

# 2023 Dairy Industry Horizon Scan

Evaluating the importance of things  
to come: why and how?

**Acknowledgement**

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Prepared for Dairy Australia  
by Chris Phillips Consulting, December 2023

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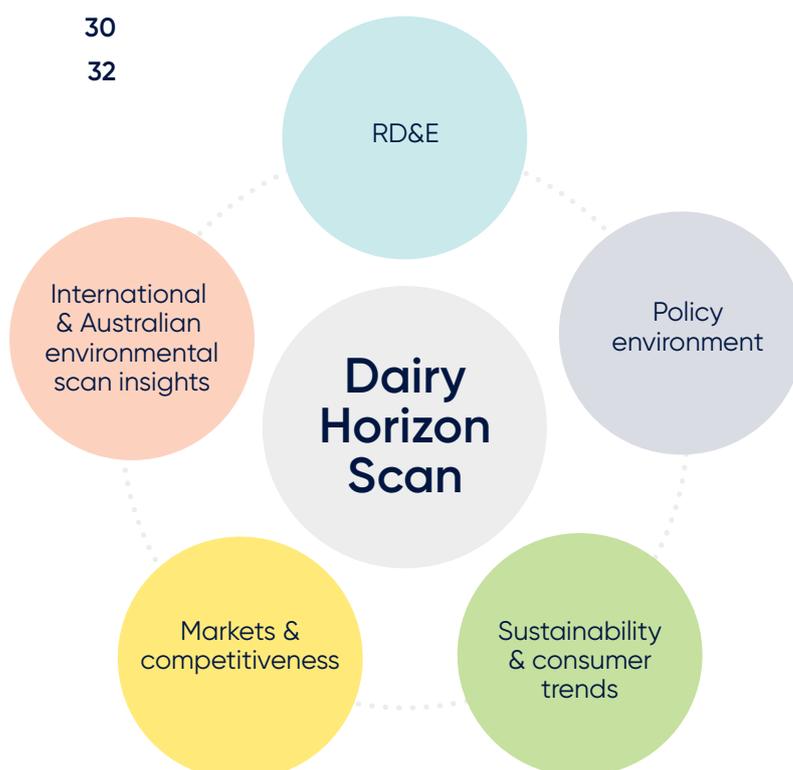
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# A Introduction

The 2023 Australian Dairy Industry Horizon Scan incorporates several separate analyses, each of which has examined the future Australian dairy value chain from a different perspective. These perspectives included future RD&E needs, emerging sustainability trends, changes in consumer attitudes, market and competitiveness trends, physical and operating environment changes, and possible government policy settings.<sup>1</sup>

The Scan also incorporates the findings of several broader studies of the agricultural sector and economy to highlight how future megatrends facing Australian and world agriculture are likely to affect dairy industry outcomes in coming decades.

The findings synthesised from these scans is intended to:

- Help industry stakeholders develop a common understanding of the emerging issues and challenges that are likely to shape Australian dairy's competitive position, profitability and sustainability to 2030 and beyond.
- Provide actionable insights regarding strategic industry-level initiatives and programs that will best address these expected challenges to help local dairy producers maintain their profitability, productivity and social licence to operate in an evolving world.
- Identify specific issues and challenges that will require a multi-faceted industry response to achieve effective and positive industry outcomes.
- Confirm the capability of industry's existing subject matter experts and collaborative networks to address emerging challenges and identify possible gaps and areas for future improvement.
- Help stakeholders refine the industry's future messaging and communication so that consumers, the community and governments at all levels retain a high level of trust in, and support for, Australian dairy as a producer of affordable, sustainable and nutritious food products and key agricultural sector and contributor to the Australian economy.

Section B of this report sets out the key findings from individual studies commissioned as part of, and associated with, the 2023 Dairy Horizon Scan.

Section C examines the potential intersections/crossovers between the challenges identified in individual studies and the differing areas of dairy operation. This will help highlight those areas where a multi-faceted industry-level response will be needed if Australian dairy is to continue operating successfully across the Horizon Scan timeline.

The report concludes by setting out some key implications of these linked findings for future farm, factory and industry-level activities.

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<sup>1</sup> A list of the one-off studies that have been incorporated into the overall 2023 Dairy Scan is included as Appendix 1.



# **B Key findings of individual scan studies**

# The broader operating environment outlook facing Australian agriculture

## Major source material

*Agrifutures – National Challenges and Opportunities Horizon Scan, 2023*

Several recent Australian and overseas studies have examined the key trends that are most likely to shape the operating environment facing world agriculture and food production in the next decade. While these studies often use different terminologies, or incorporate different combinations of issues in their findings, they generally identify a similar set of megatrends and challenges that Australian and international agriculture will face over the coming decade.<sup>2</sup>

As an example, an *Agrifutures* commissioned study (conducted earlier this year by the University of Technology Sydney) identified four broad megatrends that will shape agriculture in the next decade or so. These megatrends, and their core implications for Australian agriculture (and dairy) are:

- Environment, Climate Change and Energy
- Income Growth and Consumer Expectations
- Geopolitics, Resources and the Supply Chain
- Innovative and Emerging Technologies.

## Environment, climate change and energy

A warming climate and associated cycle of more frequent and extreme weather events will increase the pressure on available land, crop yields, animal health, biodiversity and the viability of different farm systems. Some implications of this are:

- Decarbonisation (via Greenhouse Gas (GHG) reduction) is likely to dominate local and international climate policy and sustainability debates in the near future. Governments (and large businesses) may seek to limit the damaging impacts of climate change through:
  - Increased regulation of future farm practices and outputs including GHG emissions.
  - Mandated cuts to carbon emissions across all parts of the food production chain.
  - Private end-user and financier demands for greater collection and distribution of farm and processor level GHG emissions information and the development of clear pathways for farms to reduce their future GHG emissions.
  - Increased decarbonisation-linked changes in domestic energy, industry and taxation policy.
  - Stronger impetus to address sustainability concerns through multi-lateral fora (e.g UN, WTO) and integrate sustainability objectives into other policy disciplines, including trade, biosecurity, and human and animal health.
- The push for expanded renewable energy may present opportunities for the dairy farm and processing sectors, to improve their future sustainability, productivity and cost structures.
- Future farm access to key inputs such as water will be challenged by physical climate change, creating new operating costs, and altering the competitiveness of differing farm systems.
- Governments may prioritise local biodiversity preservation over future industry growth.

<sup>2</sup> Domestic studies include the NFF's *2030 Roadmap* (2019), the Australian Food and Grocery Council's, *Sustaining Australia 2030* (2021), and *Agrifutures - Future Forces* (2021)

## Income growth and consumer expectations

Rising incomes, changing lifestyles and demographic shifts will drive changes in future consumer food preferences. Although often ill-defined, 'sustainability' will be an increasing driver of final consumer food demand in many countries (especially developed market economies).

As a result, developed country demand for innovative, 'premium' products will rise to meet greater convenience requirements and consumers' perceived desire for healthy, sustainable living.

The rise of a circular economy – and its associated pressures to reduce waste – will require progressive improvement in farm and processor level resource use, and the implementation and better waste recovery and recycling systems on farm.

The circular economy will also require greater sectoral spend and RD&E on sustainable packaging and product traceability. This, in turn, will require more effective information capture, storage and sharing to be built into standard business systems across all food value chains.

Consumer and community expectations about the ethical treatment of animals in production, and overall animal welfare, will remain important.

These expectations will help shape future community attitudes to the operation/regulation of specific dairy farm systems, and community requirements regarding 'transparency' in industry performance.

Future demand for dairy products compared to plant-based alternative fats/proteins, and the regulatory framework likely to govern future dairy industry operations and sales.

## Geopolitics, resources and the supply chain

Continued geopolitical tensions between the United States and China, and the economic rise of India, may force Australia to seek greater market diversification to maintain future agricultural export volumes and retain appropriate access to key food production inputs.

The perceived sustainability of Australian production systems can influence how future trade deals are negotiated and the resulting value of any market access gains or import entry concessions arising from such agreements.

Australia's competitors and/or potential markets may develop new border measures – for example, the EU's proposed Carbon Border Adjustment Mechanisms – that will alter potential supply chains and the competitiveness of Australian product in specific markets.

International third-party policy agreements may impact the competitiveness of Australian dairy exports in different markets without any direct reference to local industry.

Competition and consumer protection legislation will also help shape future supply chains. This will affect the future cost and profitability of domestic food processing. It will also affect the ongoing attractiveness of international and domestic investment in local dairy processing.

## Innovative and emerging technologies

The rise of new production technologies, automation systems etc. may see a fundamental redesign of farm and factory production systems, resource use and even physical production layouts. This could affect the long-term competitiveness of different farm systems. However:

- While very desirable, expansion of new technologies to improve farm level performance/lifestyle in Australia has been slower than anticipated or hoped.
- The growing use of digital and automated systems will require a more systematic approach to business-level data collection, information management (and storage) to improve product traceability. It could also create a digital capability divide between different types of farm systems and groups of farmers.
- Automation may assist the perceived professionalism of dairy farming over time. But successful technological innovation will require greater business management skills, and access to an expanded tech-savvy regional workforce and service provider network. It will also require appropriate government investment in regional telecommunications networks.
- The rising share of on-line sales in overall food markets will require adaptation by major players along the food supply and distribution chains.

# Sustainability, consumer trends

## Major source material

The Australian Dairy Industry, *Materiality Assessment Report 2019*

Dairy Australia - *Trust Tracker Consumer Survey (June 2023)*

Dairy Australia - *Sustainability Communications A global perspective (Oct 2023, DA Audience Realignment Segmentation Report (Lewers, Nov 2023))*.

The 2019 Materiality Review examined a wide range of issues that could affect the profitability, future performance and future perceptions of the dairy industry. The study identified ten key issues that it regarded as being highly material to future industry outcomes and its ongoing license to operate (see text box below).

Interestingly, animal welfare related issues accounted for almost half of this list. This highlights the importance that many consumers, and the broader community, continue to attach to the ethics of on-farm dairy production systems.

## Highly material issues for dairy (2020)

Product safety and quality

Water availability and efficiency

Animal care

Physical climate risk

Farm biosecurity

Antimicrobial stewardship

Calves, including bobby calves

Animal husbandry

Resilience of dairy regions

Greenhouse gas emissions

A new Materiality Survey is under way. It is expected to be completed in early 2024. Without seeking to pre-empt this report's findings it is very likely that the issues identified as being of Highly Material importance in 2019/20 will retain this status in the 2024 and beyond.

However, there may be some shuffling in the relative priorities of these issues going into 2024. This reflects the fact that GHG emission reduction targets and decarbonisation mechanisms have dominated recent government and business discussions on how to offset physical climate change (and promote long-term sustainability).

Governments (both federal and state), major food processors and large food retailers have all announced roadmaps they intend to follow to help Australia meet its announced GHG reduction targets by 2030.

New sustainability accounting rules will also require dairy industry participants to provide major end users and financiers with greater details of on-farm and factory level emissions from 2024. Some banks are also looking to impose future GHG recording and reporting obligations on their current borrowers as a requirement to maintain future access to credit.

At the same time, consumer and community groups continue to want to see individual businesses and industries confirm their GHG reduction commitments, and the strategies or programs they will use to effectively measure and reduce their future GHG emissions.

While GHG reduction has gained current prominence in the sustainability debate, local and export customers and consumers will continue to require strong assurances that the food they are buying is both safe, sustainable and has been ethically produced. So, issues such as animal welfare, product safety and resource use efficiency will remain important drivers of future consumer demand and market opportunities for Australian dairy.

Dairy will have to maintain a consistent and plausible narrative about the high quality of its products and practices and its strong commitment to ongoing performance improvement in all these areas if it is to retain an unfettered right to produce and sell in the next five years.

Fortunately, the local dairy industry appears to be in a good starting position in this regard. Regular Dairy Australia (DA) Trust Tracker surveys show that the overwhelming percentage of Australian homes regularly purchase and consume locally produced dairy products (98%).

Public trust in the dairy industry dipped from 2011, partly due to adverse publicity around the sale of discounted supermarket milk. But over the past decade this trust has rebounded strongly (Figure 1).

**Figure 1** Public trust in the dairy industry



Source: Dairy Australia Trust Tracker Surveys.

Public trust in dairy foods and farm practices also remains high. According to Trust Tracker:

- 87 per cent of surveyed respondents say dairy products are high quality and safe.
- 80 per cent of respondents say dairy is essential for good health and children's development, and
- 76 per cent of respondents believe that dairy farmers do a good job caring for their animals.
- Overall, 82 per cent of surveyed respondents see dairy as a hardworking, high integrity industry (especially at farm level). A similar proportion of people believe the dairy industry contributes positively to Australia's overall wellbeing.

From a nutrition perspective, cow's milk outperforms plant-based alternatives. Its measured Nutrient Density (either per serve, or per \$ spent) is 30–100 per cent higher than popular plant-based beverages.<sup>3</sup> Most consumers (61%) also regard cows' milk as being more natural than plant-based alternatives.

**The current positive status of dairy does not imply there are no future risks** to its market position and standing. DA surveys also show that dairy consumption in Australia is concentrated among an older demographic.

Younger consumers (such as those identifying as Gen Z) report that they feel social peer pressure to limit their public consumption of cows' milk product. This has implications for future dairy consumption (especially as per capita drinking milk consumption has fallen since 2018).<sup>4</sup>

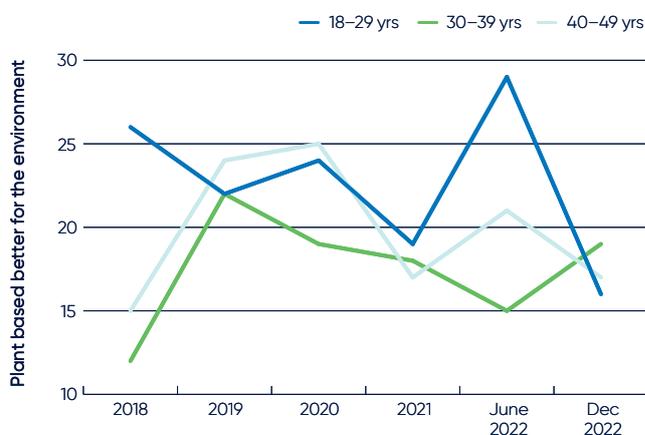
There has also been a slow, but perceptible, decline in recent years in reported local consumer views on the importance of dairy in their overall diets (down from 63–58%). This decline is possibly linked to the fact that the consumption of alternative "milk beverages" has become normalised in Australia. DA survey data show that:

- 48 per cent of consumers believe there are now good alternatives to dairy in market.
- 42 per cent of households report having purchased plant-based beverages in the past year (although only a small percentage of them exclusively purchase non-dairy products).
- 36 per cent of surveyed consumers see plant-based alternatives as being equally nutritious as milk.

**Sustainability** is also a major driver of consumer behavior both in Australia and overseas. Some 63 per cent of Australian consumers say that sustainability is important to their food choices – with over 30 per cent of consumers saying that they act on this driver in their food purchases and consumption. Nine per cent of these consumers report that they eat less dairy because of their sustainability concerns.

This sustainability concern has multiple aspects. A significant number of consumers of all ages state that they buy plant-based alternatives to milk because these products are better for the environment (see below).

**Figure 2** Purchase drivers: Plant-based 'alternatives' are better for the environment



Source: Dairy Australia Trust Tracker Surveys.

<sup>3</sup> D Ridoutt, *An Alternative Nutrient Rich Food Index*, 2021.

<sup>4</sup> Dairy Australia, *Australian Dairy in Focus 2023*, Table 18, Page 21.

While consumers see cows' milk providing superior nutrition density (NDF), some plant-based alternative drinks (like soy) achieve a higher NDF than cows' milk when certain environmental impacts of production are taken into consideration.<sup>5</sup>

**Animal welfare concerns** are also reported to be important to the 'sustainability-related' purchase decisions of light dairy consumers and non-dairy consumers.

In response to findings, such as the 2020 Materiality Report, the Australian dairy industry has worked hard to encourage farm practice change that will enhance local dairy farming's chance of preserving its social license. Over the past decade industry has made considerable progress in altering a range of farm practices (e.g. ending tail docking and calf induction, implementing new practices for dealing with surplus cows and bobby calves, and responsible practice codes for the use of antibiotics on farm). It has reported this progress through vehicles such as the Australian Dairy Sustainability Framework (ADSF).

This change leaves local dairy appears well placed to explain that its current operating practices exceed the requirements of existing and planned animal welfare laws at state level statutory reviews expected to occur in 2024 and later.

However, success in this area cannot be taken for granted. Many urban community groups hold strong views on the issue of agricultural animal care in Australia. Non-dairy consumers, in particular, report that they are very distrustful of the dairy industry reporting on its animal performance outcomes.

Another sustainability challenge for dairy comes from the recent initiatives of several major downstream users of dairy (including supermarkets and large fast-food chains) and major banks. To try and protect their own business models these firms are seeking to impose tougher rules on their local dairy supplier base in relation to sustainability planning and GHG emission levels and reporting of these.

Some examples of this behaviour include:

- McDonalds is publicly targeting to have net zero GHG emissions across its value chain by 2040, even though most of its current estimated emissions are indirect (Scope 3) emissions from its upstream farm sector suppliers. At the same time, the firm is imposing a new sustainability **Plan for Change Scorecard** on suppliers as a means of determining future material and product sourcing.
- Woolworths has announced a plan to achieve a 19 per cent reduction in total GHG emissions across its value chain by 2030 (with this reduction including both direct Scope 1 and 2 emission and indirect Scope 3 emissions from its farm supply base),
- Banks (such as Rabobank) are implementing sustainability frameworks for future borrowers and are linking GHG emissions reporting/performance improvement to their loan books.

Based on experiences in other policy areas, these new corporate 'social' reporting obligations in relation to GHG reductions may outpace planned changes in government regulations and policy. They could impose tougher rules on future dairy industry performance and business structures than would be the case from purely statutory reforms.

<sup>5</sup> Generally water use, GHG emissions and land scarcity associated with production. However, this calculation methodology does not appear to include factors such genetic modification or deforestation.

# Markets and Competitiveness

## Major source material

Freshagenda - *Implications and Issues for Australian Dairy Stakeholders of Domestic Raw Milk Pool Trajectories to 2030*

Dairy Australia - *Situation and Outlook reports*, ABARE)

## Markets

The international market facing Australian dairy early in this Horizon Scan period is likely to remain subdued. Global demand in recent years has been constrained by weak Chinese import demand, driven by the combined effects of a surge in domestic Chinese milk production and slower than expected economic recovery in that country following the relaxation of COVID-19 restrictions.

Chinese import demand is expected to remain subdued throughout 2024 due to ongoing domestic product stockpiles (particularly for milk powders) and weak consumer sentiment and product purchasing. This will be significant for Australian dairy, as China, in recent years, has accounted for around 37 per cent of Australian dairy exports (by both volume and value).<sup>6</sup>

However, the longer-term outlook for world dairy demand remains positive. Income growth, population increase and changes in diets all suggest there is still significant upside in the longer term demand for dairy, especially in developing countries across the Asian region.

Most analysts expect world dairy supply will be constrained in coming years – partly due to the impacts of government sustainability and GHG emissions policies on the production costs and farm systems in major producers such as the EU. Production growth in the western regions of the US may be less constrained, which would add to export market pressures in coming years.

At the same time, different UN agencies are pushing for an expansion in world protein production and supply to address food security issues in developing nations. Such developments would help underpin the longer term demand for dairy proteins.

## Milk Supply and Pricing

Australia enters the current Horizon Scan period following several years of steady **decline in the national milk pool**. National milk production now stands around 8.16 billion litres – down 10 per cent from five years ago. Local farm numbers and the national dairy herd have also continued to decline (to below 4,200 farms and 1.3 million head respectively in 2023).

These declines have not been uniform across all local production regions, with Tasmania and some regions of Victoria and South Australia, continuing to show milk production growth (until 2022/23).

However, the decline in local milk supply has:

- accentuated the competition between domestic processors for available farm milk
- pushed domestic farm gate milk prices above those paid by some of Australia's major international competitors (particularly New Zealand)
- exacerbated local milk collection, plant utilisation and competitiveness issues for domestic milk processors and manufacturers, and
- reduced Australia's competitive position in export markets.

ABARES estimates that the Australian **farmgate milk price** in 2023/24 will fall slightly as world markets ease.<sup>7</sup> However, farmgate milk prices are still expected to exceed 71 cents per litre (or about \$9.44 per kilogram of milk solids). This is historically very high – some 38 per cent above the five-year average milk price paid to 2021/22. This suggests that domestic milk prices will remain relatively high compared to world dairy prices in the first part of this Scan period.

A major factor for this is that the decline in Australian milk production since 2001/02 has left the industry with significant excess processing capacity. The resulting competition between processors to secure sufficient milk to efficiently utilise existing processing facilities has pushed up milk prices and put pressure on processor profits and margins.

<sup>6</sup> Dairy Australia, *Australian Dairy in Focus 2023*, Figure 11 and Table 16, Page 20.

<sup>7</sup> ABARES – *Outlook for Dairy, August 2023* (on DAFF website).

In considering, Australia's potential future milk supply, Freshagenda noted<sup>8</sup> that, while there has been a relaxation of some recent drivers of farm exits, dairy remains vulnerable to an ongoing decline in national milk volumes. It attributes this to several factors including:

- A lack of trust at farm level that processors or the marketplace will consistently deliver milk prices that are adequate to counter an expected rising cost base, and escalating business management challenges.
- A two-way weakening of industry trust, as processors avoid partnering in farm enterprise development.
- An aging cohort of dairy farm owner-operators and increased incentives for dairy farm families to capitalise on rising asset values through exiting.
- Farmer expectations that they will face increased on-farm compliance costs including the requirement that they measure and manage on-farm greenhouse gas (GHG) emissions and comply with other market-driven sustainability agendas.
- A lack of clear pathways for new entrants.

The prospect of reduced water availability in the Murray Darling Basin associated with Southern Basin water buybacks is also likely to limit future milk supply from inland dairy regions. Additionally, the climate impacts of a new El Nino pattern will also add pressure on short to medium-term farm input prices and potentially restrict future milk supply volumes.

Freshagenda identified that there is scope for new dairy farm investment through corporate and innovative ownership models. However, nationally, the entry of these additional growth hubs is unlikely to match or exceed the milk production losses arising from smaller, traditional farm exits.

Processors and the downstream dairy marketplace appear to have limited confidence in a resurgence in domestic milk supply in coming years. They are readying themselves for a smaller future domestic dairy industry. There is already significant import product substitution occurring as firms and retailers seek to establish greater future supply and input cost security.

These trends could threaten future local factory demand for raw milk. Any further reductions in commodity prices also raises the risk of firms mothballing or closing their local ingredient manufacturing capacity to the detriment of their milk supply base and future industry growth.

Australian dairy exports have traditionally received a small price premium over world dairy prices. In 2022, this premium rose substantially, particularly for butter and cheddar exports, reflecting a preference for Australian products among Asian importers and our reduced export supply.

These higher price premiums, particularly for cheddar cheese, helped insulate Australian dairy exporters from the relatively sharp fall in world dairy prices following March 2022. This helped firms retain recent profit margins on export sales.<sup>9</sup>

More recently, though, these premiums have diminished as some importers appear to have switched to cheaper alternatives to Australian dairy to protect their own profit margins. This loss of margin highlights the competitive nature of world dairy markets (to which Australian dairy remains significantly exposed, regardless of future domestic milk production levels).

## Future Competitiveness

With its heavy emphasis on pasture-based, seasonal milk production, Australia has long regarded itself as a competitive product supplier to the domestic and world markets. A significant question going forward is whether this will remain the case with current or reduced milk supply.

The (climate induced) expansion of partial and total mixed ration systems in some dairy production regions (particularly inland dairying) has added to the complexity of local industry and its positioning in world dairy.

Much of the talk of on dairy competitiveness tends to focus on the cost of milk production on farm. However, given the strong interlinkages that exist across the dairy value chain, the issue of Australian dairy's future competitiveness is more complex.

<sup>8</sup> Freshagenda - *Implications and issues for Australian Dairy Stakeholders of Domestic Raw Milk Pool Trajectories to 2030*, Page 7.

<sup>9</sup> ABARES - *Outlook for Dairy, August 2023* (on DAFF website).

It requires discussion not just of farm costs, but also whether:

- Local farm cash costs of production are competitive with other major exporting regions.
- Conversion and supply chain costs are competitive with export and import competitors.
- Local supply chains can reliably meet customer requirements into the future.
- There is a commitment to measuring, mitigating, and reducing Scope 3 GHG emissions and clear progress towards that outcome. How will this affect industry positioning?
- How well animal welfare standards and practices align with customer expectations.
- Whether dairy can compete for investment capital to underpin expansion of output.
- How retailer and QSR sourcing strategies will affect their acceptance and usage of imported product.

DA farm financial surveys suggest that the export facing sectors of Australian dairy farming remain cost competitive against our major overseas competitors.

This is less so in regions where local production is heavily focused on fresh products such as milk.

Australian farm systems can be competitive. Grazing land is cheaper compared to New Zealand, a situation that offers opportunities for new farm entrants. However, there are higher per-unit capital costs for new intensive farm systems in Australia compared to Northern Hemisphere competitors.

Dairy Australia research indicates that while many farms are with existing technologies, local farm productivity has been flat since milk production peaked in 2001/02. The contribution of technical change to Total Factor Productivity (TFP) has been weak.

It appears that local farmers are adapting to weather and climate variability. Some of these adaptations (such as building feed reserves, diversifying income, and changing stocking levels) may have constrained growth or diverted investment from productivity outcomes and expansion.

Freshagenda concludes that the local dairy sector is unlikely to grow with current technologies. The only scope for sustained growth in farm productivity is through technology change to increase labour and capital efficiency. However, Australia's overseas competitors face similar challenges.

Beyond the farmgate, Australia's fragmented processing sector operates with smaller scale and at higher cost than some major export competitors. Low margins and contracting volumes are limiting the scope for industry product innovation.

This may lead to a potential mismatch between the regional location of future raw milk production in Australia and the ongoing dairy processing infrastructure. Such an outcome would:

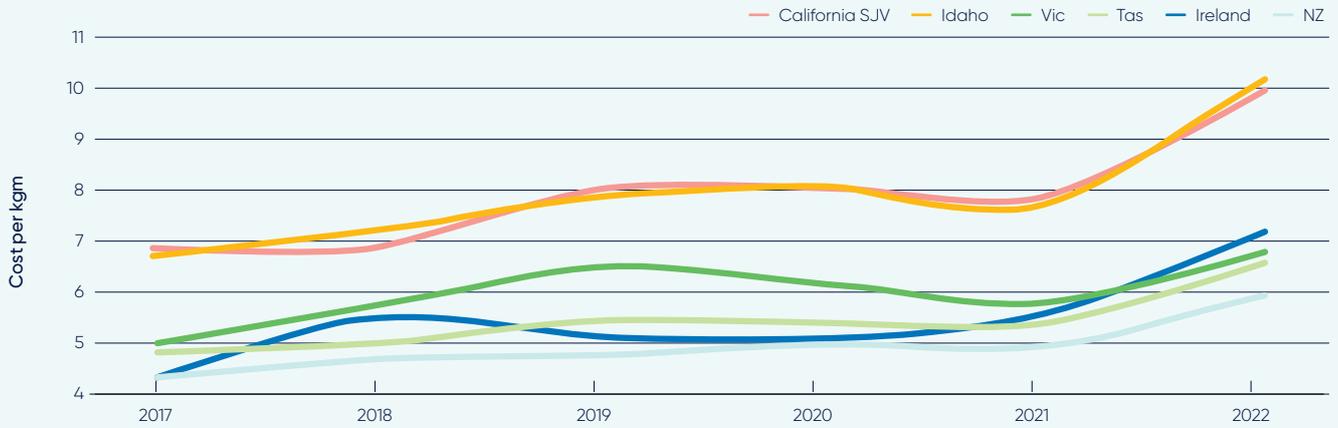
- Impose higher logistics costs on Australian dairy processing and require more rationalisation of domestic freight infrastructure and systems.
- Increase the cost of on-farm milk collection.
- Raise questions with some buyers about Australian dairy's long-term capacity to reliably meet end customer requirements.

From the perspective of consumer and government attitudes, Australia also trails some of its major competitors in setting targets and implementing on-farm measurement and GHG reduction practices. To maintain its competitive position, local dairy will need to ensure that it retains control of this process (and the associated public narrative) to develop a suitable science-based, credible system of emissions measurement and reporting. Unlike some competitors (e.g. the USA), Australia has not yet developed broadly agreed market signals that incentivise GHG emissions reduction at farm level.

Freshagenda also examined whether a future reduction in the Southern Australian milk pool (and a greater local emphasis on fresh milk, yogurt and cheese production) would encourage a further flattening of the local milk supply curve – an outcome that has its own implications for Australian dairy's future international competitiveness.

With more volatility expected for milk prices, input costs and operating conditions, most processors believe farm producers will focus more on reducing their costs of production rather than exploring how to optimise the advantage from future pricing signals. This may be more challenging for farmers should there be significant rationalisation of dairy processing capacity for the manufacture of powder and cheese that could potentially limit the capacity to supply seasonal milk in some regions.

**Figure 3** Operating costs per kgms in A\$



Source: prepared by Freshagenda on behalf of Dairy Australia

**Figure 4** Total factor productivity



Source: G Dwyer, H Quinn, ABARES, Fisher Index

# Research, Development and Extension

## Major source material

C Murphy, *Dairy Research, Development and Extension Horizon Scan* (Oct 2023)

G Dwyer, H Quinn, *The Determinants of Dairy Farm Productivity and Competitiveness* (2023)

As noted above, DA research has indicated that Australia is a technically efficient dairy producer. Over 75 per cent of dairy farms are 91 to 92 per cent, efficient and 25 per cent of farms are more than 94.5 per cent efficient with existing/current technologies. Farm efficiency levels are similar across all local production regions.

Historically, improvements in farm productivity have tended to offset the industry's declining terms of trade. However, Australian dairy farm productivity has been flat since milk production peaked in 2001/02. The contribution of technical change to Total Factor Productivity (TFP) has been weak.

Scale and mix efficiency have also fallen, with constant returns to scale meaning changes in the mix of inputs and outputs in response to changing circumstances are shaping productivity.

There are indications that some efforts by local farmers to adapt to weather and climate variability may be constraining farm level investment in productivity outcomes and expansion.

This suggests that the local dairy sector is unlikely to grow significantly using current technologies. The best scope for sustained growth in farm productivity appears to be through technology change to increase labour and capital efficiency.

The challenge to Improve TFP is not unique to Australian dairy. ABARES data indicates other local broadacre industries are struggling in this regard.

In assessing the major factors driving change in what is needed from future Australian dairy RD&E, Chris Murphy identified a similar set of issues to those put forward by Agrifutures in its broader cross-agriculture study. These include:

- Addressing the impacts and risks of physical climate change. The need to proactively transition to a low-carbon future.
- Moving to zero, or at least low-waste, methods of production.
- Managing an expected reduction in access to key production inputs.



Future physical climate challenges that dairy farmers are likely to face:

- Every decade since 1950 having been warmer than the preceding decade.
- Average daily temperatures are expected to rise, with more extremely hot days, and less extremely cool days,
- The next decade will see more days with temperatures over 30°C in many dairy regions.

At the same time, farm producers are likely to see:

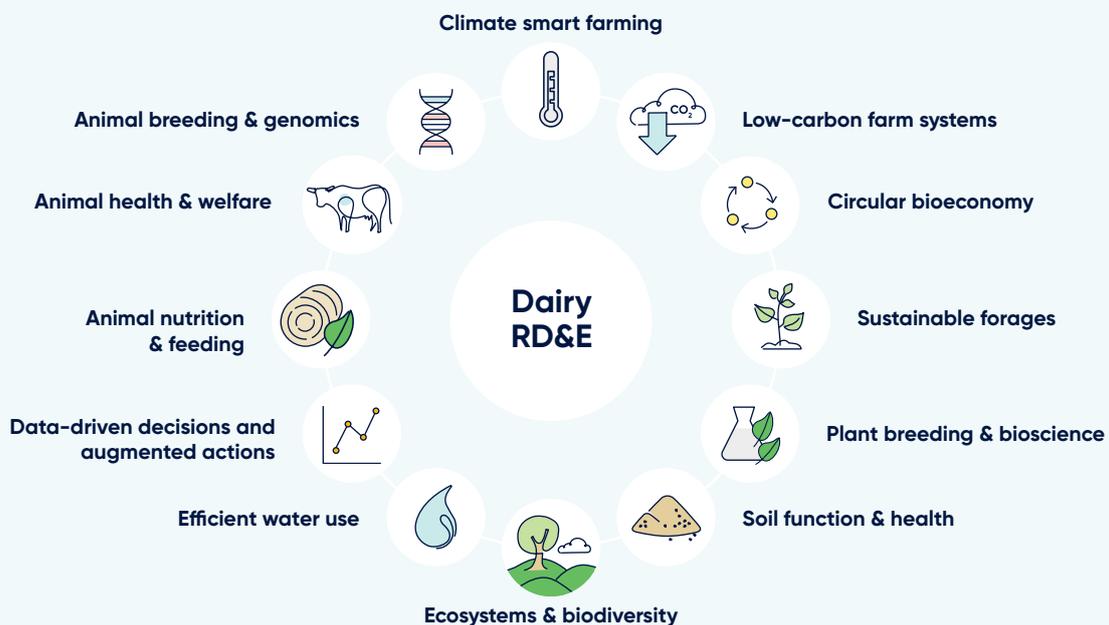
- Decreased cool season rainfall across many regions, and longer fire seasons.
- The continued drying of South-west Western Australia.
- Longer periods of drought on average in the south and east of the country.
- Despite lower average rainfall, more intense, short-duration heavy rainfall events leading to increased flood risk.

These physical changes in climate in coming decades will affect where dairy farms and cattle are located across Australia. This, in turn, will require changes to current farm production systems and the deployment of new skills in the dairy workforce.

Successfully achieving this change will require a range of enabling factors to be put in place in coming years such as:

- An improved dairy workforce and service sector that can identify the evolving needs of local producers and implement effective farm-based solutions based on new research, development, and technologies.
- A similarly improved local science capability that can effectively develop new methodologies/technologies and innovations and assist in their successful and timely implementation.
- Sustained, and novel approaches to accelerate co-development, practice change, and rapid adoption of farm solutions.
- A greater capability to undertake 'problem solving and innovation' rather than relying on traditional knowledge exchange.

Chris Murphy identified that there is a range of available and emerging RD&E on the horizon that can help dairy increase farm level productivity and sustainability in the lead up to 2030 and maintain its social license to operate. This R&D can be considered under 12 linked domains (see below).



These domains essentially emphasise the need for new farm level RD&E that focuses on:

- Carbon smart farming, and low carbon emissions.
- Farm system transition.
- New farm technologies, and automation.
- Herd genetics, animal health and nutrition.
- Water use efficiency on farm.

However, some constraints on the possible development of low carbon dairy farming systems arise from the fact that:<sup>10</sup>

- Only a low percentage of dairy farms know their current GHG emission footprints.
- Most farmers reportedly are not interested in finding out this information (although this may change as dairy processors, banks and dairy end users increase the external pressures on farmers to be able to provide this information.
- Many farmers are not concerned about the impact of climate change on their businesses, being confident that they can successfully continue to manage periods of extreme heat and adverse weather conditions.

Industry bodies and government continue to invest in a wide range of RD&E initiatives aimed at reducing dairy farm and factory-level GHG emissions. While progress has been made, at this stage there do not appear to be any guaranteed solutions that will dramatically cut the GHG intensity of Australian dairy farm operations in the short term (at least in a cost-effective manner).

Differences in regional outlooks and the **increased diversity in operating farm systems** will also complicate R&D planning in this area.

Despite industry reticence, future opportunities and threats to the dairy sector are poised to emerge with increasing scale, complexity, and speed. They cannot be ignored or wished away. But addressing these challenges will require strong industry leadership and seamless collaboration across the entire industry.

Dairy will also face RD&E challenges based on evolving stakeholder expectations (of both farm production practices and the appropriate form and conduct of RD&E). In this environment:

- Improved waste efficiency will be potentially important to industry in demonstrating its improved (i.e. reduced) farm carbon footprints.
- Improved recycling and on-farm water usage will also be important to industry viability, but also the narrative it can present to consumers through forums such as the Australian Dairy Sustainability Framework (ADSF).

- The continued evolution in on-farm pasture, plant and animal breeding strategies will also be important to future industry returns and viability and GHG responses.

Dairy also must be aware that many consumer and community groups retain negative perceptions of the use of GMO technology in animal-based industries. Future RD&E activities must be cognisant of these concerns if dairy is to continue to be accepted as a responsible, ethical producer.

The above challenges provide scope for many areas of expanded dairy farm RD&E in coming years. But there will be ongoing pressures on the available RD&E funding base over the next decade. One source of this potential funding pressure will come from a declining local milk production base (and its implications for government matching funds).

State and federal governments also face ongoing pressure to direct an increased share of their available research funding to non-agricultural initiatives (like GHG and energy reforms). However, dairy researchers have some scope to tap into recent government climate, biodiversity and decarbonisation funding mechanisms to help retain an adequate funding base for industry RD&E going forward.

There is also an ongoing need for more post-farm R&D to address emerging climate and sustainability challenges further up the dairy value chain. It is likely that this work may need to be funded increasingly through joint projects with local and international dairy manufacturers.

Many future farm-level improvements are likely to require global, multidisciplinary approaches to RD&E. They will also require clever combinations of new technologies within existing farm systems. Australian dairy stands to benefit greatly if its RD&E subject experts can:

- Expand the level and intensity of effective international (and cross sector) RD&E collaboration.
- Work to improve on-farm innovation performance.
- Help ensure that enhanced information capture and reporting systems (including GHG footprints) are broadly integrated into future farm business management systems (with significant farmer buy-in to the need for, and potential benefits of implementing such changes).

Success in these areas will be important to effectively address mounting external pressures for dairy to improve its on-farm climate performance. It will be integral to ensuring that key dairy stakeholders can maintain control of any future public narrative on dairy's "social performance" and its ongoing right to produce and sell products in all markets.

<sup>10</sup> C Murphy, *Dairy RD&E Horizon Scan July 2023*, Page 6.



# Policy Settings

## Major source material

C Phillips, *Dairy Policy Horizon Scan*, Oct 2023

Government policy settings can significantly affect industry growth and sustainability as they can either advance, or hinder, local producers' market opportunities, cost structures or profitability.

Unsympathetic or inappropriate policy settings can generate rapid downward step changes in the operating environment facing producers in a specific industry.

Across the world, current governments are trying to balance competing goals of sustainable climate change, reducing carbon emissions, ensuring domestic and international food security and maintaining local food affordability. Striking a balance between these goals is difficult as they each can come with competing industry and community expectations and different success criteria.

Australia is not unique in this regard. Federal and state governments are seeking to both shape and respond to local consumer and community expectations about what constitutes good, sustainable industry behaviour. In recent months this has seen the announcement of a range of "high level" policy statements aimed at securing sustainable future growth in Australia. These include:

- The National Agriculture & Climate Change Statement.
- The Federal Government Industry Policy for Decarbonisation.
- The revised federal/state agreement on implementing the Murray Darling Basin Plan.
- The National Traceability Roadmap and Strategy.

Governments are not generating these new policies in a social vacuum. Rather, their actions reflect prevailing geopolitical alliances and tensions (and so may change as these change). They also reflect government assessments of local consumer and community attitudes to, and support for, the 'social performance' of different industries.

However, when formulating policy, different sections of government often respond to different drivers and communities of interest. This can result in a disconnect between the approach taken by different departments

(levels of government) in developing new policy, the priority they attach to specific policy outcomes, and the criteria by which they measure policy success.

Industries like dairy must ensure that they take a holistic – rather than a siloed – approach to analysing the drivers of new policies to maximise industry's ability to positively influence the direction of future policy debates. This includes understanding (and addressing) the perceived 'needs' and likely reactions of major upstream suppliers and downstream users (like retailers) in these debates.

For a small, open economy like Australia, policy decisions (and associated regulations) in overseas countries can also have major impacts on the future competitiveness of Australian industries either here or in key overseas markets.

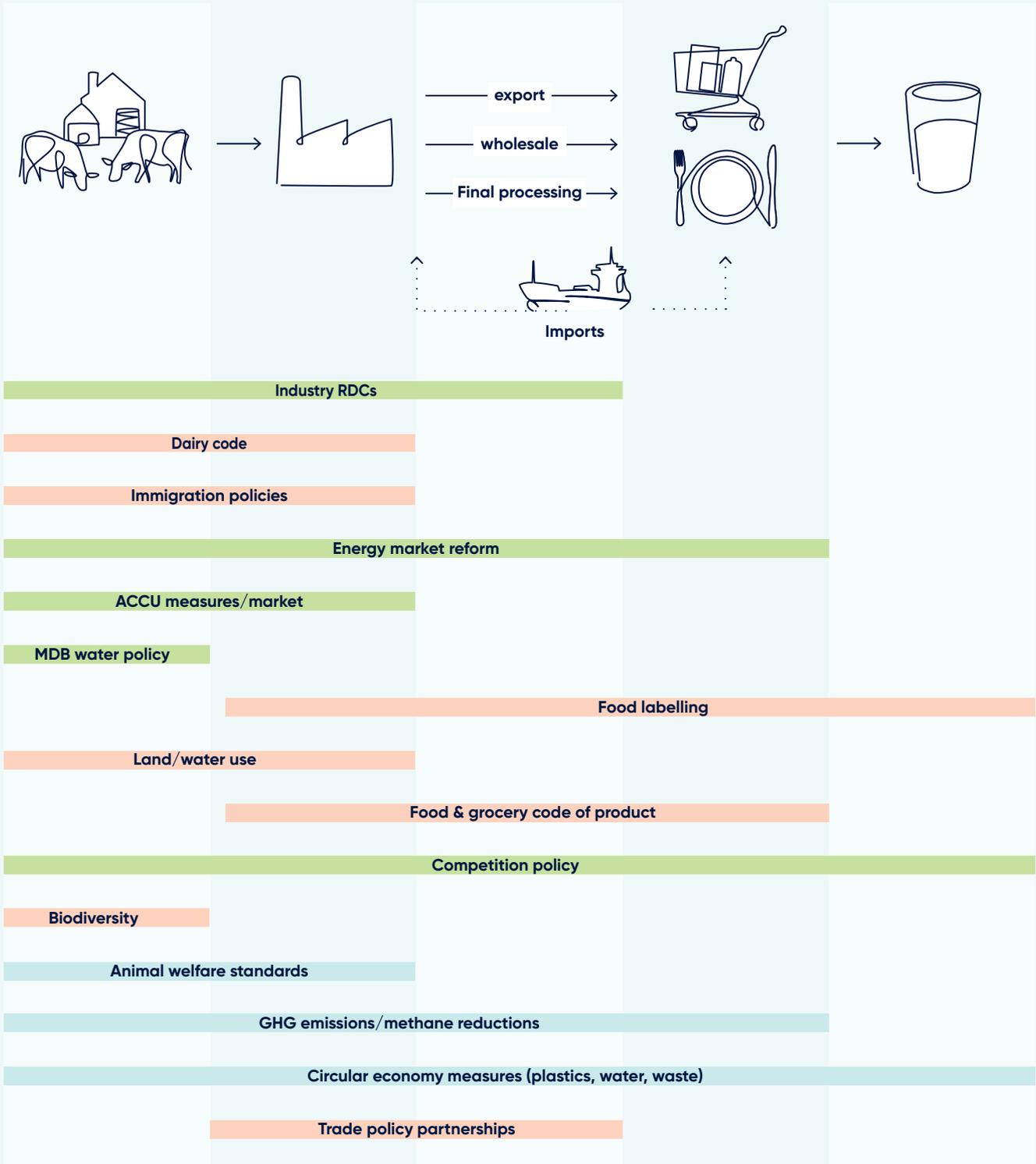
The EU's proposed Carbon Border Adjustment Measures or the possible taxation of on-farm methane and nitrous oxide emissions in New Zealand are examples of overseas policy decisions that could:

- affect Australian entry rights to, or competitiveness in, different international markets; or
- create benchmarks for future Australian government action and regulation.

Local industry players and even governments may have very limited, or no, practical scope to influence the direction and outcomes of these overseas policy changes, despite the commercial implications they may have for our producers' profits and future production.

Changes in the ownership structure of Australian dairy processing over the past 20 years also mean that the commercial interests of the dairy farm and processing sectors can vary in emerging policy debates. This will make it harder for the industry to develop agreed positions and approaches to some future policy challenges. However, governments remain keen to better understand dairy's position (and its likely growth trajectory) to try and minimise any unexpected adverse effects of new policies on future industry development.

As shown on the next page, the broad range of recently announced domestic policy reforms can have important implications for the dairy industry across its entire value and supply chain.



Key		
<span style="display:inline-block; width:15px; height:10px; background-color:#92d050;"></span>	High impact domestic policy	<span style="display:inline-block; width:15px; height:10px; background-color:#f4a460;"></span>
<span style="display:inline-block; width:15px; height:10px; background-color:#f4a460;"></span>	Low/moderate domestic policy	<span style="display:inline-block; width:15px; height:10px; background-color:#80c0c0;"></span>
<span style="display:inline-block; width:15px; height:10px; background-color:#80c0c0;"></span>	Global policy issues	

However, the policy shifts that are likely to have the greatest potential impact on, and associated risks, for Australian dairy production and profitability over this Horizon Scan period are:

## GHG emission reductions

The most obvious climate-related policy issue facing dairy production (and all agriculture) in the next five years is the national commitment to achieve a long-term target of net zero national GHG emissions in Australia by 2050 (with an interim emissions reduction<sup>11</sup> target 43 of per cent to be met by 2030).

State governments have also committed to enforce parallel reductions in GHG emissions in their jurisdictions. Often, these state-level commitments exceed the national reduction targets (e.g. New South Wales and Victoria have said they will achieve interim 2030 GHG reduction targets of 50%).<sup>12</sup>

As an animal-based production system, dairy faces particular challenges responding to planned GHG reduction targets. Differentials in state and Federal reduction targets may also affect the future attractiveness of dairy farming and processing (or the cost of doing business) in different regions.

One challenge for dairy in debates on GHG emission cuts is whether these discussions are seeking cuts in absolute aggregate farm and industry emissions (megatonnes) or in dairy's GHG intensity (i.e. emissions associated with producing and processing a litre of milk (tonnes per ML)).

For example, if national milk production grows later in the decade, without an accompanying fall in measured GHG emissions per ML processed, aggregate reported dairy emissions would rise at a time when governments (and consumers and communities generally) will expect to see national GHG emissions fall. Industry would have some protection in this debate if local milk production remains static or falls in coming years (as measured sector emissions will fall regardless of whether any GHG intensity improvements occur).<sup>13</sup>

Ultimately, however, if the local dairy industry cannot show that it is progressively lowering its GHG emissions intensity on a voluntary basis (or is implementing appropriate reduction strategies), it may face increased regulatory pressures (or new policies and regulations aimed at driving faster change).

Australian dairy also faces the future risk of tighter industry specific GHG emissions regulations being imposed due to international policy developments.

For example, under its 2021 Green Deal the EU is proposing to impose tougher sustainability (and reduced GHG emissions) targets on both its domestic producers and those of major trade partners.

Linked with this, it has published draft regulations that, if enacted, will impose new taxes – Carbon Border Adjustment Measures (CBAMs) – on the entry into the EU of imports of certain products from countries that do not enforce EU-equivalent controls on domestic GHG emissions.

In late 2022, Australia joined 122 other countries (including the EU and US) in signing the voluntary Global Methane Reduction Pledge. This scheme aims to collectively reduce global methane emissions across the energy, mining, agriculture and waste sectors by 30 per cent below 2020 levels by 2030. Australia's commitment to the Methane Pledge may lead local government agencies to demand more detailed GHG emissions data from dairy businesses (at factory and large farm level).

These international policy developments could establish precedents that future local governments are willing to use to enforce tighter emission intensity controls on dairy production in this country.

As noted, earlier, an associated GHG risk for dairy stems from recent announcements by major domestic and overseas downstream users of dairy<sup>14</sup> that they plan to reduce the GHG emissions profile of their whole supply chain (including all Scope 1, 2 and 3 emissions). These announcements are commercially driven. But they also reflect downstream users' expectations of how future changes to GHG, and sustainability policies may affect their own business models. So, these large end users are likely to be willing to use their market power to enforce greater data requirements or more costly (but lower emission) practices onto their upstream suppliers. In dairy's case, local firms have already begun considering how they may comply with downstream user requests for new GHG emissions data. However, the associated costs of for industry appear to very difficult to recover from market prices.

Closely linked to the planned de-carbonisation (GHG emission reduction) of Australian industry, federal and state governments are actively reforming Australia's National Energy Market and supply infrastructure. The Australian Energy Market Coordinator (AEMC) oversees the operation of a combination of energy policies (including the National Electricity Law, National Gas law and National Energy Retail law).

<sup>11</sup> From reported 2005 GHG emissions levels.

<sup>12</sup> Other announced 2030 state reduction targets include Queensland (30%), South Australia (at least 50%), Western Australia (80% below 2020 levels), and the ACT (65–75% from 1990 levels).

<sup>13</sup> For example, the fall in the national dairy herd since 2015 should account for a fall of 10% in measured aggregate dairy farm GHG emissions (even with static per cow emissions).

<sup>14</sup> For example, locally Woolworths has announced plans to reduce its aggregate supply chain emissions by 19% over the next decade (including those from its farm and factory food suppliers). Nestles has announced plans to examine ways to significantly reduce GHG emissions across its global supply chain.

These laws are designed to regulate domestic user access to electricity and natural gas supplies and the pricing of these energy inputs.

In line with this, the National Gas Code was introduced in July 2023 to provide domestic gas users with more certainty over the supply volumes and the maximum wholesale price they would face for this key input up to 2025.

However, before the Code's implementation, some local dairy firms entered supply contracts at prices above its announced maximum. This occurred partly because these firms needed some certainty on their own likely production costs in advance of having to announce minimum 12-month farm gate milk price schedules for 2023/24 (as required under the Dairy Code of Conduct).

The Gas Code (and regulated minimum price) are scheduled for review by 2025. In the lead up to this, local industry will need to ensure that it can explain to government:

- dairy's role and needs as a user of natural gas
- the potential impact of future energy policy changes on local dairy's cost competitiveness, and on existing dairy factory energy systems
- factory and region-specific issues in terms of alternative energy supplies, and
- the cross-over between input pricing certainty and other regulate requirements (e.g. dairy code pricing requirements to ensure all sectors of the dairy industry retains appropriate business flexibility and fairness in market outcomes.

## Water access

Water is a critical resource for all farming systems in Australian dairy, but particularly inland irrigated farming. The Federal Government's renewed push to complete the implementation of the Murray Darling Basin Plan (MDBP) poses a real policy challenge for dairy production in South-Eastern Australia. Following a recent review, the government has re-committed to implementing the Plan's water recovery targets in full by the end of 2027, including the recovery of a total 450 Gigalitres of water for the environment (against a reported current recovery figure of 30 Gigalitres).

In August 2023, the Federal Government secured an agreement with all Basin states, other than Victoria, on a strategy to achieve the Plan's targets by a (revised) end date of 2028 (originally 2024) using a combination of infrastructure developments, system efficiency gains and water buybacks. Victoria's absence from the new agreement is problematic given the importance of dairy production within the lower Murray Darling Basin.

There is a strong likelihood that achieving the MDBP environmental water buyback targets will require a greater level of voluntary water entitlement purchases by government from individual farm businesses in the Basin. It may also result in the removal (or weakening) of previous MDB Plan guarantees about how regional irrigation industries and townships would be protected from the effects of future water recovery programs.

These policy developments raise some serious challenges for the dairy industry, which has already borne the major impact of the historical recovery of high reliability water rights in the Southern Basin<sup>15</sup>. This has seen:

- the shut down or underutilisation of existing dairy processing capacity in the region (with adverse effects on industry productivity and production costs per litre of milk processed) and
- increased processor competition for milk at farm gate to the detriment of processor margins and profits and the attraction of the industry for new processing investment.

Further voluntary water buy backs, could adversely affect future regional dairy production volumes within the Southern MDP Basin. This would reflect a combination of increased competition in Basin water markets between dairy, horticulture and almond producers (with an associated rise in average water prices), and potential negative effects on the operating efficiency of existing irrigation infrastructure.

Such changes would have negative flow-on effects to the regional economies of Northern Victoria (and their neighbouring dairy production regions). Buybacks could also encourage further shifts to more complex farm feeding systems (although this may come with associated on farm investment in new infrastructure and equipment to promote resilience among remaining operators.

## Consumer legislation

From a dairy supply chain perspective, the planned implementation of several key domestic policy reviews or reforms has important direct implications for future local dairy operations. These reviews and policies include the current review of Australia's National Dietary Guidelines, planned reviews of state Animal Welfare Acts, the National Plastics Plan (waste and recycling) and the National Traceability Strategy. Reviews of existing competition codes (e.g. the Dairy Code and Food and Grocery Code) also have the potential to significantly affect future industry operations.

<sup>15</sup> Frontier Economics, *Social and economic Impacts of Basin Plan Water Recovery in Victoria*, August 2022, Pages 62-65.



## National Dietary Guidelines review

This has been in train under the National Health and Medical Research Council since 2020 but is expected to take several more years to finalise. It will be critical for dairy to use its direct contributions to the review and those of supporting health professional networks, so that the NHMRC does not recommend any reduction in the current recommended daily intakes of dairy products like milk, yogurts and cheese nor recommend any further restrictions on the consumption of dairy fats (relative to plant based alternatives).

An area of particular importance (and contention) in this review will be how the NHMRC approaches future dietary recommendations relating to animal-based versus plant base proteins.

While dairy has a strong case in terms of its greater nutrition density as a staple food, some overseas reviews of nutritional guidelines (e.g. Canada, Denmark) have pushed for greater dietary roles to be given to plant-based proteins versus animal-based proteins. This could present a real market risk for Australian dairy if the NHMRC follows on a similar path.

Keeping consumer trust levels in dairy high and ensuring there is widespread awareness of dairy's superior nutrition density status – compared to plant-based foods – will be an important part of dairy's response to this emerging policy challenge.

The dairy industry will also have to watch possible developments in Australia's Food Health Star rating system to ensure that future changes in this system do not diminish dairy's perceived value proposition as a safe, healthy food. Some specific issues here include the possible downgrading of the Star rating for cheese and changes in the core food status of products like milk and yogurt. While any such changes are not expected to occur until the completion of the NHRMC review in 2025, this remains a regulatory /policy issue that will require continued industry vigilance and effective advocacy input in future years.

**Animal health and welfare issues** are obviously important in an industry like dairy. One complication with dealing with this issue, however, is that animal welfare rules and regulations in Australia are generally dealt with via state-based (rather than Federal level) Animal Welfare Acts.

Several state Acts will come under review in the next few years. So, dairy must present a positive story to these reviews and work to bring consistency between state level arrangements and rules.

As noted above, in response to findings such as the 2020 Materiality Report, the local dairy industry, through the ADSF, has placed particular emphasis over the past decade of adjusting farm practices to ensure that local dairy farming maintains its social license to operate.

Over the past decade industry has successfully altered several past farm practices (e.g. ending tail docking and calf induction, implementing more appropriate practices for dealing with surplus cows and bobby calves and the responsible use of antibiotics on farm).

Dairy should be well placed to explain that its operating practices are already ahead of existing and planned animal welfare law reforms. However, this position cannot be taken for granted given the strong underlying views that many (urban) community groups have on the issue of animal care in Australia.

There is also a risk that third party government trade agreements (particularly those being sought by the EU under its 2021 Green Deal) may alter the animal welfare standards implicitly or explicitly imposed on Australian dairy product production and exports to different countries. The industry will need to ensure that international production rules do not become non-tariff barriers to Australian exports that limit the range of profitable overseas markets – especially as the resolution of any resulting trade disputes can require extensive time frames and government resource commitments.

## Recycling

The rise of consumer and community concerns over the sustainability of local (or imported) food production has generated a strong interest in industry performance in the areas of waste reduction, recycling and resource use efficiency.

Government is also actively taking steps to encourage progressive improvements in industry performance in these areas. This regulatory pressure is expected to grow in the next five years. For example, in 2021 the Federal Government set out a new National Plastics Plan to reduce packaging waste and enhance recycling in Australia.

While many of the provisions of this Plan are voluntary, it did impose some 2025 deadlines on the incorporation of single-use plastics in food packaging and the incorporation of increased percentages of recycled materials in food packaging. It also set up a national body, the Australian Packaging Covenant (APCO) to facilitate the adoption of the new targets.

When it became apparent in late 2022 that Australia is unlikely to meet the original Plastic Plan targets, the Federal Government set up a new Soft Plastics Taskforce (authorised by the Australian Competition and Consumer Commission (ACCC)) to work towards the reintroduction of soft plastics recycling through Australian supermarkets and to maximise the future recovery of soft plastics.

The Taskforce is developing a Roadmap that local food processors (among others) will use to develop improved recycling and plastic usage targets and performance measures.

Local dairy processors, therefore, will need to ensure that they can continue to demonstrate that they are on a pathway of improved performance in this area if they are to retain consumer, community and government confidence in dairy's commitment to meeting this packaging and recycling challenge (without the need for further domestic regulation to be imposed).

Overseas governments are also enforcing increased restrictions on plastic packaging (e.g. China's planned ban on single use plastics and the USA's National Plastic Pact with its requirements to cut domestic use of single-use plastics and the incorporation of certain plastics as packaging material inputs).

At farm level, New Zealand has also been moving to introduce a new levy on plastic imports to help fund its domestic recycling programs for on-farm plastics. Despite issues about the cost and viability of these programs, Australian authorities are understood to be examining the feasibility of introducing a similar 'user pays' levy at farm level in this country. This step, and developments in New Zealand, will need to be closely watched.

## Trade policy

With the failure of the WTO to establish a viable mechanism for securing multilateral trade reform, world trade (including dairy) is being increasingly influenced and shaped by the outcomes of bilateral or plurilateral trade agreements.

The scope of many trade agreements extends well beyond traditional tariffs and market access rights. They also include mutually binding commitments on sustainable production practices, product standards, intellectual property and trademark recognition and labour rules.

Trade agreements not only cover well-publicised Free Trade Agreements. They also include lesser-known technical agreements such as the Madrid Protocol on Trademarks and the World Intellectual Property Organization.

Groups such as the EU continue to try to get these bodies to alter international trading rules to the detriment of international competitors, like Australia (e.g. ongoing EU moves to have Geographical Indication rules applied under the Madrid Protocol). This pressure may increase in coming years following the collapse of Australia: EU FTA negotiations in late 2023.

The decline in Australian milk production (and lower share of milk exported) has seen some sections of local industry ascribe lower importance to future trade policy developments. However, given the free market access that Australia provides to its major dairy competitors, local industry returns are not decoupled from world market developments or prices.

Local industry must maintain some capacity to analyse, anticipate and effectively advocate on emerging trade issues and challenges – either directly to the Australia government or through ongoing international partnerships and alliances like the Global Dairy Platform.

In this area, the dairy industry will have to consider how its future leverage with national government on trade policy matters will be affected by observed (or expected) changes in the scale and regional location of local milk production or product mix over the next decade. The priority that government is prepared to give to dairy industry needs and interests when setting its overall trade policy agenda will be directly influenced by the volume and growth in Australian milk supplies, and by the export pressures facing the local processing sector.

Trade policy change can have a major bearing on the future investment decisions of major local dairy processors. Given the nature of current dairy processing ownership, new policy settings could quickly create important inflection points for individual processors and see a dramatically change in both their local marketing and production plans and their subsequent demand for off-farm milk supplies (with flow through effects for local farmgate milk pricing).

## Sustainability Accounting Standards

While not developed with dairy as a target, the extension of enforceable Sustainability Accounting Standards to the future business reporting obligations of Australian dairy processors (and potentially larger scale farm operations) has the potential to increase business data collection and information network requirements, and impose additional operating costs on to local dairy producers.

Industry will need to be careful to work with government to ensure that any such imposts are known well in advance of implementation, phased in scope, and do not disadvantage Australia versus its overseas competitors.

Over the past five years there has been a broad push by international governments to establish a set of commonly enforceable and globally accepted accounting and sustainability disclosure standards for firms operating within and across individual jurisdictions. Draft standards for sustainability performance reporting have now been developed through an international body (the IFRS).

Australia recently committed to extend the annual, general financial reporting obligations of large, local firms to include reporting on their sustainability performance and plans. In June 2023, the Australian Accounting Standards Board (AASB) – which operates under the control of the Australian Securities and Investment Commission (ASIC) – formally endorsed a proposal that major, locally owned public companies should incorporate sustainability performance statements in their financial accounts from 2024 onwards.

At this stage, the formal reporting requirement will only apply to large firms with publicly traded shares. Foreign or privately owned large firms can, but are not yet obligated, to meet the new reporting requirement. But the IFRS is moving to establish (and have its member countries adopt) detailed sustainability accounting standards that will:

- Make it mandatory for firms in specific industries to report on their performance against these new sustainability standards as part of their general financial reporting,
- Extend, future sustainability reporting requirements to small- and medium-size enterprises (SMEs).

The IFRS has produced a draft Sustainability Accounting Standard for meat, poultry and dairy operations that would cover both dairy processors and larger scale dairy farm operations.

If implemented here, this standard would impose major information and data gathering obligations on local firms on a wide range of issues including GHG emissions, land and water use, feed sourcing, animal health, animal supply chains, plant and workforce safety records. It would also require firms to publicly present information on how they are addressing known climate risks, their climate transition strategies and their capital expenditure to address emerging climate risks.

While current large dairy processors may be better placed to deal with these potential reporting challenges, the resource pressure on individual farm operators will be significant if these standards are applied to SMEs. Therefore, local industry bodies need to work closely with government to ensure that:

- No arbitrary systematic obligations are imposed on local firms and farms.
- Australia does not impose new reporting requirements well in advance of, or at a higher level, than our international competitors.
- Local industry participants are fully aware of any potential regulatory rule changes well before their planned implementation.

## Automation/AI technologies

The steady development in automation, artificial intelligence (AI) and other new technologies in coming years has the potential to greatly assist dairy producers and firms to enter new, profitable production pathways while also meeting community and government expectations on environmental stewardship and food safety.

At farm level, these technologies may also assist local producers to adjust their farm systems to take advantage of emerging climate-smart and carbon farming initiatives.

The widespread adoption of AI systems on farm could also see dairying become more recognised as a viable and professional career path going forward.

However, some observers have suggested that the expansion of on-farm automation and AI systems also raises some risk of a greater capability divide developing between different subsets of farmers. They see larger-scale, corporate style farm operations being better placed (or more willing) to effectively use these emerging technologies to assist production – while dealing with any associated data, information and training and management issues – than other groups of smaller farm systems.

At the other end of the dairy value chain, major local supermarkets are already looking to use automation and AI to adapt their warehousing and distribution processes to effectively deal with expected changes in the expected future level and form of e-commerce. These new business models may provide opportunities to assist the dairy sector to shift from bulk product lines to more focused retail product lines.<sup>16</sup>

<sup>16</sup> ADSF, *Annual Summit 2023 Report*, Page 2



# C Intersections Between Identified Challenges

The individual studies that comprise this current Dairy Horizon Scan have identified some unique challenges that the local industry is likely to face in the period to 2030.

However, these studies have also identified several major issues, (including physical climate change, industry decarbonisation and animal welfare concerns) where there is considerable overlap. These issues will present simultaneous challenges to dairy's continued profitability and its future right to produce across the whole dairy value chain.

For example, in the case of expected physical climate change, the industry will need to be able to concurrently:

- Support and develop farm level RD&E that will improve the resilience of local farm systems and the national dairy herd in a more volatile physical environment.
- Effectively advocate for appropriate policy settings relating to resource access (e.g. water), biodiversity rules and animal health and welfare.
- Maintain a capability to respond effectively to the impacts of climate-related extreme events (floods, fires etc.) on farm and processing businesses.
- Develop and present a clear public narrative on how dairy is adjusting to physical climate change, that maintains consumer trust and support for dairy as a product and industry.
- Analyse the likely impacts of climate change on farm costs, regional milk production and regional milk flows, and ensure downstream users and governments understand these impacts and their flow-on effects.

Similarly, implementation of policies like the revised Murray Darling Basin Plan will have important consequences for the likely future level of milk production in inland Australia in the coming decade. It will also affect the types of farm systems that will remain viable in these regions. However, industry advocacy efforts in relation to water policy are more likely to be successful if it can:

- Demonstrate to government that dairy has a well-established RD&E program aimed at improving on-farm, and regional factory water efficiency and waste-water recycling.
- Provide government with accurate and trusted analysis of the costs of policy change.
- Explain to the broader community, dairy's contribution to, and importance in, affected regional economies.

The Table over the page sets out some key challenges that dairy is likely to face over the Horizon Scan period which will have multiple points of intersection across the dairy value chain. It also lists the potential activities that dairy may simultaneously undertake to try and successfully promote industry objectives, outcomes and long-term sustainability.

This suggests that focusing industry efforts too closely on only one aspect of these multi-dimensional challenges will reduce the likelihood of dairy developing an effective and viable long-term industry-level response to them. It reinforces the need for dairy to:

- Take a holistic, rather than a siloed approach to assessing, and addressing, future issues.
- Be aware of the broad range of communities of interest that may engage on a specific issue (including non-agricultural ones) and understand the positions /beliefs these groups may bring to public debates and assessments of a particular issue.

The Scan studies have also shown that Australian dairy is not unique in terms of the challenges it will face in coming years. The industry, therefore, could benefit greatly from pursuing continued close collaboration, joint research and knowledge sharing with other agricultural sectors, universities and research bodies and counterpart dairy bodies both here in Australia and overseas.

## Key Challenges and Potential Points of Intersection Across the Dairy Value Chain

Issue/Challenge	RD&E	Policy	Consumers, sustainability	Markets/competitiveness
<b>Physical climate change</b>	<ul style="list-style-type: none"> <li>• Feed</li> <li>• Pasture devt.</li> <li>• Herd genetics</li> <li>• Soil science</li> <li>• Farm system change</li> </ul>	<ul style="list-style-type: none"> <li>• Biodiversity Acts</li> <li>• Access to inputs (e.g. MDBP water)</li> <li>• Animal welfare rules</li> </ul>	<ul style="list-style-type: none"> <li>• Animal health</li> <li>• Resource use</li> <li>• Stewardship narratives</li> <li>• Emergency response capability</li> </ul>	<ul style="list-style-type: none"> <li>• Milk supply volumes</li> <li>• Regional location of farms and factories</li> <li>• Farm input pricing</li> </ul>
<b>Decarbonisation</b>	<ul style="list-style-type: none"> <li>• Farm enteric emissions</li> <li>• Feed additives</li> <li>• Herd genetics</li> <li>• Farm system change</li> </ul>	<ul style="list-style-type: none"> <li>• GHG emissions targets</li> <li>• Energy market reforms (Gas Code)</li> <li>• International agreements (CBAMs etc)</li> </ul>	<ul style="list-style-type: none"> <li>• Aggregate emissions versus emissions intensity reporting</li> <li>• Consumer expectations (dairy versus plant-based alternatives)</li> </ul>	<ul style="list-style-type: none"> <li>• Access rules to markets</li> <li>• Preferred supplier status</li> <li>• Policy impacts on business costs</li> <li>• Profits</li> </ul>
<b>Animal health</b>	<ul style="list-style-type: none"> <li>• Reducing animal heat stress</li> <li>• Calf management</li> </ul>	<ul style="list-style-type: none"> <li>• Animal welfare legislation (urban versus regional interests)</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer and community trust messaging</li> <li>• Available service infrastructure (vets, advisors)</li> </ul>	<ul style="list-style-type: none"> <li>• Changing farm practices</li> <li>• System intensification</li> <li>• Dairy beef</li> </ul>
<b>Food safety</b>	<ul style="list-style-type: none"> <li>• Zoonotic diseases</li> </ul>	<ul style="list-style-type: none"> <li>• Biosecurity levies</li> <li>• Dietary guidelines</li> <li>• Traceability rules</li> </ul>	<ul style="list-style-type: none"> <li>• Consumer trust</li> <li>• Dairy versus plant-based alternatives</li> </ul>	<ul style="list-style-type: none"> <li>• Imports versus domestic inputs</li> <li>• Farm input supply and pricing</li> </ul>
<b>Enhanced information/data needs</b>	<ul style="list-style-type: none"> <li>• Automation of information collection on farm</li> <li>• Systematic data capture (GHG, welfare etc)</li> </ul>	<ul style="list-style-type: none"> <li>• Sustainability Accounting Standards</li> <li>• Regional telecommunications</li> <li>• Regional training</li> </ul>	<ul style="list-style-type: none"> <li>• ADSF</li> <li>• GDP narratives</li> <li>• Availability of suitable tech savvy regional workforce</li> </ul>	<ul style="list-style-type: none"> <li>• On farm business management systems</li> <li>• Company finance and end-user info demands</li> </ul>
<b>Waste and recycling</b>	<ul style="list-style-type: none"> <li>• Farm, factory waste recycling</li> <li>• Water use reductions</li> </ul>	<ul style="list-style-type: none"> <li>• National Plastics Plan</li> <li>• Farm-level levies</li> <li>• International agreements</li> <li>• Access rights</li> </ul>	<ul style="list-style-type: none"> <li>• Traceability</li> <li>• Recycling initiatives</li> <li>• Input utilisation</li> <li>• Right to sell narratives</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Availability of key inputs</li> </ul>
<b>Food security</b>	<ul style="list-style-type: none"> <li>• Productivity gains (TFP)</li> </ul>	<ul style="list-style-type: none"> <li>• Food security</li> <li>• Food affordability policies versus sustainability targets</li> </ul>	<ul style="list-style-type: none"> <li>• ADSF</li> <li>• GDP narratives</li> </ul>	<ul style="list-style-type: none"> <li>• International push for greater food security (more protein)</li> <li>• Domestic versus international balance</li> </ul>

## Key Implications

There is no question that the combination of physical change, shifts in policy settings and community and end user expectations will the demand on local dairy producers and firms for increased business performance reporting and accelerate farm system change in Australian dairy over this Horizon Scan period.

Such changes will not be costless, and they also are unlikely to be readily recoverable in future market prices. However, to be sustainable future dairy farms in Australia will need to improve:

- Their farm business performance measurement, management and language.
- The management and verification of whole-of-business data streams.
- Their adaptability around volatile input availability and pricing.
- The productivity of farm labour.
- The traceability of key input usage and ongoing animal health and welfare practices.

Farmers most likely will also have to achieve recognised credentials in relation to their:

- Measured GHG emissions and GHG Reduction and mitigation strategies.
- Animal welfare practices and outcomes, and the management of increased biosecurity risk.
- Farm biodiversity outcomes.

Achieving these outcomes will require consistent and concerted farm level support from industry bodies and government agencies in the forms of effective RD&E, advocacy and business system innovation.

However, the age and farm size profile of existing dairy producers (and some 'change fatigue' over recent and expected developments) is likely to impact on how well the sector can respond to the coming challenges and increased information demands in the next five years.

At an industry level, changes in the ownership structure of Australian dairy processing over the past 20 years may make it harder to the industry to develop agreed positions and approaches on all emerging policy challenges.

But the industry will need to maintain and promote a strong positive narrative around dairy's contribution to Australia's general health and food security if it to retain a favourable position in emerging social and policy debates.

The future scale of local dairy production (and its final product mix) will affect the nature of some challenges that the industry will face in coming years. For example, a seven billion litre dairy industry may find it easier to comply with future GHG Emissions reduction targets or new biodiversity conservation rules than would a nine billion litre industry. Equally, a smaller (more domestically focused) industry will require different trade policy settings and government support to operate profitably than would a larger more export-oriented industry.

However, industry scale (or a changing sales focus) will not automatically protect local dairy from potential new policies (or higher costs imposed by new regulations). Similarly packaging and recycling laws, health standards, and animal welfare practices are all areas where the local dairy industry is likely to face new regulatory pressures regardless of whether it continues its recent path of slow declining national milk production or enters a new growth phase.

The Australian public will keep asking questions about where their food comes from, expect more from local suppliers. So, Industry must retain control of the public narrative around dairy practices and contributions to maintain government and community support.

Dairy's continued right to produce and right to sell in coming years will depend on its ability to:

- Improve community knowledge of dairy practices, commitments.
- Ensure the community continues to trust dairy product safety and quality.
- Keep delivering positive stories /action plans (e.g. ADSF, Dairy Pathways to Net Zero (GDP).
- Show real progress/continued commitment to improvement.
- Be honest about what can and can't be achieved in relation to specific emerging challenges (such as GHG, water etc.).

A declining or static industry production base could also affect dairy's standing with different sections of the community and government. It may also affect its capacity (and the resources it can access) to address emerging challenges in coming years.



# Appendix 1 Major Reports/Studies Considered in 2023 Dairy Horizon Scan

Future Trends	
Agrifutures	Future Forces, A Ten Year Horizon for Australian Agriculture (2021)
Agrifutures / UTS	National Rural Issues Horizon Scanning Report (2023)
CSIRO	Our Future World, Global megatrends impacting the way we live (2022)
CSIRO	Reshaping Australian Food Systems (2023)
National Farmers Federation	2030 Roadmap (2019)
Food & Grocery Council	Sustaining Australia: Food and Grocery Manufacturing 2030 (2021)
OECD- FAO	Agricultural Outlook 2023-2030 (2022)
Sustainability, Consumer Attitudes	
Dairy Australia	2019 Materiality Assessment Report (2022).
Australian Dairy Sustainability Framework	Celebrating 10 Years, Sustainability Report (2021)
Australian Dairy Sustainability Steering Committee	Member Updates (March, June 2023)
Dairy Australia	Trust Tracker Waves 16 and 17 (Dec 2022, June 2023)
Ridoutt, B.	An Alternative Nutrient Rich Food Index (2021).
Dairy Australia	Sustainability Communications - A global perspective (Oct 2023), Audience Realignment Segmentation Report (Lewers, Nov 2023)
Australian Farm Institute	Farm Policy Journal – Circular Economy & Agriculture (Spring 2022)
United Nations	Progress towards Sustainable Development Goals: A Rescue Plan for People and Planet (2023)
Markets, Competitiveness	
Freshagenda	Implications and Issues for Australian Dairy Stakeholders of Domestic Raw Milk Pool Trajectories to 2030 (2023)
Dairy Australia	Dairy Situation and Outlook reports (March, Sept 2023)
ABARES	The Outlook for Dairy website and reports (August 2023)
USDA	World Dairy Situation (2023)
RD&E	
C Murphy,	Dairy Research, Development and Extension Horizon Scan (Oct 2023)
G Dwyer, H Quinn,	The Determinants of Dairy Farm Productivity and Competitiveness (2023)
NSW Milk & Dairy Advocate	NSW Dairy Industry Action Plan (2021)
Australian Farm Institute	Farm Policy Journal –productivity Issues (Autumn 2021)
Policy	
C Phillips	Dairy Policy Horizon Scan (Oct 2023)
Commonwealth of Australia	National Statement on Climate Change and Agriculture (2023) National Traceability Roadmap (2023) Agreement on implementing the Murray Darling Basin Plan (2023)
Climate Action Tracker	Country Reports – EU, Australia, USA. (June 2023).
Australian Farm Institute	Farm Policy Journal –productivity Issues (Autumn 2021)
Productivity Commission	Murray Darling Basin Plan Implementation, Interim Report (2023)
European Commission	A Farm to Fork Strategy for a Fair, Healthy and Environmentally

**Disclaimer**

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