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Report Highlights:

Milk production in 2023 in Australia is forecast to decline by another two percent to 8.4 million metric tons (MMT), after an estimated six percent fall in 2022 to 8.55 MMT. This decline is expected despite a big increase in farm gate milk prices for 2022/23 to far exceed the previous record, and overall good seasonal production conditions for dairy farmers leading into the forecast year. The shortage of labor has precluded dairy farmers from taking advantage of these factors and will impact 2023 production. Factory use consumption of milk is forecast to decline to 5.535 MMT, from an estimated 5.685 MMT in 2022, pressured by lower milk production and also forecast growth in milk fluid exports in 2023. Australia is continuing to focus its processed milk products towards cheese production, which is set to remain fairly steady in 2023. However, the volume of butter, skim milk powder and whole milk powder production and exports are all forecast to decline moderately in 2023.

Executive Summary

Milk production in 2023 in Australia is forecast to decline by another two percent to 8.4 million metric tons (MMT), after a six percent estimated fall in 2022 to 8.55 MMT. This is despite a big increase in farm gate milk prices for 2022/23 to far exceed the previous record and overall good seasonal production conditions for dairy farmers leading into the forecast year. The shortage of labor has precluded dairy farmers from taking advantage of these factors and expand production in 2022, and the labor shortage is expected to continue into 2023. Such is the severity of this shortage that it has also led to some dairy farms partially or fully transitioning to less labor-intensive beef cattle production, encouraged by record beef prices in Australia.

The overall outlook for production conditions in 2023 remains strong. Milk prices are at record levels, hay prices are low, and feed grain prices are likely to ease after another bumper crop. Also, with irrigation dams full and low water use so far there is expected to be ample water available for irrigators for the remainder of the current irrigation season and for the start of the 2023/24 season. Although fertilizer and energy prices are high, dairy farmer profitability is expected to be very good. Industry analysts believe government intervention to improve labor availability is key to unlocking Australia's potential to increase milk production, but no meaningful policy change is on the horizon.

Fresh milk consumption in 2023 is forecast to decrease slightly by around one percent to 2.42 MMT, a continuation of the general trend over the last five years. But with milk production also declining fresh milk consumption is set to reach 28.8 percent of overall milk production and, if realized, would be the highest for over four decades. Factory use consumption of milk is also forecast to decline to 5.535 MMT, from an estimated 5.685 MMT in 2022, pressured by lower milk production and also forecast growth in milk fluid exports to 450,000 metric tons (MT) in 2023, from an estimated 420,000 MT in 2022.

Australia is continuing to focus its processed milk products towards cheese production, which is set to reach 395,000 MT in 2023, a small decrease on the 2022 estimate of 400,000 MT. The forecast cheese production for 2023 equates to utilizing 38 percent of total fluid milk production, by far the highest use of Australia's overall annual milk production. With the focus on cheese production, the volume of butter, skim milk powder (SMP) and whole milk powder (WMP) production are all forecast to decline moderately in 2023. Exports for these three dairy commodities are also forecast to decline in 2023.

DAIRY INDUSTRY SUMMARY

The dairy industry has been one of the major agricultural industries in Australia for many decades. The milking herd size peaked in 2002 at 2.369 million head and milk production also peaked in the same year at 11.608 MMT (see Figure 1). This was merely two years after the dairy industry was deregulated. This deregulation involved breaking down the state-based regulated liquid milk market which was of strong benefit to smaller milk producing states. In such states, a high proportion of their milk went toward the much higher value regulated liquid milk market and little or none to the manufactured milk sector which was more exposed to the domestic and export markets. As part of the deregulation process dairy farmers were paid a substantial lump sum compensation (by the Federal Government) calculated based on the individual farms level of dependence on the regulated liquid milk market.

Dairy deregulation enabled some dairy farmers to invest in their business and others to sell and step away from the industry. It also enabled the industry to gradually right-size and those farms that were in less efficient producing areas and were not competitive in the free-market arrangement could step away from the industry allowing it to consolidate. Broadly, this resulted in there being a greater reduction in dairy farm numbers in the more northern tropical and sub-tropical regions than in the more southern temperate regions. Between 2002 and 2021, the industry has reduced the milking herd size by 35 percent to 1.365 million head and reduced dairy farm numbers by around 56 percent to 4,618. However, industry adaptation to the free market during this period allowed milk production to only decline by around 22 percent, from 11.6 MMT in 2002 to 9.1 MMT in 2021. During this period the average milking herd size increased by almost 50 percent from around 200 head to 295 head. At the same time, average milk production per cow has increased by almost 20 percent from approximately 5.6 metric tons (MT) per cow to almost 6.6 MT per cow.



Figure 1 – Australian Dairy Herd Size, Farm Numbers and Production per Cow

Source: Dairy Australia / ABS / PSD

Almost two-thirds of milk production is from the southern state of Victoria (see Figure 2), which has a temperate climate. The north of the state, which is known as the Murray Dairy region, has traditionally been very dependent upon irrigation but has been forced to adapt as irrigation water prices have broadly increased and availability diminished due to competition from the horticulture sectors. The two southern dairy regions known as West Vic Dairy and Gipps Dairy are pasture-based relying on natural rainfall with only small pockets able to access irrigation water. Tasmania is also an important contributor at around 10 percent of overall national milk production. It, similar to the two southern Victorian regions, is pasture-based and fed by natural rainfall and little irrigation. Milk production in New South Wales is mainly in the central and southern coastal areas and in the southern irrigation area adjacent to the Murray Dairy irrigation region in northern Victoria.



Source:Dairy AustraliaNote:Data is based on January to August 2022

Across the major dairying areas in the southern states around 60 to 65 percent of the dairy herd feed requirements come from grazing pastures along with some fodder crops. The balance of feed requirements is met from supplementary feed, mainly grains, hay and silage. Very few dairy farms are entirely reliant on grazing. The shift over time towards increased supplementary feeding has contributed towards the increase in average per cow production along with herd genetic gains predominantly through decades of artificial insemination typically using U.S. genetics. Unlike the United States, at this point there are very few free-stall barn style dairy farms in Australia. Although there are a few notable large-scale feedlots that have been in operation for some time and there is now a growing interest, particularly in northern Victoria.

FLUID MILK

Production

FAS/Canberra forecasts Australia's milk production to decrease by around two percent to 8.4 MMT for 2023, from the slightly downward revised estimate of 8.55 MMT for 2022. The forecast decline in milk production is despite record milk prices and above average rainfalls across the major dairy farming regions with ample fodder and irrigation water (at low cost) available. With these circumstances there would typically be an expectation of growth in dairy cow numbers and milk production. However, with a continued shortage of labor which strongly emerged in 2021 some dairy farmers have opted to scale back their dairy operation by either partially or fully converting to the lower labor input and near record priced beef cattle production.

Record Milk Price

Dairy farmers are benefiting from by far the highest milk price on record for the July 2022 to June 2023 season with the Australian Bureau of Agriculture Resources, Environment and Sciences (ABARES) forecasting a 28 percent increase in price from the previous year (see Figure 3). This strong price increase is driven by domestic competition from processors of a dwindling supply of milk and also from strong world dairy product prices, and prices are expected to remain high in the second half of 2023.





Source:Australian Bureau of Agricultural and Resource Economics and SciencesNote:(e) = estimate, (f) = forecast

Domestic milk prices vary from one manufacturer to the next and from region to region. Areas which almost exclusively supply the liquid milk market for domestic consumption receive the highest milk prices, whereas for those regions where the majority of milk is used for manufactured products, the milk price to dairy farmers is lowest. On a weighted average basis, dairy farmers received an estimated record

milk price in 2021/22 (July 2021 to June 2022), of 56.5 cents per liter and is forecast by ABARES to reach 72.5 cents per liter, a staggering 50 percent above the previous 10-year average.

After implementing the Dairy Industry Code of Conduct from January 1, 2020 milk processors must publicly release standard forms of agreement on June 1st each year. This primarily relates to the initial milk price offered for the upcoming period of July 1 to June 30. As domestic and world market prices change for manufactured goods, processors typically offer multiple increases to milk prices during the year which are retrospective from July 1. These are referred to as 'step-ups'. Retrospective 'step-downs' are prohibited under the code and since the opening price for the 2022/23 season has been established, the big increase in the forecast record price in Australia is assured even if world inflationary pressures were to have an impact on world dairy product demand and prices.

With decreasing milk production in recent years, maintaining utilization of milk processor facilities has become more challenging. This has resulted in very strong competition for the supply of milk and has contributed to the growth in milk prices to record levels.

Plentiful Rain

Another positive impact for the dairy industry, which will have a favorable influence on 2023, was that rainfall during the first nine months of 2022 has largely been above average across almost all dairy producing regions in Australia (see Figure 4). October rainfall has been very high, particularly in New South Wales and particularly northern Victoria where some flooding has occurred.





Source: Bureau of Meteorology / Dairy Australia

Rainfall across most of the dairy farming regions over the November 2022 to January 2023 period is forecast to be above average (see Figure 5). If this is realized, it will provide dairy farmers with the benefit of preserving more of their fodder reserves (mainly produced in the spring of 2022) to carry into 2023.





Source: Bureau of Meteorology / Dairy Australia

Also, the above-average rainfalls in 2022 have minimized water usage so far for the 2022/23 irrigation season, and if the above-average forecast rains happen this will have an even greater positive impact on the availability if irrigation water for the following irrigation season.

Ample Fodder

Although there are a range of dairy production systems in Australia, from entirely pasture based through to highly intensive free stall barns, dairy farmers broadly meet around 60-65 percent of the needs from pasture and the balance from fodder (hay and silage) and grains. As such, they constitute a substantial portion of the input costs of producing milk.

With above-average rainfalls experienced across the major dairy farming regions since the start of 2020, there has been ample supply of fodder and dairy farmers have experienced relatively low prices over the last two years. Silage, due to its high moisture content (around two-thirds by weight), is expensive to

transport and is typically produced on-farm or purchased from neighboring farms at the time of producing the silage. As such there are no reliable price indicators for silage but is likely to be reflective of the hay price trends. The current spring conditions are particularly wet, and farmers are finding it difficult to produce fodder silage, but it can be carried further (grown for an additional 2-3 weeks) and hay produced instead, weather permitting. This production will largely be unused for the remainder of 2022 and instead be traded and consumed in 2023. With seemingly another big year of fodder production now in 2022, the relatively low and flat prices experienced over the last two years (see Figure 6) are likely to continue into the forecast 2023 year.





Source: Dairy Australia

Australia is expecting another bumper grain crop this year (mostly harvested in November and December), particularly in the eastern states near the major dairy producing regions. This may place some downward pressure on grain prices as harvest approaches and into 2023.

Feed grain (typically wheat and barley) prices for dairy farmers are influenced by world grain prices and despite bumper crops over the last two years grain prices overall have been substantially higher than the previous 5-year average during 2022. However, with world grain prices easing somewhat in recent months, grain prices for dairy farmers have also eased but remain above average (see Figure 7). This along with another big grain crop in Australia may provide some feed grains input cost relief for dairy farmers for the forecast year.



Figure 7 – Grain Price Trends in Victorian Dairying Regions

Plenty of Irrigation Water at Low Cost

The major water storages influencing irrigated dairy farming regions were all at or near capacity at the end of October 2022, which is well into the start of the 2022/23 irrigation season. At the middle of October 2022, dairy farmers had full irrigation water allocations for the second successive year (see Figure 8) and with above-average rainfall forecast for the coming months, water usage will be low this irrigation season. This bodes very well for a big if not full water allocation for the 2023/24 season. So, for the 2023 forecast year (which crosses over two irrigation seasons) the prospects of a plentiful supply of irrigation water is very good, and not dissimilar to the 2022 result.



Figure 8 – Irrigation Water Allocation Trend in Major Irrigated Dairying Regions



With plentiful supply of irrigation water, the price of traded irrigation water is also usually low. For the Goulburn irrigation system which supplies the largest irrigation dependent dairy farming region in northern Victoria, the average price of traded water in 2022 so far is AU\$42/ million liters (ML) (US\$27/ML) – far below the peaks of over AU\$600/ML (US\$390/ML) during the drought in 2019 (see Figure 9). With a likelihood of ample water available for the 2023/24 season, the average traded irrigation water price in 2023 is likely to remain low and similar to 2022.



Fewer Expected Dairy Conversions to Beef

While strong beef prices have helped drive dairy farmer conversions, this might be less of a factor in 2023. Beef cattle prices in 2023 are set to remain high but have a greater downside risk as increased volumes of beef cattle are expected to become available for slaughter in Australia. This is likely to diminish the lure of partially of fully converting dairy farming to beef cattle farming in 2023. This is particularly so after the big milk price increase seen for 2022/23, which has further diminished the attractiveness of beef cattle production.

Beef cattle prices increased extraordinarily during 2020 and 2021 and have decreased somewhat in 2022 but are relatively stable at very high prices (see Figure 10). These increases are largely associated with a

low volume of stock available for slaughter due to an industry wide herd rebuild phase commencing in early 2020, subsequent to preceding drought years. This rapid climb in beef cattle prices, which have approximately doubled over a two-year period, is a far bigger rise compared to milk price increases over the same period. This attracted some dairy farmers to convert part or all of their farm towards the much lower labor-intensive beef cattle production.

Figure 10 – Eastern young Cattle Indicator History

Source: Meat and Livestock Australia

With the challenge of a very tight labor market for dairy farm workers, the high beef cattle prices had made it an easy decision for some to convert their dairy farm to beef production.

Although there are a series of positive factors supporting milk production, a number of negative factors are expected to lead to the decline in 2023 milk production.

High Fertilizer Prices

Australia produces around one-third of its overall fertilizer requirements which are mainly phosphatic or nitrogen-based, or blends of the two. But Australia is highly dependent on nitrogen fertilizer imports and so is exposed to world market prices. Nitrogen fertilizer production requires large amounts of energy, usually gas, and with increasing gas prices since early 2021 (well before the start of the Russia-Ukraine war), nitrogenous fertilizer prices have escalated 3 to 4-fold (see Figure 11). However, nitrogenous fertilizer prices have declined substantially in recent months coinciding with peak Spring pasture demands, but this may be short lived with the northern hemisphere winter expected to increase energy demands and with it, gas prices. For the 2023 forecast year there is unlikely to be any substantial nitrogenous fertilizer price relief.

Figure 11 – Fertilizer Import Price Trend

Source: Australian Bureau of Statistics

Soaring Energy Prices

Although Australia is a large producer of coal and gas, it is exposed to world energy prices including electricity and diesel, which have soared since the start of 2022. Diesel prices have increased by almost 50 percent since the start of 2022 and there is no indication that there will be any easing in diesel prices in 2023.

Due to the complexity of electricity markets, it is difficult to gauge the extent of the price increases experienced by dairy farmers since the start of 2022. Nevertheless, there is no sign that the price of electricity will abate in 2023. The milking parlour on dairy farms uses substantial amounts of electricity and some farmers also use electric pumps for bore water and also for irrigation. Through these uses, the rising costs of electricity can have a significant impact on dairy farmers input costs.

Shortage of Labor

Tight labor availability is expected to continue to be a key limiting factor in the 2023 forecast year, but with Australian borders opened to international travellers since early 2022 there may be some easing of labor availability pressures. The majority of dairy farm workers in Australia are from domestic sources, but despite this the industry has been impacted by the low level of international travellers to Australia associated with the impacts of the COVID-19 pandemic.

The horticulture industries in particular have been greatly impacted by the much lower current numbers of temporary visa holders, which are primarily backpackers (working holiday makers) and from the

Pacific Australia Labor Mobility (PALM) scheme. This has given rise to much stronger competition for labor from the horticulture sector which has had some impact on the dairy industry.

Further exacerbating the labor shortage for the dairy industry is that Australia's unemployment rate is the lowest since 1974, and all industries across the economy are struggling to meet labor requirements. This is causing further competition for labor from other sectors in the economy.

The previous federal government in October 2021 introduced a new Australian Agriculture Visa as a means to encourage unskilled, semi-skilled and skilled farm workers to Australia from nations beyond the PALM scheme and is designed as a transition towards permanent residency. But this involved bilateral agreements and prior to the recent change of federal government (May 2022), Vietnam was the only country to commit. The new government has stated that it will honor this arrangement but disband the scheme to other nations. Instead, its plan is to expand the PALM scheme. This may alleviate some competition for labor between the agriculture sectors, but dairy farmers indicate that the best solution is some form of visa with a pathway to permanent residency which will enable them to attract suitable labor from south-east Asian nations.

Typically, in the past dairy farmers have responded to high milk prices by expanding production but for many, this simply is not an option if they cannot be confident of finding additional labor and retaining this labor. Often milk production losses from past dairy farmer exits, usually smaller less viable farms, would be compensated for by larger dairy farms expanding. But this hasn't been the experience in recent years. The lack of labor availability and the high beef cattle prices (and lower labor requirement for beef production) has created an easy pathway out of the dairy industry, and the other dairy farmers have not been able to expand production enough to offset these exits.

FAS/Canberra's milk production estimate for 2022 is downward revised to 8.55 MMT from the official USDA estimate of 8.73 MMT, as a result of weaker than expected milk production so far in 2022. Milk production for the first eight months of 2022 is at 4.91 MMT, six percent behind the same period in 2021 (see Figure 12). Despite a strong milk price, dairy farmers have been negatively impacted by high on farm inflation, particularly for fertilizer, grain, diesel, electricity and labor, to a larger extent than previously forecast.

According to industry sources, there has been a continuation of typically smaller dairy farmers partially or fully converting to beef cattle production, the process of which commenced in 2020 and has been discussed in previous reports. These sources indicate that the primary reason for exits from the dairy industry has been the difficulty in sourcing suitable labor. The high beef cattle prices along with beef productions lower labor requirements have provided a suitable alternate use of their land with a relatively easy transition.

Figure 12 – Monthly Milk Production in Australia

Source: Dairy Australia

Consumption

Fluid milk consumption is forecast by FAS/Canberra to moderately decline in 2023 to 2.42 MMT, from the 2.45 MMT estimate for 2022. Domestic fluid milk consumption had been declining over recent years, partly driven by COVID-19 related disruptions. Consumption is forecast to account for 28.8 percent of all milk produced in Australia in 2023. If realized, it would be the highest level since 1982. Despite the gradual declining milk consumption, milk production has reduced by a greater rate over the last few years resulting in an increasing proportion of fresh milk consumed domestically.

Even with the post COVID-19 bounce back in domestic travel in 2022 supporting a growth in the food service sector, fresh domestic milk consumption in 2022 is estimated to be declining. There is no known trigger that is likely to change that trend for the forecast year. In fact, with inflationary pressures set to continue well into 2023 and reducing consumers disposable incomes, there is some expectation milk consumption could decline further in 2023. Domestic milk fluid consumption relative to overall production peaked in 1981 at 29.7 percent, when overall milk production was 5.32 MMT compared to the forecast for 2023 of 8.4 MMT (see Figure 13). Domestic milk fluid consumption in Australia peaked in 2015 at 2.7 MMT and has been gradually declining since that time.

Milk sales data from Dairy Australia shows that drinking milk sales for the first six months of 2022 was 1.225 MMT (1.19 million liters) and almost one percent below the same period in 2021, which supports the 2022 fluid milk consumption estimate of 2.45 MMT.

Figure 13 – Domestic Milk Consumption of Overall Production History

Source: FAS PSD Online

Overall drinking milk consumption in Australia remains high compared to world levels. Consumers have shifted their milk preference towards regular (full-fat) and away from reduced fat/skim milk over the last decade. Regular milk accounts for 57 percent of milk sales and reduced/non-fat has over time declined to be 23 percent. Flavored milk sales are around ten percent and UHT milk is eleven percent and they have remained relatively constant over the last decade.

FAS/Canberra forecasts factory milk consumption in 2023 to reach 5.535 MMT from the downward revised 2022 estimate of 5.685 MMT. The FAS/Canberra 2022 factory milk consumption estimate of 5.685 MMT is significantly lower that the official USDA estimate of 5.855 MMT. This is due to a substantial reduction in the overall milk production estimate for 2022.

Trade

Exports

FAS/Canberra forecasts fluid milk exports to reach 450,000 MT in 2023, a five percent increase over the 2022 estimate of 420,000 MT. This is a continuation of strong growth in fluid milk exports, which has mainly been driven by demand from China. Due to the majority of milk exported (around 98 percent) being long life UHT milk, which is transported by sea freight, the freight challenges experienced in recent years although a concern, are less of an issue compared to perishable goods. Despite the impacts of COVID-19 lockdowns in parts of China throughout 2022, exports of milk to China have continued to grow rapidly and this is not expected to abate in 2023.

As mentioned, the major trading partner for Australian fluid milk is China. Exports to China grew by 39 percent for the January to August 2022 period relative to the same period in the previous year, and now account for 58 percent of overall exports (see Figure 14). The other consistent major destination is Singapore, which so far in 2022 (January to August) has accounted for 31,500 MT of exports, only marginally lower in volume than the past two years. It is anticipated that this rate of export growth to China will remain strong for the remaining four months of 2022 and support the estimated growth in overall exports to 420,000 MT.

Figure 14 – Milk Fluid Exports – Jan to Aug 2020 to 2022

Source: Australian Bureau of Statistics

The FAS/Canberra 2022 milk export estimate at 420,000 MT, 10,000 MT below the official USDA estimate. For the January to August 2022 period 248,000 MT has been exported and the past seasonality of exports shows an expectation of about 40 percent of annual exports in the final four months.

Imports

Fluid milk imports by Australia are forecast to remain stable at a very low level of 5,000 MT in 2023. This level of imports has remained relatively constant for over five years.

Dairy, Milk, Fluid	2021 Jan 2021		2022 Jan 2022		2023 Jan 2023	
Market Year Begins						
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Cows In Milk (1000 HEAD)	1365	1365	1335	1335	0	1325
Cows Milk Production (1000 MT)	9019	9067	8730	8550	0	8400
Other Milk Production (1000 MT)	0	0	0	0	0	0
Total Production (1000 MT)	9019	9067	8730	8550	0	8400
Other Imports (1000 MT)	5	5	5	5	0	5
Total Imports (1000 MT)	5	5	5	5	0	5
Total Supply (1000 MT)	9024	9072	8735	8555	0	8405
Other Exports (1000 MT)	402	367	430	420	0	450
Total Exports (1000 MT)	402	367	430	420	0	450
Fluid Use Dom. Consum. (1000 MT)	2482	2477	2450	2450	0	2420
Factory Use Consum. (1000 MT)	6140	6228	5855	5685	0	5535
Feed Use Dom. Consum. (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	8622	8705	8305	8135	0	7955
Total Distribution (1000 MT)	9024	9072	8735	8555	0	8405
(1000 HEAD) ,(1000 MT)						

Table 1 - Production, Supply, and Distribution of Dairy, Milk, Fluid

POLICY

Methane Reduction Plans

The Australian government announced on October 23, 2022 that it will join more than 120 countries by signing the global methane pledge to cut its methane emissions by 30 percent from 2020 levels by 2030. This is a non-binding commitment. It is reported that around half of Australia's methane emissions is from agriculture, 29 percent from the mining resources sector and a further 10 percent from waste. Of the methane emissions from agriculture the majority is from the ruminant livestock sectors, mainly beef, sheep and dairy. The government has confirmed that it will not legislate or introduce taxes or levies to reduce livestock methane emissions.

The peak industry body, National Farmers Federation (NFF), along with beef cattle industry bodies have welcomed Australia's voluntary commitment to the methane pledge, provided that it does not negatively impact farmers and the agriculture sector. The NFF stated that the support for the pledge reinforces Australian agriculture's demonstrated commitment to sustainability. The beef cattle industry has now for some years been driving towards its commitment to becoming carbon neutral by 2030. It is reported by Meat and Livestock Australia (MLA) that the industry is over half-way towards its target, but the balance would come from reducing methane emissions as commercialized methods emerge.

Meat and Livestock Australia, which represents the beef and sheep industries, along with Dairy Australia, have invested tens of millions of dollars from levies collected from producers towards advancing enteric methane reduction from ruminant livestock. Australian researchers are at the forefront of establishing that adding appropriate quantities of red seaweed to feed rations of ruminants in a feedlot environment can reduce methane emissions by over 90 percent. Large scale trials are under way in the beef and dairy sectors to validate results in a commercial environment from which 'methods' can be developed for the calculations of emissions reductions and Australian Carbon Credit Units. It is understood that the method of calculation will be in accord with the GWP-100 metric accepted for reporting under the Paris Agreement.

Large scale trials are also underway using a synthetic enzyme inhibitor which acts similarly to red seaweed but with lower levels of methane reduction, to similarly validate results in a commercial environment from which an accepted 'method' can be determined for the calculation of methane reduction in commercial herds.

As part of the federal government's commitment to the methane pledge it has announced a AU\$8m (US\$5.2m) fund to support the seaweed industries commercialization of the low-emissions red seaweed livestock feed supplement. It has also committed to a AU\$5m (US\$3.25m) fund for the second stage of the Methane Emissions Reduction in Livestock (MERiL) program for the development of technologies to deliver low emissions feed supplements to grazing animals and determine their technical viability and commercial potential.

Research towards the delivery of red seaweed and synthetic enzyme inhibitors, and the degree of methane emissions reductions in feedlot and dairy grazing environments where they are supplemented with grains (with added methane emissions reduction agents) are well progressed and could make a significant contribution towards the methane pledge well before 2030.

CHEESE

Production

FAS/Canberra forecasts cheese production to reach 395,000 MT in 2023, a small decrease on the upward revised 2022 estimate of 400,000 MT. If realized, they would be the third and second highest levels of cheese production on record. The record of 413,000 MT was set in 2002 at a time when milk production in Australia was far higher than now. The primary reason for the lower forecast is directly related to the anticipated two percent decrease in milk production for 2023. Despite the forecast decline in cheese production, this still represents an increasing use of milk for cheese production relative to overall milk production, in line with the milk processing industry focus towards increasing cheese production over recent years.

Cheese production is forecast to account for 38 percent of total fluid milk production, and after accounting for forecast domestic fluid milk consumption and fluid milk exports, represents 57 percent of fluid milk available for manufacturing products (see Figure 15). Since 2015 there has been a clear trend of cheese production becoming of increasing focus by processors, when cheese accounted for only 28 percent of national fluid milk production and 39 percent of fluid milk used for manufacturing products. Cheese by far accounts for more milk usage in Australia than any other dairy product and even domestic fluid milk consumption which is forecast to equate to 29 percent of national milk production.

Figure 15 – Trend in Milk Consumption for Cheese Production

Source: Dairy Australia / Dairy Manufacturers

The export prices for the Oceania region (mainly New Zealand and Australia) for the major processed dairy commodities have seen declines in all four of the key commodities, cheese, butter, whole milk powder and skim milk powder during 2022 (see Figure 16). During 2022 the price difference between cheese and butter compared to the powders has widened from those seen in 2021 and the price of butter in October 2022 has declined and matches that of cheese. With butter having a much higher content of milk fat than cheese, along with the wide price gap to milk powders, there is every reason for processors to further focus on increasing cheese production where possible. This supports the forecast Australian dairy industry attention towards further increasing the proportion of overall milk production to cheese.

Despite producing more cheese than is consumed, Australia still imports a significant amount of cheese. There has also been an increasing trend of soft cheese imports during this time as Australian manufacturers have shifted away from producing these cheese types. Instead, they have been increasing production of more specialized cheddar varieties and semi-hard cheeses, predominantly mozzarella (see Figure 17).

Figure 16 – Dairy Export Product Price Trends

Source: USDA Agricultural Marketing Service

Figure 17 – Cheese Production by Type - 2014/15 to 2020/21

Source: Notes:

Dairy Australia / Dairy Manufacturers

(1) Includes vintage (2) Includes Cheedam, Colby, Cheshire

(2) Includes Cheedam, Colby, Cheshire, Gloucester, Lancashire, Nimbin and semi processed cheddar

FAS/Canberra's cheese production estimate for 2022 is revised up to 400,000 MT from the official USDA estimate of 375,000 MT. The Dairy Australia January to June 2022 cheese production data shows a nine percent increase compared to the same period in 2021, despite less overall milk. It is not anticipated that this pace of growth can be maintained in the second half of 2022.

Consumption

FAS/Canberra forecasts cheese consumption to remain stable in 2023 at 320,000 MT, from the 2022 estimate. Despite inflationary pressures expected by the Australian government to continue well into 2023, which will reduce consumers disposable income, overall cheese consumptions is expected to remain firm. However, consumers are expected to respond by adjusting their purchasing behavior to reduce the impact of the rising cost of living by such measures as dining out less but opting for more take-away (to go) (for instance swapping out higher end cheeses used in restaurant dishes to the likes of mozzarella on pizzas), as well as purchasing block cheese rather than sliced cheese.

Australia is one of the wealthiest nations in the world and according to the Global Wealth Report 2022 by Credit Suisse, Australia ranked first in the world based on median wealth per adult in 2021. Combined with this, according to the Organisation for Economic Co-Operation and Development (OECD), household expenditure on food and restaurants in Australia is among the lowest in the world. With this there is substantial scope for Australian consumers to adjust their spending patterns on the type and level of convenience packaging to minimise the impact of inflationary pressures and maintain overall cheese consumption at similar levels.

FAS/Canberra estimates consumption of cheese in 2022 at 320,000 MT and in line with the official USDA estimate. This is a 10,000 MT increase over the 2021 outcome and is related to an anticipated improvement in domestic demand following the opening up of state and international borders and limited COVID-19 restrictions in early 2022. These measures have supported a growth in domestic travel and strengthened the food service sector demand.

Trade

Exports

Cheese exports in 2023 are forecast by FAS/Canberra to increase moderately to 170,000 MT, from the 160,000 MT estimate for 2022. The industry trend towards increasing cheese production in recent years has involved a build up of stocks in part due to the lag associated with maturity periods required for the hard cheeses, but this is now enabling higher volumes of exports. Also, cheese exports to Japan (Australia's major cheese trading partner) are anticipated to partially recovery in 2023 towards pre-COVID-19 levels after its economy began opening up in late 2022 from COVID-19 related restrictions.

Australia is a net exporter of cheese, which is the largest dairy product exported. In 2021 around 40 percent of all cheese produced in Australia was exported. With the expectation of manufacturers

favoring further gradual growth in cheese production, but hindered by decreasing overall milk production, the scope for any substantial growth in exports in the coming years is limited.

Japan has consistently, and by far, been the largest market for Australian cheese over the last decade. Prior to COVID-19 impacts, exports to Japan typically accounted for around half of Australia's overall exports. This high level of exports flowed into 2020 during the start of the pandemic but in 2021 had declined by around 11,500 MT and volumes in 2022 are only marginally higher (see Figure 18). In late 2022 Japan is reported to be opening up their economy from the pandemic restrictions which is likely to have a positive impact on trade in 2023 but may be partially tempered by inflationary impacts on their economy like many other parts of the world. China, the second largest destination for Australian cheese, increased in volume over the last two years from past levels of around 11 percent (around 18,000 MT) of overall exports.

Figure 18 – Major Cheese Export Destinations Jan-Aug 2018 to 2022

Source: Australian Bureau of Statistics

FAS/Canberra estimates cheese exports at 160,000 MT in 2022 and in line with the official USDA estimate. Exports for the January to August 2022 period are at near 100,000 MT, marginally below the same period in 2021. It is anticipated that exports for the remainder of the year will improve slightly to achieve the estimate.

Imports

FAS/Canberra forecasts cheese imports in Australia remain stable at 90,000 MT for 2023, the same as the estimate for 2022. This is despite the forecast increase in cheese production. The anticipated stable

but strong domestic cheese consumption and increase in exports is expected to support maintaining the high level of imports in 2023.

For many years almost one-half of all cheese imports were from New Zealand and around one-quarter from the United States. This has gradually shifted over recent years, but the big change has occurred during 2022 with the United States becoming the major source of cheese imports for Australia at 36 percent for the January to August 2022 period. At the same time imports from New Zealand have dropped to 33 percent of overall imports (see Figure 19). New Zealand's overall cheese exports globally were five percent lower in the January to September 2022 period than the same period in the prior year, but of their major export destinations the biggest drop has been to Australia at 20 percent.

Unlike New Zealand's other major trading partners, Australia is a net exporter of cheese and is able to supply much of its domestic needs. Imports of New Zealand cheese to Australia have typically been the lower value cheddar type cheeses while Australian processors increasing focus has been on producing more specialized cheeses for export.

Figure 19 – Major Cheese Import Sources Jan-Aug 2018 to 2022

Source: Australian Bureau of Statistics

FAS/Canberra's import estimate for 2022 has been upward revised to 90,000 MT from the official USDA estimate at 85,000 MT. January to August 2022 imports are at 62,205 MT, around 3,700 MT lower than the same period in 2021 when overall imports for the full year were 97,000 MT.

Dairy, Cheese	ns 2021 2022 Jan 2021 Jan 2022		2022		2023 Jan 2023	
Market Year Begins			2022			
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	73	73	93	96	0	106
Production (1000 MT)	385	393	375	400	0	395
Other Imports (1000 MT)	97	97	85	90	0	90
Total Imports (1000 MT)	97	97	85	90	0	90
Total Supply (1000 MT)	555	563	553	586	0	591
Other Exports (1000 MT)	157	157	159	160	0	170
Total Exports (1000 MT)	157	157	159	160	0	170
Human Dom. Consumption (1000 MT)	305	310	321	320	0	320
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	305	310	321	320	0	320
Total Use (1000 MT)	462	467	480	480	0	490
Ending Stocks (1000 MT)	93	96	73	106	0	101
Total Distribution (1000 MT)	555	563	553	586	0	591
(1000 MT)						

Table 2 - Production, Supply, and Distribution of Dairy, Cheese

BUTTER

Production

FAS/Canberra forecasts butter production in 2023 to decline to 50,000 MT, from the 2022 estimate of 55,000 MT. The forecast decline in butter production is part of a broader trend over almost the last decade partly driven by shrinking overall milk production, which is the case for the 2023 forecast. Butter production remains well below past levels which for almost three decades prior to 2018 was well in excess of 100,000 MT, peaking at 180,000 MT in 2000. This highlights that Australia's milk processors have opted to focus their efforts away from butter and have chosen to produce greater volumes of cheese instead. With this shift in the use of processed milk, Australia has been a net importer of butter since 2017.

FAS/Canberra estimates butter production in 2022 at 55,000 MT, 10,000 MT below the USDA estimate but also 15,000 MT below the production in 2021. This estimate is based on Dairy Australia's reported production data for the January to June 2022 period which has butter production around 20 percent below the same period for 2021. This large drop in butter production estimate for 2022 is largely related to the big drop in milk production that has occurred so far in 2022 and anticipated for the remainder of the year.

Consumption

FAS/Canberra forecasts butter consumption to remain stable in 2023 at 90,000 MT, the same as the 2022 estimate. Dairy Australia's per capita consumption results indicate that butter consumption had been declining in past years, but it appears to have stabilized in recent years.

Butter volume includes butteroil and anhydrous milk fat in butter equivalent terms. Anhydrous milk fat is essentially dehydrated butter which is used in food manufacturing such as bakery and confectionary products. Although butter is also used in food manufacturing it is primarily sold through retail channels and used by the food service sector.

Trade

Exports

Butter exports are forecast by FAS/Canberra to decline to 15,000 MT in 2023, a 5,000 MT fall from the 2022 estimate of 20,000 MT. This decline is largely due to a drop in forecast butter production. Australia is a net importer of butter, consuming far more butter than it produces.

In recent years Thailand had been the major export destination for around a quarter of Australian butter. But their demand had declined during COVID-19-impacted 2020 and 2021, however it is recovering well with the January to August 2022 figures some 50 percent higher than for the same period in 2021. China, Singapore and Malaysia are also significant export destinations, providing a diversity of export destinations for Australia.

Butter exports for the January to August 2022 period are at 12,176 MT and around 3,000 MT lower than for the same period in the prior year. The fall is largely due to substantial declines in exports to China and the Philippines but has partially been compensated by increased exports to Indonesia and Thailand as previously mentioned. Based on the exports so far in 2022 and past export seasonality, the FAS/Canberra export estimate of 20,000 MT for the full year is within reach.

Imports

FAS/Canberra forecasts butter imports to increase to 40,000 MT in 2023, from the 35,000 MT estimate for 2022. The forecast increase in butter imports is largely due to the anticipated 5,000 MT decrease in butter production.

The major source of butter imports is from New Zealand which accounts for over 85 percent of overall imports which has been the case for many years. This is expected to continue in the coming years with New Zealand being a major dairy producer and in close proximity to Australia.

Butter imports for the January to August 2022 period are at 24,036 MT, almost 3,000 MT lower than the result for the same period in 2021 which had a final outcome of 37,092 MT for the year. With four months remaining in 2022, full year exports are approximately on track to reach the estimated 35,000 MT.

Dairy, Butter	202	21	202	22	202	23
Market Year Begins	Jan 2021		Jan 2022		Jan 2023	
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	77	77	67	67	0	47
Production (1000 MT)	70	70	65	55	0	50
Other Imports (1000 MT)	37	37	33	35	0	40
Total Imports (1000 MT)	37	37	33	35	0	40
Total Supply (1000 MT)	184	184	165	157	0	137
Other Exports (1000 MT)	22	22	19	20	0	15
Total Exports (1000 MT)	22	22	19	20	0	15
Domestic Consumption (1000 MT)	95	95	91	90	0	90
Total Use (1000 MT)	117	117	110	110	0	105
Ending Stocks (1000 MT)	67	67	55	47	0	32
Total Distribution (1000 MT)	184	184	165	157	0	137
(1000 MT)						

Table 3 - Production, Supply, and Distribution of Dairy, Butter

SKIM MILK POWDER

Production

FAS/Canberra forecasts skim milk powder (SMP) production in 2023 to decline moderately to 150,000 MT, from the 160,000 MT estimate for 2022. SMP and butter are typically produced as part of the same manufacturing process, but manufacturers have scope to vary the amount of alternate butterfat-based product production such as cream and sour cream, changing the amount of butterfat used for butter production. In the forecast year however, the rate of decline in SMP and butter production are anticipated to be similar.

The fat content of milk is initially reduced and then dried to produce SMP. Of the extracted milk fat from the production of SMP, according to industry reports, approximately one-quarter is used to produce cream (including sour cream) and three-quarters is further processed to produce butter, the mix of which can readily be altered by manufacturers.

Similar to butter, SMP production is now well below past levels which for almost a decade prior to 2018 was well in excess of 150,000 MT, peaking at around 265,000 MT in the early 2000s when milk production was at its highest. Over almost the last decade as milk production declined, the rate of SMP and butter production decline has been greater. It is quite evident that more and more of the milk produced has been channelled towards cheese production over this time (see Figure 20).

FAS/Canberra estimates SMP production in 2022 at 160,000 MT, 6,000 MT higher than the official USDA estimate. SMP production for the first half of 2022 is higher than for the same period in the previous year and seasonally around two-thirds of production is in the second half of the year, indicating that production is likely to be a little stronger than previously anticipated.

Figure 20 – Milk and Processed Milk Products Production Trend 2014 to 2023

Source: FAS/Canberra Note: (e) = estimate, (f) = forecast

Consumption

SMP consumption in 2023 is forecast by FAS/Canberra at 30,000 MT, in line with the 2022 estimate. Based on the typical use of SMP and the inflationary pressures impacting consumers, which are set to continue into 2023, it is unlikely that there will be any increase in consumption. However, as previously discussed the low proportion of Australian's income towards food may see a shift towards lower value foods but overall consumption is not expected to be negatively impacted.

Skim milk powder has a wide range of uses in the food manufacturing sector as additive products such as:

- breads, cakes and biscuits (improving volume and binding capacity, browning, freshness extension);
- beverages, confectionary (such as milk chocolate to add a milky texture and flavour);
- dry mixes and infant products (assists with adding a dairy flavour, texture and aroma to foods);
- prepared foods such as processed meats and seafoods, seasoning and flavours (adding texture and flavor and acting as a flavour carrier);
- snacks;
- animal feeds.

SMP can also be reconstituted to produce yoghurts, dairy desserts and ice creams and skim milk, particularly in countries without adequate refrigerated food chain networks.

FAS/Canberra estimates SMP consumption in 2022 at 30,000 MT. Heightened demand for SMP exports in 2022 has limited any growth in domestic consumption.

Trade

Exports

FAS/Canberra forecasts exports of SMP in 2023 at 130,000 MT, which is 20,000 MT lower than the 2022 estimate of 150,000 MT. The lower forecast is related to very strong exports in 2021 and 2022, as processors took advantage of attractive world market prices, placing pressure on stocks.

In 2021 exports were higher than production, substantially reducing ending stocks, and for 2022 exports are estimated to be a little lower than production. With lower SMP production forecast for 2023, and already expected depleted stocks, exports in the forecast year are set to decline.

Prior to 2018, Indonesia was the major destination for Australian SMP exports. Over the last five years there has been a big shift, with exports to China more than doubling, and the volume of exports to Indonesia decreasing marginally (see Figure 21). China now accounts for almost half of Australia's SMP exports. This is despite China's increasing domestic dairy production and challenges associated with COVID-19 lockdowns which are reportedly continuing well into 2022. Australia exports to a further 20 or more countries but their volumes have all generally declined over recent years as China's share has increased.

Figure 21 – Change in SMP Exports – Jan-Aug 2018 to 2022

Source: Australian Bureau of Statistics

Imports

SMP imports are very low and FAS/Canberra forecasts it to remain relatively stable at 15,000 MT in 2023. Australia is a large net exporter of SMP and variances of imports from year to year are minimal.

SMP imports in the January to August period in 2022 are 8,421 MT and with imports typically relatively stable from month to month. Overall imports are tracking to reach around 12,000 MT for the full year. This has prompted the FAS/Canberra to revise down its estimate from the official USDA estimate for 2022 of 15,000 MT.

By far the primary source of SMP imports over many years have been from New Zealand, with a lower volume from Germany and small volumes from Austria and the United States. In the January to August 2022 period imports from New Zealand are well down on the prior year which is the primary reason for the lower imports in 2022 so far, and the downward revised estimate.

Dairy, Milk, Nonfat Dry	2021 Jan 2021		2022 Jan 2022		2023 Jan 2023	
Market Year Begins						
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	54	54	19	19	0	11
Production (1000 MT)	147	147	154	160	0	150
Other Imports (1000 MT)	14	14	15	12	0	15
Total Imports (1000 MT)	14	14	15	12	0	15
Total Supply (1000 MT)	215	215	188	191	0	176
Other Exports (1000 MT)	156	156	150	150	0	130
Total Exports (1000 MT)	156	156	150	150	0	130
Human Dom. Consumption (1000 MT)	40	40	28	30	0	30
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	40	40	28	30	0	30
Total Use (1000 MT)	196	196	178	180	0	160
Ending Stocks (1000 MT)	19	19	10	11	0	16
Total Distribution (1000 MT)	215	215	188	191	0	176
(1000 MT)						

Table 4 - Production, Supply, and Distribution of Dairy, Milk, Nonfat Dry

WHOLE MILK POWDER

Production

FAS/Canberra forecasts 2023 WMP production to decline to 30,000 MT, from the from the 2022 estimate of 35,000 MT. If realised, they will become the lowest and second lowest WMP production levels for at least 40 years. This is part of a long-term trend of declining production but is also associated with a forecast decline in overall milk production and the other longer term industry trend focusing on increasing cheese production.

The peak WMP production in Australia was in 2002 at 239,000 MT and has gradually declined to an estimated 35,000 MT in 2022 and forecast to decline further (see Figure 22). With Australian

manufacturers channelling greater volumes of milk towards cheese production, the reduced volumes of WMP have been focused towards producing more specialized higher value powders such as infant milk formula.

Figure 22 – WMP Production Trend 2000 to 2023

Source: FAS/Canberra

The FAS/Canberra WMP production estimate for 2022 is at 35,000 MT and is 5,000 MT lower than the official USDA estimate of 40,000 MT. Dairy Australia data for the January to June 2022 period shows production at 16,165 MT and is a substantial fall from the same period in the previous year. But with peak milk production forthcoming in the remainder of the year, the estimated 35,000 MT production of WMP for the full year in 2022 is well within reach.

Consumption

FAS/Canberra forecasts WMP domestic consumption in 2023 to remain at 35,000 MT in line with the downward revised 2022 estimate. Due to the nature of the use of WMP in manufactured products, major changes in consumption from year to year are not expected.

WMP is an important ingredient for a wide range of manufactured food products, and it can be reconstituted to produce milk drinks, yoghurts and ice cream. In the food manufacture sector, it is used similarly to SMP in baking products, such as breads, cakes and biscuits, beverages, confectionaries, dry mixes and prepared foods. But a key difference is that WMP is also used in the production of infant milk formula whereas SMP is not.

Trade

Exports

Exports of WMP in 2023 are forecast by FAS/Canberra at 40,000 MT, some 15,000 MT lower than the 2022 estimate. This decline is in part due to the forecast 5,000 MT lower production but more so due to high prices and strong export demand during 2022, which is estimated to substantially reduce ending stocks.

Despite substantially lower WMP production in 2022 from the prior year, exports for the January to August 2022 period have increased by around nine percent from the prior year. This will maintain Australia's temporarily shift to become a net exporter of WMP for two successive years before forecast levels of exports and imports become the same at 40,000 MT in 2023. With relatively low WMP production, Australian manufacturers focus on producing higher value WMP predominantly for export, while imported product is primarily used as an ingredient in manufactured products.

In recent years China accounted for around half of all exports for the January to August period but declined to around one quarter for this period in 2022 (see Figure 23). There has been a marked shift in export destinations in the January to August 2022 period with the United Arab Emirates and Indonesia combined, emerging from very little in prior years to accounting for 35 percent of overall exports. At the same time exports to Thailand also expanded from past results.

Figure 23 – Major WMP Export Destinations Jan-Aug 2020 to 2022

Source: Australian Bureau of Statistics

WMP exports for the January to August 2022 period are at 38,857 MT, around 3,000 MT higher than for the same period in the previous year which achieved full year exports of 51,334 MT. With four months of exports remaining in 2022, trade is on track to achieve the 55,000 MT estimate for the full year.

Imports

FAS/Canberra forecasts WMP imports of 40,000 MT in 2023 in line with the estimate for 2022. The forecast of lower production (5,000 MT) and even with a greater reduction in exports (15,000 MT) will mean that imports of at least 40,000 MT will be required to meet forecast demand due to low expected stock levels.

Similar to butter, the majority of WMP imports to Australia are from New Zealand, the volume and proportion of which have crept up in recent years to now being in excess of 90 percent. Due to New Zealand being a large producer of milk, and their milk production seasonality has a big peak in the spring months, their processors are forced by these circumstances to produce large volumes of milk powders. Due to their scale of milk powder volumes, they are efficient producers, and it is logical that Australia has reduced its focus on WMP production and instead imports a large proportion of its domestic needs from New Zealand which is in close proximity.

The FAS/Canberra import estimate of WMP in 2022 is 40,000 MT, and in line with the official USDA estimate. WMP imports in the first eight months of 2022 are at 24,676 MT and approximately in line with imports for the same period in 2021 which achieved a final result of 37,293 MT. Similar to exports, the rate of imports in the last four months of the year are typically at a higher rate due to the majority of imports being from New Zealand and this period being on the back of their peak spring milk production period. With this, WMP imports of an estimated 40,000 MT for 2022 is within reach.

Dairy, Dry Whole Milk Powder	Powder 2021 2022 Jan 2021 Jan 2022		2022		2023 Jan 2023	
Market Year Begins			2022			
Australia	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Beginning Stocks (1000 MT)	37	37	38	36	0	21
Production (1000 MT)	55	53	40	35	0	30
Other Imports (1000 MT)	37	37	40	40	0	40
Total Imports (1000 MT)	37	37	40	40	0	40
Total Supply (1000 MT)	129	127	118	111	0	91
Other Exports (1000 MT)	51	51	55	55	0	40
Total Exports (1000 MT)	51	51	55	55	0	40
Human Dom. Consumption (1000 MT)	40	40	40	35	0	35
Other Use, Losses (1000 MT)	0	0	0	0	0	0
Total Dom. Consumption (1000 MT)	40	40	40	35	0	35
Total Use (1000 MT)	91	91	95	90	0	75
Ending Stocks (1000 MT)	38	36	23	21	0	16
Total Distribution (1000 MT)	129	127	118	111	0	91
(1000 MT)						

Table 5 - Production, Supply, and Distribution of Dairy, Dry Whole Milk Powder

Attachments:

No Attachments