the opportunity to decide on that pathway and the actions that will follow.

Situation analysis snapshot

The market has evolved faster than the industry

The world market

- **Competition:** Our global competitors have caught up and are now moving ahead of us in international markets. This includes a complex trade environment.
- **Relevance:** While still a major global dairy exporter, our relevance on global markets is being questioned because of our shrinking scale and competitiveness.
- **Volatility:** With the gradual removal of quotas and export subsidies overseas, volatility in dairy markets has increased.

The supply chain

- **Processor investment:** Processors have invested heavily on the back of clear opportunities for the Australian dairy industry but are now struggling to fill their plants. Production growth is required, but at the moment processors are transporting milk to fill regional shortfalls.
- **Supply chain divergence:** Fierce competition has challenged our capacity to collaborate.
- **Ownership structures:** Processor ownership structures have evolved from the traditional cooperatives which is also influencing processor decision making.

The consumer

- **Sales channels:** Our production mix has had to adapt to changing consumer preferences and price/positioning competition from milk alternatives.
- **Demand remains strong:** Consumption in Australia is robust and global dairy demand continues to grow.
- **Social licence:** Public expectations are changing and consumers are increasingly questioning the attributes of their food.

Making a profit on farm has become more difficult

On farm dynamics

- **Farming systems and structures:** The way we farm is becoming more complex in response to market, pricing and climate variability.
- **Margins and input costs:** Input costs (water, feed, labour and energy) have increased much faster than milk prices and productivity gains can cover.
- **Farmer investment:** Farmers have invested heavily in recent years but are questioning their capacity and confidence to continue investing.

Risk profiles

- **Climate volatility:** Australia has the most variable climate in the world being 22 per cent more variable than South Africa. This variability adds to production costs.
- **Risk management:** Risk management has become critical to manage the peaks and troughs.

Regional profitability

- **Community sustainability and resilience:** Farm consolidation is shifting our relationship with regional service providers and communities.
- **Export region margins being challenged:** Milk prices are not keeping up with the rising costs of production in some regions.
- **Domestic region margins being challenged:** Strong import competition means domestic producers are increasingly competing with the international market.

Our people and organisations need to adapt to succeed

Skills, knowledge and mindsets

- **Farming skill needs:** Farmers need skills in a broader range of areas than was once the case.
- **Education and training:** Farmers are changing the ways in which they learn.

Attracting and retaining people

- **Attracting people:** There is a widespread shortage of skilled labour at all levels in the dairy industry.
- **Retaining people:** Keeping skills and knowledge in the industry, and encouraging farm succession is an increasing and critical challenge.
- **Promoting the industry:** We can do more to portray a positive image of dairy as an industry to be involved in.

Industry structures

- **Industry structures and services:** The structures and services that exist to support industry are under pressure to adapt to changing industry needs.
- **The advocacy environment is changing:** Expectations of how industry advocacy organisations should operate are changing and there is a need for a trusted, authoritative voice



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Challenge 1

**The market
has evolved
faster than
the industry**

The world market

Competition: Our global competitors have caught up and are now moving ahead of us in international markets. This includes a complex trade environment.

By world standards, Australia has taken a relatively unique approach to supporting domestic food production and trade. Many countries (like the USA, EU, Canada, Japan, Brazil and Argentina) intervene in markets to support domestic food industry returns, address local food affordability or boost the sustainability of regional food production. In contrast, Australia, for some decades, has favoured an open market approach to agricultural production and trade with government intervention focusing primarily on maintaining food safety and environmental sustainability, research and development and drought recovery.

In the specific case of Australian dairy, this approach resulted in the broad exposure of local industry to world prices for manufactured dairy products from 1984 (through CER with New Zealand) and the phased removal of domestic price support arrangements from 1985. Government did, however, work with industry to try and enhance the international trading environment for Australian agriculture by securing better access to major markets and reducing the negative effect on world prices of overseas domestic support regimes and export subsidies.

In the 1990s Australian dairy significantly expanded both milk production and exports as the combined effect of favourable exchange rates, world price movements and improved trade outlooks and policy settings lifted industry confidence and investment. By the end of the decade, Australia was supplying around 16 per cent of the measured world exports of dairy products.¹ The two largest local processors (MG and Fonterra) ranked in the world's top 20 to 25 firms in terms of raw milk intake (although their heavy focus on bulk commodity sales meant that they ranked considerably lower on a revenue basis). Both firms separately accounted for five per cent of world export volumes.²

In 2000, local industry fully expected that its share of world dairy production and trade would continue to grow based on Australia's relatively low production costs, its proximity to emerging markets in Asia and expected reforms in international trade policy. Due to the complex interactions of a number of subsequent internal and external domestic market and industry shocks (and overseas competitor reactions to policy and market changes) this pathway has not developed as expected. Some of the drivers of this outcome are discussed below.

The effect of the Australian mining boom on agriculture

In the decade to 2013, the Reserve Bank of Australia (RBA) estimates the mining boom increased real per capita household disposable income by 13 per cent.³ However the subsequent increase in the value of the Australian dollar had a negative impact on trade exposed industries like manufacturing and agriculture.

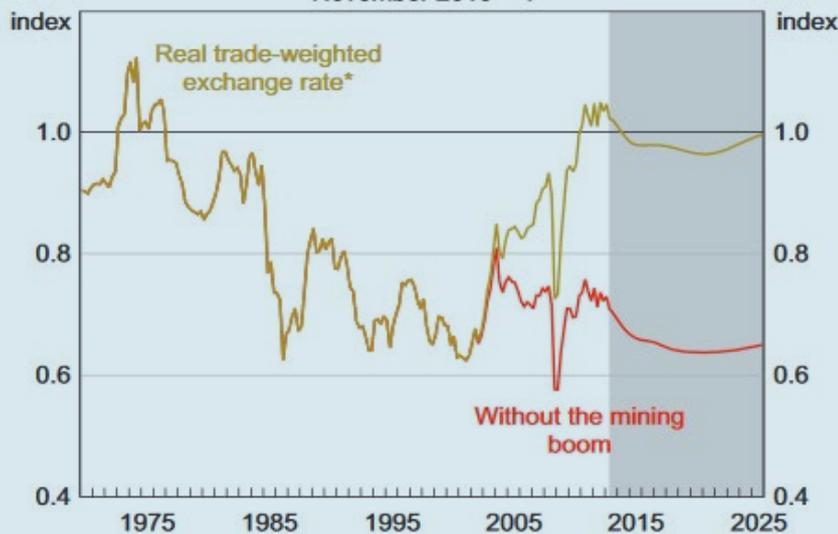
The RBA used AUS-M (an economic model of the Australian economy) to estimate the real exchange rate would have been 44 per cent higher in 2013, relative to its level in the absence of a mining boom. In effect remaining largely at similar levels to where it's traded for the previous 20 years.

1 ADC – *Dairy Compendium 2001*, pp 54.

2 Leatherhead Food RA 1997. *Key Players in the Global Dairy Industry*. Report prepared by Information Group Services of Leatherhead Food RA, November 1997.

3 <https://www.rba.gov.au/publications/bulletin/2014/dec/pdf/bu-1214-3.pdf>

Figure 1: RBA Real trade weighted exchange rate without the Australian mining boom¹
November 2010 = 1



Fluctuations in currency can be exacerbated by individual company hedging policies and Australian farmgate returns are influenced by commodity markets and individual business decisions relating to product and market mix. Independent of individual business decisions, the rapid appreciation of the AUD increased competitive pressure on Australian exporters given much dairy trade occurs in US dollars and the AUD increased faster than the NZ dollar and Euro against the US dollar; eroding Australian exporter returns.

Australian dairy exporters faced more competitive pressure from 2009 to 2013 as the Australian dollar was trading comparatively higher than pre-mining boom (2002) levels, relative to competitors in New Zealand and Europe. This means in order to earn an equivalent local currency return, Australian exporters needed to sell Australian dairy product for a premium in US dollar terms in export markets.

Trade and market policy changes

As noted above, Australia has long embraced an open-market approach to multilateral trade reform. The WTO Uruguay Round of 1995 vindicated this approach with its commitment to significantly cut the use of (market damaging) export subsidies. This gave a permanent boost to world prices and industry sentiment.

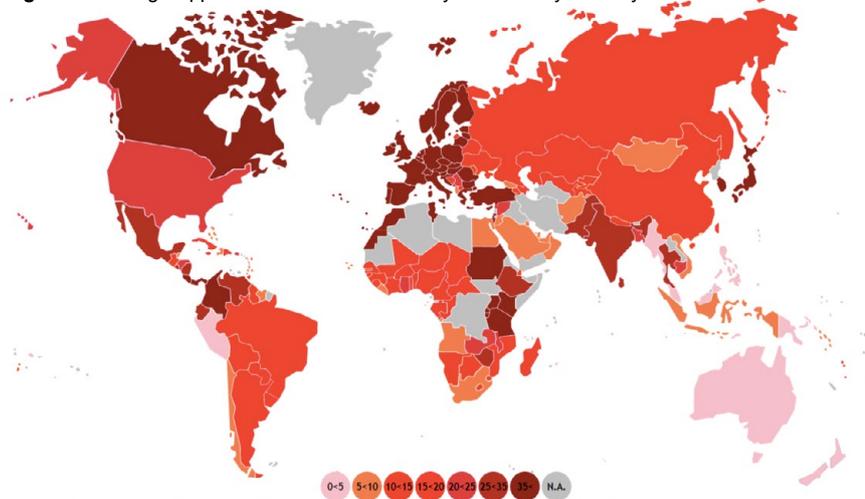
The Uruguay Round was less successful in generating real reform in the areas of market access and domestic market support. However, it did create expectations within major producers and traders such as the EU and USA that they would have to substantially adjust their existing support policies in future years to comply with expected WTO rule changes.

Subsequent WTO Rounds (Millennial and Doha) have failed to make further substantial progress in these areas of agricultural trade policy reform (with the exception of the Doha Nairobi sessions of 2015 which formalised the end of all export subsidies).

As a result, the WTO considers the global dairy market to still be one of the most protected and distorted food markets. Many countries continue to apply high tariffs on dairy imports (see Figure 2 next page) and to employ non-tariff barriers – such as restrictive customs procedures, excessive port of entry inspections, product testing, factory inspections or veterinary certificate requirements – in order to restrict trade and protect local production. Governments also continue to intervene in domestic markets to distort and reduce import trade opportunities. Dairy Australia estimates that Australian dairy exports attract in excess of \$200 million in direct tariff charges each year as they enter destination markets.

¹ <https://www.rba.gov.au/publications/bulletin/2014/dec/pdf/bu-1214-3.pdf>

Figure 2: Average Applied MFN Tariff for All Dairy Products by Country.



Source: WTO

The failure of the Doha Round has led many countries to seek to gain trade advantages and protections for their local industries through a patchwork of domestic reforms and an expanding number of preferential market access agreements. Companies have also acted to advance their positions through cross-border alliances and investments in developing markets. While Australia has tried to be active in this area, its success lags that of some major competitors, leaving the local dairy industry at somewhat of a crossroads as a global market supplier.

Europe: The EU regularly jockeys for the position of the largest dairy exporter with New Zealand. For some time, the EU government and dairy industry have expected that WTO reforms would force it to modify key tariff settings and domestic support regulations under its Common Agricultural Policy (CAP). This has strongly influenced the EU's approach to world trade over the past decade.

These include:

- Budget pressures on planned EU spending on direct farm payments post 2020
- Moves by countries such as the Netherlands to impose significant environmental constraints on farm production systems
- General 'greening' measures that could threaten the cost and efficiency of EU milk production
- The impact of Brexit on Irish dairy industry trade opportunities – given that country's significant growth over the last decade.

An early EU response was to expand its internal market by increasing its membership from 15 to 27 countries from 2004 to 2007.¹ From 1996 to 2010, the EU also entered into preferential trade agreements with another 22 countries where it saw demand growth opportunities for EU industries and products across North Africa, the Middle East and Central America. It has sustained this push for bilateral FTAs over the past decade – signing a further 12 agreements with various Asian, American, African and East European nations since 2010.

In dairy, the EU is not only using these bilateral deals to gain preferential access for EU dairy into key import markets, it is also (successfully) seeking to limit competition in these markets from third country cheese producers like Australia via the enforcement of EU GI regulations in each deal.

The expansion of the EU's membership had several important market and policy consequences:

- Commercially, it increased the size of the internal EU market for products like dairy.
- Politically, it forced a shift in domestic support policy away from a more expensive system of maintaining high wholesale domestic prices (with government purchase of market surpluses at agreed minimum prices) to a 'cheaper' policy of direct income support for local farmers.

- The shift from price to income support, in turn, saw a gradual convergence of EU domestic wholesale dairy prices and international market prices. This has helped sustain internal EU demand. More importantly, it has reduced the EU's attractiveness as a dairy import market and reinforced the effectiveness of its existing tariffs in preventing any import trade outside of narrowly defined tariff rate quotas.²
- EU expansion was also a driver of the removal of EU milk production quotas in 2015. This change saw many European farms and processors, particularly those in more cost-competitive grass-fed regions (e.g. Ireland, Denmark), gear up to expand production and exports post 2015 – an outcome that has come to fruition with both EU milk supplies and exports growing since 2016.

Various public reports have indicated that EU company investment in new dairy processing facilities between 2012 and 2016 exceeded 5 billion Euros (AUD \$8 billion)³.

Despite this recent growth, there are some factors that could limit the future growth in EU milk production and export availability.

¹ Membership extended to 28 countries with the addition of Croatia in 2013.

² Australian dairy exports to the EU have dramatically fallen over the past decade.

³ The Land – *Europe leads the world in dairy processing investments* – April 2016

United States: While the US has a very large dairy industry, for many years it considered export sales as a market of last resort for surplus local production.

This approach has changed over the last decade or so. While US milk production has steadily climbed around 2 per cent per annum, the country has doubled dairy exports (in milk equivalent terms) from 2010 to 2017. The US is now the world's third largest contributor to dairy trade.¹ This trade growth reflects several factors including:

- The US entering into 14 preferential trade agreements in key target markets like Mexico, and Korea. In the case of Korea, US dairy exports were fuelled by the agreement's rapid removal of tariffs under the FTA which has seen Korea become the US's number two export market
- The development of large scale factory operations for export in the Western half of the US (a number of which are joint-venture partnerships with European export firms)
- The active physical presence of industry organisations like the US Dairy Export Council (USDEC) in major demand markets in Asia on trade development missions
- Significant uptake of genetically modified herbicide tolerant and enhanced digestibility lucerne/alfalfa² and increased ear biomass and high amylose content maize³ has improved productivity in US agriculture.

Based on this growth, the USA retains an ambition to significantly increase its share of global dairy trade over the next decade. However, there are also some restraining pressures on the US's continued ability to grow its export presence. These include:

- The high exposure of large-scale US farm systems to rising purchased feed costs, as world feed markets become tighter and more volatile
- Stronger land and water-use competition in south-western growth regions, and barriers to new large farm and factory developments from local communities in some regions
- The affordability of safety-net regulations for farm producers in more volatile markets.

However, at this stage, the intensity of these pressures on US milk production are well behind the pace of community expectations in competitor regions like the EU and Australia.

1 IDF – *The World Dairy Situation 2018*, pp 8

2 <http://www.isaaa.org/resources/publications/briefs/53/default.asp>

3 <http://www.isaaa.org/resources/publications/briefs/53/default.asp>

New Zealand: Australia's competitiveness with New Zealand is critical to Australian dairy farming due to the Closer Economic Relations trade agreement signed in 1983 which effectively treats New Zealand as the seventh state of Australia for purposes of trade in goods and services between the two countries.

New Zealand's milk production has grown strongly over the past two decades (although the pace of growth has slowed in recent years). This growth has been aided by several factors including an entrenched enterprise culture, a focus on wealth creation and dairy's greater profitability compared to other land uses which has seen the significant conversion of other farm land into dairy production.

While small alternate pathways to market exist, New Zealand's industry development is closely linked to the dominant position of its major processor, Fonterra. This has allowed it to develop a consistent export vision for the 'industry'. Australia's competition laws have specifically excluded such a market dominance position of one player in a similar way to New Zealand.

Fonterra has also used its control over seasonal milk supplies to invest heavily in some very large-scale export commodity production plants (for milk powder and cheese).¹ These plants have much lower per-tonne production costs than their Australian counterparts, a factor that has been very important in maintaining New Zealand's competitiveness in international markets.

The importance of New Zealand dairy exports to its economy has also meant that dairy interests are given a strong focus in that country's trade negotiations. The NZ–China FTA provides a good example of how this has benefited the New Zealand industry. While other countries, including Australia, have subsequently signed FTAs with China, New Zealand retained a clear tariff preference for its products and first-mover advantage in the China market over much of the past decade. This allowed it to expand exports of products like cheese to China by 30 per cent per annum from 2012 to 2017 and to secure more than 50 per cent of the expanding Chinese import market for this product.²

As with other dairy producing countries, there are issues that may limit the future growth in New Zealand milk production and exports. These include:

- Regulatory measures imposed by regional councils, such as limits on stocking rates and water access to address the environmental impact of milk production in sensitive areas
- The increased need for purchased feed on larger scale farm units that will introduce new costs, volatility and complexity to farm systems
- Reduced land conversion opportunities and
- Increased production costs, especially in South Island enterprises as they seek to lift land and cow productivity.

¹ Fonterra's investments from 2012–16 in this area exceeded \$AUD 2 billion. Rabobank's — *Asia's Fast Moving Cheese Markets*, September 2018, pp 6, notes that following a NZ\$240 M investment, Fonterra's Clandeboyne Mozzarella cheese plant is the largest in the Southern hemisphere and its patented technology allows the firm to control a significant share of China's pizza cheese trade.

² Ibid.

Commercial scale and partnerships

As the above section identified, all major dairy producing countries face issues that could limit their future growth in domestic milk supplies, and their ability to meet rising world dairy demand.

These constraints may be new (and more environmentally focused) but world dairy has faced such constraints before. A 2002 review by Babcock¹ identified how many of the world's largest, and more successful, dairy processors had maintained effective company growth strategies in the face of limits on raw milk supply using a combination of:

- Maximising their manufacturing efficiency (through scale or technology)
- Developing new markets for their product in developing dairy markets
- Securing access to increased milk supply – including through cross-border alliances
- Building market share and market power through their brand portfolio.

Many of the world's major dairy firms have continued to pursue these strategies over the past decade to position themselves to meet rising dairy demand in emerging markets in Asia and Africa.

Fonterra, for example, has actively pursued a strategy of developing a 'global' farm supply and manufacturing footprint (covering Europe, Asia, Oceania and the Americas). This allows it to try and match demand growth in particular markets with its own multi-hub supply sources.

Fonterra is by no means unique in this regard. Other major firms that have utilised this approach include:

- Saputo (Canada) which has expanded operations into the USA and Australia
- Glanbia (Ireland) which has major joint venture processing investments in the USA
- Lactalis (France) which has operations in the USA, Australia and Asia to underpin its global brand strategies
- Yili (China) which has invested in New Zealand manufacture supply base, and
- Nestle which has joint partnerships with multiple partners across a range of regions.

As a result, many of the world's major dairy players are now well placed to operate across multiple market and policy settings, and have a reduced dependence/ focus on industry developments in individual dairy producer countries. Consequently an Australian brand for dairy products has less capacity for impact in overseas markets.

Australia's performance – a comparison

An irony of recent world market developments is that, while global dairy demand is increasing, with much of this growth being driven by markets that Australia is well placed to service, local milk production and export availability have stagnated for almost 20 years. As noted before, a number of factors (drought, company collapses, water availability, payment step downs in the wake of market crises etc.) have combined to badly affect farmer confidence, profitability and production with a resulting decline in regional milk pools even though local consumption of dairy has held firm.

With Australia's major export competitors continuing to grow, this situation has led some buyers to question the ongoing significance and relevance of Australia as a supplier into the global dairy marketplace.

Industry, however, has sought to re-affirm its export commitment, working with government to push for further dairy trade liberalisation and individually working to reinforce positive consumer perceptions about the quality, safety and integrity of Australian industry practices and products.

To date, Australia has secured 14 bilateral trade agreements. Eleven of these are currently in force – New Zealand, Singapore, Thailand, USA, Chile, ASEAN (AANZFTA), Malaysia, South Korea, Japan, and China – while a further three – Peru, Indonesia and Hong Kong – are awaiting ratification.

Australia is also a member of the 11 nation Comprehensive and Progressive Agreement for Trans-Pacific Partnership (TPP-11) which entered into force in December 2018. This provides additional access rights for Australia into markets including Brunei, Canada, Chile, Japan, Malaysia, Mexico, Peru, New Zealand, Singapore and Vietnam.

Given the range of competing FTAs in place, it should be recognised that the access rights conferred on Australian dairy exporters by these agreements, in some cases, only match those given to our competitors. So, while they are essential for Australian dairy exports to remain competitive in future, they do not always confer major commercial advantages to us in all emerging markets.

1 W. D. Dobson and A Wilcox – *How leading International Dairy Companies adjusted to Changes in World Markets* – Babcock Institute Discussion Paper 2002

Relevance: While still a major global dairy exporter, our relevance on global markets is being questioned because of our shrinking scale and competitiveness.

Global dairy markets hold significant potential for the Australian industry if our industry is able to service market opportunities. These opportunities are being driven by demand growth, which in turn is being driven by positive economic growth rates. The perception in some markets that imported products are safer, rising incomes, comparatively high birth rates and increasing refrigerated infrastructure is expanding opportunities for fresh product.

Trade data suggests global dairy export trade volumes increased by more than 2.5 million tonnes (21 per cent) between 2012 and 2018, while Australian dairy exports according to the ABS increased 22,364 tonnes (3 per cent) over the same period.

Despite the strong brand and historical presence Australia has in international dairy markets, some buyers are now questioning the ability of Australia to supply future needs of dairy products. The changing production landscape in Australia is also encouraging many Australian dairy processors to reassess their markets and reprioritise based on potential returns.

As noted previously, in the late 1990s Australian dairy supplied around 16 per cent of measured world exports of dairy products.¹ The two largest local firms (MG and Fonterra) each separately accounted for about 5 per cent of total world trade by volume. By 2018, Australian dairy's share of (an admittedly expanded) export trade has fallen to around 6 per cent.² No local firm accounts for anywhere near 2 per cent of this trade.

The two dairy commodities that have experienced the most significant growth in international demand in recent decades are cheese and Whole Milk Powder (WMP). World exports of each of these two products have effectively doubled since the early 2000s to reach roughly 2.4 million tonnes per annum in 2018. However, Australian production and exports of these products have not kept pace with this world market growth.

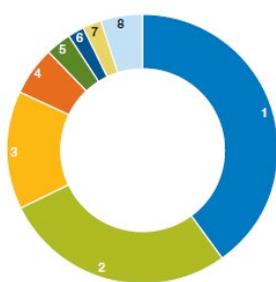
Australian production of cheese has been relatively flat and exports have slowly dropped below 200,000 tonnes per annum. As a result, Australia's export market share has halved to less than 10 per cent. The limited growth in Australian cheese supplies also restricts local industry's capacity to participate in growing world markets for whey-based products.

In the case of WMP, recorded Australian production and exports have steadily fallen over the past decade, with the result that Australia's share of world trade has fallen from 13 per cent in 2000 to under 5 per cent in 2018.

Australian imports of both cheese and WMP have risen sharply in the past decade. In the case of cheese this is likely to reflect local companies maintaining export volumes while using imported bulk cheese to meet demand from certain domestic sales outlets.

In the case of WMP (and imported lactose and whey products) imports are most probably re-exported as recombined retail powder products. The benefits accruing to the local dairy industry from this development are limited at best.

Figure 3: Exporter Shares – Sourced from Dairy In Focus and IFCN.



- 1 NZ 40%
- 2 EU 28%
- 3 USA 14%
- 4 Australia 6%
- 5 Uruguay 3%
- 6 Argentina 2%
- 7 Ukraine 2%
- 8 Other 5%

Source: Dairy Australia

Rank 2018	Company name	Origin & main operation countries
1	Dairy Farmers of America	USA
2	Fonterra	New Zealand/ others
3	Groupe Lactalis	France/others
4	Arla Foods	Denmark/Sweden/others
5	Nestlé	Switzerland/others
6	FrieslandCampina	Netherlands/others
7	Saputo (incl.MG)	Canada/USA/others
8	Dean Foods	USA
9	Amul (GCMMF)	India
10	Danone	France/others
11	DMK	Germany/Netherlands
12	California Dairies	USA
13	Yili Group	China
14	Glanbia Group	Ireland/USA/others
15	Mengniu	China
16	Agropur	Canada/USA
17	Groupe Sodiaal	France
18	Müller	Germany/UK/others
19	Schreiber Foods	USA
20	Bongrain/Savencia	France/others

Source: <https://ifcndairy.org>

1 ADC – Dairy Compendium 2001, pp 54.
2 IDF – The World Dairy Situation 2018, pp 7

These raw trade data do not, by themselves, imply that Australia has no capacity to regain position in world dairy markets and trade. As Rabobank has identified:¹

- Australia has a strong reputation with dairy buyers in Asia and beyond as a reliable supplier of technically advanced, high-quality, safe products.
- The industry continues to have access to a strategic milk pool which it can use to deliver significant volumes of competitively priced products to key markets in Asia.
- Against this, Australian dairy manufacturers no longer appear to have any absolute production cost advantage against major competitors.
- So Australia remains vulnerable to competition from alternative exporters, with improving access rights that operate larger scale plants and have reliable year-round milk pools.

There has been substantial investment in recent years to upgrade and expand dairy manufacturing operations in Australia and to set up a number of greenfield powder and liquid milk plants for export sales. While these upgrades are important in promoting industry competitiveness, in general they have not been designed to match the scale of operations now present in many overseas operations.

Australia has also successfully established retail and food service sales channels for shorter shelf life products like yoghurt and milk across Asia in recent years. This is providing a positive platform for industry to build outlets for more value added products such as cheese in the years ahead.

However, perhaps the key driver of Australia's future export market relevance will be its capacity to restore some level of sustained growth in local milk production in coming years. This is needed both to convince buyers that Australia retains a capacity to meet emerging product demand and to ensure that local factories have sufficient throughput volumes to generate utilisation synergies and keep processing costs competitive.

¹ Rabobank – *Asia's Fast Moving Cheese Markets*, September 2018, pp 8

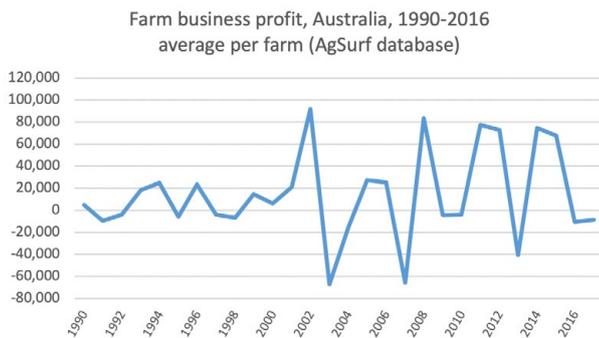
Volatility: With the gradual removal of quotas and export subsidies overseas, volatility in dairy markets has increased.

Unlike most of our competitors, Australian dairy farmers operate in a deregulated and open market, and have done so for almost 20 years. This does make us more exposed as an industry to the global market shocks that increasingly define the dairy industry.

Dairy commodity prices are extremely volatile, commonly perceived as one of the most volatile of all globally traded commodities. More specifically, it is reported that WMP prices are more volatile than other key traded global commodities such as sugar and oil (WMP claims to have a volatility > 60 per cent versus sugar at 26 per cent and crude oil at 22 per cent (Commerzbank, 2016; Fonterra, 2015)). This is in no small way due to the fact that globally traded dairy commodities are arguably more sensitive to a variety of external impacts that can variously affect milk supply and demand.

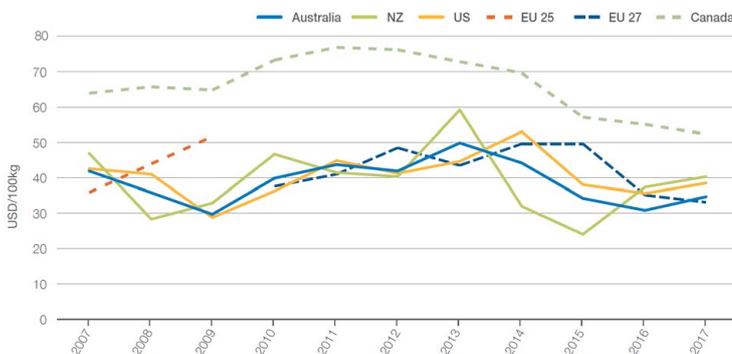
Increased levels of market and margin volatility within the industry have undermined confidence in the outlook for many farmers, who are seeking reliable returns on which to build a longer term future.

Figure 4: Industry volatility as indicated by farm business profit



While world dairy trade is growing, it still represents less than 10 per cent of global dairy production. So dairy remains a ‘thinly’ traded commodity, and international dairy prices remain susceptible to market shocks.

Figure 5: International farmgate milk price comparison (USD/100kg)



Source: Dairy Australia

Compared to New Zealand, the Australian milk price does not vary as much from year to year because of reduced exposure to international markets (Australia exports less than 40 per cent of milk production compared to New Zealand exporting around 95 per cent of milk production). While Australian farmgate prices avoided the rapid and prolonged drop New Zealand dairy farmers experienced between 2013 and 2015, it has spent the last three years at similar levels to 2009. The New Zealand milk price has since recovered in US dollar terms to be the equivalent milk price in the USA or EU-27 average.

In the past decade, dairy market returns have been greatly affected by several unexpected market shocks. Some obvious examples of this include:

- The step down in farm gate prices following the Global Financial Crisis and its impact on world trade and pricing
- The flow effects of Russia's 2014 ban on cheese imports that carried through into significant temporary downturns in international cheese prices and an extended fall in world Skim Milk Powder (SMP) prices (following a build-up of surplus SMP stockpiles)
- More recently, the United States has imposed higher tariffs on a range of imported products. Some US trading partners, such as China, have retaliated with their own tariff increases (particularly on US agricultural exports).

Australian Dairy Plan

While these disputes raise the scope for opportunistic short term sales for exporters like Australia, ultimately they raise market uncertainty and volatility due to potentially adverse trade diversion impacts and the reduced clarity and predictability of market conditions and opportunities.

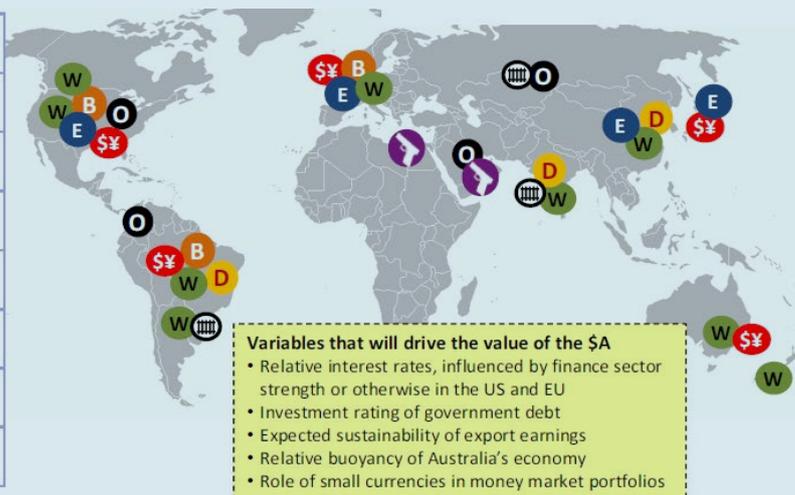
Australian dairy farmers operate in a deregulated and open market, leaving them quite exposed to the product price adjustments induced by global market shocks and associated flow on impact to farm gate milk prices.

Coupled with increased volatility in the availability and pricing of key production inputs such as water and feed, this has undermined local farmer confidence in the long term dairy market outlook and the scope to extract reliable returns from their milk on which to build a longer term future.

The map below is a summary of the variables identified in Horizon2020 that would drive greater volatility in food and dairy markets in the next decade. The coincidence and relative intensity of these influences

will vary over time, affecting dairy markets, competing foods and input costs. It is imperative that Australian dairy industry participants build volatility into their business expectations and resilience into their business practices.

W	Weather will affect dairy pasture growth, as well as the production of food and feed crops.
O	Oil market balance will affect incomes and livelihoods in key oil producers, which are important dairy markets.
B	Biofuel mandates and supports affect a significant competing use for feed grains and oilseeds.
E	Economic growth in key demand markets may affect dairy consumption which is sensitive to household income levels.
\$¥	Currency fluctuations affect competitiveness of exports and imports
D	Consumer demand in key developing world markets may be affected by government policy, affordability and choice
🏛️	Trade barriers may be used by governments to protect consumers and farmers from high world prices
🗡️	Conflict – there is ongoing risk of political turmoil caused by risks to the affordability of food and access to water.



Source: Horizon2020

The supply chain

Processor investment: Processors have invested heavily on that back of clear opportunities for the Australian dairy industry but are now struggling to fill their plants. Production growth is required but at the moment processors are transporting milk to fill regional shortfalls.

The underlying competitiveness and attraction of the Australian dairy is illustrated by the estimated \$3 billion that processors have invested in acquisitions and upgrades in Australian dairy assets over the last five years.

Figure 6: Investments, acquisitions and upgrades in the Australian dairy industry

<p>2014</p> <ul style="list-style-type: none"> • WCB purchased by Saputo • MG upgrades Koroit (\$2.5 m plus earmarked further \$19 m upgrade) • MG filling line at Edith Creek (\$14 m) • Tamar Valley purchased by Fonterra • William Hui buys UDP • Bright Foods buys Mundella Foods (WA) to add to Manassen Foods (aqa 2011) • Parmalat buys Harvey Fresh (\$120 m) • R&R Ice Cream buys Peters • PZ Cussons buys Sam yoghurt • Bega Cheese and Chongqing General Trading Group sign \$100m export UHT deal • MG takes additional TDP share (56.1% to 76%) • MG announces \$91 m Cobram cut and wrap plant • Burra Foods Base Infant Powder investment (\$22 m) • Parmalat expand UHT capacity at Rowville (\$150 m) 	<ul style="list-style-type: none"> • Midfield Group Penola plant flagged, Warrnambool plant to follow. \$130m total investment. • National Dairy Products (NDP) formed • SADA Fresh Milk launched • Moxey Farms acquired by Australian Fresh Milk Holdings • ACM/Dutch Mill plan to buy farms • ASX-listed Australian Dairy Farm Group buys 3 more farms in southwest Vic (\$17.7 m) • Beston Global Food Company listed on ASX for \$127 m, purchases factories at Murray Bridge and Jerovis, and stake in B-d Paris Creek (\$9.5 m) • Brownes Dairy sold to Archer Capital • Fonterra builds bottling plant at Cobden for Woolworths deal (\$38,900,000) • Harvey Norman buys 49.9% of Coomboona Holsteins (\$34 m) • Camperdown Dairy Company pasteuriser and yoghurt capacity (\$2 m) 	<ul style="list-style-type: none"> • Fonterra invests in extra 8,000 tonnes of Wynyard cheese capacity (\$4.3 m) • Fonterra expands Cobden cold store (\$6.2 m) • Fonterra sells Riverina Fresh to Blue River Group • WCB raises \$142 m <p>2017</p> <ul style="list-style-type: none"> • Bega Cheese buys Mondelez grocery business (\$460 m) • Freedom Foods buys the balance of the Pactum Dairy Shepparton UHT plant from ACM (\$50 m) • Saputo completes WCB takeover • Bega Cheese sells a Tatura dryer and Derrimut canning facility to Mead Johnson for \$200 m • Kivalley Dairy Group buys MG's Kiewa brand of milk • Bellamy's Organic buys Camperdown Powder (Braeside) facility (\$28.5 m in cash and shares) 	<p>However, reduced milk flows in many regions around Australia are straining production economics of the newly constructed plants. At the time several new plant construction or upgrades were budgeted for, industry confidence and growth forecasts for Australian milk production were substantially stronger. The current reduced milk production levels are requiring processors to:</p> <ul style="list-style-type: none"> • Concentrate their fixed overhead recovery over a smaller volume of milk inputs and finished product outputs • Face increased competition for raw milk thereby increasing the cost of their main input.
<p>2015</p> <ul style="list-style-type: none"> • Lion invests \$150 m into Burnie cheese plant • Parmalat buys Longwarry Food Park for \$67 m • Fonterra/Beingmate JV • Camperdown Dairy International commits \$120 m ton nutritional powder plant (never happens) • Banister Downs invests \$20 m in partnership with Hope Dairies (Gina Rinehart) • MG Unit Trust listing raises \$500 m • Saputo buys Lion Every Day Cheese business (\$137 m) • UDP assets split up between Burra Foods (Gippsland depot), MG (Caboolture equipment in SA). 	<p>2016</p> <ul style="list-style-type: none"> • Fuyuan (Mengniu) take a 79% share in Burra Foods (\$240 m) • Fonterra rebuilds Stanhope cheese plant (\$120 m) • Parmalat buys Fonterra yoghurt business • MG buys remaining TDP shares off Mitsubishi (24.1% for \$4.8 m) • VDL sold to Moon Lake Investments • ACE farming buys additional Gippsland properties (\$8 m) • Carbon Conscious renames itself Alterra and proposes 2500 cow System 5 dairy operation in WA • 75% of Dairy Technical Services (DTS) sold toASUREQuality (which owned the remaining 25%) for an estimated \$54 m. 	<p>2018</p> <ul style="list-style-type: none"> • MG assets sold to Saputo for \$1.3 billion • ACM invests in 200m litre Girgarre drying/butter plant • Freedom Foods expands Shepparton UHT plant • Brownes Dairy (WA) sold to Shanghai Ground Food Tech • Brownes invests \$10 m in whey drying capacity • Wattle Health/Organic Dairy Farmers Co-op flag \$55 m spray dryer near Geelong • ASX-listed Australian Dairy Farms Group plans organic conversion and investment in processing capacity (as yet unfulfilled) • Coomboona Holsteins goes into administration • Fonterra to double Stanhope cheese capacity <p>The dynamics of the domestic and international markets are contributing to growing pressure on dairy processor margins. As Australia is an open market for dairy, local dairy manufacturers and processors compete for inputs and sales both with international suppliers in overseas markets and with domestic competitors at home in the Australian market.</p> <p>Processors operating in traditionally fresh product domestic markets (typically based in Queensland, NSW and WA) earn on average over 70 per cent of their revenue from fresh drinking milk. Yoghurt, cheese, cream, other dairy products and a relatively small amount of UHT milk make up the remaining revenue.</p>	

Figures indicative based on media reporting

Particularly in these ‘fresh milk states’, the widespread introduction of \$1/litre milk and private label milk at retail level has had considerable negative effects on industry confidence and margins.

Evidence supplied to the ACCC Dairy Inquiry suggested that, while private label contracts are profitable for some processors in isolation, many private label contracts are at best profit-neutral for processors and that firms may operate at a loss once overheads are fully accounted for. It is well recognised that processor margins are better for branded product, compared to private label equivalents. With this being the case, the discount milk policies have eroded the profitability of the broader supply chain by reducing the market share of branded milk.

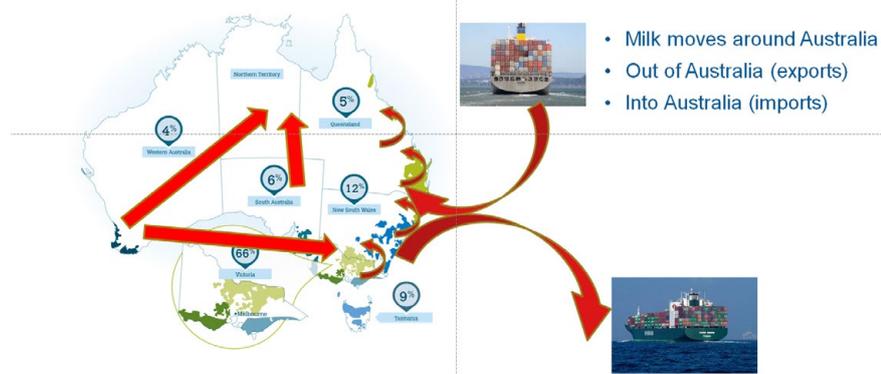
Indirectly, there has been no question about the impacts of heavy retail price discounting and how it has eroded the perceived value of dairy by consumers. Dairy farmers have felt the emotional impact as they invested their livelihood into caring for animals and producing fresh milk in an industry that appears to be devalued.

Traditionally fresh milk production states (NSW, Queensland, and WA) supplied milk to fulfil domestic demand requirements. However, reduced milk production in these regions in recent years has created significant supply tension in the Australian domestic market.

Figure 7: Movement of milk around Australia

In an open market, milk flows to where it's required

Movement of milk has increased



Since 2011/12 Queensland hasn't been self-sufficient with respect to milk production and consumption and has relied on milk produced in NSW to fill seasonal gaps in production. (see figure 8 and figure 9). Reduced regional milk flows since 2017/18 have meant that there is now a combined QLD and NSW seasonal milk deficit, with this gap having to be filled with milk shipped north from Victoria.

As indicated in figure 7 ‘movement of milk’, there are clear supply pathways moving milk from production surplus areas in the south eastern states, further north to meet seasonal supply shortfalls.

Often this milk has been transported to meet domestic market supply contracts (for retail, food service or industrial users) for fresh, short shelf life products — which means processors have limited scope to use global suppliers to meet their obligations.

In times of production surpluses in south eastern states this isn't a problem as the south eastern milk price is generally lower than that for northern and western milk production states, suggesting freighting milk up the eastern seaboard, or fresh manufactured product across the Nullarbor to WA is economically viable. However, milk production dynamics within Australia are changing.

Figure 8 : Combined NSW & QLD Fresh Milk Balance

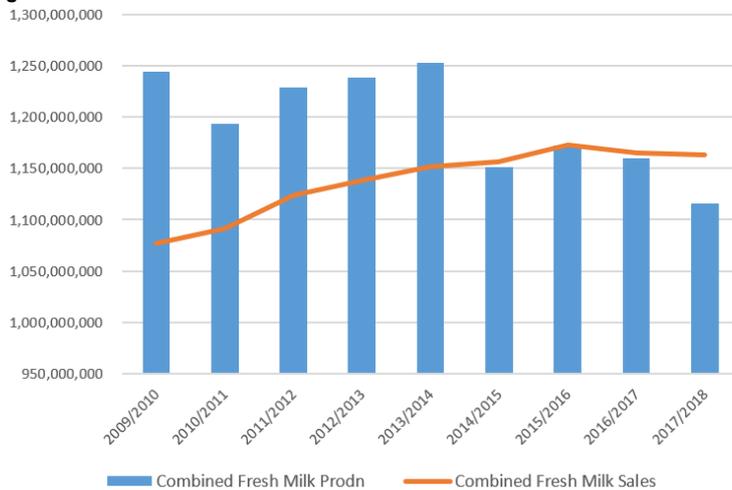


Figure 9: Queensland Fresh Milk Balance

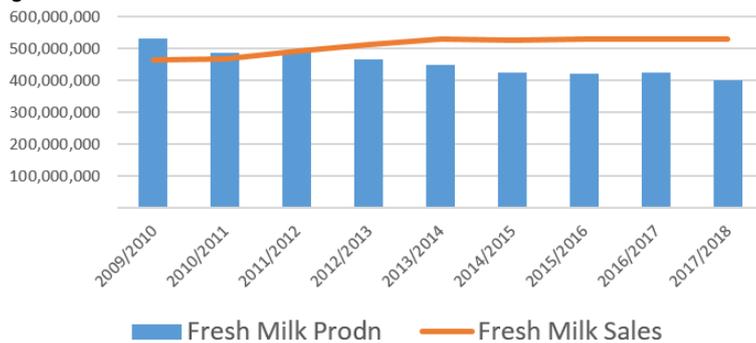
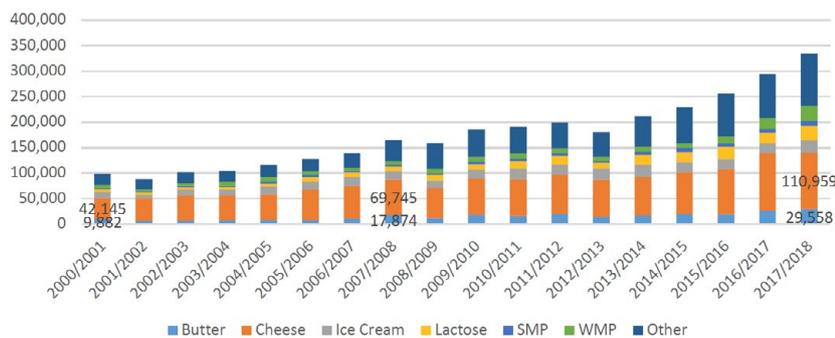


Figure 10: Australian dairy import volumes



However, the 2018/19 season has been significantly affected by drought, reducing milk available to fill this NSW/QLD gap and raising significant concern amongst some processors as to how (and at what expense) they will fulfil contractual supply obligations.

This shortage of milk also means processors have needed to buy milk off each other to fill contractual obligations. This milk is often procured at a price higher than average farmgate milk prices off the liquid milk spot market. This is not an open and transparent market, so farmers do not receive pricing signals to produce more milk on the basis of these inter-processor purchases of milk.

The open Australian market also allows customers to fulfil their requirements with imported dairy products if they are not concerned about country of origin. A combination of the declining milk pool and choices to export dairy product to some markets rather than focus on the domestic market has opened the door for significant growth in dairy imports, which have more than doubled in the last decade.

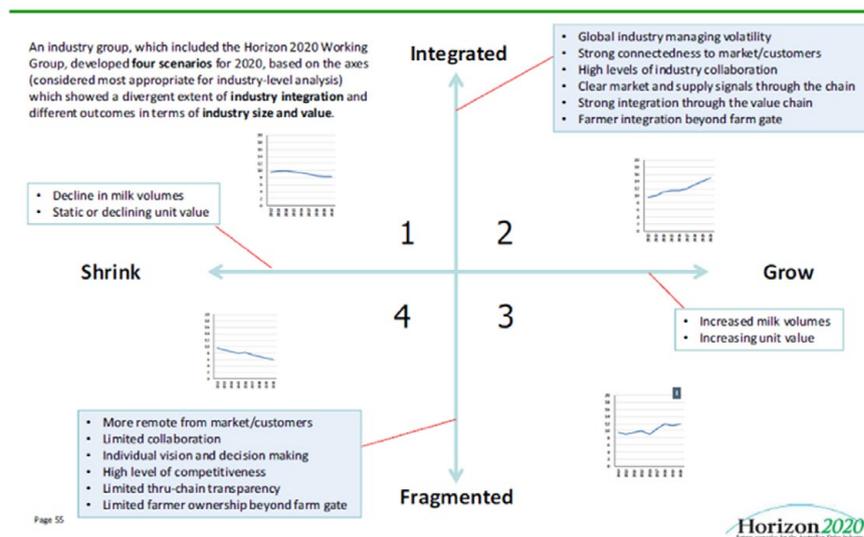
The combination of a gradual decline in dairy production volumes, competition for milk at the farm gate and significant competition from imported dairy in Australian domestic market is ratcheting up the challenges faced by processors in the Australian market.

Supply chain divergence: Fierce competition has challenged our capacity to collaborate.

The Australian dairy industry has seen a more intensely-competitive environment between dairy companies which are offering different propositions and business models through to customers. Industry has collaborated in limited areas where necessary but this is far less obvious than was the case a decade ago. The more competitive climate has meant there are winners and losers, and less integration results in more exposure to volatility.

The Horizon2020 project¹ completed in 2013 identified four potential scenarios for the dairy industry of the future along dimensions of; an integrated or fragmented industry where participants collaborated or worked closely with market (integrated), or pursued individual interests and had limited farmer ownership post farmgate (fragmented). The second dimension of these scenarios was growth or contraction in milk production volumes.

Figure 11: Horizon 2020 working group scenarios for dairy industry future



Over the last five years the industry has unfortunately drifted toward the Scenario 4 (bottom left), demonstrated by declining milk production volumes, limited post farmgate collaboration, a high level of competition and limited farmer ownership beyond the farmgate.

The significant diversity in the industry is a reflection of the many groups of industry stakeholders pursuing what they've identified as the 'best strategy'. Yet the industry could be more successful in responding to the external environment with a coordinated approach.

¹ <https://www.dairyaustralia.com.au/about-dairy-australia/about-the-industry/horizon-2020>

Ownership structures: Processor ownership structures have evolved from the traditional cooperatives which is also influencing processor decision making.

Processors occupy a critical position in the value chain between producers and consumers of dairy products and ingredients.

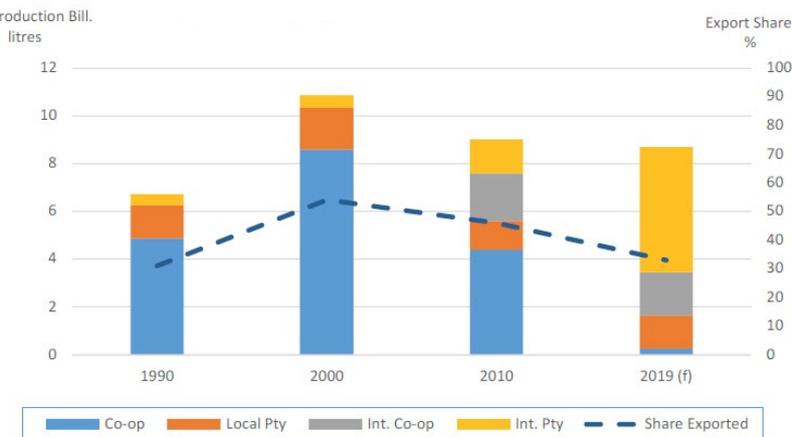
The importance of processing capacity has also been recognised in the prevalence of cooperative ownership of processing infrastructure by farmers during the history of the Australian dairy industry. In a global context there are still many large cooperatives in existence today, but the herd has progressively thinned over the last decade. There are a number of reasons, from strategic missteps to improving access to capital and mitigating redemption risk.

In the context of the Australian dairy industry, the share of milk processed by cooperatives has gone from ‘major’ to ‘niche’ in just a few years. In the late 1990s, eight locally owned dairy firms¹ (six of which were farmer-owned co-ops) processed and sold around 85 per cent of Australia’s milk supply. The three largest cooperatives controlled around 60 per cent of all milk processed.

One of the advantages multinational processors offer customers is the notion of consistent supply from multiple origins. This consistency can be provided because of the internal standards and processes of the organisation in all of the countries in which it operates.

These new ownership structures add complexity to traditional country of origin marketing because multinationals operate in multiple jurisdictions. In that context they are now looking to manage potential regional risk that come with limiting marketing efforts to only one country of origin. This may mean that some firms are more willing to contract for large volumes of milk from other firms than enter into open ended milk supply arrangements with individual farm suppliers.

Figure 12: Australian Dairy Manufacturing By Ownership Type. Market Orientation



Twenty years later, only one of these eight firms continues to operate independently (and with an expanded business focus beyond dairy) and this is no longer a cooperative. The factory operations of the other seven firms have either been rationalised, closed or incorporated into the businesses of major global players such as Fonterra, Lactalis, Saputo and Kirin Breweries (and, in some cases, Bega). Essentially, Australian dairy processing has become one of the supply hubs that major dairy players are using to meet their specific market strategies – with these strategies largely being determined outside Australia’s direct control.

As a result, where a cooperative might have traditionally been accountable only to its member shareholders, the current corporate landscape has created new dynamics which repositions the importance of Australian origin product and means processors are accountable to shareholders and overseas parent companies.

¹ These were Murray Goulburn, Bonlac, Dairy Farmers (ACF), National Foods, Warrnambool Cheese and Butter, Bega Cheese, Pauls (QUF) and Tatura Milk Industries.

The consumer

Sales channels: Our production mix has had to adapt to changing consumer preferences and price/positioning competition from milk alternatives.

The Horizon2020 project identified an intense contest for 'parent brand' trust by consumers in retail food markets, which is dominated by a core appeal to the 'value' perception (representing 'price plus benefits').

It is not expected that this approach will change quickly due to:

- The entrenched desire for value from a cautious shopping public
- The expansion of the Aldi and Costco chains
- The gradual improvement in the return on investment by Coles

Gains in grocery chains building consumer trust of parent brands will be slow. UK retail parent brands models started in a different place to their local counterparts with a high-quality perception, yet have taken 20–25 years to reach their current levels of respect.

Australian consumers are relatively sceptical of major grocers that have indistinguishable propositions. 'Gen Y' and 'Gen Z' segments of the community show less attachment and loyalty to 'establishment'.

This implies that 'value' is likely to remain a key plank of retailer propositions to shoppers, unless there is a huge lift in consumer sentiment and discretionary spending on food, which is not foreseen by grocers for the next five years.

The scope for growth in unit values of dairy products depends on how products can tap into the drivers of premium, which were identified during the Horizon2020 process based on feedback from retailers.

The last decade has seen a more diverse range of products marketed as dairy alternatives, with wide variance as to the functional and/or nutritional substitutability of these products for dairy.

Plant-bases now include soy, nuts, coconut, rice, oat, pea and emerging sources like hemp and quinoa. The products have also extended beyond 'milk' into 'yoghurt', 'ice-cream' and 'cheese'.

Some products, particularly fortified soy milk and some of the new pea milks, try to mimic the core nutritional elements of milk. Others bear little nutritional resemblance to the dairy products they take the name of. However, all are marketed as dairy alternatives and attempt to mislead consumers to perceive them as such. This has been concerning for dairy industries and government authorities around the world due to the significant lack of perceived 'fairness' in the current marketing strategies being adopted by the alternatives.

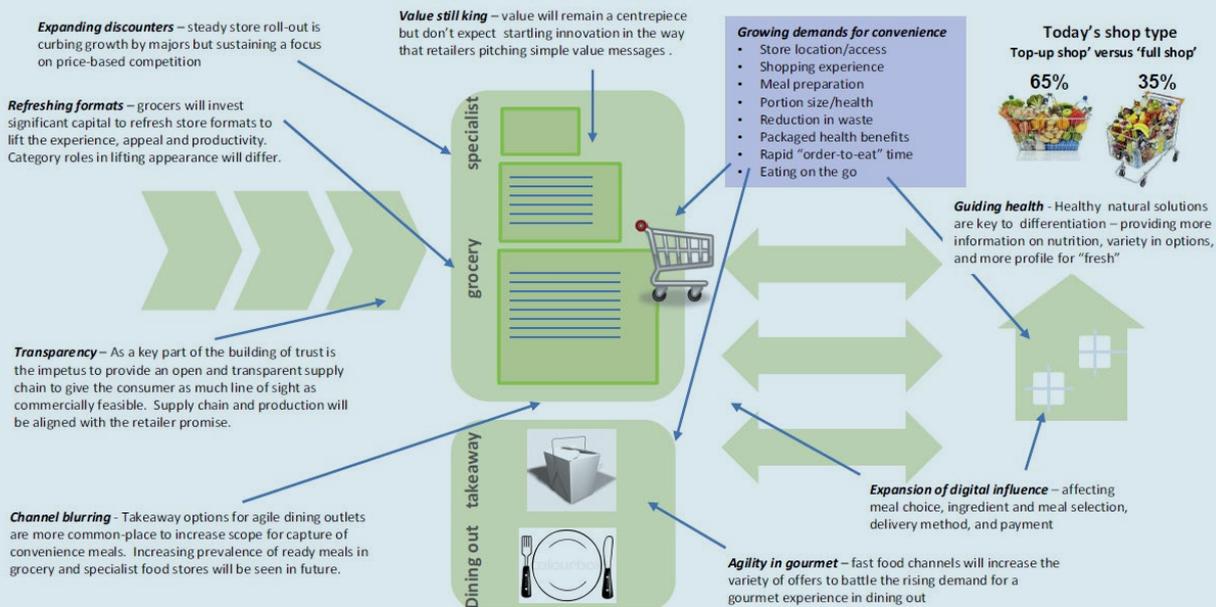
The domestic consumer market is responsible for consumption of the majority of Australia's milk output, yet grows slowly across major categories. But future growth is not assured, and the forces affecting dairy's role are changing prospects for growth are complex. A number of factors have emerged that are re-defining the consumer market:

- There is ample scope for growth in volume and value as a result of shoppers trading-off value, convenience, and indulgence priorities.

- Dairy marketers have many opportunities to capture growth in an increasingly diverse market with accelerating change due to the diversity of product offering and meal and snacking occasions that suit dairy.
- There is widening scope to get more product into convenience purchases, where there is less price-sensitivity.
- The industry must positively manage how it is seen by consumers keen to demonstrate their care for welfare and environmental concerns.
- Emerging retail channels outside of conventional grocery and foodservice outlets offer opportunities for real growth as lifestyles and technologies influence decisions.
- While price discounting has defined the last decade of retail price competition, there is a growing view that commercial capital can be gained by 'supporting the farmer' and ensuring that the supply chain is profitable. Recent fresh white milk supermarket developments have brought this consumer sentiment to the surface.

There are a number of strong trends causing change in the way consumers make their food purchase decisions and influences shopping behaviour. These in turn have relevance for the range of products and usage occasions across the dairy category.

Figure 13: Factors affecting the retail markets identified by Horizon2020 working group



In a December 2010 report, Master Grocers Australia reported Coles and Woolworths accounted for 80 per cent of packaged grocery sales in Australia. Two years later, Deloitte Access Economics conducted a similar study, identifying the share of packaged grocery sales held by Coles and Woolworths had declined to 72 per cent. Current estimates are that this share has declined further with the growth of the IGA chain, entrance of Costco and expansion of the Aldi chain of supermarkets.

Despite recent changes to the Australian retail landscape, Australia still has one of the more highly concentrated retail grocery markets in the world, with higher concentration amongst the top four players compared to retail grocery markets in the UK, USA and Chinese retail sectors. The entry and subsequent growth of the Aldi and Costco chains of supermarkets indicates it is possible to break into the Australian grocery market and that there are reasonably low barriers to entry.

There are no switching costs for consumers so they can freely spread their shopping across the four major chains. A 2013 Nielsen survey over a 12 month period indicated 97 per cent of Australian consumers switch between the four major supermarket chains, and over a month, 64 per cent will have shopped at all the major supermarkets and specialty stores.

In a 2017 survey of Australian retailers, 30 per cent were unaware of Amazon's plans to enter the Australian market. Much of the commentary in investment circles (where analysts are forecasting the impact on the publicly listed Australian retail sector) is focused on the negative impact on discount stores like Kmart and Target.

The impact on the grocery sector is far less clear. However, given annual sales turnover of Amazon is larger than that of Coles, Woolworths, Myer, JB HiFi and Harvey Norman combined, the Australian market is still anticipating some form of 'Amazon effect' when the world's twelfth largest retailer expands its footprint on our shores. At present, Amazon's product offering is skewed toward packaged goods and is yet to move into the grocery or fresh food sector.

In 2017, approximately 5 per cent of Australian retail sales were already online, Macquarie Bank expects this proportion to double by 2025, but the absence of a

physical retail footprint limits Amazon's expansion in Australia. There is significantly lower penetration in the packaged grocery space, especially in the context of fresh and products requiring cold chain management. While logistics and warehousing have been Amazon's strengths, building the necessary infrastructure in Australia will take considerable time, and it is possible retail margins in these categories are insufficient to warrant the investment..Technology and logistics are likely to be major enablers of increasing Amazon penetration within the Australian retail grocery sector.¹

1 Articles referenced in the above text:
<https://theconversation.com/factcheck-is-our-grocery-market-one-of-the-most-concentrated-in-the-world-16520>
http://data.daff.gov.au/brs/data/warehouse/pe_abarebrs99001186/PC13141.pdf
<https://www.pc.gov.au/inquiries/completed/retail-industry/report/retail-industry.pdf>
<https://www.news.com.au/finance/business/retail/australian-retailers-are-unprepared-for-the-entry-of-amazon/news-story/7fa56b9aded85aae0a47ea4155c9aa8f>
<https://www.ordermentum.com/blog/how-australian-retailers-react-to-amazons-arrival>
<https://www.macquarie.com/au/advisers/expertise/market-insights/is-amazon-the-end-of-australian-retail-as-we-know-it>

Demand remains strong: Consumption in Australia is robust and global dairy demand continues to grow

The future role of the dairy category as a key source of nutrition and protein in the medium to long-term future is regarded as strong due to the expected pressures on world food supplies as potential demand is projected to outstrip supply.

This view has been popularised by the profile given to the FAO's long range 2050 outlook, which suggests world food production needs to increase 60 per cent by 2050 to feed a 34 per cent increase in the world population.

A common feature of these markets is that local milk supply cannot keep pace with consumption growth, resulting in sustained dairy deficits that must be filled by imports. There are a number of factors driving dairy demand growth in developing markets, including;

- A perception that imported products are safer and brands more trusted
- Economic growth rates at higher levels than 'developed' economies
- Rising incomes and the emergence of a consumptive 'middle class'
- Comparatively high birth rates and young populations
- Increasing health consciousness among consumers
- Growth in 'modern' retailing and food service
- Urbanisation enabling access to more consumers
- School milk programs and consumer education
- A desire for parents to include dairy (infant formula) in the diets of children
- Relatively low base levels of dairy consumption, with substantial growth opportunity.

Global demand will outstrip supply

Global dairy trade is expected to increase 1.8 per cent per annum to 2027 by the OECD-FAO and Australia has an excellent reputation upon which to build future success.

The scope for growth in dairy demand from the developing world is substantial and will continue to expand with rising GDP that flows into higher household incomes. Increasing urban migration will push this demand growth faster in some regions, as people earn more in city jobs, and seek better nutrition and variety in their diets.

The expected strong growth in Asian and MENA economies will provide greatest opportunity for expansion of dairy's markets. Dairy is well established as a key part of an increasingly nutritional protein-rich diet in these regions.

The growth in the dairy market is not just a story about the ongoing potential in China — other markets could be as important, and possibly more significant for Australia.

Global dairy markets hold significant potential for the Australian industry if our industry is able to service market opportunities. The challenge is in restoring competitiveness and adequate milk volumes to translate this market opportunity into value for our farm sector.

Yet, the feasibility of feeding the world in the long-term — and the challenges that holds for dairy — is gradually gaining more focus as a priority. It is widely believed that it will be feasible to meet these demands, but only with significant progress in:

- 1 Huge gains in resource efficiency
- 2 Vastly improved production skills
- 3 Reduced food waste
- 4 Widespread acceptance of new gene technologies.

Rather than a physical challenge, a larger threat in future is affordability of food to consumers in the developing world, facing rising prices for food with increasing pressures on supply. Low-cost suppliers and product innovation can partly address increasing nutritional demands, but pressures on livelihoods from increased costs of living will be a source of volatility.

Domestic demand is strong

The major Australian consumer dairy products are drinking milk, cheese, butter and butter blends and yoghurt. While per capita consumption trends per product has varied significantly over the past two decades, Australians in general, consume more dairy than other comparable countries. During 2017/18 Australians consumed on average 340 litres of milk. This is more than the 269 litres per capita consumed in the United States and the average of 305 litres of milk consumed per capita in the European Union.¹

¹ The US and EU statistics represent available data from IFCN from 2016. Later data is currently unavailable.



Social licence: Public expectations are changing and consumers are increasingly questioning the attributes of their food

A focus on Sustainability

Food is at the centre of many sustainability challenges facing the world and as a result, the world's food production systems are changing rapidly. Land degradation, biodiversity loss, food security, climate change, population growth, water scarcity, public health, human rights and technological disruption are changing the way food is made.

As an industry that requires land, water and animals and employs people to provide nutritious food, the Australian dairy industry has been, and needs to continue demonstrating responsible production practices.

The future of food production is also being shaped by a global agenda to set the world on a more sustainable path — the UN Sustainable Development Goals. Signed off by 194 countries, they are a global call to action being embraced by governments, large businesses, retailers, consumers, the community and NGOs. They are all looking for ways to feed the world while preserving scarce natural resources and they want to be seen to be playing their role.

There are also large influence groups working to shape the future of food production by shaping nutrition guidelines. The 2019 EAT-Lancet Commission report on Food, Planet, Health¹ is one recent example of a group trying to redefine a global health diet on the basis of being 'healthy for both people and planet'. This report made recommendations to reduce consumption of dairy foods on the basis of narrowly defined environmental impacts.

There are also increasing pressures from investment analysts and environmental, social and governance (ESG) ranking tools to assess companies in the food and agriculture sector for their exposure to risks such as water stress, climate change and energy security — and what measures are being taken to mitigate these risks. Add to this the pressure surrounding animal welfare, and requirement to provide evidence that it is committed to change. This pressure will only be increased by emerging food trends and competition from plant-based substitutes.

Sustainability is now 'mainstream' for major food companies (such as Nestle and Unilever) that have embraced its principles as a core part of their business strategy. Major grocery chains are also following the global food groups, wanting to implement culture shift and to be seen to be doing the right thing for future generations.

Non-Government Organisations (NGOs) play a major role in influencing the sustainability agenda. Pragmatic advocates play key roles in publicly partnering with corporations (Unilever, Nestle, McDonalds as examples) in developing and monitoring practices.

Dairy will need to positively manage the balance between feed conversion and environmental benefits of intensive systems with the perceptions of welfare issues in meeting growing demand. Opportunities to combine dairy and plant substitutes will also influence the dairy landscape.

The Australian Dairy Industry Sustainability Framework has been developed as a transparent way for the dairy industry to publicly report how it is addressing the challenges and provide evidence of progress.

1 <https://eatforum.org/eat-lancet-commission/>; <https://eatforum.org/lancet-commission/everyone/>; <https://eatforum.org/lancet-commission/farmers/>

Figure 14: Australian dairy industry sustainability strategy commitments¹



¹ <https://susoz.dairyaustralia.com.au>

Social licence at risk

A growing number of examples including the exports of live cattle and sheep and the regulation of racing industries (such as greyhound racing) suggests regulators are willing to act if practices are not deemed to be socially acceptable. Independent of regulation, the supply chain (typically led by retailers) is also imposing practice standards on suppliers to preserve consumer approval.

Community expectations are helping shape the dairy industry's licence to operate with respect to animal welfare, environmental and social concerns. Another layer of influence are media campaigns questioning industry practices, and drawing attention to potential areas of risk. Deliberate consumer messaging from plant based dairy alternatives to are adding complexity to consumer decisions.

Trust in dairy products correlates strongly with trust in the industry¹ yet consumer tracking shows 25 per cent of people have doubts or concerns about consuming dairy products. Since 2010, the proportion of people agreeing that they trust dairy as a wholesome and health food has dropped from 75 per cent to 60 per cent in 2016, with a slight increase in 2017. The result is an increasing proportion of the population who choose to avoid or limit their dairy food intake despite most believing that the industry is vital to the Australian economy and offers economic and social benefit to regional communities.

Broader societal concerns around trusting organisations and readily available information, also apply to consumer perceptions of the dairy industry and the extent to which it is being open and transparent:²

- Nearly a third of Australians say they find it hard to know what information to trust because there is so much conflicting information
- Around a half don't find it easy to find reliable information about dairy and health
- Less than a third would trust the dairy industry if they said to consume more dairy
- Less than a third feel they have enough information on how cows are farmed and two thirds don't know who to listen to on this matter
- Less than half believe they have a good understanding of how milk is produced.

A recent market segmentation study³ was conducted to identify who and how to influence the public in relation to social license issues. The research segmented the Australian public based on their level of engagement with food issues, as well as their perceived responsibility and subsequent actions in response to hearing or learning about issues.

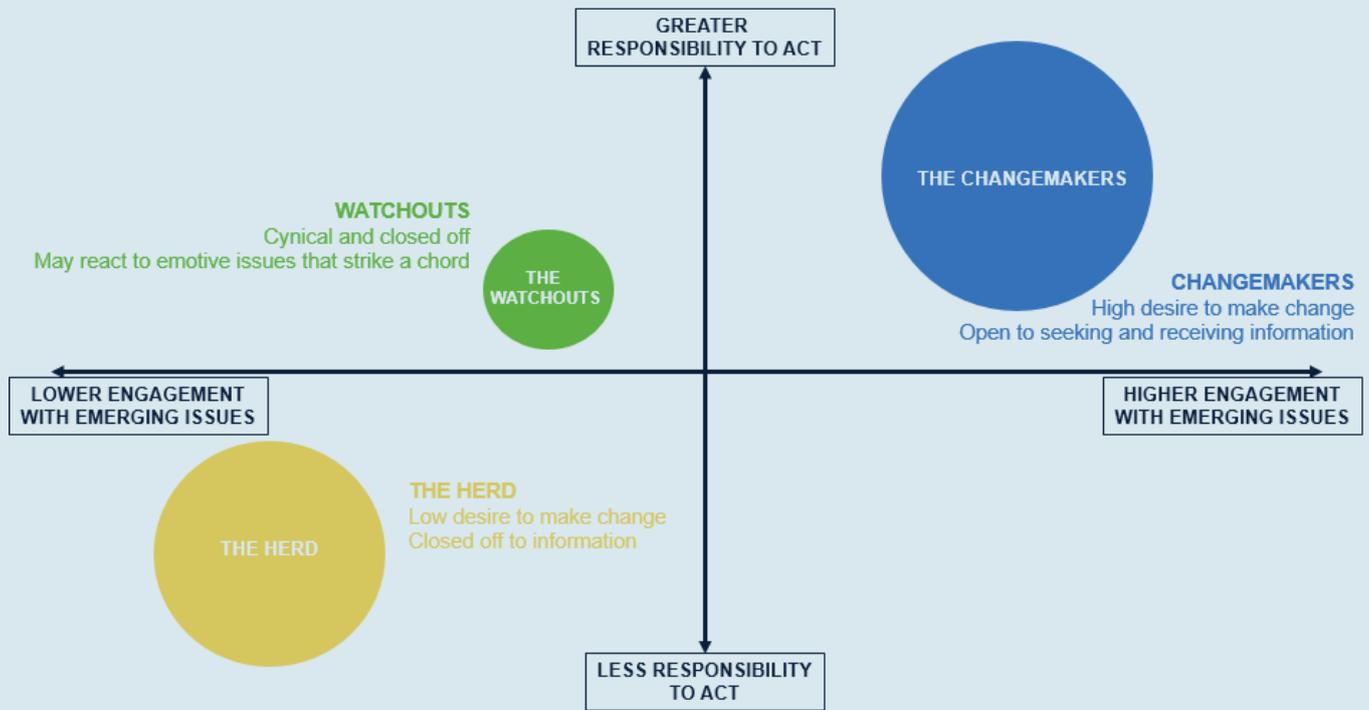
A highly engaged and highly influential group within the general public, Changemakers (46 per cent of the population) were identified as the biggest opportunity for the industry to work with. This group is the most receptive to messaging and the loudest in terms of sharing their opinions with other consumers. They want more transparent information on areas of concern including health and nutrition, animal welfare, farmer welfare and environmental impact, to help them make an informed opinion about the industry. Changemakers are more likely to place their trust in and seek the opinion of expert sources — academics, medical and scientific experts.

1 Dairy Monitor Community Tracking

2 Social Licence Consumer Survey, 2016

3 Dairy Australia consumer segmentation model

Figure 15: Dairy Australia consumer segmentation model



Challenge 2

**Making a
profit on-farm
has become
more difficult**

On farm dynamics

Farming systems and structures: are becoming more complex in response to market, pricing and climate variability

Australia has one of the world's most diverse dairy industries, both in terms of farm systems in use and climate to manage, spanning from Tasmania to North Queensland and across to south-west Western Australia. Farm systems are classified based on the intensity of feeding systems:

Figure 16: Farm systems



High pasture

Grazed pasture and other forages and feed less than one tonne of grain or concentrates per cow per year in the bail.

20% of farms in Australia
13% of production
186 cows = Average herd

Moderate-high bail system

Grazed pasture and other forages and feed more than one tonne of grain or concentrates per cow per year in the bail.

58% of farms in Australia
61% of production
210 cows = Average herd

Moderate-high bail system

Pasture for most or all of year and a partial mixed ration on a feed pad.

11% of farms in Australia
16% of production
267 cows = Average herd

Hybrid system

Pasture for less than nine months of year + partial mixed ration on feed pad.

7% of farms in Australia
5% of production
340 cows = Average herd

Total mixed ration (TMR) system

Cows housed and fed total mixed ration.

2% of farms in Australia
5% of production
404 cows = Average herd

Source: National Dairy Farmer Survey 2018

Dairy farming is a decision-intensive business, and is faced with an increasingly complex set of management and technical issues on farm. Responses to this more complex environment involve managing risk and capturing pricing or system efficiencies, often by moving to a more intensive feeding system, but also sometimes by de-intensifying the business operation.

There are a range of factors that are stimulating change in farming systems and structures. A concern by industry observers is that the complexity of farm businesses and the multiple factors driving change can lead to situations where profitability is compromised and competitiveness in terms of production costs is diminished.

One of the strengths of the dairy industry is the ability to demonstrate and celebrate business success, with many regions celebrating dairy businesses of the year and other like awards. There are model farm businesses that can demonstrate an ability to remain competitive with increasing production costs and have a long track record of profitability and wealth creation. Success has been celebrated in both family farming enterprises and corporate farms.

The following section provides a description of factors that lead to a diverse range of farming systems and structures.

Pricing signals

Milk pricing signals have favoured incentives to drive production towards flatter production curves in southern Australia. Southern Australia has traditionally been a seasonal production environment where most milk is produced in spring. The peak production months have been at least eight times greater than the minimum production months. This has now changed and the peak production months are two to three times greater than the minimum.

A higher proportion of milk from these regions is now servicing domestic markets, and the competition for milk has ensured that most milk buyers compete with signals promoting this outcome. This has encouraged the adoption of production systems to match pricing premiums, while not fully recognising the additional costs of producing milk in some months. Higher fixed production costs have reduced producers' scope to manage volatility.

Cow fertility

Farming systems are typically described as seasonal, split and year-round. Seasonal herds calve once a year, typically in spring but in some districts this can also be in autumn. Split herds have multiple periods of calving each year, typically two to four periods. There are corresponding joining periods to create these periods of calving. Year round herds are continually joining and calving cows on an as-required basis.

Breeding for production and for cow type in the 1980s and 1990s unwittingly led to a decline in fertility. By the year 2000, there were a significant number of herds that were unable to achieve pregnancy rates that allowed for seasonal calving, and a shift to more split calving herds was observed.

Split calving can be less productive than seasonal calving as less fertile cows are retained for longer periods and joining periods can be compromised, such as limiting opportunities for pregnancy or joining in hotter months. This was partially compensated by higher milk prices in autumn and early winter.

Cow fertility is now recognised as a major driver of productivity, with dedicated studies in Australia (the InCalf project) as well as a focus on being able to breed and select cows with superior genetics for fertility. The combination of good management and positive genetic selection is critical for the future productivity of the industry.

Farm infrastructure

Intensification typically requires more farm infrastructure, ranging from feeding facilities and feeding equipment through to housing facilities. Often intensification is linked with increased scale or stocking rates. Selection of appropriate infrastructure is critical as it has a long pay-off time and can result in increased cost of production. Inappropriate choice of facilities and equipment has caused financial failure.

Investment in farm infrastructure can be an effective strategy to manage seasonal volatility and ensure high levels of cow welfare, and is becoming more common in areas with reduced or less reliable rainfall that have ready access to grains and forages.

Labour requirements

High labour efficiency has been critical to the success of dairy businesses and has been a feature of those that are family owned and operated. The choice of feeding system and calving system has significant implications for labour requirements as well as the level of management and operation skills of labour. Increased labour requirements are often not fully considered when making changes to farm systems and structures, which contributes to cost of production increases and also to management stress if labour is not readily recruited.

Some farms have elected to reduce intensification and have stated that this is driven by the need to reduce labour requirements. This can include taking steps like reduced milking frequency, from twice-a-day to once-a-day milking, and resuming seasonal calving patterns.

Scale factors and capital requirements

Farm sizes have increased over time, and often in response to intensification. Increased scale requires significant capital investment, particularly if a more intensive feeding system is used. Capital requirements include an upgrade of existing infrastructure, such as milking plant and effluent management, as well as selecting and siting new infrastructure on the farm. The decision to increase scale and/or intensification of feeding systems requires deliberate management to extract cost efficiencies, including knowledge of farming aspects that become more expensive as well as aspects that have reduced marginal costs.

Learning to manage larger and more intensive farm operations is made more difficult by the volatility in markets and climate. There is now significant industry expertise in this management and successful large farming businesses. However, there are also significant businesses which have been required to manage change and volatility at the same time and have resulted in significantly higher cost of production and are highly exposed to the volatile operating environment.

Farm ownership and employment structures

There are a wide variety of ways in which farm ownership takes place, all of which have varying return and risk profiles.

Traditionally, progress in the dairy industry has been focused on achieving the ultimate goal of farm ownership, as this has been seen as the best way to grow wealth. Entrants into the industry have generally spent time as an employee and/or experienced a period of share farming, during which there is growth in skills and assets, followed by a period of leasing, with a further increase in assets and skills and eventually dairy farm ownership.

In 2017, 11 per cent of dairy farm businesses had a share farmer, with 2 per cent of dairy businesses recruiting a share farmer in the previous 12 months.¹ As the name suggests, the arrangement involves sharing. Income is shared and there is a degree of cost sharing, with each party being recognised as an individual entity while working together on the one farm. Also shared are the risks, responsibilities, skills and control of the dairy business. Both parties may bring assets (land, water, livestock and machinery) to the arrangement and there should be the potential for the owner and the share farmer to grow their wealth.

Share farming plays an important part in the Australian dairy industry in that it:

- Provides a significant amount of external labour used on dairy farms
- Is an important training ground for learning dairy farm management
- Can be utilised in farm succession and transition
- Is used to build up capital, resources and creditworthiness and is a 'stepping stone' to farm ownership.²

Leasing out the farm is common within the Australian dairy industry, particularly with landowners who want to retire from active farming but are not yet ready to sell the property. In this situation, leasing frees up time and energy for other pursuits and generates an income without having to sell the property. It may also be an option for investors who are mainly interested in capital growth of the land and receiving a reasonable rental for the asset.

¹ Dairy Australia, The Power of People on Australian Dairy Farms 2017

² Dairy Australia, Sharefarming Model Code of Practice 2014

In recent times increasing numbers of corporate farming models have been seen in the Australian dairy industry. These can be seen in the form of listed investments, private fund investments or equity co-investments/partnerships. Such models have brought significant amounts of capital into the industry in recent years and provided increased scope for larger farming enterprises.

Figure 17: Profile of ownership and employment structures



Outlook for farm systems and structures

There are significant drivers to intensify dairy farming in areas of low rainfall or low allocation of irrigation capacity. Changing rainfall patterns where reliability of rainfall in key seasons is now questionable is also driving more complex farm systems. Changing a farm system in a time of volatility is complex to manage, and can lead to over-capitalisation and misjudgement about impacts on labour and cost of production. There have been many successes in the past 20 years of proactively changing farm systems and structures, but there have also been notable failures.

It is likely that there will be a trend towards more partial mixed ration farms and hybrid farms in irrigated regions and regions more severely impacted by changing rainfall patterns. Improved cow fertility and improved performance of pastures and cattle may allow a reversion to a lower-cost and less intensive farming systems in areas of reliable rainfall. This will lead to a widening of types of farming systems, increase the spread of the cost of producing milk and will require an agile workforce and diverse support from government and industry services.

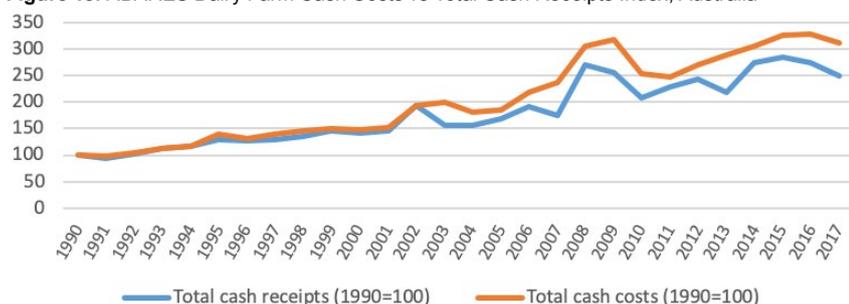
Margins and input costs: Input costs (water, feed, labour and energy) have increased much faster than milk prices and productivity gains can cover

Australian dairy farmers are price takers in inputs and outputs. The real prices of farm inputs are rising faster than the real price of products they sell. Farm costs vary from year to year because:

- Farmers are striving for productivity improvements and need improved inputs and more of them
- Land, labour and capital are scarce and farmers have to compete to access them.

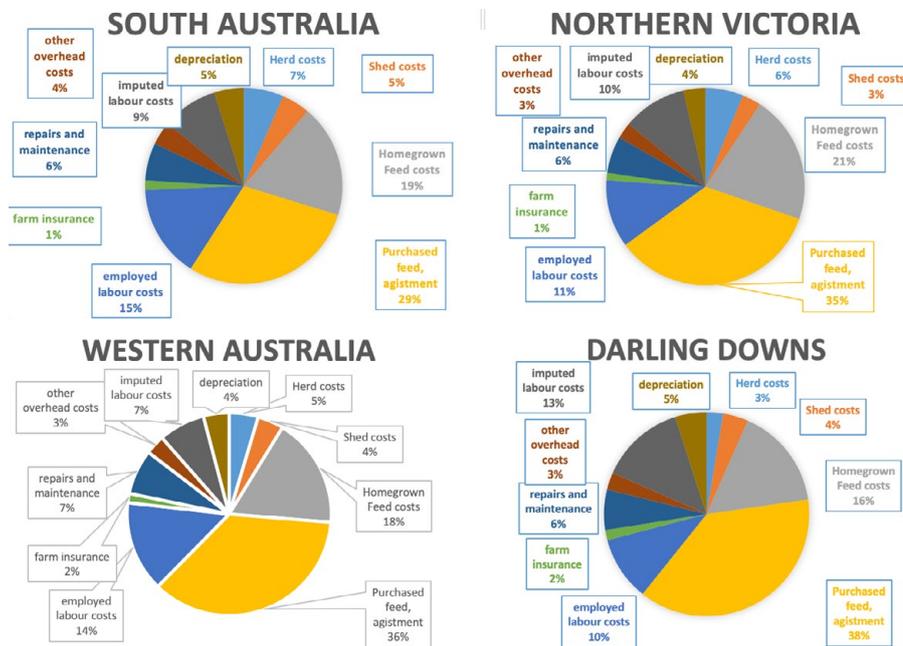
Note for 'figure 18: ABARES dairy farm cash costs vs total cash receipts index' the two series, when considered independently, indicate average annual rate of growth for income or costs. When considering the two series *together*, the distance between the lines increase, farm profits are under pressure. This is most clearly seen in the increasing gap from 2014 to 2017.

Figure 18: ABARES Dairy Farm Cash Costs vs Total Cash Receipts Index, Australia



Production cost structures can vary considerably across different production systems and in different geographies around Australia. To illustrate this variation, a breakdown of production costs in geographically diverse regions is below — one consistent element is the majority of on farm production costs are associated with growing or purchasing feed for stock.

Figure 19: Production cost structures in different Australian dairy regions



Feed costs as a proportion of milk production costs can vary, partially because of different feeding systems employed by farmers. Southern Australia's on-farm production systems for most of the past 35 years has been similar to New Zealand. However, over the past decade due to a range of climate and income variability factors the farm production systems in some regions have evolved to a higher cost structure, replacing pasture based seasonal production to all year round production systems reliant on significant grain or concentrate feed use in the cows' diet in addition to pasture.

Northern Victorian irrigation dairy farming has been the largest milk production region with a historical volume of about 25 per cent of Australia's total milk production. While it has been impacted by changed production systems like the remainder of Victoria, it has experienced a significant additional competitive challenge. With increased climate variability and the relatively high cost of irrigation water, the region is experiencing competition from alternative agricultural production to dairy.

Large scale tree crops such as nuts and citrus as well as very large scale horticulture are able to pay more for the high security water within the region – well above the water price where dairy farming can effectively compete. Changing water pricing and usage dynamics is creating new potential buyers in alternative agricultural pursuits and tension between water as an investment, and water as an input for dairy farming.

The Murray Darling Basin Plan has been developed to manage the basin as a whole system rather than separate parts. A primary goal is to improve the health and sustainability of the system, while continuing to support farming and other industries for the benefit of the Australian community.

As of 30 June 2018, 828 billion litres (GL) had been recovered under 2004 The Living Murray and 2002 Water4Rivers programs, with another 1,744 GL of water recovered in the southern Basin under the 2012 Murray-Darling Basin Plan. The Basin Plan includes more than 1,430 GL²⁷ from irrigators, with the environment now owning about 20 per cent of all high reliability and general security entitlements in the southern Basin.

The prospect of further water recovery for the environment has created uncertainty in the Murray region dairy industry. The Basin Plan allows for another 450 GL ‘upwater’ by 2024. The Basin ministerial council agreed at a meeting in Melbourne on 14 December 2018 to strengthen the criteria so no further water can be recovered if it has adverse third party or water market impacts. This should provide more certainty for irrigated industries.

Figure 20: Regional DFMP Cost of Production five year average



Cost of Production (COP), like income, varies significantly between regions. Northern NSW and Queensland both have a COP around \$8.00, \$1.50 higher than the mid-range regions of Southern NSW, South Australia and Western Australia. Tasmania has by far the lowest COP, averaging just over \$5.00 for the past five years. This is followed by Gippsland, south west Victoria and northern Victoria. This is no surprise where the climate allows, Tasmania low cost structures through predominately pasture based systems. Cost effective growth and high utilisation of home grown pastures is a common feature across all Australian dairy production systems. The difference made up is not over just one area but almost all categories such as feed, labour and repairs and maintenance. It should be noted that the levels of COP *within* regions also change significantly between years.

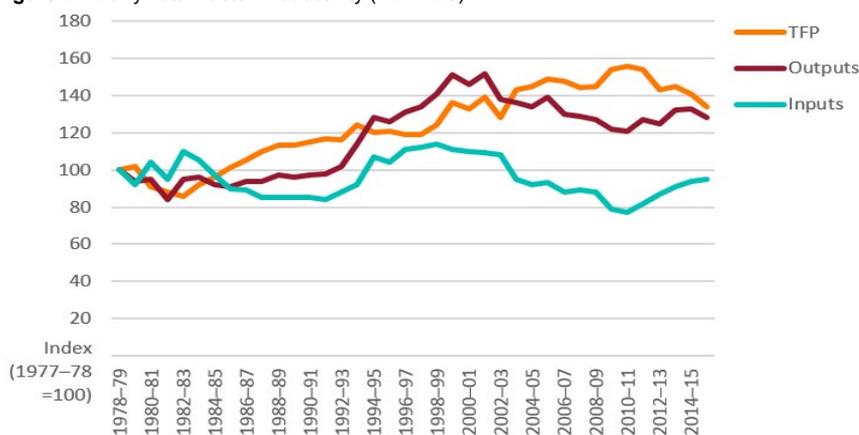
Total factor productivity

Total factor productivity (TFP) is a measure of how effectively dairy farmers combine inputs to produce outputs. At the industry level TFP for Australian dairy farms has increased on average annually by 1.44 per cent from 1978/79 to 2015/16.

Since the late 1970s the dairy industry achieved improvements in farm productivity through the adoption of new technologies and best management practices, along with structural change (exits) in the industry. Growth in productivity during the 2000s was constrained due to the prolonged drought. Farmers were required to use additional inputs (i.e. purchased feed) but with reduced milk production.

From a farmer's perspective, profitability is the main objective, rather than productivity. However, productivity growth will enable dairy farmers to remain profitable as farmers have little control over input prices and output prices.

Figure 21: Dairy Total Factor Productivity (ABARES)



Genetic improvement

Genetic improvement is a major contributor to dairy industry profitability and competitiveness, in both advancing the performance of plants and animals and also generating positive adaptation to changes in the environment. For example, genetic improvement of cattle has been reported to be one of the three most important drivers of productivity gain over the past 30 years.¹

Plant breeding has the broadest range of tools for genetic improvement, with activities that include intensive measurement of plants (phenomics), DNA-based selection (genomic selection), management of heterosis (hybrid breeding), targeted editing of the genome (down regulation of genes) and conventional genetic modification (enhanced gene function that is a 'genetically modified organism'). These technologies are being employed in the DairyBio program to improve yield and quality traits in temperate pasture species, increasing returns to farmers. There is limited potential for importing new pasture varieties that contain these improvements from overseas, meaning Australia must innovate for improving its own pasture-based dairy farming system.

However the uncertain regulatory environment for some of these technologies that involve genetic modification tempers the excitement and optimism shared by dairy farmers. High value pasture varieties have been produced with a genetic modification approach, and it is only when new innovations are adopted on farm that the value proposition is realised.

The Federal Government recently signed off on the new Gene Technology Regulations that exclude organisms modified using the gene editing technique known as SDN-1 from the definition of a genetically modified organism (GMO), and therefore exclude them from regulation under the Gene Technology Act. This is an important development for the dairy industry considering the specific gene editing technologies are current being used by DairyBio to improve the energy content of perennial ryegrass.

The regulatory landscape in both Australia and New Zealand combined with the companies appetite to market products with these new technologies will continue to be important considerations for seed companies who commercialise products in both geographies concurrently.

1 Centre for International Economics 2011, *The impact of innovation on the dairy industry over the last 30 years*. <http://www.theicie.com.au/wp-content/uploads/2014/06/Dairy-report.pdf>

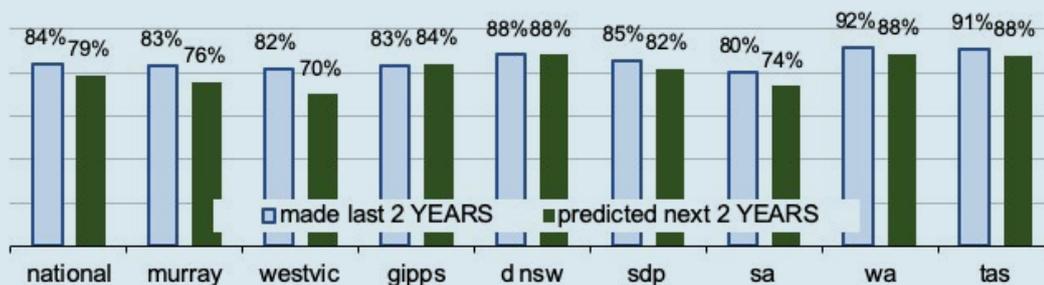
Farmer investment: Farmers have invested heavily in recent years but are questioning their capacity and confidence to continue investing.

According to the National Dairy Farmer Survey (NDFS) over the past two years, the vast majority of respondents (84 per cent) made on farm investments, most commonly minor (36 per cent), but an arguably large proportion made moderate (27 per cent) or major (21 per cent) purchases.

Over the next two years, 79 per cent of respondents indicated that they have investments planned and while this proportion is high in real terms, only 8 per cent predict investment will be in the 'major' category. Investment has been considerably more widespread among respondents with larger herds and this is set to continue over the next two years. Machinery (34 per cent), dairy plant (22 per cent) and irrigation plant (21 per cent) are the most commonly mentioned areas that investments are planned over the next two years.

While the number of respondents predicting capital investment in the next two years is positive, the current low levels of farmer confidence reported on farm draw into question what proportion of intended investment will materialise.

Figure 22: On farm capital investment

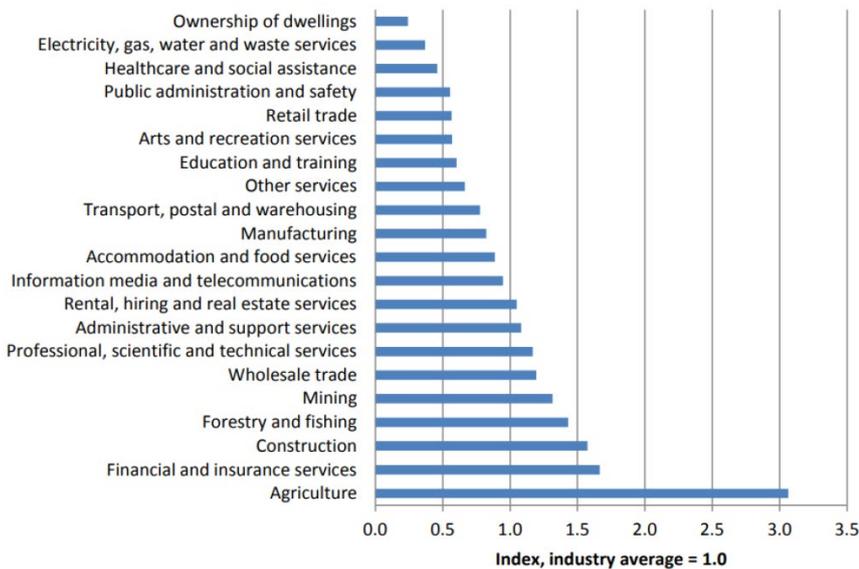


Risk profiles

Climate volatility: Australia has the most variable climate in the world being 22 per cent more variable than South Africa. This variability adds to production costs.

Australian farmers and producers operate in a highly variable environment, arguably the highest-risk agricultural domain in the world. Weather, variations in input and output pricing, resource condition and regulatory frameworks are just some of the factors that dictate decision-making in regard to risk mitigation and management. Climate volatility is a key contributor to agriculture’s volatility being nearly double that of any other industry.

Figure 23: Volatility identified in various Australian industries



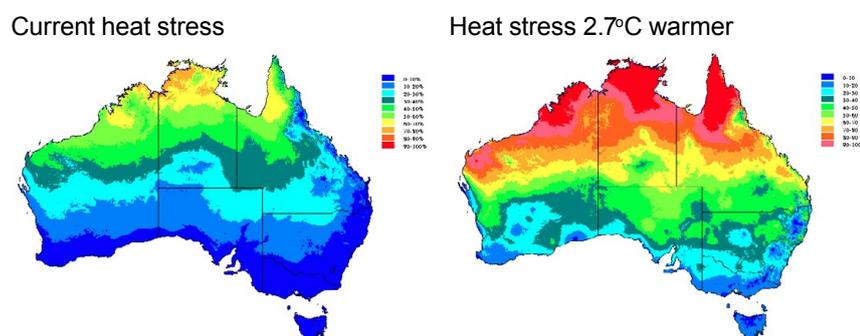
Given the significance of climate volatility in the overall risk profile of agriculture the evidence for global climate change needs to be considered. Increases in greenhouse gases due to human activities have played a role. Human influence has been detected in warming of the global atmosphere and ocean, changes in the global water cycle, reductions in snow and ice, global mean sea level rise, and changes in some climate extremes. It is extremely likely that human influence has been the dominant cause of the observed global warming since the mid-20th century.

The evidence for Australian climate change is also clear. Australian average surface air temperature has increased by around 1°C since 1910, with more hot days and fewer cold days. Annual-total rainfall has increased over northern and inland-western Australia since the 1950s. In contrast, annual-total rainfall in southern and eastern Australia has decreased since the 1950s, particularly in southwest Western Australia. One of the major impacts of the rainfall decline, and associated increases in temperature, has been a reduction in dam inflows.

Further increases in greenhouse gases are expected over the coming decades. Projections based on results from 40 different climate models indicate that Australia will become hotter, with less winter-spring rainfall and more droughts in southern Australia, uncertain rainfall changes in northern Australia, more extreme daily rainfall (except in south-western Australia), higher evapotranspiration and lower soil moisture.

Already, Australia has seen a fivefold increase in extreme heat events since 1950's. Typically about 90 per cent of Australia now gets extreme temperatures each year.

Figure 24: Chance of heat stress across Australia – Current versus 2.7°C warmer



A warmer and drier climate poses challenges for the dairy industry in areas such as pasture growth, runoff into dams, viability of shade trees, managing feed, heat stress, pests, weeds, diseases and reproduction. More extreme daily rainfall increases risks for flooding, erosion, water-logging, infrastructure, supply chain and transport.

A five year timeframe for climate analysis is insufficient as natural variation is greater than any likely trend occurring that period of time. For this reason, the discussion on the Australian climate and operating environment is based on the last 15 or 20 years compared to historical averages.

In general terms there are some key climate considerations:

- Australia's temperature continues to rise and eight of Australia's 10 warmest years on record have occurred since 2005
- Australia has the most variable climate in the world being 22 per cent more variable than South Africa
- The number of days where the Australian area-averaged daily mean temperature is extreme is increasing
- April to October rainfall across south eastern and south western Australia has declined
- There is evidence that some rainfall extremes are becoming more intense
- Streamflow has decreased across southern Australia since the 1970s
- Water runoff in the majority of catchments in the Murray Darling Basin was lower than expected based on rainfall figures during the millennial drought
- Winter rainfall patterns have shifted south
- Large areas of key Australian grain growing regions have been impacted by climate change over the last decade as evidenced by declining growth in productivity. Advances in breeding and agronomy are offsetting the impact of climate change but overall productivity growth has stalled.

Some specific dairy related climate observations:

- Pasture growth in south east Australia is higher in winter but finishing earlier in spring
- There is increased variability of pasture growth in south eastern Australia with the last 15 years looking more like the predicted pasture growth patterns under 2030 and 2070 climate change scenarios. See figure 25: Impact of climate change on pasture growth curves below.

Figure 25: Impact of climate change on pasture growth curves

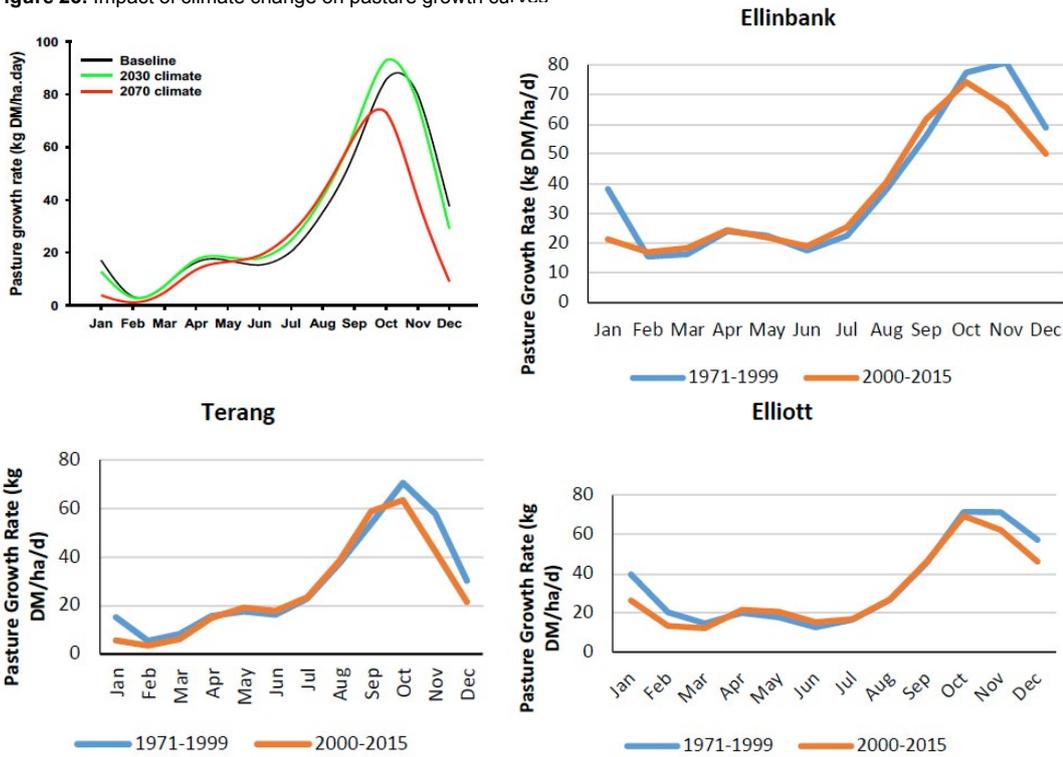
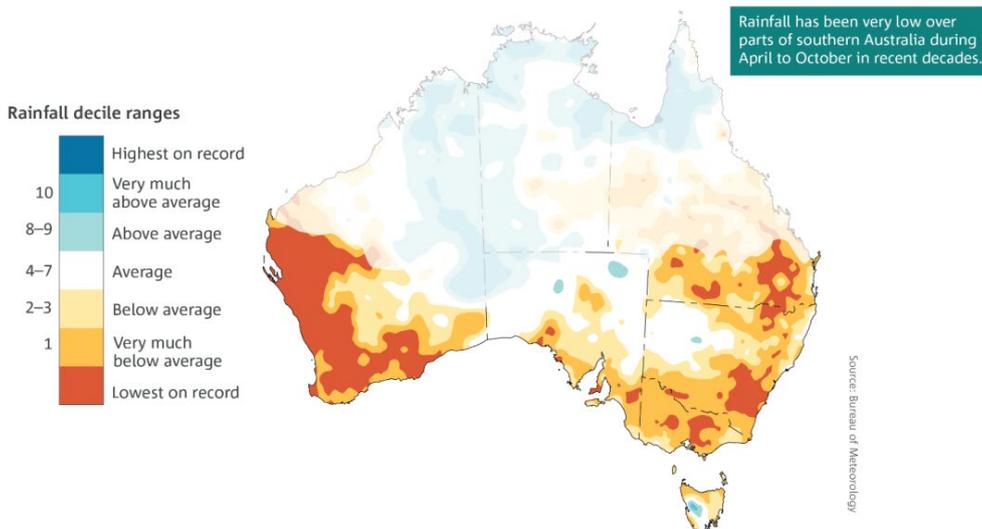
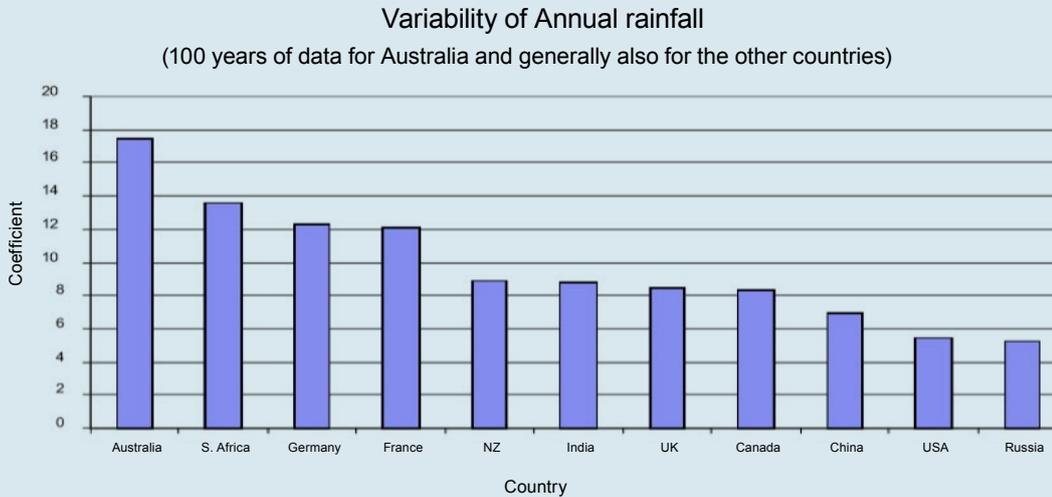


Figure 26: April to October rainfall deciles for the last 20 years (1999–2018)



Source: State of the Climate report 2018 <https://www.csiro.au/en/Showcase/state-of-the-climate>

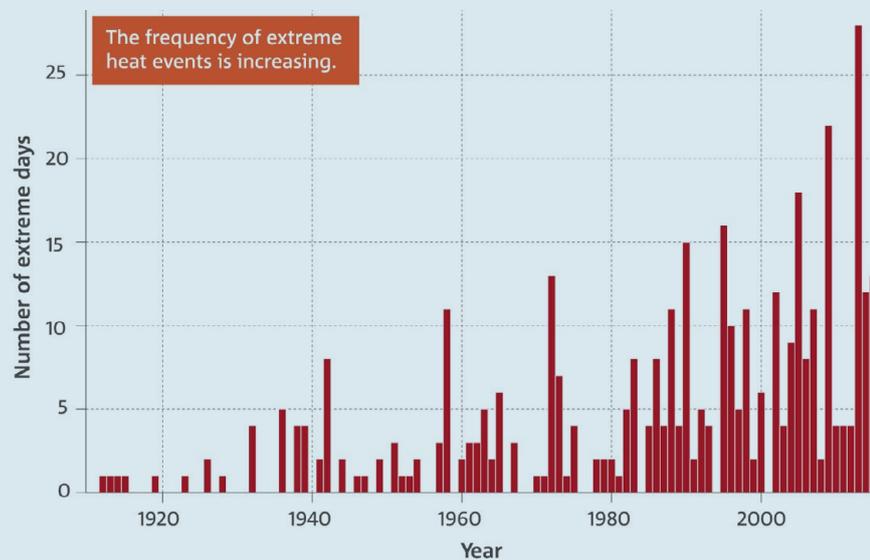
Figure 27: Australia has the most variable climate in the world being 22 per cent more variable than South Africa.



Source: Love, G (2005) *Impacts of climate variability on regional Australia*. Outlook 2005. Conference Proceedings, Climate Session papers, ed. R Nelson and G. Love, Australian Bureau and Resource Economics, Canberra.

This variability is increasing as evidenced by the increase in the frequency of extreme events.

Figure 28: Number of days where the Australian area-averaged daily mean temperature is extreme



Source: Bureau of Meteorology, *State of the Climate report 2018*
<https://www.csiro.au/en/Showcase/state-of-the-climate>

Risk management: Risk management has become critical to manage the peaks and troughs.

There has been substantially more fluctuations in milk pricing since the industry deregulated nearly 20 years ago. Part of this is a function of exposure to local and international markets. But also as a result of being a trade exposed market, that is, Australia competes with international markets (in the form of imported dairy product) as much as it competes with international suppliers of dairy in international markets.

Farmers are exposed to two elements of price risk management, input price risk and also market price risk that affect both the cost structure and revenue on farm. On the input side, there are some mechanisms to manage risk, but these generally work in the format of locking in a forward price for particular inputs like feed.

In their recently released report the Australian Farm Institute identified the production, market and institutional risks dairy farmers were exposed to.

Figure 29: Specific risks the dairy industry is exposed to

		Dairy	
		RISK	RM OPTION
PRODUCTION	1. Feed price		Forwards; Futures
	2. Climate / weather impact (feed production, animal health)		Farm business management; Enterprise diversification; Weather derivatives
	3. Operational incident (e.g. fire, malfunction)		Named insurance (if available)
	4. Transport failure		Named insurance
MARKET/ PRICE	5. Market concentration		Futures; Forwards; Enterprise diversification
	6. Market price change		
	7. Global commodity price fluctuation		
INSTITUTIONAL	8. Social licence (animal welfare)		Government programs; Farm business management
	9. Trade access		Government programs

Production risks identified can be managed through a combination of on farm management strategies and access to financial products. The AFI outlined some farmers are able to diversify, expand their presence in the value chain (to capture increased margins) or participate in futures markets. Futures market participation was noted as being limited to more advanced farmers and requiring a higher level of financial literacy given the nature of these financial market instruments.

Managing market based price risk can be more complicated than for our international competitors as there are fewer options to choose from in the Australian context.

In Australia it is traditional for milk processors to start the season with a conservative opening milk price. This allows the processor to advise their suppliers of a mid-season step-up as market conditions permit. A further step-up may well occur if the conditions continue under a favourable light. In those rare occurrences where there has been a need to step the price down, that reduced price is typically limited to the remaining production in the current season. However, during 2015/16 season a rare situation emerged in which many farmers were subject to a late-season stepdown.

Under the proposed Dairy Industry Code of Conduct it will become impossible for milk processors to 'claw-back' what are effectively 'over payments'. This suggests milk processors would be more conservative when setting the opening milk price. Under such a scenario, risk management mechanisms could well evolve quite rapidly throughout the Australian dairy industry as processors (with resources, capacity and direct risk management opportunities) would seek out more market based solutions.

Dairy farmers throughout the world are becoming more vocal in their call for more certainty in milk prices — a call for greater milk price transparency. In short, milk producers are seeking a simple milk pricing system that facilitates decision-making and ensures that planning for profitability is on a more informed basis.

There is still a strong link between Australian milk prices and international markets, even though the proportion of product Australia exports has steadily declined from 60 per cent in the early 2000s to less than 40 per cent in the last financial year. Over a similar period, the volume of dairy product imported has more than tripled to make up for shortfalls to supplying demand of the Australian market.

While hedging products in the form of futures markets or derivative products exist in some markets like New Zealand, the EU and USA, there isn't an Australian market offering these risk management products. Traditionally this risk mitigation has been undertaken by the cooperative on behalf of the farmer and is part of the historical context of how the opening price, step-up, closing price system developed.

Figure 30: Price Risk Management (PRM) tools and techniques

Attribute	USA	Europe	NZ
PRM Tools & Techniques			
Tools	All established tools Forward Fixed Price Contracts Futures Contracts OTC Contracts	3 Year Forward fixed price (est. in Ireland) Futures & OTC Contracts (limited)	Forward Fixed Price (discontinued) Futures Contracts (limited) OTC Contracts (limited)
Avenues	Co-operatives Processors Brokers	Co-operatives Processors Brokers	Processors Brokers
Accessibility	Widespread	Moderate to low	Low & limited
Years available	10-20 years	6 years	3 years
Level of govt. support/regulatory framework	US govt. provides regulated milk pricing based on milk class, facilitating a reference point for CME	No	No regulated prices though NZX Futures are linked to GDT which in turn works in concert with the Milk Price Manual

Risk beyond inputs and revenue

One element of risk at a national scale is the level of debt associated with an industry. The NZ and Australian dairy industries are compared on a regular basis, often from a milk price, milk production, or policy structure perspective; but rarely on the basis of debt associated with on farm production.

The Governor of the Reserve Bank of NZ, Graeme Wheeler noted in 2015 debt to the NZ dairy industry had trebled since 2003 identifying that nearly 25 per cent of dairy debt is owed by farmers in excess of NZ\$30/kgMS. In comparison, data provided by the Department of Agriculture and Water Resources for the dairy farm financial performance indicates total farm business debt across the sector of \$6.01bn which equates to \$945,228 per farm or approximately \$8.74/kgMS of debt for the average dairy farm.¹

Given the significant ownership linkage between Australian and New Zealand banks, there are risks of overexposure to NZ dairy that could spill into lending in the Australian market. There are also risks to the NZ production sector if bank lending capital requirements are changed or land prices or farm incomes change, putting a comparatively highly geared sector at risk.

1 <http://www.agriculture.gov.au/abares/research-topics/surveys/dairy>
<http://apps.agriculture.gov.au/agsurf/>
<https://www.radionz.co.nz/news/national/273581/dairy-debt-risk-to-nz-per-cent27s-financial-system>

Regional profitability

Community sustainability and resilience: Farm consolidation is shifting our relationship with regional service providers and communities.

Creating a vibrant industry that rewards dairy workers and families, their related communities, business and investors is one of the Industry's underpinning commitments to its sustainability strategy.

The 2030 goal in the Sustainability Framework is to 'increase the competitiveness and profitability of the Australian dairy industry' by increasing the number of profitable farms, lifting market preference for buying Australian dairy products, providing consumers with greater choice of dairy to meet their nutritional requirements and measuring capital investment made on farm.

The Australian dairy industry is a significant contributor to communities all around Australia (as highlighted in 'Figure 31: Australian dairy industry multipliers compared to other agricultural industries') given the regular operation, range of services required, and increasing complexity of dairy farming. The dairy industry compares favourably to other agriculture industries that might be present in rural communities because of the reliance dairy farming has on services including veterinary, electrical, plumbing and machinery to operate effectively.

To assist with interpreting the below table some important definitions: GDP – gross domestic product, the money working through the system. Multipliers expressed below are 'Type 1' and 'Type 2' multipliers. Type 1 include direct and production induced effects, where Type 2 is more like a 'total' multiplier in that it includes, the direct and production induced effect of a change, plus the consumption effect of the induced change.

Figure 31: Dairy Industry multipliers compared to other agriculture industries

	Agricultural Sectors						Agricultural Processing Sectors			
	Dairy Farming	Sheep	Grains	Beef/Cattle	Vegetables	Fruit & Nut	Dairy Processing	Meat Processing	Fruit & Veg. Processing	Cereals Processing
GDP										
Type I	2.22	1.90	1.88	1.90	1.56	1.56	1.86	1.43	2.64	1.95
Type II	3.76	3.02	2.67	3.32	2.35	2.34	3.28	2.61	4.73	3.35
Employment										
Type I	1.62	1.49	2.21	1.32	1.51	1.52	2.05	1.27	3.41	2.07
Type II	2.35	2.09	3.28	1.81	2.21	2.21	3.39	1.86	6.28	3.61
Direct fte	20,122	35,884	49,024	90,581	18,249	18,051	13,081	53,617	12,637	9,342

Source: EconSearch analysis, Australia RISE model

The reverse of the significant contribution the dairy industry makes around Australia to regional communities and prosperity is the impact on regional communities as a result of the ongoing consolidation trend in the industry.

Consolidation of farm numbers, which have declined from almost 21,994 farms in 1979/80 to 5,699 in 2017/18 – is raising questions at a community level as businesses established to service the dairy community are now diversifying, or ceasing operation. The impact varies from region to region but examples shared are service trades no longer specialised in dairy pump or refrigeration equipment, or bovine vets expanding their practice to also include more common household pets. Average herd size has increased from 93 cows in 1985 to an estimated 273 currently. There is also an emerging trend of large farm operations of more than 1,000 dairy cattle.

While consolidation creates fewer, larger farms that still create demand for services in local communities, the reduced population does have an impact on businesses operating in regional communities. The changing ownership structures of farms also can affect community dynamics (i.e. schools and young farming families, or demand for rental accommodation and services if additional farm workers are required). The industry has also seen continued consolidation amongst processors, and rationalisation has seen the closure of a number of smaller facilities.

Strong prices tend to either slow the rate of attrition or even reverse the long-term trend. At times of low farmgate milk prices, farmers choose to leave the industry or else cease dairying operations in favour of other farming activities, such as beef cattle, until market conditions improve.

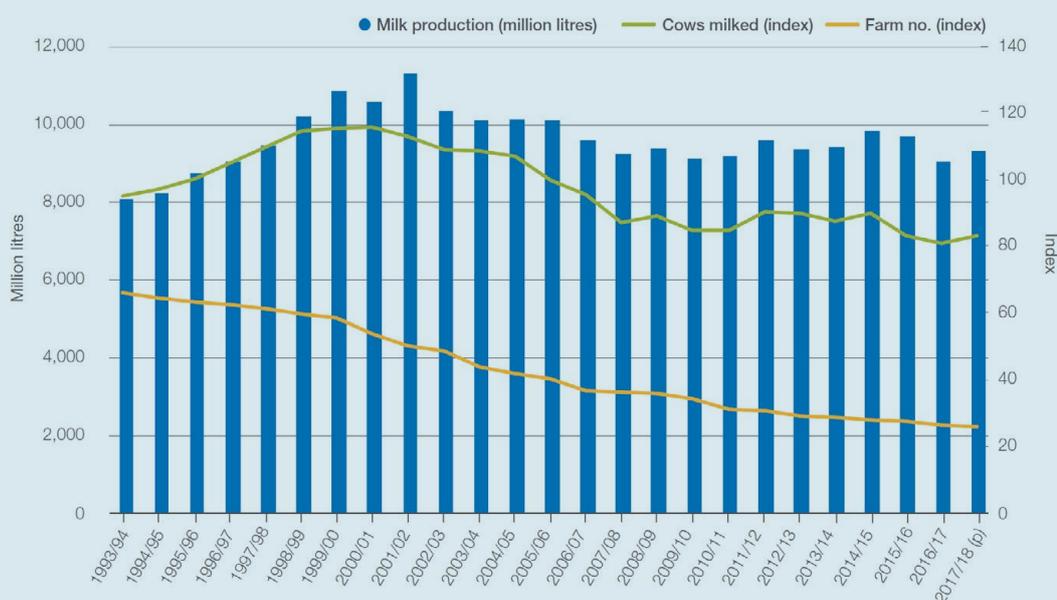
Nevertheless, falling farm numbers reflect a trend in agriculture around the world. Changing business practices have encouraged a shift to larger, more intensive operating systems with greater economies of scale.

Despite the increase in average herd sizes over the longer term, one of the variables placing a limit on total milk production in recent years has been a fairly static national herd size. One factor contributing to this situation is the increased volatility in farm cash incomes. This has led many farmers to participate in the export heifer trade, or selling dairy cows for slaughter in an attempt to stabilise farm income.

With the structural shift in the nature and type of 'average' farming operation service delivery offerings have also adapted. These changes can be as simple as developing skills of farmers as employers, through to larger scale capacity building and specialised delivery options to match the smaller number of large farm enterprises. Thus change is constant, and accelerating.

It's important to underpin the success of dairy regions by planning how to sustain a critical mass of dairy enterprises. This forms a critical component of preserving and growing dairy in regional Australia to ensure the entire community continues to prosper.

Figure 32: Australian milk production vs indices of cow and farm numbers



Source: Dairy manufacturers, ABS, state authorities and Dairy Australia

Export region margins being challenged: Milk prices are not keeping up with the rising costs of production in some regions

Over time some costs as a proportion of dairy production have increased while others have declined. Seasonal conditions and input costs often play a significant role in the cost of feed from one year to the next. When combined feed costs (home grown and purchased) and labour costs (imputed and employed) account for approximately 70 per cent of the milk production cost base on farm.

Perhaps more telling is the financial pressure 'average' farmers from the Dairy Industry Farm Monitor Project (DIFMP) are under in terms of maintaining EBIT above \$1.50/kgMS which is considered a threshold for earning enough profit to sustainably service debt and reinvest in the farm.

It's clear from the above DIFMP data that 'average performance' is unsustainable in the northern Victoria region against that \$1.50/kgMS threshold given the requirement to lower standards of living or erode equity to stay in business. There are additional challenges in that capital growth is largely attributable to water values, which if sold simply increases the risk exposure of the dairy business further. Much of the decline in milk production and farm numbers within the northern Victorian region are due to consistent profitability challenges and minimal capital growth in areas other than water assets. The Murray Region Future Focus Strategy¹ explains the situation in this region at length.

Tasmania has been somewhat shielded from the input price and climate related variability other regions have faced. Production costs are generally lower than in other regions and even amongst the 'average' group of farmers were able to make sufficient profits. The top 25 per cent of Tasmanian farmers are some of the most profitable in Australia with an average EBIT of \$2.50/kgMS, well and truly enough to reinvest in the farming business and sufficient to fund expansion.

Defining Cost of Production

Cost of production including inventory change is the most accurate measure of COP as it takes into consideration a changing business. COP is made up of Farm Working Expenses (FWE) plus imputed labour and depreciation. FWE are variable costs (herd, shed and feed) plus cash overhead costs (employed labour, repairs and maintenance and other).

Figure 33: Calculating Farm Working Expenses and Cost of Production

C Calculating FWE

FWE = Variable costs + cash overhead costs

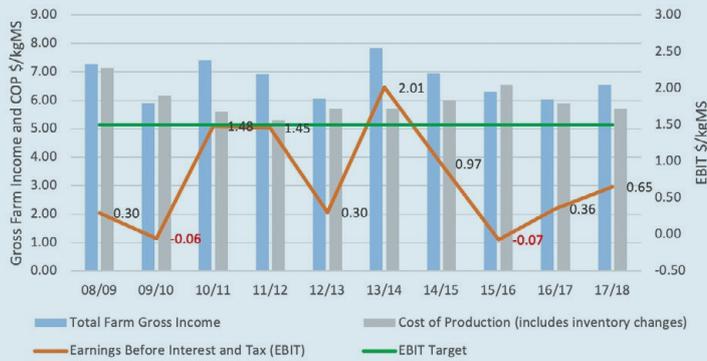
FWE in \$ per kg milk solids =
FWE ÷ total milk solids

C Calculating COP

= FWE
+ imputed labour
+ depreciation
= COP
(excluding inventory changes)
+/- livestock inventory changes
+/- water/feed inventory changes
= COP
(including inventory changes)

1 https://www.dairyaustralia.com.au/-/media/dairyaustralia/murray-dairy/documents/about-murray-dairy/murray-dairy-future-focus-report_final.pdf?la=en&hash=A829AE04A4D0BE882A14F9DDAC0679E82649EBA3

Figure 34: Northern Vic average margins, and margins for the top 25 per cent
Northern Victoria Average Margins



Northern Victoria Top 25% Margins

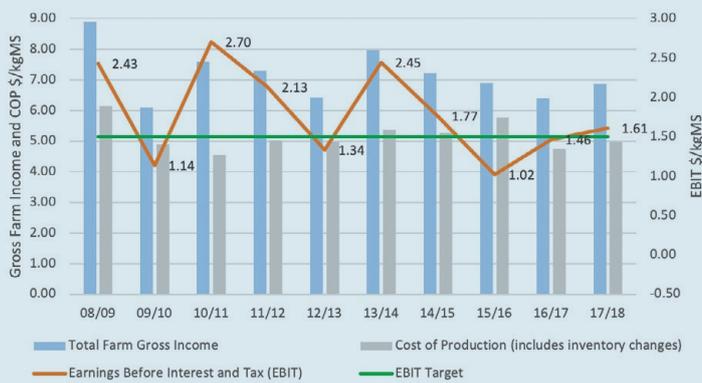


Figure 35: Tasmanian average and top 25 per cent EBIT figures

Tasmania Average Margins



Tasmania Top 25% Margins



Figure 36: Gippsland average margins, and margins for the top 25 per cent



Figure 37: South Western Victoria average margins, and margins for the top 25 per cent



Domestic region margins being challenged: Strong import competition means domestic producers are increasingly competing with the international market.

New South Wales has traditionally been the production area that has supplied shortfalls in milk production in Queensland. Over time, profitability challenges have challenged the entire NSW and QLD milk pools which has opened a gap of more than 150 million litres that needs to be supplied from Victoria. Production economics in Victoria (a traditionally export oriented state) have also been challenged, so a larger proportion of Victorian milk is being purchased by processors to supply a growing gap between supply and demand in the NSW and QLD milk pools.

The open nature of the Australian market means that processors have been focused on procuring liquid milk to meet immediate requirements and have fulfilled demand for manufactured product with imported bulk ingredients being repacked into retail ready goods.

Based on available industry data, the population of dairy farmers is quite polarised. The top 25 per cent have an average EBIT over a nine year period of \$2.51/kgMS – as good as Tasmania – however, the average has an equivalent figure of \$0.66/kgMS. This is compounded by a scale issue with many small herds and also some challenges with *marginal* milk and business settings. The polarisation suggests consolidation will continue with only the top 25 per cent of farmers doing particularly well.

Relative to other states (except QLD) the NSW milk price and hence income is higher, though cost of production is much higher as well. Production costs generally increase as you travel further north through Australia, and we see a similar variation across the regions each year, regardless of conditions.

Some of the factors influencing a higher cost of production in NSW and regions further north are:

- Higher heat and humidity
- Tropical pasture as feed base – lower quality but higher DM /ha potential
- Cost of grain increases by \$40–50/t
- Smaller farms and herd sizes, though higher stocking rates. Often means labour costs are higher relative to output
- Extremes of water availability – more floods, but also very dry periods, less reliable irrigation supply on unregulated coastal systems, limited irrigation area.

There are some highly profitable farms in each of the fresh milk state datasets, and they vary across region and farm system used. A common characteristic across these highly profitable operations were excellent business skills. Excellent business skills were associated with lower cost of production, even though herd size and per cow production all varied across the most profitable groups of farmers.

Figure 38: Average margins and gross farm income QLD

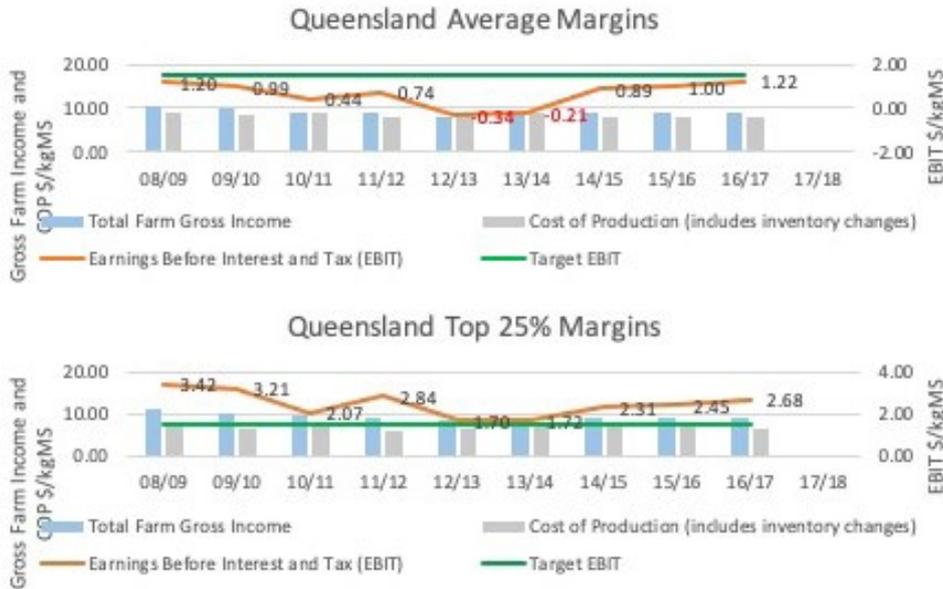


Figure 39: Average margins and gross farm income NSW

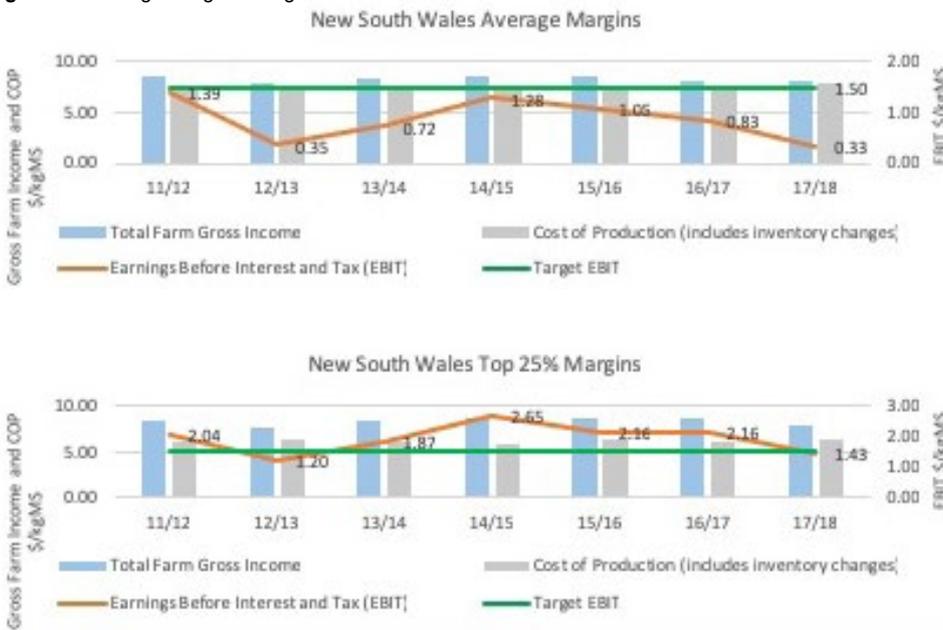


Figure 40: Average gross farm income South Australia

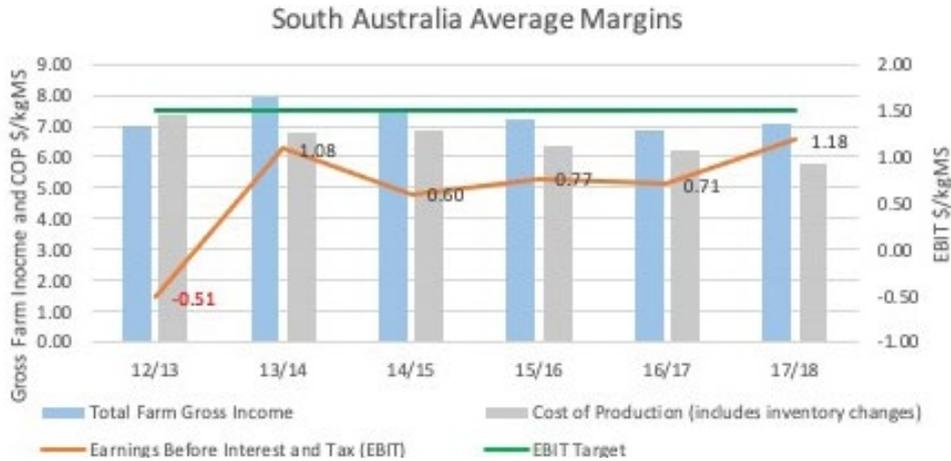


Figure 41: Average margins and gross farm income Western Australia





Challenge 3

Our people and organisations need to adapt to succeed

Skills, knowledge and mindsets

Farming skill needs: Farmers need skills in a broader range of areas than was once the case.

The dairy industry has long recognised that people are the fundamental driver of farm business success, and that being able to attract the right people, manage them effectively and provide career and wealth creation opportunities is essential for the long-term viability of the industry.

Building equity and wealth requires an increasingly complex set of skills on farm. Dairy is a skilled industry and there are few positions on dairy farms for unskilled workers.

Over the last 20 years the family dairy farm model has changed to larger farms with expanding herd sizes. The farm workload has both specialised and increased. In fact, dairy farmers need more than 170 separate skills in 11 specialist areas to run a successful farm business. With this transition comes a consequent increased reliance on paid employees and the need for higher skill levels.

Figure 42: Skill requirements on farm in a more complex environment

Building *more equity and wealth requires more skills on farm*

- Understanding of cost of production.
- Knowing which levers to pull to keep business afloat in volatile times
- Adapt and manage external influences



- Increasing herd size, increases reliance on outside labour
- Consulting or contracting expertise
- Managing legal aspects of employment

- Good engagement with communities
- Social licence will be increasingly critical
- A desirable employer
- To maintain the right to farm
- To adapt farming practices
- To keep Australian product desirable to the market

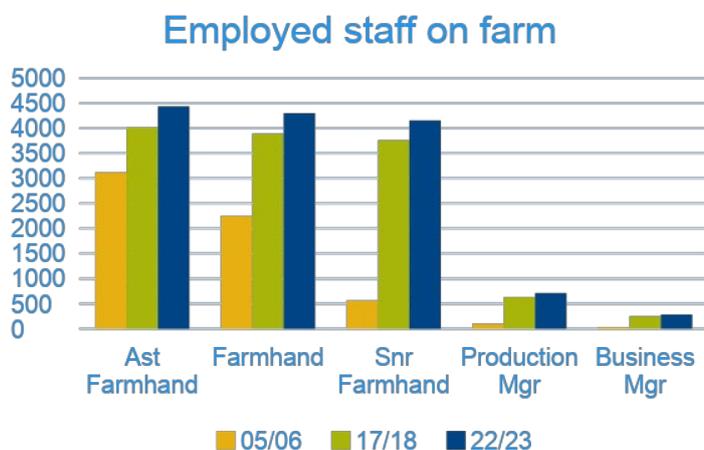
The increased volatility of many factors affecting farm performance means that farm owners and managers will not only need the skills for daily technical aspects of the business, but financial, risk and people/employment skills will be an even higher priority. Increased volatility being experienced on farm underscores the need for enhanced financial literacy to effectively utilise price risk management tools and plan and adapt budgets to an increasingly dynamic environment.

Currently the Australian dairy industry does not have a coordinated approach or clear strategy to building Farm Business Management (FBM) capabilities. The lack of a coordinated strategy and pathway has resulted in a general duplication and highly varied quality of efforts to develop and deliver FBM capability programs to industry. In other cases, significant gaps in capability-building support remain, particularly at the entry-level and advanced ends of the FBM capability spectrum. This has resulted in a lack of consistency in the terminology and metrics used to describe and calculate farm business performance, which can at times lead to a disjointed and confusing debate regarding levels of profitability being achieved on farm and how management practices influence farm business performance.

Workers at the 'farm hand' level will also need to develop their skills and capability. The increased use of technology, the need to carefully monitor inputs, animal welfare, milk quality and the environmental credentials of farm operations all require a good understanding of the farm system and how it operates.

The changing employment profile to 2022/23 shown below demonstrates the shift to higher level roles on farm and the consequent increase in skills and knowledge required. We see a substantial increase in the need for senior farm hands and for production and business managers. Ensuring these employees have the appropriate skills and capabilities will be essential for farm business success.

Figure 43: Employed staff on farm



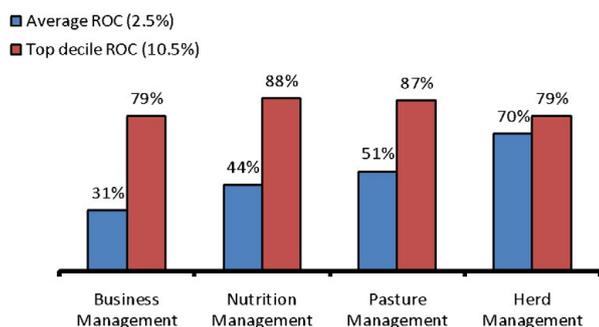
A Tasmanian study¹ highlighted the dependence of financial performance on four factors, with business management and nutrition management standing out as the two areas most highly related to superior returns on capital.

This study is particularly revealing in that business management is the lowest rated area for the average performing farms, yet is high – equal to herd management expertise – for the top decile farms who are achieving four times higher return on capital. From this, we can assert that business management ability is a defining characteristic of high performing farms. This is also a skill that generally requires formal tertiary education to fully develop.

1 20/12 Pasture Business Management Project Evaluation, Dept. Primary Industries, Water and Environment, Davey & Maynard, 2009

The Tasmanian study suggested that higher education could make a significant improvement in management skills, resulting in better farm performance. It was valued in that case as providing a return of approximately \$50,000 per annum, corresponding to 25 per cent of the performance gap between the average and top-quartile performers. It is reasonable, given the relative components of the performance gap, to suggest that at least \$15,000 of this opportunity should be attributable to an improvement in business management.

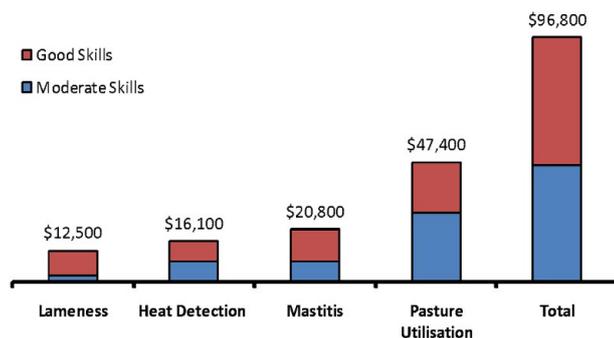
Figure 44: Skill by management area on farm



Source: Dairy NZ presentation to Dairy Industry People Development Council

A New Zealand¹ study focusing on industry training has also identified the relationship between higher skills levels and farm profitability. This study used employer feedback to evaluate the financial contribution of employees with good, moderate and poor ability across different skill areas. The findings were that employees' skills made a substantial contribution to the business, and also that poorly skilled employees were very costly. A highly skilled farm worker can contribute an additional \$100,000 to farm profitability compared to one with poor skills.

Figure 45: Value of farm skills



Source: Dairy NZ presentation to Dairy Industry People Development Council

1 *Reporting Value Added by Agriculture Training*, Phillip McLeish, Bo Gardner and Warwick Waters, AgITO, July 2007

The impact of technology is broad and can be witnessed across the value chain. There are still many elements under technological development from a processor and farmer perspective that may not have been commercialised yet, but appear close to being widely available. Adaptation to and integration of these new technologies often requires practice change (for humans and animals) and capital investment (funded by debt or free cashflow). Details on the proportion of dairy farmers using particular technologies in their dairy, on their farm business, and practices like succession and business plans are noted below. These figures are from the 2018 National Dairy Farmer Survey.

Figure 46: Proportion of farmers using different technology and business practices

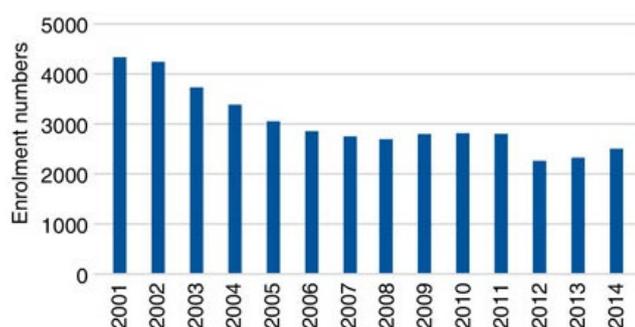
	In line meters	Herd mgt software	Soil moisture probes	Cow ID tags	Paid consultants/advisors	Accounting software	Written business plan	Succession/transition plan	Benchmarking	Contracts and posn descriptions for staff
(Incl N/A)										
Currently using this	18%	50%	15%	36%	42%	55%	39%	32%	37%	33%
Not using but plan to	12%	11%	11%	11%	4%	3%	6%	20%	6%	4%
Not using and have no plans to	67%	38%	71%	51%	52%	40%	53%	46%	55%	36%
N/A	3%	1%	3%	2%	2%	2%	2%	2%	2%	27%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	450	450	450	450	450	450	450	450	450	450

Education and training: Farmers are changing the ways in which they learn.

The dairy industry has a proud history of being at the forefront of education and training provision in Australia. In recent times, significant changes within the education sector have placed pressure on the previous National Centre for Dairy Education (NCDE) model and it became essential to adjust how the dairy industry provided education services into the future.

Through this review process it has been noted that the ways in which farmers seek to upskill has evolved. It has been well reported that student intakes into agriculture courses at Australian universities declined from 4,300 in 2001 to a low of less than 2,300 in 2012 and 2,500 in 2014 (Figure 47). This decline of more than 40 per cent has had substantial impacts on the viability of teaching schools.

Figure 47: University enrolments in agriculture and agricultural science for the period 2001 to 2014. Pratlley J: AFI May 2016



While university participation numbers have fallen, farmers and their staff are shifting to alternative means of learning. A 2017 survey conducted by Dairy Australia showed an increase in the proportion of farms engaging in formal and informal training and education to enhance their ability to adopt new technologies and ideas on farm. In particular, the survey reported that 57 per cent of farms had staff attend some form of training and development activity over the previous twelve months. This was an increase on the 2014 result of 46 per cent, with the most noticeable increase in the informal training taking place through extension programs via the Regional Development Programs (RDPs). 59 per cent of farms with staff who attended formal and informal training reported improvements in staff effectiveness and efficiency as a direct result of training, a 38 per cent increase on the 2014 result.¹

Farms engaging in formal and informal training and education²

	Formal programs	Both formal and informal	Informal programs	Total participation
2014	26 per cent	13 per cent	7 per cent	46 per cent
2017	10 per cent	8 per cent	39 per cent	59 per cent

The dairy industry has also taken the opportunity to broaden and strengthen the industry's education footprint by introducing a new national education framework called DairyLearn. DairyLearn builds on the work of the NCDE and gives more dairy workers access to consistent, high quality resources, training opportunities, and nationally recognised qualifications. It allows the current education and learning activities to be broadened, and provides greater access to providers in the vocational, tertiary, and school based sectors of the industry.

¹ The Power of People on Australian Dairy Farms, Dairy Australia, 2014, 2017

² The Power of People on Australian Dairy Farms, Dairy Australia, 2014, 2017

Attracting and retaining people

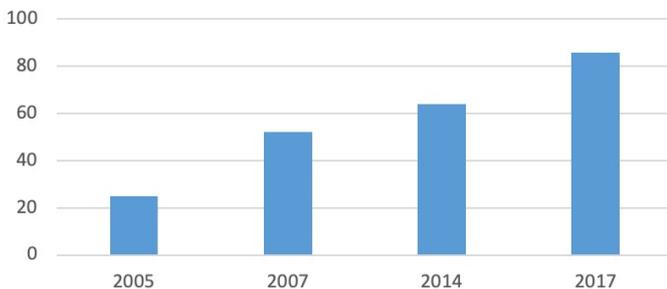
Attracting people: There is a widespread shortage of skilled labour at all levels in the industry.

The dairy industry is working hard to address the skills shortage and continues to invest in initiatives to build workforce planning and capability across the industry. However there is a well-documented and widespread shortage of skilled labour at all levels from entry level to Farm Manager level.

The dairy industry struggles to source labour from the pool of unemployed in regional areas. With the unemployment rate in regional areas sitting at around 5 to 5.3 per cent there is effectively full employment. The Regional Australia Institute May 2018 policy paper 'The Missing Workers' indicates that in Australia's eight dairying regions there are not enough local workers to fulfil specialist employment needs,¹ yet attracting and retaining suitably skilled labour and improving on-farm employment practices is critical to business success.

The proportion of dairy farms employing people has been gradually rising, illustrating that skills are paramount. The dairy industry directly employed 42,000 people in 2016/17. 86 per cent of dairy farmers employ labour, which equates to a 20 per cent increase since 2014 (66 per cent) and a 33 per cent increase since 2007 (Figure 48). This trend is demonstrated most clearly by examining the change in the number of farms employing staff. Since 2005 this has risen from 25 per cent to 86 per cent as shown in the figure below.

Figure 48: Number of dairy farms employing staff



In addition, the number of farms with six or more employees across the industry is projected to increase from 4 per cent to 20 per cent by 2025. Analysis of the trends also indicates that by 2023 there will be an additional 800 people on farm across Australia and the balance will have shifted significantly to more employees than employers.

Figure 49: Employees, employers and employment in dairy to 2022/23



¹ The Regional Australia Institute 2017. *The missing workers: Locally-led migration strategies to better meet rural labour needs*. Canberra, The Regional Australia Institute, Figure 1, p. 5

Retaining people: Keeping skills and knowledge in the industry, and encouraging farm succession is an increasing and critical challenge.

The costs of staff turnover are a significant concern directly related to attrition. Each time there is a turnover of employees in an organisation, there are the direct costs of hiring, and other costs of decreased productivity for other employees as they take on extra work, the cost of orientation and development, workforce morale and business reputation.¹

A 2008 study of the pastoral livestock industries reported that employee turnover cost the industry between \$336 and \$364 million a year and on average, around \$22,500 per employee per farm.² It has been suggested that turnover rates within the dairy sector are as high as 35 per cent, well over 10 per cent more than the next highest sector.³

Moreover, it is important to understand that competition for dairy skills, particularly middle and managerial skills, is international. This is further exacerbated at the 'skilled manager' level with dairy competing for skills that are also desired by other sectors of the economy such as banking and finance.

In 2017, 29 per cent of dairy farm businesses had staff resign. Of those who resigned, 58 per cent left the dairy industry. While the vast majority of attrition occurred at the 'farm hand' level, there exists significant anecdotal concern within the industry about losing valuable skilled workers at all levels to other industries.⁴

Research undertaken in 2011 and still relevant now paints a complementary but more complex picture associated with labour resources. The research found the Australian agriculture industry workforce faced a looming crisis due to the ageing of its people, skilled workers exiting to the resource sectors, and poor attraction and retention rates over an extended period, leaving an insufficient pool of young skilled workers.⁵

To further illustrate agricultural industry staff attrition, projections at the time indicated that by 2018 over 102,000 of the current labour force (equating to 33.4 per cent) would be aged 65 years and over. A staggering 56.2 per cent of the current workforce was then aged over 55 years.

Succession planning

Succession planning remains a major challenge for the industry and is often a complex issue for farm businesses and one which many businesses are uncertain how to start. Research estimates an average 20 per cent drop in productivity during periods of unresolved issues and conflict surrounding succession.⁶ Farm owners may be considering reducing their level of active involvement and wanting options as to how they move forward, perhaps retire, sell or transition out of the family farm business.

There are many challenges regarding to succession planning — some of which are not unique to the dairy industry. These include having honest and open communication, identifying goals, releasing control, trusting others in new roles and responsibilities, generational differences, managing change and having a clear understanding of options in terms of ownership and business structures. 74 per cent of dairy farms with an agreed succession planning engaged one or more professionals to assist with this process in their dairy businesses.⁷

1 National Rural Advisory Council 2013. Report on the workforce planning capabilities of agricultural employers.

2 Attracting and retaining staff in Australia's beef, sheep and pastoral wool industries 2008 (Meat and Livestock Australia)

3 Retention of People in Dairyfarming – What is Working and Why? (2011) Ruth Nettle, Augusto Semmelroth, Rebecca Ford, Connie Zheng, Aman Ullah, Gardiner Foundation Executive Summary

4 Dairy Australia, The Power of People on Australian Dairy Farms 2017

5 Agrifood Skills Australia 2011. Australia's Region: Australia's Futures. Agrifood Skills Australia Ltd, Canberra.

6 Wilkinson, J & Sykes: A Guide to Succession Sustaining Families and Farms (2007)

7 Dairy Australia, The Power of People on Australian Dairy Farms (2017)

Promoting the industry: We can do more to portray a positive image of dairy as an industry to be involved in.

The dairy industry is one of Australia's major rural industries. Based on a farmgate value of production of \$4.3 billion in 2017/18, it ranks third behind the beef and wheat industries. It is estimated that approximately 42,600 people are directly employed on dairy farms and by dairy companies within Australia. Associated transport, distribution, farm services and research and development activities represent further employment associated with the industry.

Dairy is also one of Australia's leading rural industries in terms of adding value through further downstream processing. Much of this processing occurs close to farming areas, thereby generating significant economic activity and employment in regional areas.

Strong growth characterised the dairy industry through the 1990s, but that growth has stalled since the early 2000s. This period coincided with the latter half of the severe and prolonged 'Millennium Drought'. Increased levels of market and margin volatility within the industry have also undermined confidence in the outlook for many farmers, who are seeking reliable returns on which to build a longer term future. There has been ongoing consolidation within both dairy farming and dairy processing. In terms of dairy farming, the number of dairy farms has continued to fall, while the average size of farms has increased. The number of large farms and their share of milk production has grown. Meanwhile the industry has seen continued consolidation amongst processors, and rationalisation has seen the closure of a number of smaller facilities.

Media coverage on the dairy industry is variable depending on current conditions and the newsworthiness of topics at a particular point in time.

Only a few years ago, stories of 'white gold' were key news headlines and the industry was depicted as one that was growing and viable. In recent years, these positive stories have been replaced with a narrative depicting struggling farmers due to the ongoing impacts of \$1 milk and the collapse of the Murray Goulburn Cooperative, poor seasonal conditions and feed shortages. The ongoing reporting of conflict between farmers, processors and industry leaders also contributes to a negative image. Other topical issues such as permeate, the fat and sugar content in dairy foods, treatment of animals and sustainability matters regularly depict the industry in a bad light. In this environment, the negative stories tend to be given more airtime and any positive stories become overshadowed.

All these images play a role in impacting not only external perceptions of the Australian dairy industry on the world stage, but also the way dairy farmers perceive the future of the industry and how prospective investors and employees perceive the industry. Recent National Dairy Farmer Survey (NDFS) data points to the lowest levels of positivity amongst farmers in the future of the industry since tracking began in 2004.

While the media play a significant role in portraying the image and reputation of the industry, the industry itself also has a voice on issues it's facing. In many instances, the industry is forced into a defensive or reactive position to respond to media coverage. Furthermore, farmers themselves are not always able to have positive conversations about the state of the industry and in 2017, data indicated close to seven in ten farmers were having negative conversations to a variety of audiences they come into contact with.

Industry structures

Industry structures and services: The structures and services that exist to support industry are under pressure to adapt to changing industry needs.

The Australian dairy industry is divided into a network of representational and service bodies operating at regional, state and national levels.

Representational bodies

Australian Dairy Farmers (ADF) is the national advocacy body representing dairy farmers across the six dairying states. The ADF constitution is comprised of six state dairy farmer organisation (SDFO) members, which represent their respective state dairy farmers and support ADF's strategic objectives.

ADF provides policy and advocacy representation for Australian dairy farmers at a national level, whereby an issue is defined as one that impacts one or more states or is likely to set a national precedent. The SDFO members, or state members, deliver policy and advocacy representation to dairy farmers at a state level and contribute to national policy through ADF membership and active participation in their respective SDFOs. ADF is a member of the National Farmers' Federation (NFF).

The Australian Dairy Products Federation (ADPF) is the peak policy body representing the post-farmgate members of the Australian dairy industry — including processors, manufacturers and traders of Australian dairy products and dairy related products. The principal purpose of the ADPF is to take such action deemed necessary to protect and promote the collective interests of its members.

Together, the ADF and ADPF comprise the Australian Dairy Industry Council (ADIC) which is the peak national representative body of the Australian dairy industry.

The ADIC represents the interests of Australian dairy's whole value chain through its constituent bodies. This value chain partnership is unique to Australian agriculture and aims to provide a strong, unified approach to industry and government advocacy. The ADIC is funded by many of the major dairy processing companies in Australia and provides funding for investment in projects that aim to improve the entire value chain's sustainability and profitability as part of a broader network of regional and national organisations that support the Australian dairy industry.

Dairy farmers and dairy industry organisations have also formed two representational bodies that are not members of ADF or ADPF. DairyConnect originated in NSW in 2012 and remains independent of the national dairy farmer representative structure. Farmer Power formed in 2013 to protect the interests of farmers (not only dairy farmers). It also remains independent of the formal national farmer representative structures.

Services bodies

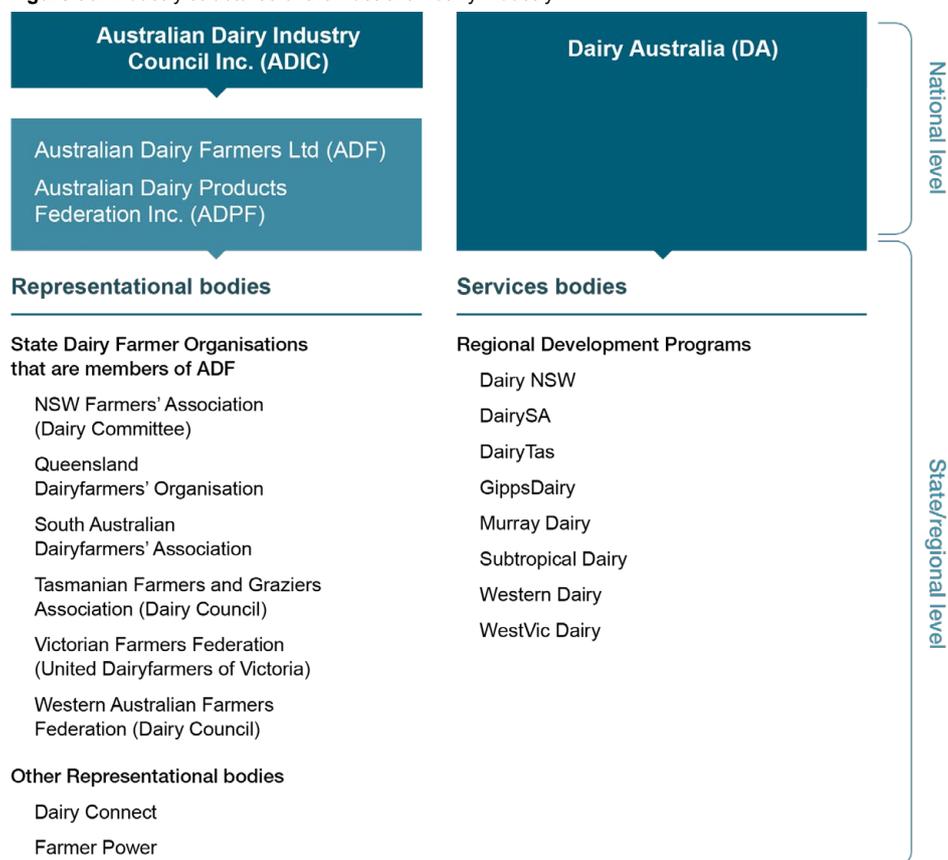
Dairy Australia (DA) is the industry-owned, national services body, funded by farmer-paid levies calculated on the fat and protein content of all milk produced in Australia. The Australian Government matches expenditure on the industry's research and development activities that meet established criteria. The total income for DA in recent years has been around \$55 million p.a. of which approximately one third comes from the federal government.

DA invests in essential activities across the dairy supply chain to deliver the best outcomes for dairy farmers, the dairy industry and the broader community. DA also focuses investment on pre and post-farmgate research, development, extension and industry services. This includes education, technical policy support, information, issues management, technological innovation, promotion of the health and nutrition benefits of dairy products and marketing of the industry. Due to the funding that it receives from the federal government, DA is required to abide by a Statutory Funding Agreement with the government that prevents the organisation from engaging in agri-political activity (industry advocacy).

An important feature of the DA Constitution is the membership structure, which is comprised of two classes of members, Group A and Group B members. Group A members are persons who have paid the levy and have applied to become a Group A member; Group B members are comprised of bodies corporate who are 'peak representative bodies' for sectors of the Australian dairy industry. At the current time, there are two Group B members, namely, the ADF and the ADPF who DA is required to consult with on its development of its Strategic Plan and Annual Operating plan. Each Group B member is also required to nominate two representatives each to sit on the DA Board selection committee.

DA provides core funding to Regional Development Programs that support the Australian dairy industry in each of the eight dairy regions across the country. These Regional Development Programs deliver research, development and extension programs at a regional level to improve the profitability and sustainability of dairy farms within the region.

Figure 50: Industry structures of the Australian dairy industry



Dairy Moving Forward

A National Primary Industries RD&E framework is in place to identify industry priorities and facilitate greater coordination among the Commonwealth, state governments, CSIRO, Research and Development Corporations (RDCs), industry and university sectors to better coordinate their roles in RD&E related to primary industries. Dairy Moving Forward is the dairy component of the National RD&E framework with the objective of developing, overseeing and guiding the coordination and alignment of research, development and extension in the dairy industry and to ensure the outcomes of investments in RD&E address the industry agreed priorities.

The Dairy Moving Forward project is managed by a steering committee chaired by the president of the Australian Dairy Farmers and comprises senior members from Dairy Australia, the Commonwealth Department of Agriculture, the Victorian Department of Economic Development, Jobs, Transport and Resources, the Gardiner Foundation, the United Dairyfarmers of Victoria, the Australian Dairy Products Federation and the Regional Development Programs.

The Dairy Moving Forward project is divided into the five program areas of:

- Animal Performance – Dairy farmers confidently managing animal performance to deliver farm profit, health and welfare outcomes
- Feedbase and Animal Nutrition – Dairy farmers growing profitability through improved management of their Feedbase and Animal Nutrition
- People – The dairy industry has the people it needs
- Land Water Carbon – Dairy farmers managing animal, land and water resources to minimise environmental impact whilst enhancing profit and
- Farm System and Business Management – Dairy industry will be increasingly seen as a valid pathway for long term wealth creation.

Gardiner Dairy Foundation

Gardiner Dairy Foundation was established in 2000, in partnership with Victorian farmer, processor and manufacturer groups and the Victorian Government, to increase the international competitiveness of the Victorian dairy industry.

Gardiner Dairy Foundation was created with \$62 million in funding from the sale of assets, including milk brands, as part of deregulation of the dairy industry. Gardiner is not reliant on industry or government funding and is thereby able to be flexible and agile in responding to industry's opportunities and challenges.

The Foundation's purpose is to 'maximise benefits to the Victorian dairy industry and dairy communities'. The Foundation achieves this purpose by investing in a range of RD&E, people and community development projects, together with enabling industry engagement and supporting industry issues management across the value chain.

Prudent management of the Foundation's asset base is a constitutional responsibility and enables the on-going capacity to invest annually in key industry and dairy community projects. Projects are commonly undertaken collaboratively with industry organisations, government and stakeholders to optimise the impact of investments.

DataGene

DataGene is an independent and industry-owned organisation that is responsible for developing modern tools and resources to drive genetic gain and herd improvement in the Australian dairy industry, through research, development and extension activities. Formed in July 2016, DataGene brings together many 'non-competitive' herd improvement functions under the one umbrella, including genetics, herd testing, herd recording, data systems and herd test standards.

DairyLearn

During 2018, the National Centre for Dairy Education transitioned to become DairyLearn, a national training network comprising preferred Registered Training Organisations, aligned with Dairy Australia. DairyLearn gives dairy workers access to consistent, high quality resources, training opportunities, and nationally recognised qualifications. It provides greater access to education providers in the vocational, tertiary, and school based sectors of the industry.

DairyBio and DairyFeedbase

DairyBio is a large government and industry initiative to improve pastures and dairy herds through new bioscience based innovations. DairyBio focuses on three key areas of pasture performance – yield, persistence and quality. The initial focus is to improve perennial ryegrass, the major pasture species in temperate regions of Australia. Further work will also improve short-term ryegrass and tall fescue and expand the relevance of the innovations to a broader range of Australian dairy farms.

DairyBio is funded via a five-year, \$60 million initiative with Agriculture Victoria, Gardiner Dairy Foundation and Dairy Australia as joint venture partners and a range of investors in individual projects. Investors include global leaders in pasture and animal breeding and DairyNZ who invest on behalf of NZ dairy farmers.

The advocacy environment is changing: Expectations of how industry advocacy organisations should operate are changing and there is a need for a trusted, authoritative voice.

The dairy industry is facing significant challenges that require powerful advocacy, led by a unified, authoritative, trusted industry voice, to ensure positive change for the supply chain. Similarly, dairy advocacy bodies are managing their own challenges as they adapt to a rapidly shifting industry and political environment.

As membership numbers in many state dairy farmer organisations (SDFOs) continues to be a challenge, funding for dedicated advocacy efforts is becoming more difficult to sustain. The advocacy environment is becoming more crowded, with different commodity groups at times working independently to achieve conflicting objectives for their members. It is also now easier, through the advent of social media, for individual farmers and groups not aligned with SDFOs to communicate their point to policymakers at all levels of government.

The dairy industry must find a way to constructively portray a consistent message and priorities to government.

As mentioned earlier, the Australian dairy industry at a national level is represented by three peak organisations. Australian Dairy Farmers (ADF) is the advocacy body representing farmers, the Australian Dairy Products Federation (ADPF) represents dairy processors, and the Australian Dairy Industry Council (ADIC) is an overarching organisation consisting of both ADF and ADPF, which advocates on behalf of the entire dairy industry. The membership of ADF consists of six SDFOs, while membership of ADPF consists of more than 20 commercial enterprises.

Declining membership and farmer engagement

Membership in some SDFOs is trending downwards for a number of reasons, including:

- Decreasing number of farms
- A view by some that SDFO membership dues are an unnecessary cost and
- Disaffection among some farmers around the value of SDFO membership.

Given this challenge, it is imperative for ADF to continually demonstrate the value proposition to ensure its members are receiving value for money. There is a need for a refreshed approach to leadership, with existing and new leaders encouraged, supported, given opportunities and developed continually.

Funding

All SDFOs pay a membership fee to ADF, calculated based on the state's share of national milk production. Some SDFOs that belong to larger state farmer organisations (SDFOs) also pay subscriptions to those organisations, while ADF and those SDFOs pay additional membership fees to the National Farmers' Federation (NFF).

ADPF operates on an annual processor membership fee, calculated based on a company's milk intake or total Australian sales of milk products.

There is an argument that these funding models may not be sustainable in the long-term and are affecting the resources available to dairy bodies to provide members with advocacy support.

Unity

Many industry bodies, including SDFOs, dairy processors, retailers, and other farmer groups, are attempting to achieve different goals and competing to be heard by policymakers at a local, state and national level.

There have been frequent calls in recent years for the dairy industry to present a united message on key issues, but this is proving to be a difficult task due to conflicting priorities.

The presence of non-aligned groups and individual farmers engaging in advocacy efforts has added to the challenge around delivery of a 'one industry, one voice' outcome. The dairy industry is not alone in the context of building and delivering unity in an industry.

Political engagement

The dairy industry has historically been at the forefront of national and state politics, which has assisted political engagement by industry organisations. However, policymakers at all levels of government are receiving mixed messages from the industry around priorities and objectives. It is vital for engagement with federal and state governments to maintain a consistent message on areas of common interest.

Advocacy organisation structures

Agricultural advocacy organisations have adopted a federalist model. Local branches meet to discuss their issues, which are brought forward to the SDFO for action or notification. Any items relevant to the national organisation will be brought forward by the SDFO for debate and, if agreed as policy, action by ADF.

A growing number of farmers exiting the dairy industry and declining SDFO membership have gradually seen a consolidation of the traditional branch structure.

SDFO executive committees are primarily comprised of elected representatives from each region of the state, who determine the organisation's policy positions and are responsible for fulfilling the resolutions brought forward by farmer members.

ADF is comprised of a skills-based board, which has ultimate responsibility for the direction of the organisation. A national council, consisting of representatives from each SDFO, recommends policy positions for consideration by the ADF board. ADF also has five policy advisory groups (PAGs) consisting of direct farmer members, who advise on natural resource management, farming systems and herd improvement, trade, markets and value chain and animal health and welfare. PAGs are organised from expressions of interest (EOI) forms sent to members every second year.

The ADPF can independently lobby on items relevant to protect and promote its members' interests, operating under the guidance of an ADPF Executive Committee.

The ADIC comprises an eight-member board with equal representation from ADF and the ADPF. Meetings are chaired by the president of ADF.

Advocacy discussion papers

The importance of advocacy is underscored by the number of parties stepping in to help create a supportive environment for Australian dairy. In 2017 a review of dairy advocacy systems and structures took place, primarily looking at the relationship between Victorian and national structures, but encompassed the overall advocacy landscape. This review emerged in response to an environment of disengagement, falling membership and revenue and a perceived lack of value from existing advocacy structures.

Based on more than 60 interviews and desktop research undertaken as part of this review, a number of key principles of advocacy were identified by stakeholders as challenges being faced by dairy industry advocacy bodies:

- There is a lack of a clear and effective pathway for farmers to engage with advocacy organisations
- Membership and value proposition is being questioned by farmers and funding is being compromised as a result
- We are struggling to find enough dairy farmers with the interest and skills necessary to fill advocacy roles
- There remains some duplication across industry organisations
- A lack of a clear strategy, vision and direction is compromising the advocacy model
- Advocacy governance structure, roles and responsibilities remain unclear; and
- We are failing to present ourselves as a unified industry.



Disclaimer

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