MEAT & LIVESTOCK AUSTRALIA MARKET INFORMATION

How are global and Australian beef producers performing?

Global *agri benchmark* network results 2021

agri benchmark

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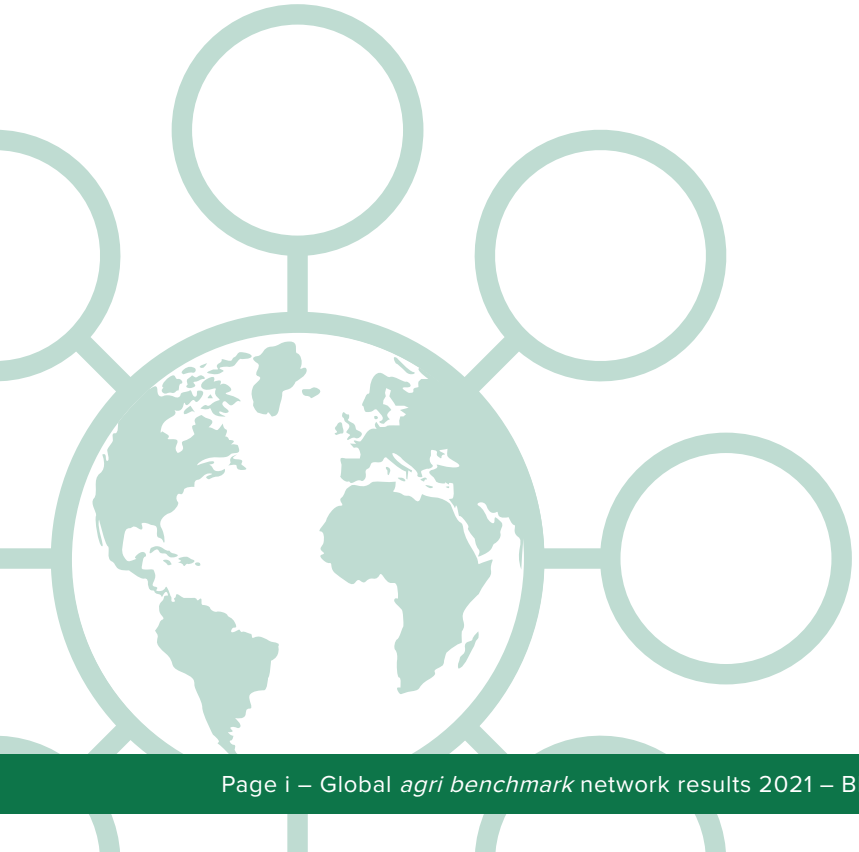

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Global and Australian beef producer performance 2020: *agri benchmark*

Introduction

agri benchmark (AB) is a global non-profit, non-political network of agricultural economists, advisors, producers and specialists in key sectors of the agricultural value chain. It operates as an international network of research partners coordinated by the Thünen Institute – the German government rural research body. The cattle network has over 28 member countries, covering 75% of world beef production and has been producing the results of comparative analysis over the last 17 years.

This report summarises the latest data from the network and provides insights into the performance of Australian beef farms and their productivity in comparison to their global counterparts.

Summary and conclusions

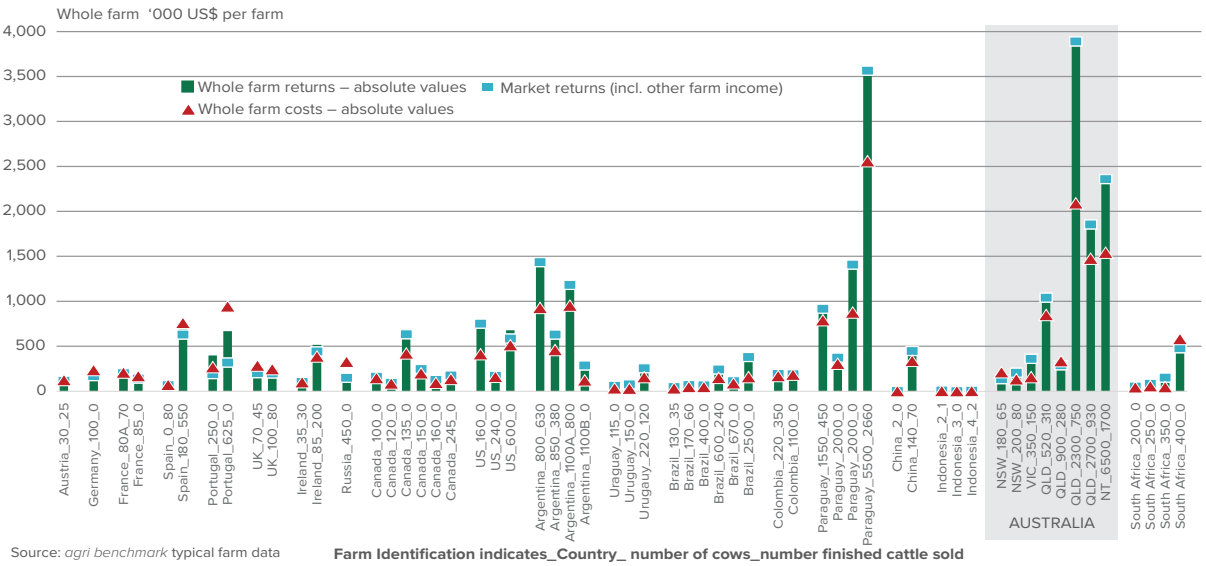
- Beef production continues to be profitable worldwide, on the back of rising demand in Asia (especially China) causing high cattle prices.
- Globally, breeding enterprises are particularly profitable (75% are profitable in the medium-term), while only 48% of cattle finishing enterprises were profitable in 2020.
- This suggests that globally the beef industry is still in an expansion phase, with weaner prices elevated relative to finished cattle prices – a situation that was greatly exaggerated in Australia where the severe 2018–2019 drought broke, and the national herd began rebuilding.
- Overall, the financial performance of the eight Australian *agri benchmark* cattle grazing farms was surprisingly good in 2020, especially given that the particularly severe 2018–2019 drought was only broken in March 2020 in some areas and continued in central Queensland.
- However, there is a wide variation in performance between the Australian farms, caused by varying extent and impacts of drought based on location, and the different drought recovery strategies implemented by each farm.
- Most pasture-based Australian *agri benchmark* beef farms achieved better medium-term profits for the breeding section of the business compared to the finishing component of their farms in 2020.
- Australian farms remain relatively low-cost cow-calf producers, although costs have increased. Australian finishing farms are high-cost producers compared to other countries due to the record cost of weaner cattle.
- There is a much greater diversity of beef finishing systems in Australia compared to other countries, resulting in a bigger variance in farm performance (southern farms rivalling the intensive systems of Europe and northern farms comparable to the extensive systems in South America).
- The extensive nature of the large properties in the north of Australia means they have an ability to achieve large profits through economies of scale but also large losses, therefore they have a relatively high-risk profile.
- Economies of scale are important to achieve profitability, especially in the northern Australian production systems due to the low stocking rates and extensive size.
- Australian beef finishing farms are almost fully reliant on the beef enterprise for their income, unlike most others around the world that have significant other income, often from cash crops or dairy.
- Improvements in calving percentages and weight gain in the finishing systems appear to offer an opportunity for the Australian industry to improve productivity, and therefore profitability, for both the Bos taurus and Bos indicus breeds.

Columbia

How did beef farms perform financially in 2020 on a whole farm basis?

The Global *agri benchmark* (AB) network results demonstrate how beef and sheep farms performed across the globe during 2020. Figure 1 shows the medium-term profits[1] achieved by 58 of the 73 AB beef farms presented in this report, on a whole farm basis[2].

Figure 1: Whole farm performance for global beef farms, 2020



Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

The difference between whole farm returns and market returns in Figure 1 is direct government payments in the form of coupled or decoupled payments. This mostly applies in the European countries.

On a whole farm basis, the *agri benchmark* beef farms generally made a medium-term profit in 2020 on the back of high cattle prices, even despite the impacts of COVID-19. The exception was in Europe, where beef farms were either only just profitable or made a loss, despite substantial Government payments.

Seven of the eight typical Australian beef farms made a medium-term profit in 2020. The aftermath of the severe 2018–2019 drought was still being felt by all the farms to some degree, but record finished cattle prices bolstered returns. AU_180_65 (Northern Tablelands, NSW) made a loss due to its rebuilding strategy (typical of many farms in the region). AU_900_280 (Burdekin, Central Queensland) was still in drought, resulting in only a slim profit.

Even though Australian beef farms are typically combined breeding and finishing operations, the two enterprises are separated for the detailed global beef enterprise benchmarking analysis below. The primary reason is that the breeding and finishing systems are commonly separated in most countries, especially the Northern Hemisphere – hence, global benchmarking requires them to be benchmarked separately.

Also, it can be beneficial to examine the breeding and finishing enterprises separately even when they are combined on one farm, as producers have the option to sell or buy more weaners to adjust the mix between breeding and finishing. With specialist feedlot finishing now a major and expanding feature of Australian beef production, graziers are increasingly selling feeder cattle to feedlots post weaning (often after growing and backgrounding).

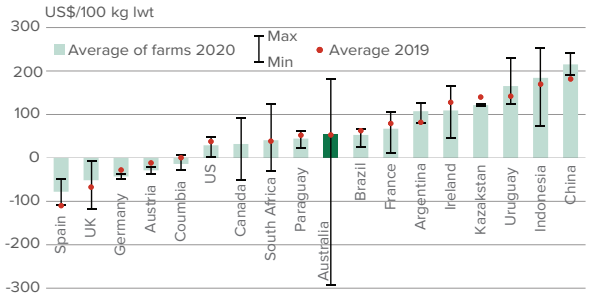
[1] Medium-term profitability = Total returns minus cash costs and depreciation
[2] Whole farm includes the costs, returns and profits for all enterprises including beef. The beef enterprise can be cow-calf, finishing or, as in Australia, both cow-calf and finishing on the same farm.

How did cow-calf enterprises perform in 2020?

Financial performance

2020 was the year when COVID-19 began to disrupt supply chains, restrict movement across borders and having serious impact on the foodservice industry. Despite all these headwinds, beef prices remained high as demand for beef transferred from foodservice to the retail sector. Average breeding enterprise performance for Australia's AB global beef farms remained almost identical to 2019, and most farms achieved medium-term profitability again, Figure 2.

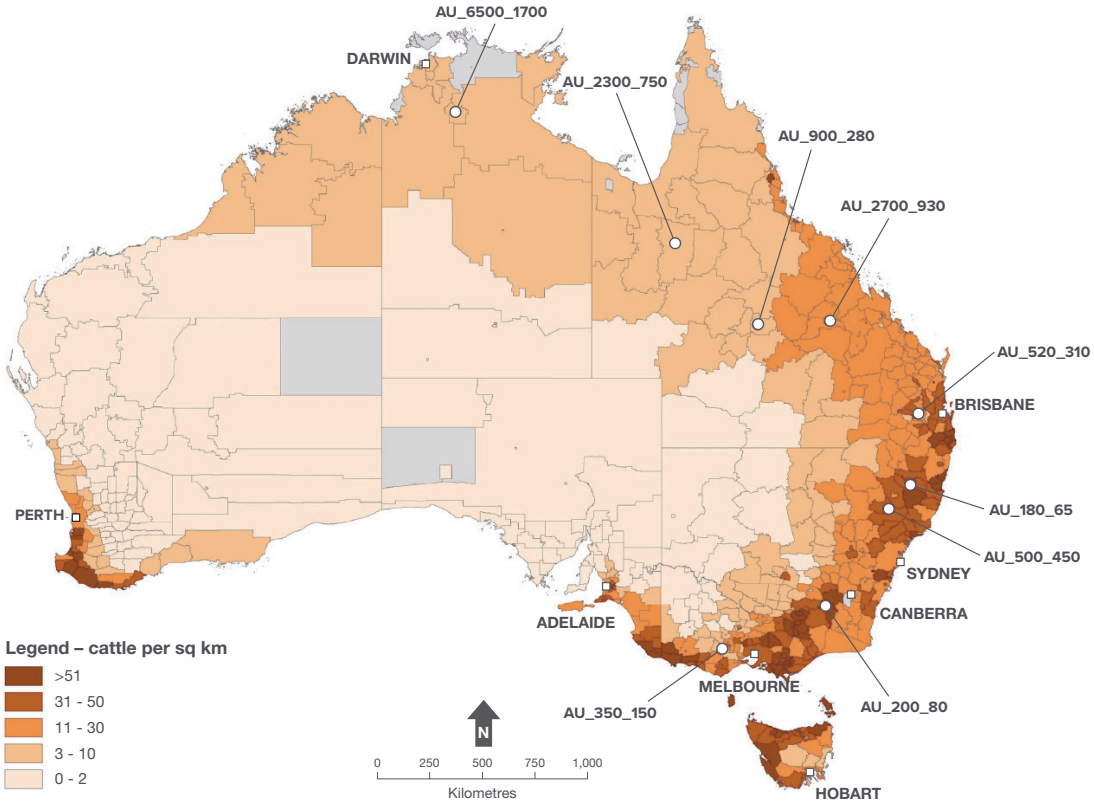
Figure 2: Medium-term cow-calf enterprise profitability (average of each country's farms) for 2019 and 2020 with minimum and maximum ranges for 2020



Source: *agri benchmark* typical farm data

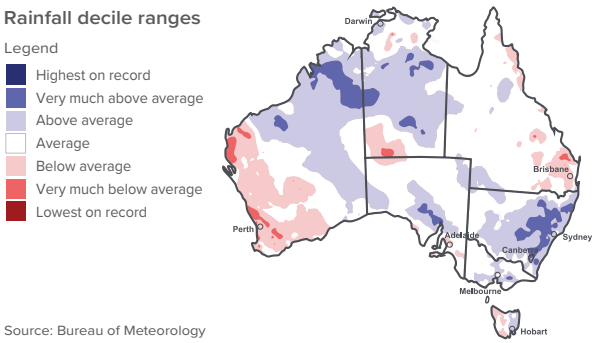
For Australia's eight cow-calf farms, average medium-term profitability remained stable in 2020. However, there was a large variation and change in performance between farms, the largest variation of all countries. This is possibly due to Australia having the largest sample size in the data set (eight farms), in recognition of Australia's size and various farming systems. The eight farms represent the most typical cow-calf farms in Australia. The farms are located in Queensland, Victoria and New South Wales where cattle densities are highest, Figure 3.

Figure 3: Location of *agri benchmark* typical farms and density of cattle in Australia



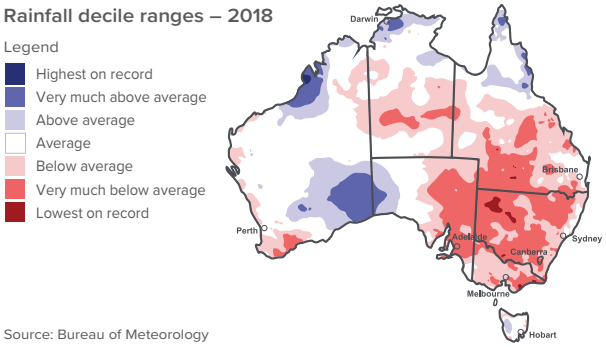
Variability in performance between farms in Australia is not uncommon. Nor is it uncommon to have a large variation between years, largely driven by the variability in seasonal conditions between years and geographic regions. In 2020, eastern Australia generally returned to average seasonal conditions after enduring a drought during the previous two years. This is shown by the Australian maps and rainfall deciles in Figures 4 and 5. In 2019, some regions recorded their lowest rainfall on record and most of the country's rainfall was well below average. While the drought broke in most key beef cattle regions in 2020, many AB farms reported that very dry conditions continued for the first few months of the year, which for some is a critical pasture growth and breeding period. This caused difficult management conditions and impacted on farm productivity for the 2020 season.

Figure 4: Australian rainfall deciles 1 January to 31 December 2020

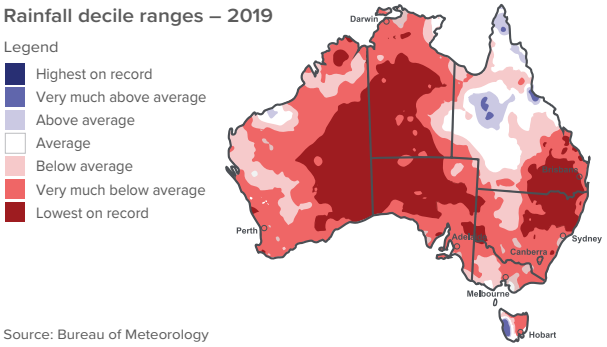


Source: Bureau of Meteorology

Figure 5: Australian rainfall deciles for 2019 and 2018



Source: Bureau of Meteorology

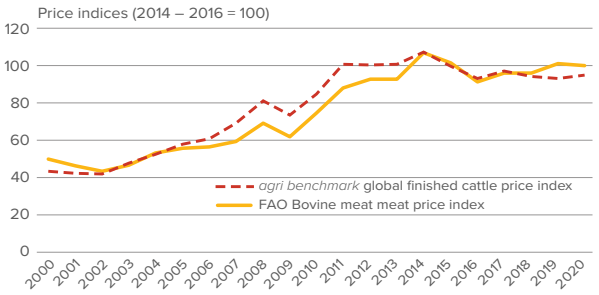


Source: Bureau of Meteorology

Despite these difficult seasonal conditions, farms performed relatively well in 2019 compared to previous years and all seven farms managed to achieve a medium-term profit on the cow-calf portion of the operation (Figure 1) largely driven by high weaner prices. This trend continued in 2020, as global prices remained at historically high levels and near the price peaks experienced in 2014. The *agri benchmark* Finished Cattle Price Index and the Food and Agriculture Organisation (FAO) Bovine Price Index in Figure 6, shows this trend in prices and how they increased from 2000 to 2014 after which they slightly decreased.

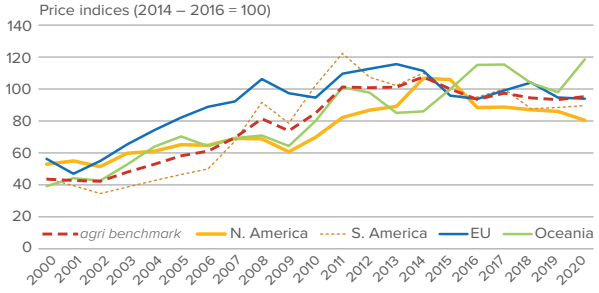
A comparison between key regions can be made using the *agri benchmark* finished cattle price indices shown in Figure 7. The difference between the Oceania price index and the North American Finished Cattle price index is worth noting because trade flows where Australian beef competes with American beef are impacted by prices. Since 2016, the Oceania Finished Cattle price index has trended consistently higher than the North American Finished Cattle price index, whereas before 2016, it generally remained similar or sat below the North American price. The surge in the Oceania price since 2016 (Figure 7) has been driven by severe and widespread drought, but also by a high level of demand and increase in exports, particularly into the Chinese market.

Figure 6: *agri benchmark* Finished Cattle Price Index and FAO Bovine Meat Price Index 2000 to 2020



Source: *agri benchmark* Finished cattle price index and FAO Bovine meat price index

Figure 7: *agri benchmark* Finished Cattle Price Index for different regions globally



Source: *agri benchmark* Finished cattle price index and FAO Bovine meat price index

When a national (widespread) severe drought breaks in Australia (especially if it breaks almost everywhere in the same year) cow-calf operations are boosted as weaner prices lift much faster than finished cattle prices (and vice versa as Australia enters a severe drought). In 2020, as the drought broke almost everywhere, weaner heifer prices on average rose by 80% and weaner steers prices by 72%. At same time, finished Japan ox prices rose only 18% and yearling steer prices by 31%. Hence, the cow-calf enterprise profits lifted in 2020 on most Australian AB typical farms while the finishing farm profits held or fell (assisted by record finished cattle prices).

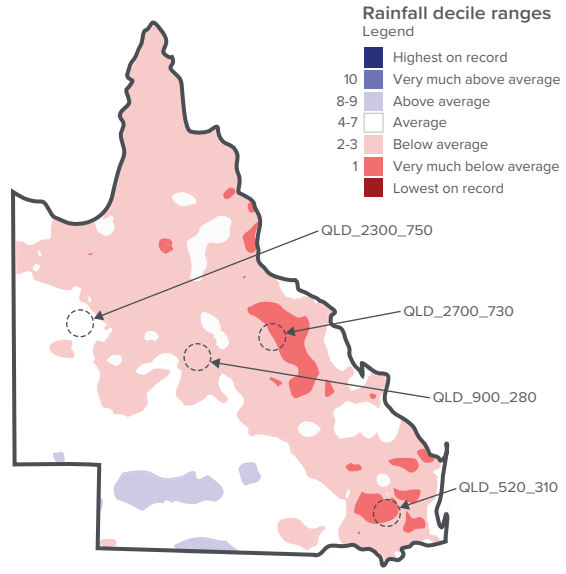
The high level of variation in profitability between the Australian farms seen in Figures 1 and 2 is mostly due to the difference in farming systems and environments within which they operate. The southern farms use British breeds (Figure 2 and Table 1) which are more adapted to temperate climates and pasture grazing systems on smaller properties, whereas the farms in the north (Queensland and Northern Territory) use Bos Indicus breeds which adapt to the hot climate and forage bush grazing in extensive systems on large properties with low stocking rates.

Most Australian properties achieved short-, medium- and long-term profitability for the breeding portion of their operations in 2020.

Despite the drought-breaking rains of 2020, NSW_80_65 in the northern tablelands of NSW made significant losses and did not even cover cash costs (i.e., made a short-term loss), after suffering a very severe drought in 2018 and 2019. The Central/Northern Queensland farms QLD_900_280 and QLD_2700_930 both achieved medium-term profits, but failed to achieve a long-term profit, having not received enough rain in the northern wet season (October 2019 to April 2020) to break the drought (see Figure 8).

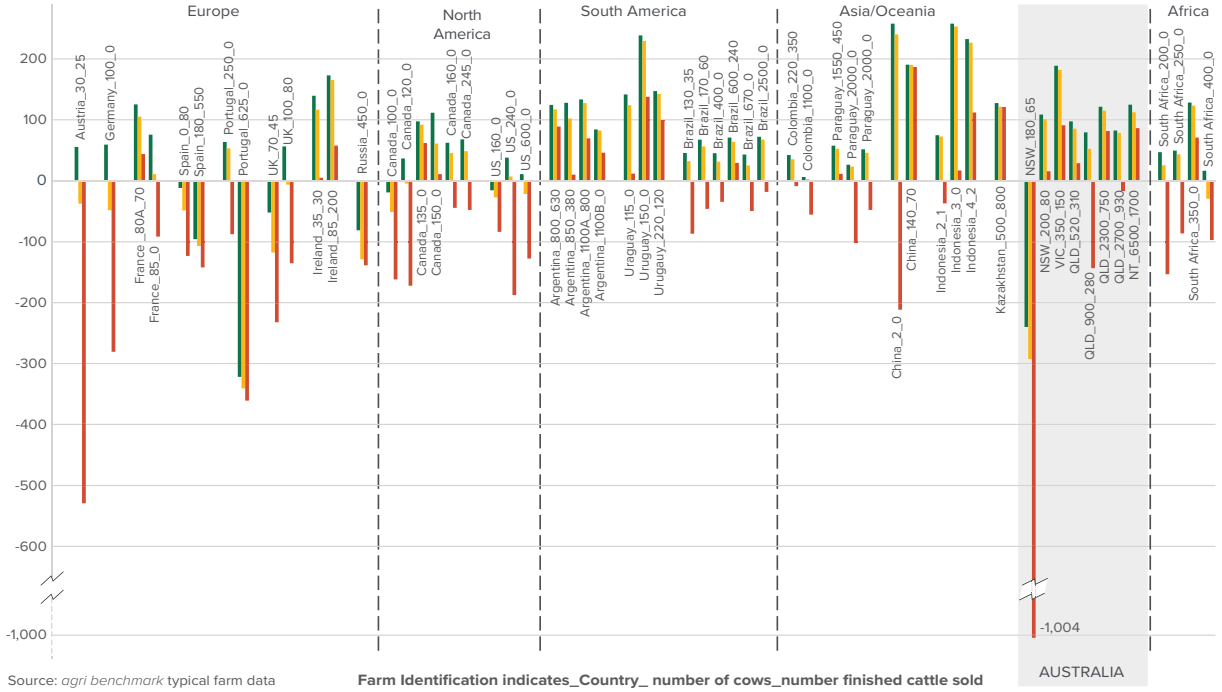
Short-term profitability is total revenue minus cash costs. Medium-term profitability includes depreciation in the costs because it accounts for the need for the farmer to continually replace machinery and equipment. If there is not enough profit generated to pay for new equipment and machinery, then the farm is not sustainable. Long-term profitability means the farm generates enough income to cover the opportunity cost of labour and land (i.e., earnt a return above that offered by alternative uses). It is obvious from Figure 9 that many beef farms around the globe do not achieve this long-term profitability. Part of the explanation lies in the fact that beef farms are often situated on high value and appreciating land and off-farm income is often part of family farm income.

Figure 8: Queensland rainfall deciles northern wet season 2019–20 (October 2019 to April 2020)



Source: Bureau of Meteorology

Figure 9: Profitability of *agri benchmark* cow-calf farms



Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

The *agri benchmark* ID number specifies the number of breeding cows followed by the number being finished on the property, for example AU_350_150 has 350 breeding cows and 150 weaners are retained and finished on the property in a pasture finishing system. The number of breeders has altered for some farms since they have entered the *agri benchmark* program either due to expansion or dry conditions. For example, AU_900_280 originally had 900 breeding cows and 280 weaners that were finished on the property in a finishing facility. However, dry conditions have forced the reduction in breeding cows to 647. Table 1 specifies the numbers of animals, breeds, location, and seasonal conditions for the Australian *agri benchmark* farms in 2020.

Table 1: *agri benchmark* cow-calf farm locations, breeding cow numbers and seasonal conditions

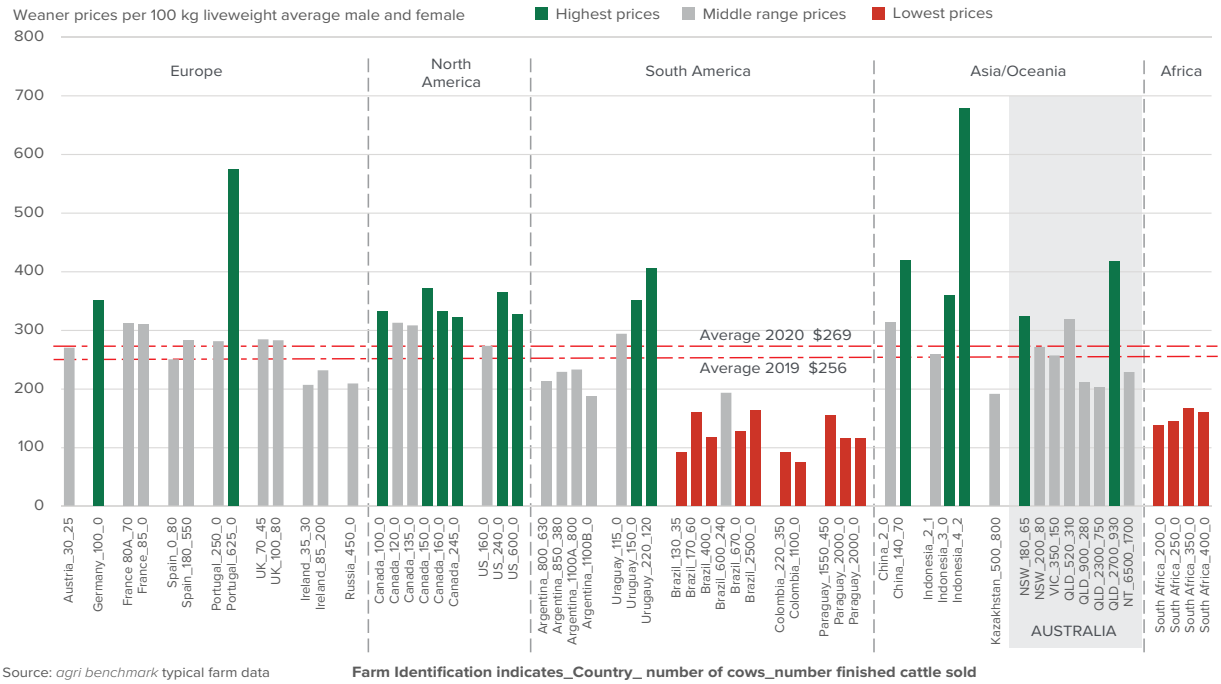
agri benchmark farm ID	Location and size	Number of breeding cows 2020 and breed	Seasonal conditions and responses
AU_200_80	New South Wales Tablelands 370 hectares	180 Angus	A devastating start to the year, as massive bushfires hit many farms in this region. Many paddocks were completely burnt out, with no paddock feed remaining. Hand feeding started from the beginning of the year until Autumn. Houses and farm buildings were lost. However, from March onwards the season was very favourable. There was a large amount of paddock feed, and fewer animals to eat it (due to reduced numbers from the previous drought). Demand for cattle was high, pushing prices for all categories to record levels.
AU_180_65	New South Wales Northern Tablelands 800 hectares	180 British	Prices for commodities and livestock varied considerably throughout 2020 given the drought eased with significant rain in January. Most notably, cattle prices were lower in the first quarter and gradually increased throughout the year. Restocking was the priority and fertiliser was foregone to purchase livestock instead. Pasture hay was quite expensive at $320/tonne but heavy rainfall in Jan-Feb meant high levels of pasture growth.
AU_350_150	Victoria Western District 505,000 hectares	350 Angus	The South-West Victoria region experienced good summer rainfall and a fairly wet month of April, followed by a dry winter and a good spring. The timely rainfall throughout the year provided for good pasture production and a subsequent reduction in the amount of supplementation required compared to the previous year. The reduced supplementary feeding, combined with lower grain prices and record high beef prices, supported an increase in beef enterprise profits across the region during 2020.
AU_520_310	Queensland Darling Downs 3,675 hectares	654 Drought Master	The period from July 2019 to June 2020 was particularly bad for this property – only receiving 310 mm of rainfall, less than half its normal annual average. Although 450 hectares of wheat were planted only 250 was harvested with a yield of 0.5 tonnes per hectare. This was grown on 35 mm pre-crop moisture and 23 mm in-crop rainfall. The season improved and 15 tonnes per hectare of silage was harvested after 105 mm pre-crop moisture and 156 mm in-crop rainfall. Supplement costs were 51% higher than the previous five-year average of $36,969.
AU_900_280	Queensland Burdekin 10,660 hectares	647 Bos Indicus	Seasonal conditions were again below average with 383 mm from June 2016 to June 2020 when normal expectation is 650 mm. This pushed the drought into a third year and the impact on this farm was severe with no weaners retained for finishing.
AU_2300_750	Queensland Gulf 72,770 hectares	3,458 Red Brahman	No information available
AU_2700_930	Queensland Fitzroy 22,270 hectares	2,398 Brahman	Poor seasonal conditions extended the severe drought into a third year, with only 405mm of rain compared with an annual average precipitation of 600mm.
AU_6500_1700	Northern Territory 147,000 hectares	6,485 Brahman	2020 saw the second failed wet season in a row. The growing season was much shorter due to the record-breaking late onset of the wet season. The result of this was a continued decrease in the percentage of the younger sale animals reaching target weights due to the shorter growing season. There was also an increased cow mortality rate as the usual commencement of the wet season did not arrive. Reproductive rates were held at the lower than long-term average 2019 level. Supplement costs increased by 20% due to the late onset of the season for all animals and drought fodder was introduced as the late onset of the wet meant poor condition cows were at risk of mortality. Every year there is an energy deficit in the region from around September, which leads to cows relying on body condition to survive the remaining weeks of the dry season, even when being supplemented with protein. Hence, cows that had raised a weaner through the dry did not have sufficient condition to hold out and then survive the “storm and green pick chasing” after the first rains. 30% of the breeder herd received the substitute feeding at the end of the dry season. Hay continued to be in short supply locally due to the poor growing season, so the higher-than-normal price maintained, but competition with buyers in southern states abated as the national drought began to break. The land beast area value (BAV) continued to be very strong with continued interest in purchasing NT properties and a strong volume of sales.

Source: *agri benchmark* typical farm data

What conditions have affected farm business performance of beef farms in 2020?

The story behind business performance for breeding enterprises farms in 2020 is all about the price paid to the producer for the weaners. The global average weaner price increased from US$256 in 2019 to US$269 per 100 kg liveweight in 2020. Figure 10 identifies the countries with the highest and lowest weaner prices. One of the farms in Indonesia had the highest of all countries and one farm in Portugal was similar.

Figure 10. Weaner prices per 100 kg lwt average male and female



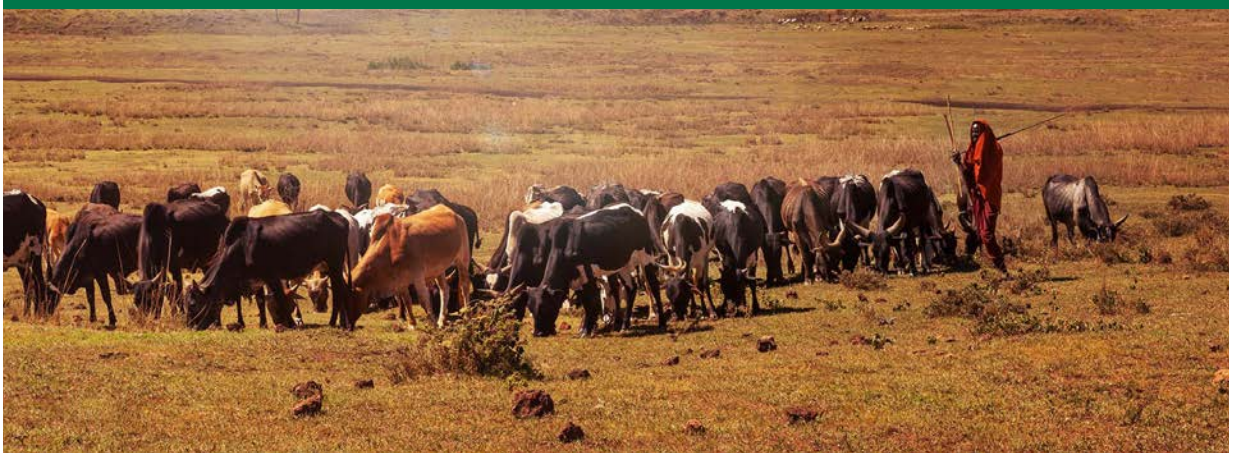
Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

In contrast, the lowest prices received (in South America and Africa) for weaners were nine times lower than the prices received in Indonesia.

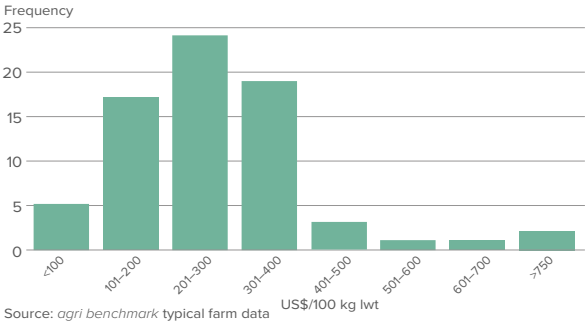
In Australia, weaner prices increased significantly for all farms in 2020, the average was US$287 compared to US$175 in 2019, a 39% increase. Low post-drought cattle supply and high demand from re-stockers for herd rebuilding purposes drove this price increase, but prices were also underpinned by firm demand from feedlots and processors, responding to strong domestic and international demand.

Africa



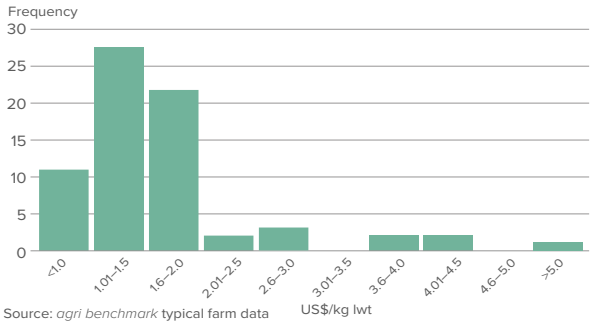
At the same time, international prices have increased, albeit with a widening distribution. In 2020, there were both more countries receiving less than US$100 per 100 kg lwt for weaners and more countries that received prices above US$400, compared to 2019 (Figure 11).

Figure 11: Frequency of weaner prices per 100 kg lwt (US$) average male and female



Source: *agri benchmark* typical farm data

Figure 12: Frequency of cull cow prices per kg lwt (US$)



Source: *agri benchmark* typical farm data

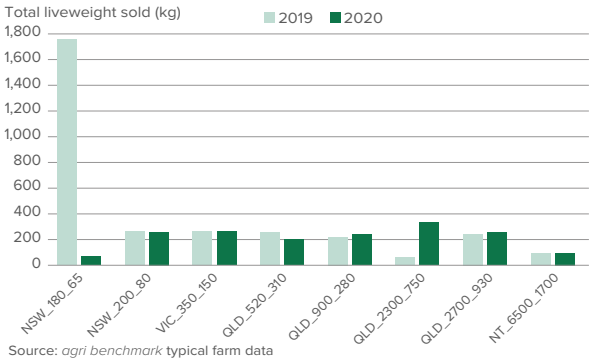
The low US$ weaner prices received in Brazil, Paraguay and Colombia (Figure 10) are largely due to rapid currency devaluations. The devaluation of South American currencies helped breeding operations to again achieve short- and medium-term profitability and one farm in Brazil achieved long-term profitability indicating they have a low cost of production.

How do costs compare across countries and how did they impact on profitability?

The year after a particularly severe drought such as in 2019 we expect to see feed and labour costs decline, whilst other costs, like livestock purchases and deferred maintenance costs increase. Also, cattle turnoff rises during a severe drought and then falls significantly immediately post-drought as breeding herds have been depleted and produce fewer calves. Finished cattle are sold earlier than normal and more heifers are retained for herd rebuilding. Consequently, costs can decline to very low levels during a drought then spike immediately after, especially when expressed as a $/kg produced metric, simply due to a fall in sales.

NSW_180_65 is an example of this scenario – costs increased, because the number of kilograms liveweight sold was low in 2020 (Figure 13). This means using the measure 'per 100 kg lwt produced' the farm had high costs of production. In 2019, the opposite was true, because NSW_180_65 sold significantly more kilograms of liveweight due to drought-induced destocking.

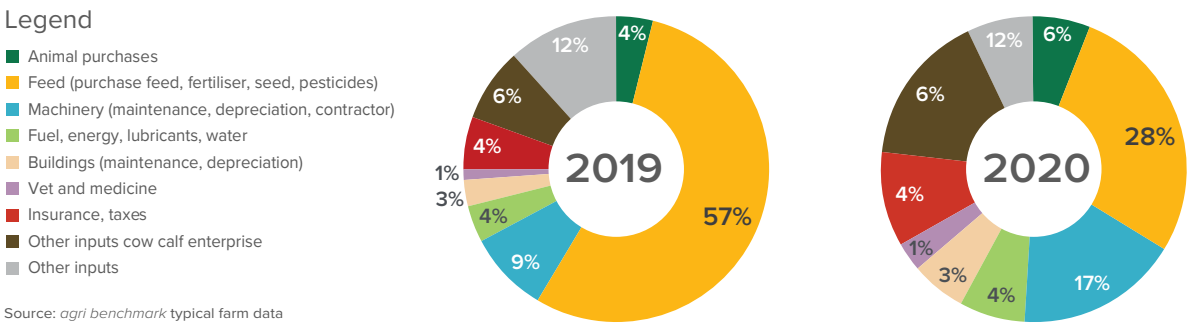
Figure 13: Total liveweight sold per cow in 2019 and 2020, absolute values.



Source: *agri benchmark* typical farm data

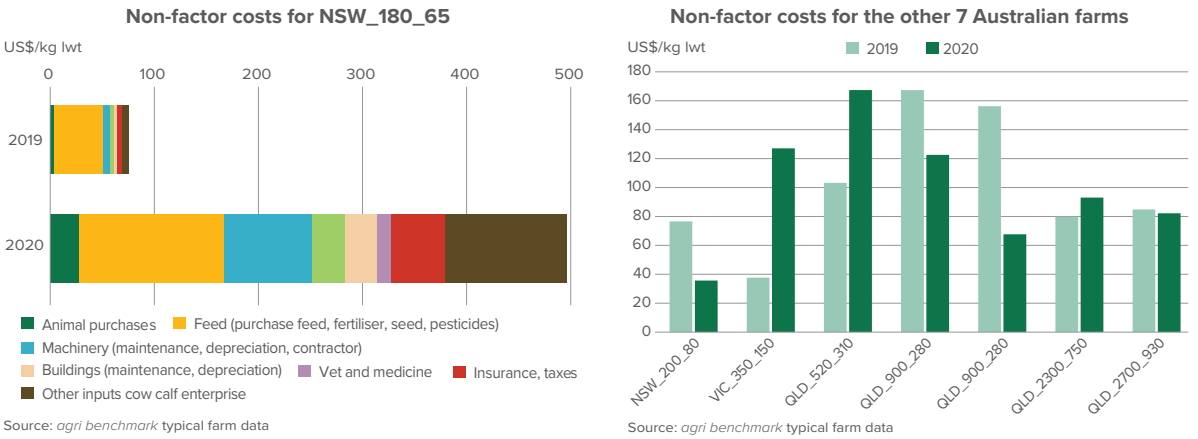
In 2019, the Australian farms had significant feed costs (Figure 14 and Figure 15), sold significant amounts of breeding stock (Figure 13), and had a low cost of production per kg lwt – then in 2020 they had lower sales and high cost of production (Figure 15).

Figure 14: NSW_180_65 non-factor costs comparing 2019 to 2020 (%)



Source: *agri benchmark* typical farm data

Figure 15: Cost of production – non-factor costs for Australian farms 2019 and 2020 (US$/kg lwt)

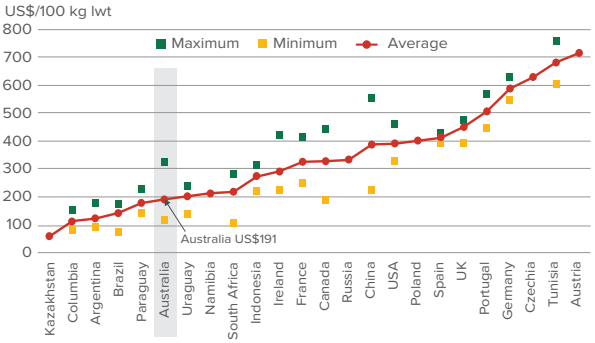


Source: *agri benchmark* typical farm data

Source: *agri benchmark* typical farm data

In 2019, Australia's average cost of production was US$200 per 100 kg lwt, similar to South America, and was ranked 7th of 20 countries. In 2020, the average cost of production, including NSW_180_65, was US$327 per 100 kg lwt which changed Australia's ranking to 12th. The change in Australia's cost of production made it a more expensive beef producer than South Africa, Namibia, Indonesia, Ireland and France, but it remained cheaper than the USA at US$400 per 100 kg lwt and almost the same as Canada at US$328. However, when removing the distortion caused by the extreme costs incurred by NSW_180_65, the Australian cost of production is US$191 per 100 kg lwt – 6th lowest globally (shown in Figure 16).

Figure 16: Average cost of the cow-calf enterprise by factor and non-factor costs



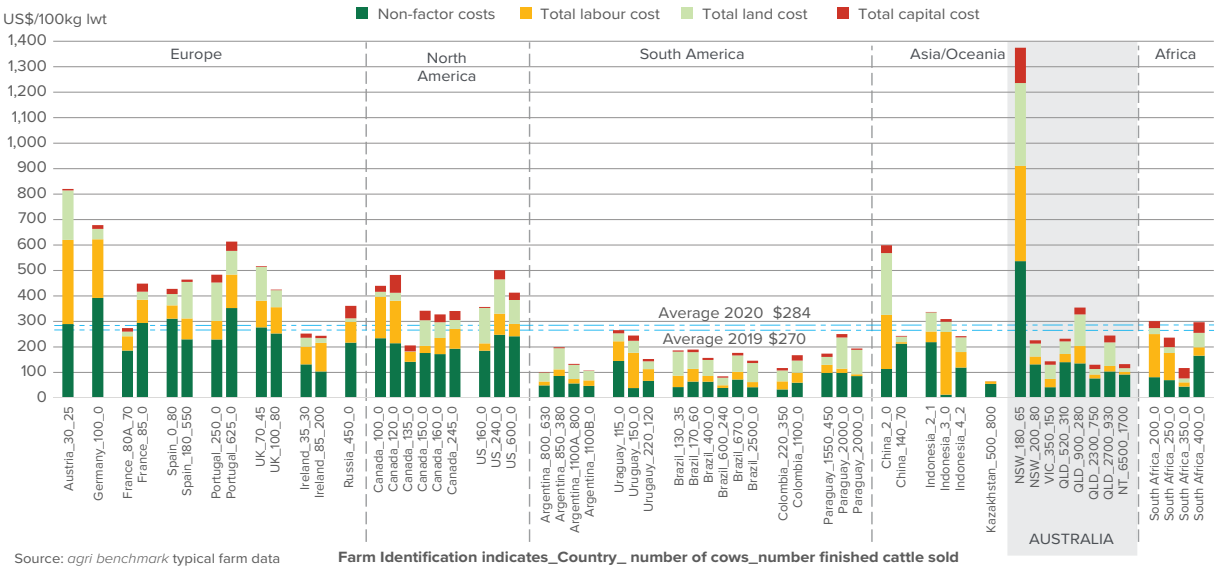
Source: *agri benchmark* typical farm data

The average total cost of production shown in Figure 16 for the Australian AB cow-calf enterprise increased in 2020 by 5% and went from US$270 to $284 per 100 kg lwt. This increase was mostly caused by the meteoric increase by NSW_180_65, explained above – many other countries had a reduction in costs in 2020, most noticeably in South America.

In Brazil, the costs reduced on average by 27%. Non-factor costs reduced from US$59 to US$47 per 100 kg lwt because feed costs declined from US$23 to US$18 per 100 kg lwt, but the opportunity cost for land and labour also decreased – land from US$69 to US$61 per 100 kg lwt and labour from US$31 to US$28 per 100 kg lwt (Figure 17).

Colombia, South Africa, Ireland and Spain all experienced a reduction in costs between 2019 and 2020. Colombia and Ireland, like Brazil experienced a reduction in land and labour opportunity cost as well as non-factor enterprise costs.

Figure 17: Total cost of cow-calf enterprise US$ per 100 kg lwt

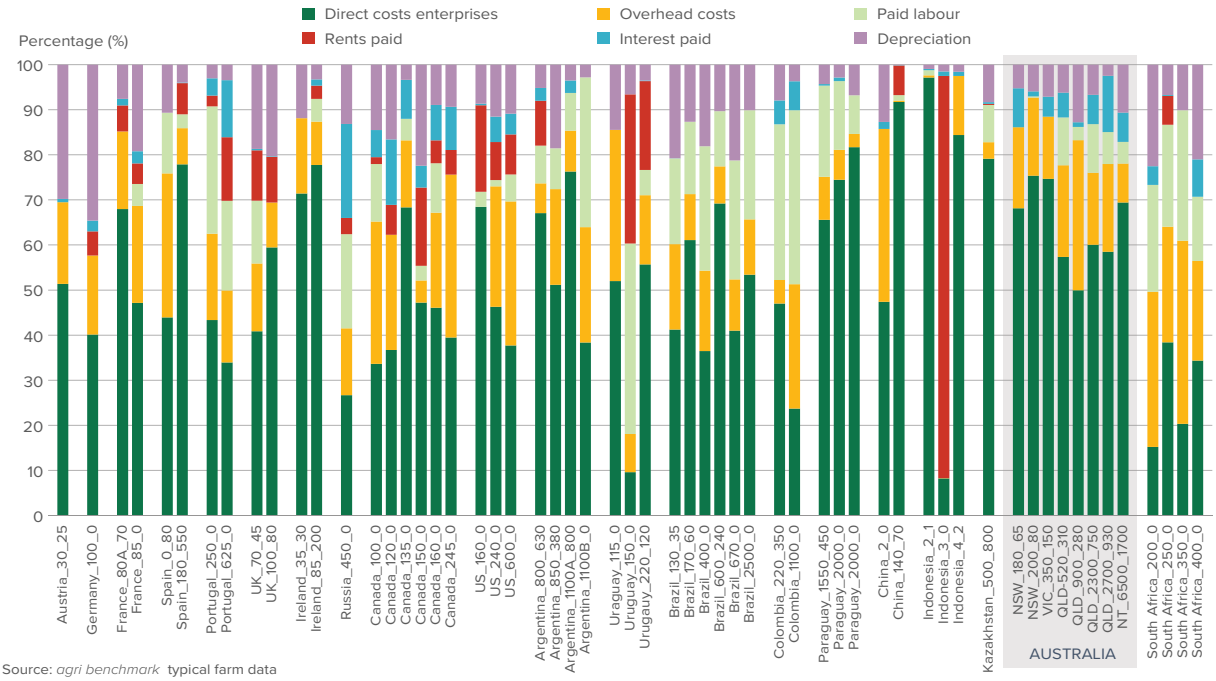


Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

Figure 18 presents a breakdown of the cow-calf enterprise costs for each farm in the data set and shows how the Australian farms' direct costs are more than 50% of its costs – only Paraguay has a similar high percentage.

Figure 18: Percentage breakdown of cow-calf enterprise costs

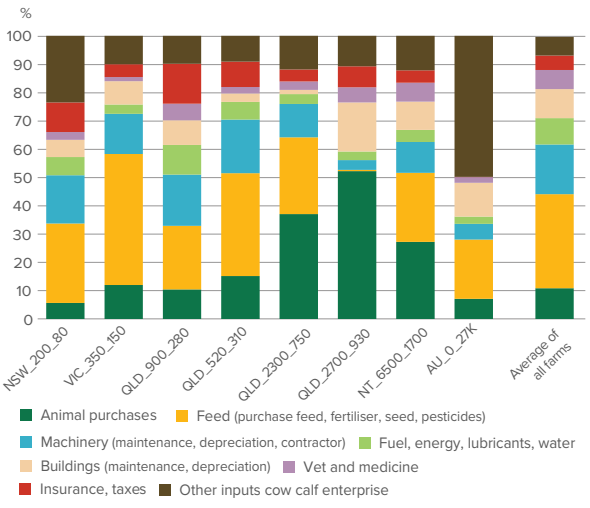


Source: *agri benchmark* typical farm data

In Figure 19, the direct costs are shown for the Australian farms. Three of the drought-affected farms have high levels of animal purchases as a percentage of their costs.

The high feed purchase cost for NSW_200_80 is the result of the devasting bush fires and requirement to buy-in purchased feed at the beginning of the year.

Figure 19: Percentage composition of non-factor costs for the cow-calf enterprise US$/100 kg lwt



Source: *agri benchmark* typical farm data

Australia

How does farm management affect profitability?

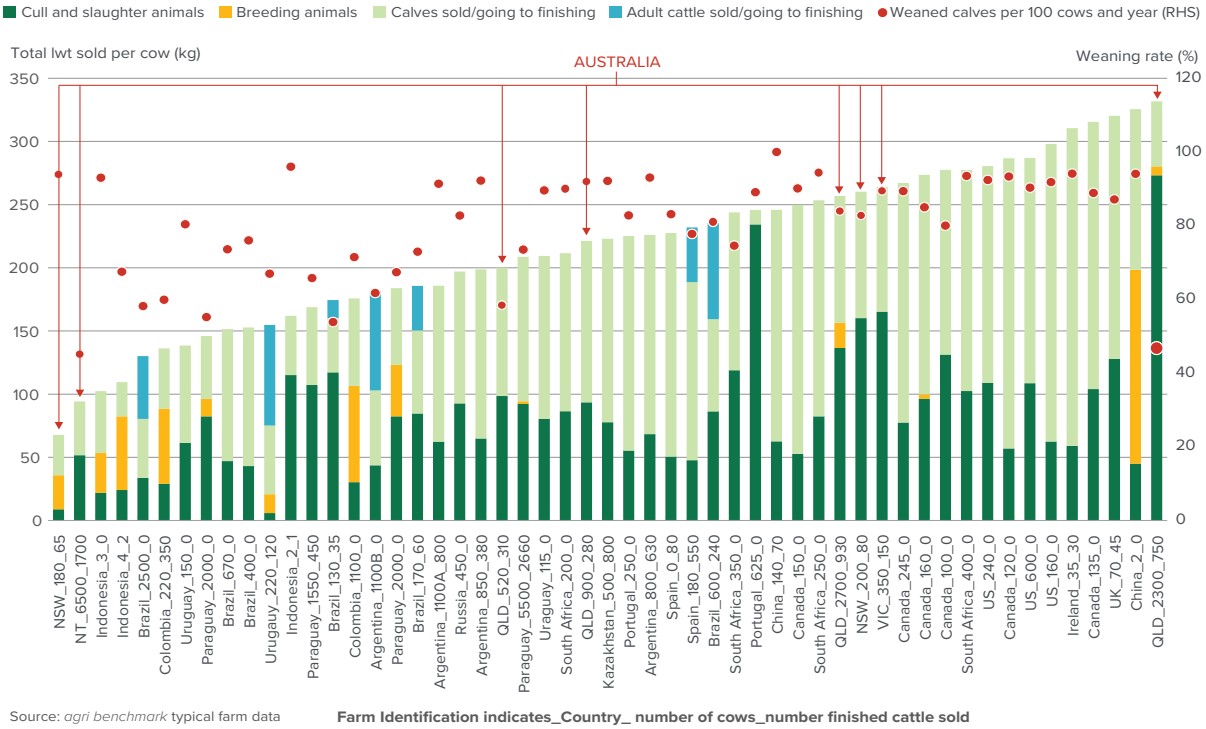
Farming is a complex business and managers have many variables to consider. Achieving optimum productivity, which is the efficient use of inputs to achieve an output, is a key objective for farm operators. Farm management requires the ability to adapt and respond to changing circumstances, including the environment and seasonal conditions. This requires matching the environmental conditions with the right technology. In the beef sector, breed type is chosen to optimise the interaction between genetics and environment, for example the Bos Indicus breed is used in Northern Australia.

Total liveweight sold is one of the key drivers of profitability for a steady beef herd, and a key measure to understand productivity improvements for a beef farmer. But note, it does not account for changes in inventory. Weaning percentage is also a key productivity measure which generally reflects management decisions and one's response to environmental or seasonal conditions. These two measures shown in Figure 20 for all 58 farms and ranked by total liveweight sold per cow (lwt), help us to understand and compare productivity performance between farms.

Again, the effects of drought are seen in results for two Australian farms. NSW_180_65 was ranked at the top in 2019 having sold the most kg of meat per cow, but in 2020 this farm sold the least amount. Similarly, QLD_2300_730 needed to sell cull animals in 2020 to reduce herd size and sold the highest total liveweight per cow out of all the farms in the data set but they also had the lowest weaning rate.

At least NSW_180_65 had one of the highest weaning rates in 2020, suggesting a more normal season and recovery from drought.

Figure 20: Total liveweight sold per cow (lwt) and weaning rates (%) ranked from lowest to highest



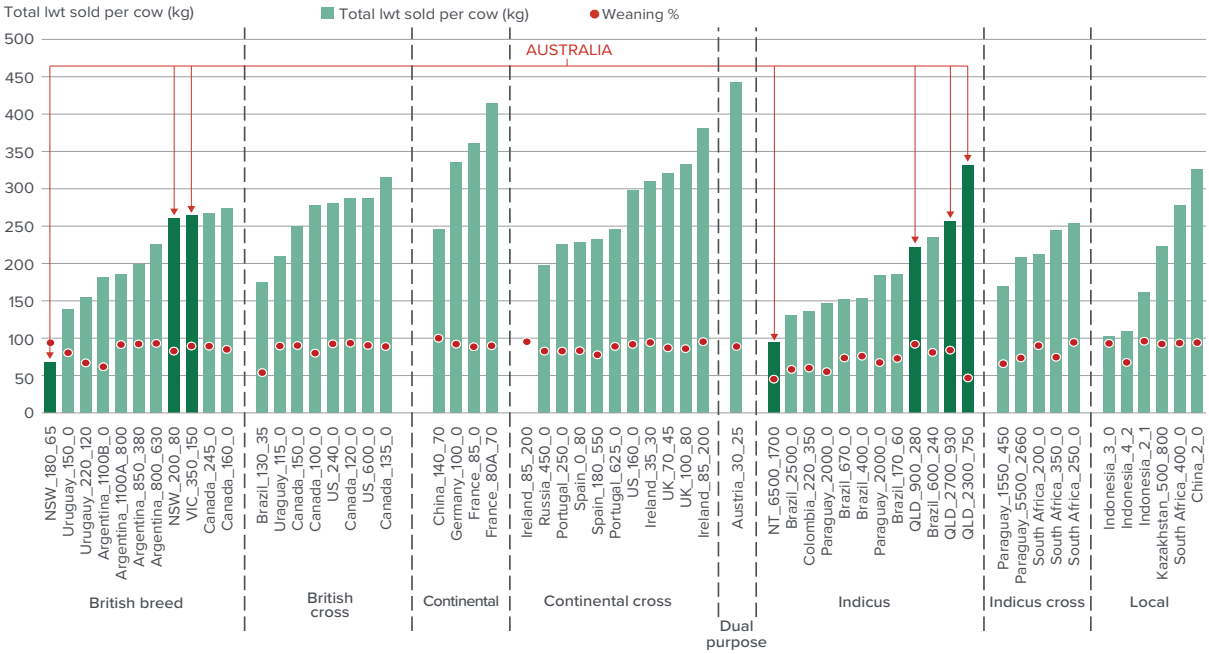
Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

Ireland

Figure 21 shows how the Bos Indicus breeds tend to have lower weaning rates compared to other breeds, such as the continental breeds. Weaning rates were particularly low for the Northern Territory farm NT_6500_1700 and Queensland_2300_750 caused by the dry conditions experienced in 2019 flowing through into part of 2020.

Figure 21: Total liveweight sold per cow (lwt) and weaning rates (%) by breed



Source: *agri benchmark* typical farm data

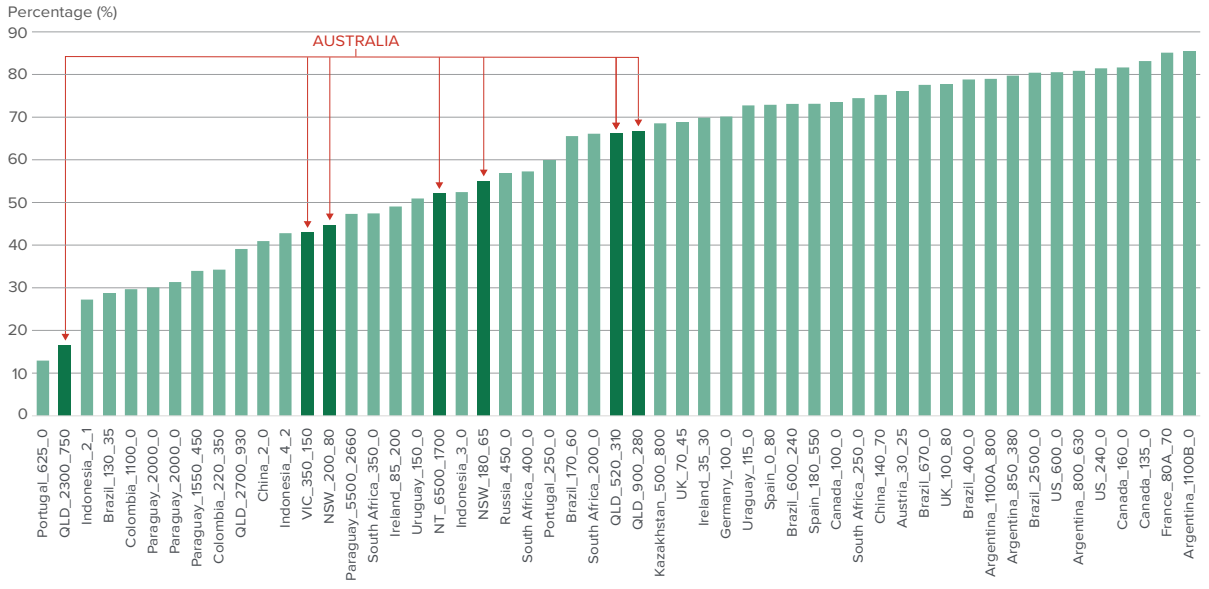
Farm Identification indicates_Country_ number of cows_number finished cattle sold

QLD_2300_750 had high mortality rates due to severe flooding in 2019, losing a particularly high number of young stock. In 2020, they retained more of their heifers but reduced their breeders by 38% to cope with the seasonal conditions and to restructure their herd. This means they ranked the highest in the amount of kg lwt sold in 2020.

In summary: cow-calf enterprises

Most of the cow-calf farms receive more than 50% of their income from weaner receipts which is illustrated in Figure 22. This means that the weaner price had a strong influence on the profitability of the enterprise, and 2020 was another year when prices were at historic highs.

Figure 22: Percentage of weaner and transfer to beef finishing receipts

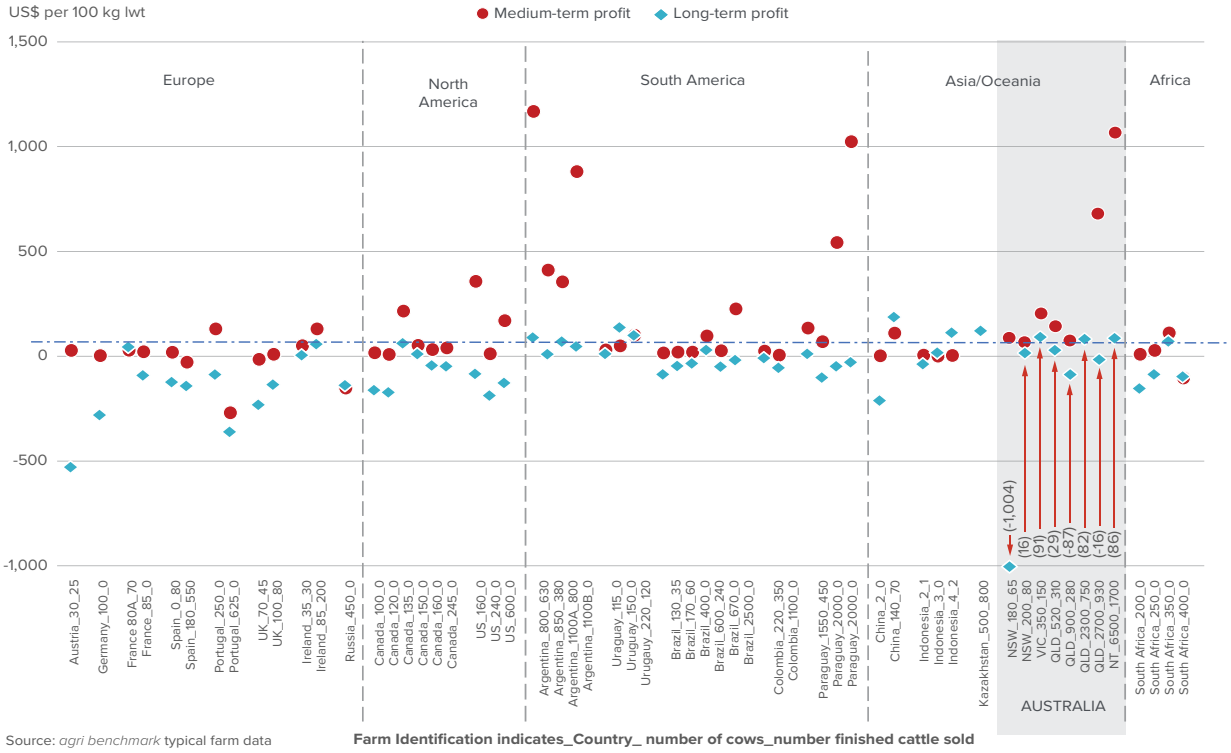


Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

73% of *agri benchmark* cow-calf enterprises reached medium-term profitability in 2020, covering all their enterprise costs and depreciation, therefore having the capacity to replace machinery and buildings. Outside of Europe, only three enterprises made a medium-term loss (two in the US and one in South Africa). Despite this, many farms still struggled to achieve long-term profits (Figure 23), because they were not able to generate enough income to pay for the opportunity cost associated with labour and land.

Figure 23: Medium- and long-term profit US$ per 100 kg lwt



Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

Australian cow-calf farm performance in 2020 was extraordinary considering the seasonal conditions experienced in 2019 and early 2020. Australian farms in the two-year period have experienced floods, severe drought and bush/grass fires. Consequently, two farms experienced high mortality rates and were forced to sell down breeding stock severely. Consequently, in 2020 one of those farms, NSW_180_65, made a severe financial loss but appears to be recovering with good weaning rates.

Except for NSW_180_65, the Australian farms achieved short-term profits where they could pay for their direct costs. Most even managed a medium-term profit. For some farms their medium-term profit was impressive, i.e., NT_6500_930, where the size of this farm creates economies of scale – they have low costs (Figure 17) and relatively low outputs (Figure 20 and Figure 21).

Italy

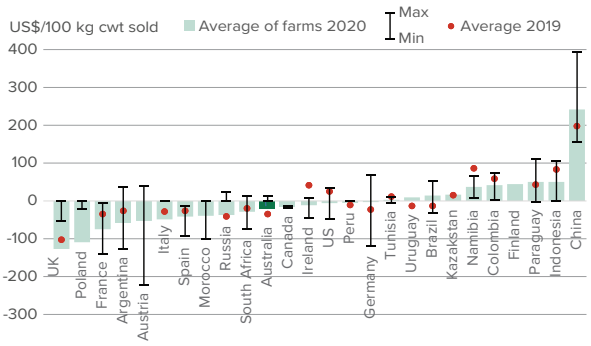
How did beef finishing enterprises perform in 2020?

Financial performance

The deterioration in profitability for global finishing farms continued in 2020. Only 58% of countries and 55% of the 95 global *agri benchmark* finishing farms achieving a medium-term profit in 2020 (Figure 24 and Figure 25), compared to nearly 100% in 2017, 64% in 2018 and 60% in 2019.

The average medium-term profitability for Australian beef finishing farms remained in negative territory. However, they generally experienced a small improvement in medium-term profitability compared to 2019. The loss was to be expected given lower sales and higher cattle purchase prices immediately post-drought – weaner prices were more than 70% higher than the previous year.

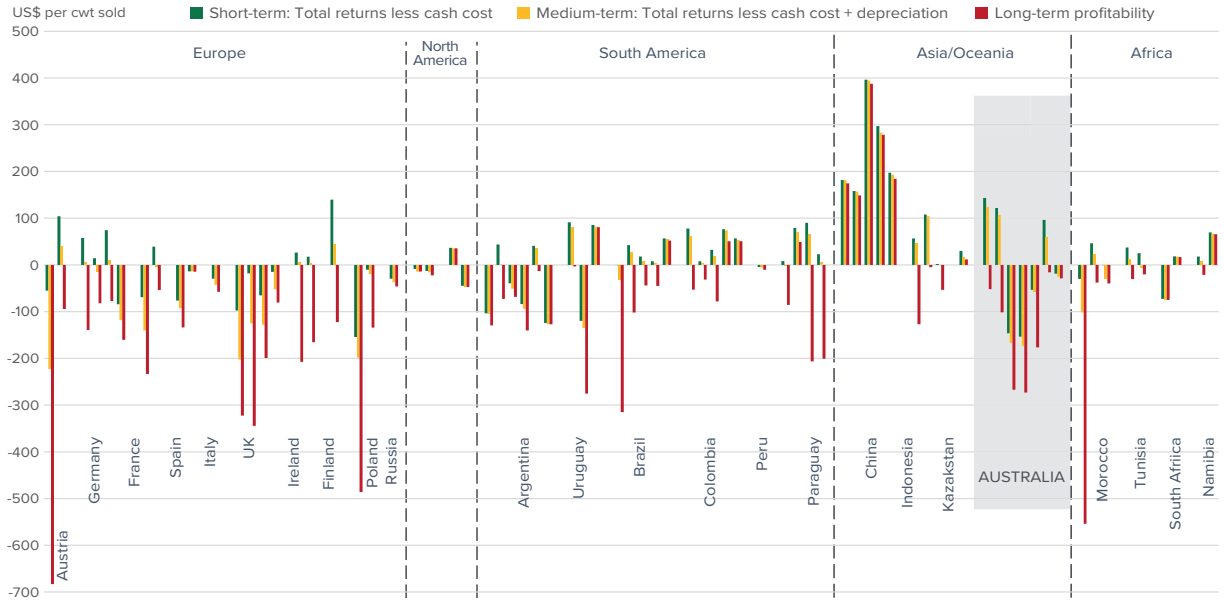
Figure 24: Medium-term profitability (average of each countries' farms) for 2019 and 2020 with minimum and maximum ranges for 2020[3]



The other notable movement in 2020 was the deterioration in medium-term profitability in the United States, Argentina, Colombia, Indonesia, Namibia and Ireland. China had the most significant improvement and continues to have high levels of profitability in the short-, medium- and long-term, Figure 25.

There are 95 finishing farms in the data set, however due to the difficulty in presenting this many farms, a shorter set of data is presented in the charts (NB. the analyses are based on all 95 farms). Also, data from two Australian farms, NSW_180_65 and QLD_900_280, are absent because the poor seasonal conditions meant they did not transfer weaners into their finishing systems – instead they elected to sell their weaners, a strategy NSW_180_65 also used in 2019.

Figure 25: Short-, medium- and long-term profitability for beef finishing enterprises (100 kg per cwt sold)



Source: *agri benchmark* typical farm data

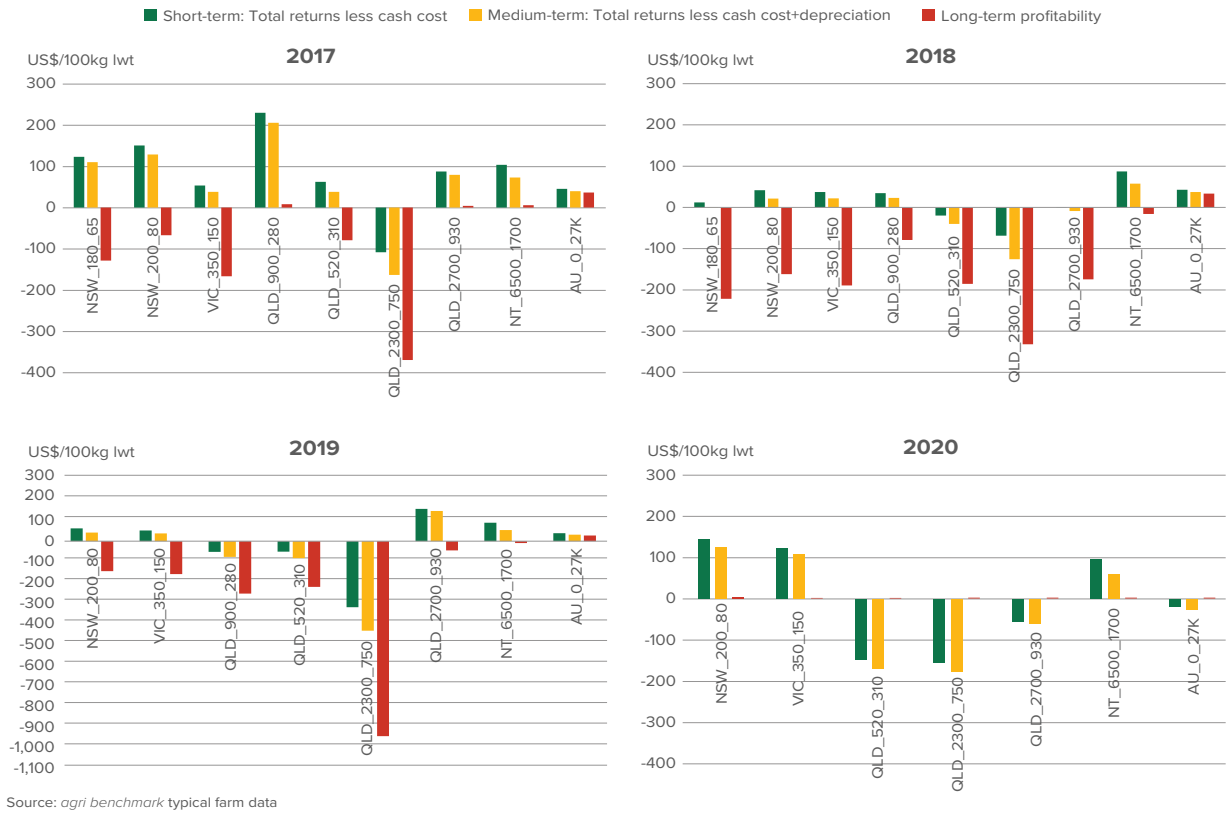
In 2020, three out of the seven Australian farms achieved short- and medium-term profitability within their finishing enterprise. (Figure 26). However, none achieved long-term profitability, which means they did not generate enough income to pay for the opportunity costs of labour and land. The three farms that achieved medium-term profitability generated enough income to pay for depreciation or the replacement of depreciable assets.

[3] The countries without red dots did not have any data for 2019

When examining the last four years' data for the Australian farms in Figure 26, some farms have performed consistently. For example, despite poor monsoon rains for the last two years, the Northern Territory farm NT_6500_1700 has achieved short-term and medium-term profitability in the last four years. The specialised feedlot AU_0_27K usually manages long-term profitability but unfortunately in 2020, the high weaner prices impacted on their financial performance.

NSW_200_80 and VIC_350_150 have also achieved medium-term profitability in the last four years, but not long-term – an indication of high land prices (land opportunity cost) in these regions.

Figure 26: Short- medium- and long-term profitability for Australian beef finishing enterprises, 2017 to 2020 (100 kg cwt sold)



Source: *agri benchmark* typical farm data

Why do some beef finishing systems have low levels of profitability?

Strong beef prices, managing costs and improving productivity are required to achieve medium-term profitability for the beef finishing sector and therefore a sustainable business future. However, the sector is characterised by cyclical swings in profitability related to changes in the cost of weaners and of grain. In Australia, finished beef cattle prices rose to record levels in 2020, but the cost of weaners rose even faster, impacting finishing margins, as expected, when a herd rebuild commences.

Australian beef cattle farms typically breed and finish cattle in the same operation, so these cyclical swings in weaner prices do not necessarily impact whole-farm profitability, as in periods of herd rebuilding (like in 2020) higher breeding profits offset lower finishing margins.

Prices increased across the globe, and significantly in Australia as drought conditions eased (Figures 5 and 6), costs increased and productivity remained steady. These three factors are discussed in the next sections.

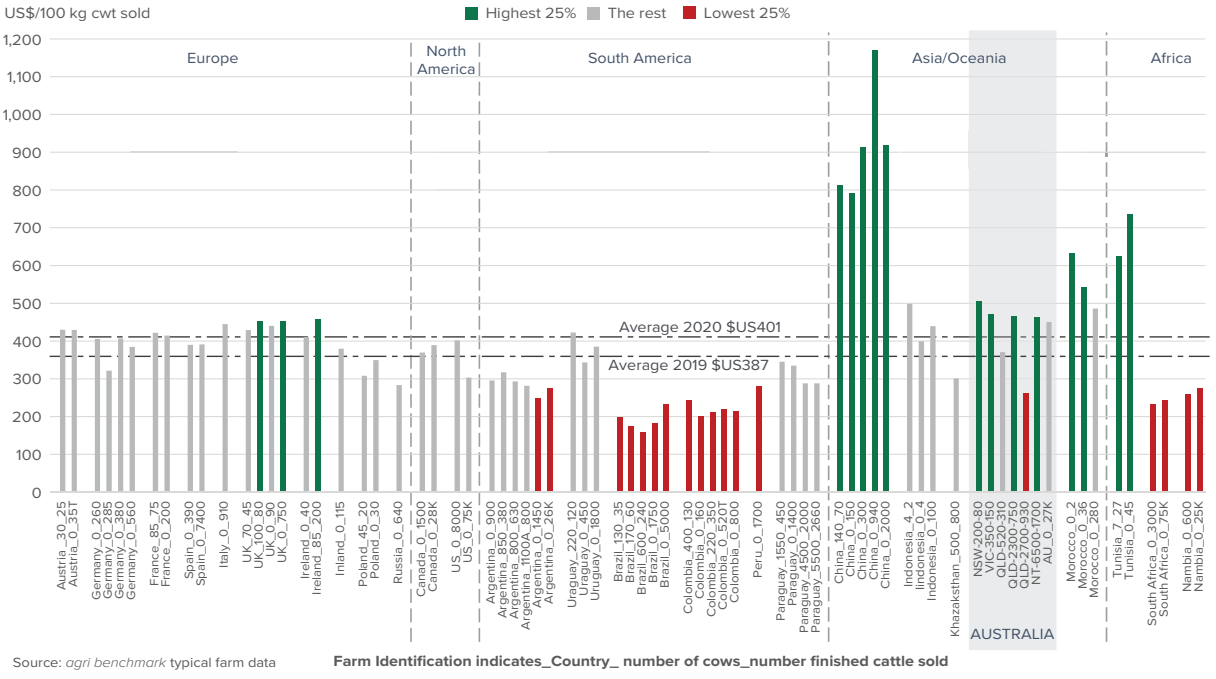
Portugal

Beef prices

The simple average finished cattle price for the 95 farms in the *agri benchmark* global database increased from US$387 in 2019 to US$401 per 100 kg cacass weight (cwt). The top quartile received prices above US$450/100kg and for the lowest 25%, the prices were below US$281 per 100 kg cwt (Figure 27).

Most of the Australian farms received prices in the top quartile, above US$450/100kg. The exception was QLD_2700_930, which had prices in the bottom quartile at US$261 per 100 kg cwt, largely due to low weights and selling in drought conditions (impacting cattle condition). Australian prices increased from 2019 to 2020 as drought conditions eased, and restocking commenced.

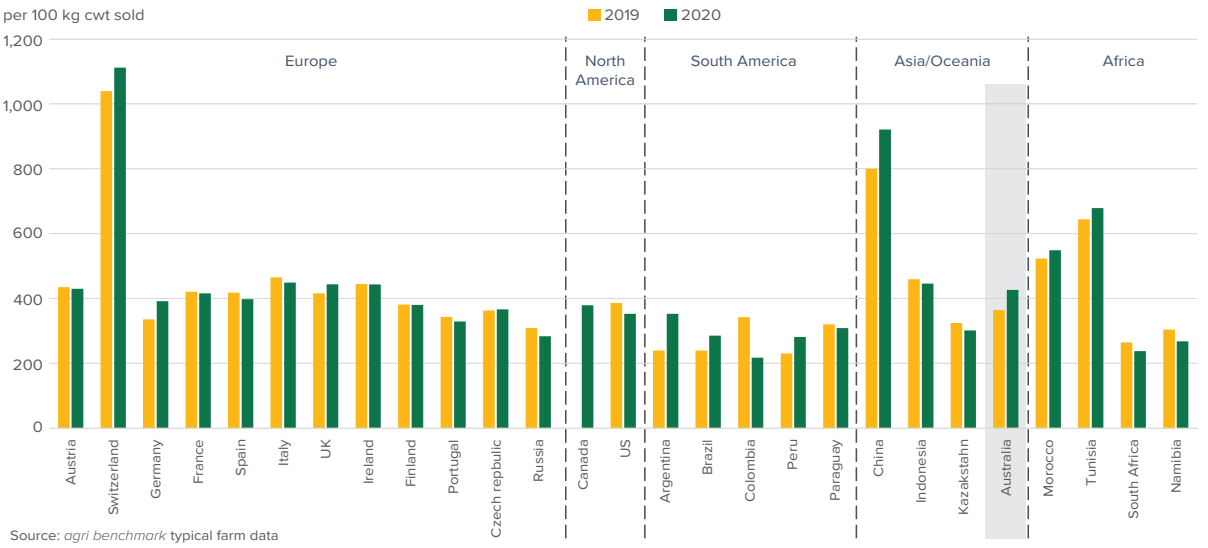
Figure 27: Finished cattle prices for 2020 (US$ per 100 kg cwt)



Despite an overall increase in the simple average for finished cattle prices, 51% of farms received prices lower than the previous year. The finished cattle price index in Figure 6 is a weighted average and shows a modest 2% increase in global prices.

China, North Africa and some South American countries experienced price increases in 2020, Figure 28. Australian prices were higher than the US, (US$430 v's US$353, respectively) and higher than South America's – even despite Brazil and Argentina experiencing a price increase from 2019.

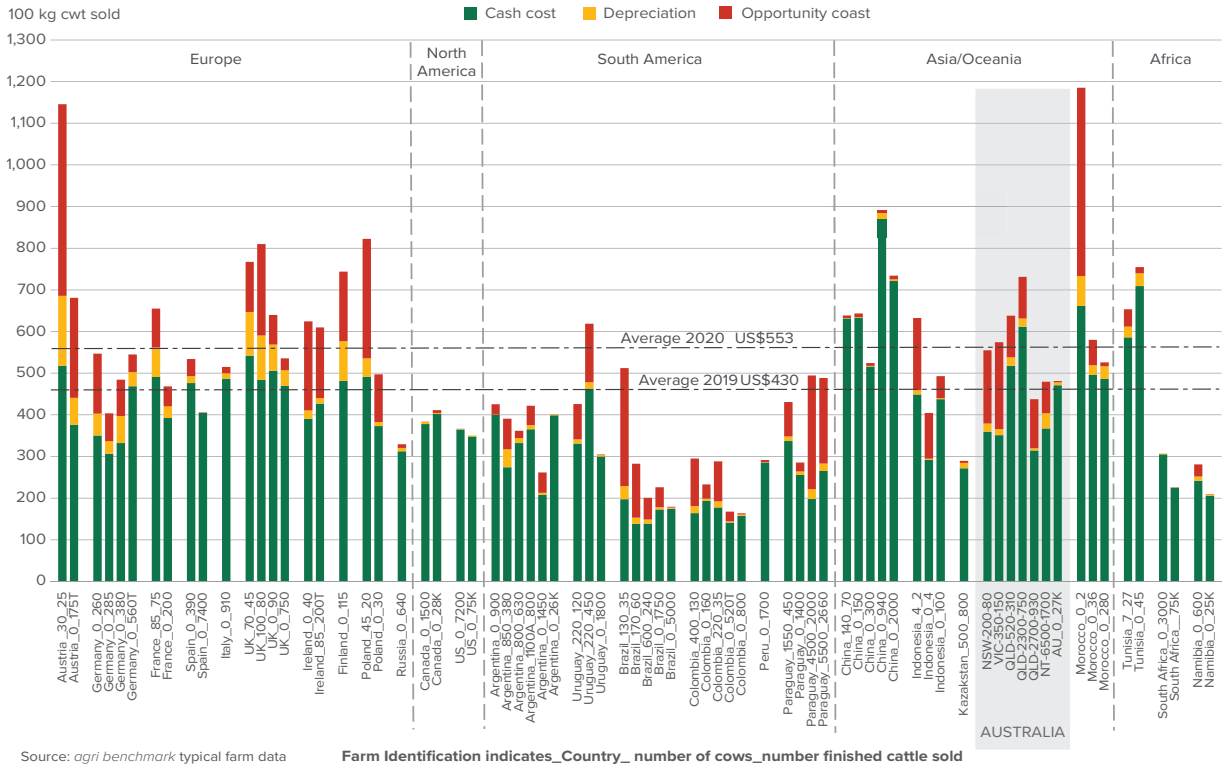
Figure 28: Difference in prices between 2019 and 2020 for countries



Managing costs

The average total cost of production for the 95 AB farms increased by 30% from US$430 in 2019 to US$553 per 100 kg cwt in 2020, Figure 29.

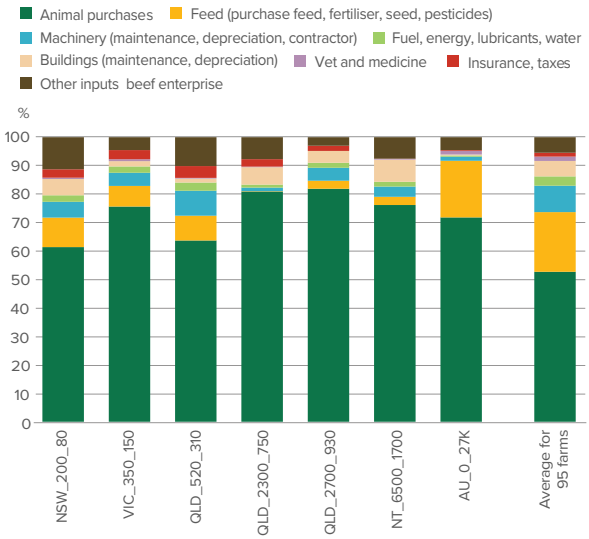
Figure 29: Total cost of production for *agri benchmark* finishing farms 2020



The average total cost of finishing cattle in Australia was a little higher than the global average, at US$557 per 100 kg cwt sold. This is lower than many of the European countries, but higher than the North American and South American countries which are the countries we generally compete against in export markets. This is mainly due to the higher cost of weaners for Australian farmers.

Animal purchases are the largest proportion of direct costs for the finishing systems, which Figure 30 illustrates. The breeding enterprises earn revenue by selling the weaners the finishing systems need to purchase (internal cost). Cost of feed is generally the second largest cost for finishing systems.

Figure 30: Expense contributions to cost of production (%) for Australian farms compared to the average



Source: *agri benchmark* typical farm data

France

Table 2 compares Australian farms' cost of production with the average for the 95 farms, and specifically against the US, Brazil and Argentina.

Australia's average cash costs[4] are US$428 which is close to the global average of US$421, and more than the cost of production in the US, Brazil or Argentina. Australia's opportunity cost for land and labour is also much higher than Brazil, Argentina and the USA, at US$112, US$84, US$35 and $US0/100kg respectively.

Table 2: Cost of production (US$/100 kg cwt sold) for Australia's farms compared to the average for all farms and the average for farms in US, Brazil and Argentina

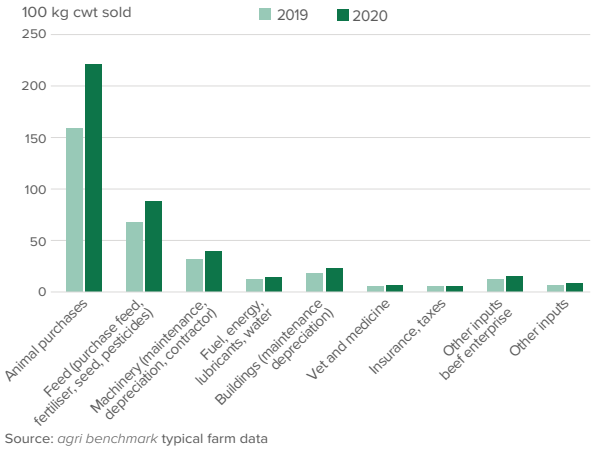
	NSW_200_80	QLD_520_310	QLD_520_310	QLD_2300_750	QLD_2700_930	NT_6500_1700	AU_0_27K	Average for 95 farms	Average for AU	Average for USA	Average for Brazil farms	Average for Argentina farms
Total cost	555	638	638	731	438	480	481	553	557	359	252	377
Cash cost	360	517	517	612	315	367	471	421	428	357	156	330
Depreciation	19	21	21	20	5	37	6	33	17	2	12	12
Opportunity cost	176	100	100	100	118	76	4	100	112	0	84	35
Opportunity cost	155	177	88	88	104	66	3.1	100	108	0	84	377
Labour	61	18	18	8	10	13	2	54	24	0.0	14.4	32
Land	93	82	82	60	108	37	0	36	73	0.1	63.7	167
Capital	23	1	1	32	0	26	1	10	13	0.0	6.3	14

Source: *agri benchmark* typical farm data

By examining the difference in non-factor costs[5] (per 100 kg cwt sold) between 2019 and 2020 for all 95 farms in Figure 31, it is evident that the increase in cost of animal purchases has impacted significantly on the increasing costs finishing farms experiencing globally. Finishing farms also had increases in feed, fertiliser and seed costs between 2019 and 2020.

Canada

Figure 31: Non-factor costs 100 kg cwt sold in 2019 and 2020



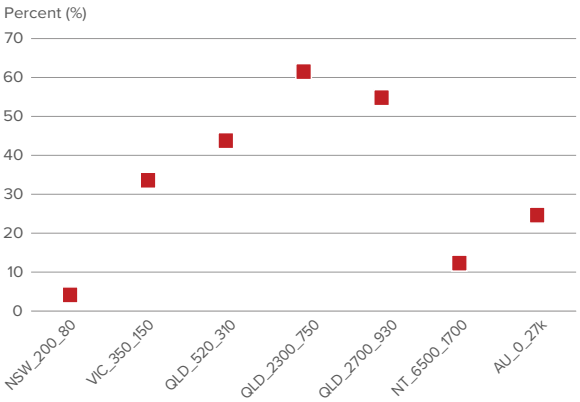
Source: *agri benchmark* typical farm data

[4] Animal purchases, feed, insurance & taxes, fuel, vet & medicine & other inputs
[5] Animal purchases+feed+machinery+buildings+insurance+taxes+fuel+vet+medicine+other inputs

For the Australian farms specifically, the increase in costs of production varied between farms. QLD_520_310 experienced a 51% increase in costs (Figure 32) driven by a 44% increase in animal purchase costs (Figure 33).

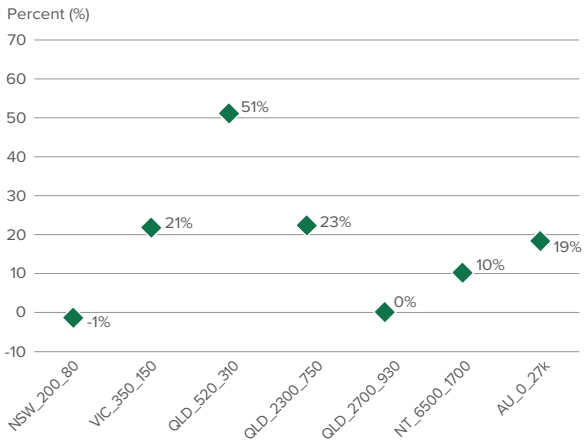
While QLD_2300_750 experienced animal purchases that were 61% higher (Figure 32) year-on-year, their other costs like feed (and across all categories) decreased. This is not unusual when farms are coming out of drought conditions – overall their costs only increased by 23% (Figure 33).

Figure 32: Change in total costs for Australian farms between 2019 and 2020 (%)



Source: *agri benchmark* typical farm data

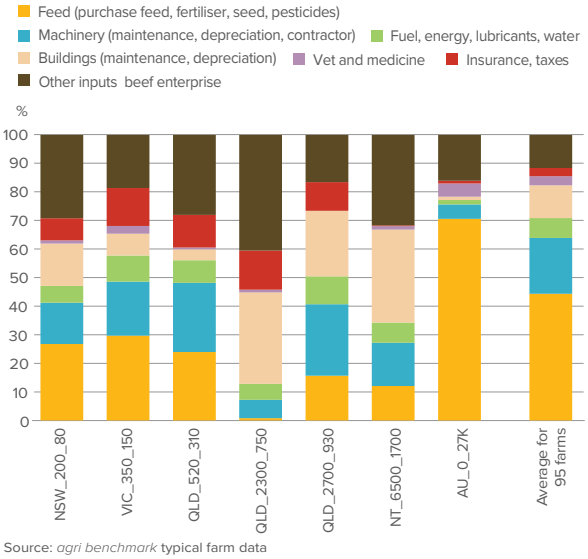
Figure 33: Change in cost of Animal purchases for Australian farms between 2019 and 2020 (%)



Source: *agri benchmark* typical farm data

Figure 34 shows the breakdown of expenses for finishing enterprises, excluding animal purchases. It shows how the cost structures of Australian farms compared to the average for the 95 farms from around the world.

Figure 34: Percentage compostion of direct costs for Australian farms compared to the average – without livestock purchases



Source: *agri benchmark* typical farm data

UK

Managing productivity

The Australian finishing systems are mostly pasture-based, except AU_0_27K which is a specialised feedlot which finishes animals at almost 600 kg lwt. A notable difference for this feedlot in 2020 was a higher start weight, 412 kg lwt compared with 363 kg lwt in 2019. These higher starting weights are likely strategic management decisions aimed at creating efficiencies by buying-in cattle at heavier weights and finishing at lighter weights, reducing the number of days in the feedlot from 100 in 2019 to 90 in 2020, Table 3.

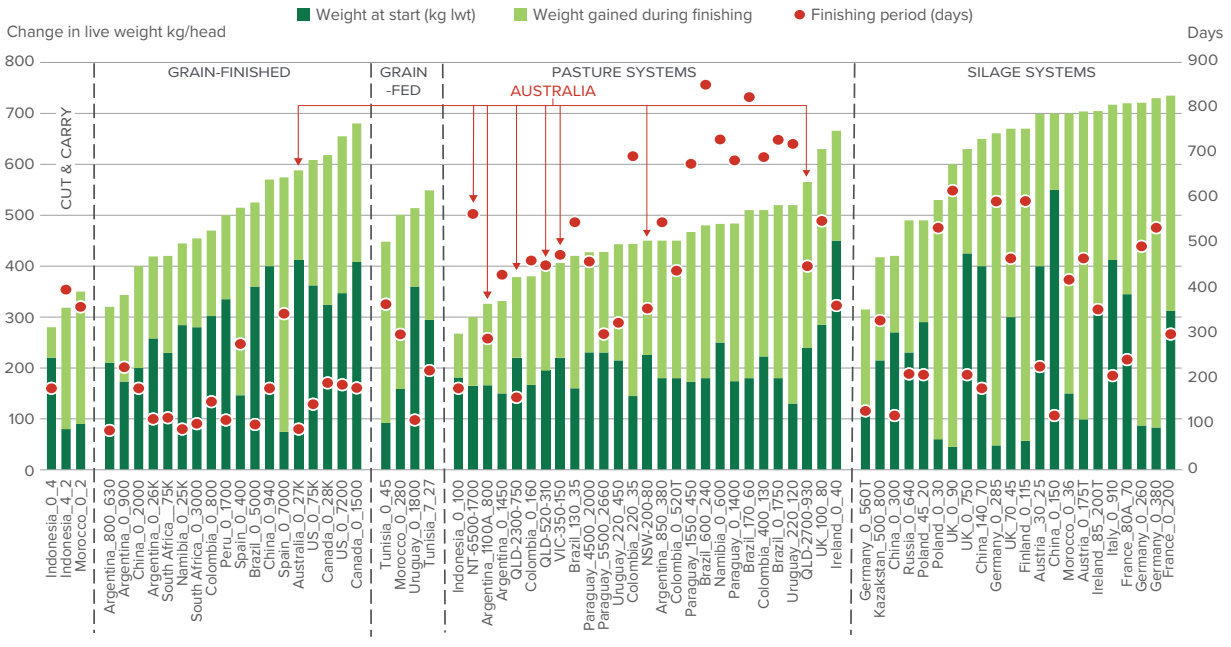
Table 3: Average number of days to finish, average weight at the start (kg lwt), finished weight (kg lwt), average daily weight gain (g/hd/day) for each type of finishing system and average weight gained (kg lwt) (range in brackets)

Production system	Average number of days to finish (days)	Average weight at the start (kg lwt)	Average finished weight (kg lwt)	Average daily weight gain (g/head per day)	Average weight gained (kg lwt)
Cut and carry	313 (180-398)	130 (80-220)	316 (280-350)	573 (333-722)	186 (60-260)
Grain-finished	176 (87-366)	273 (75-412)	505 (320-680)	1,396 (758-1976)[6]	232 (110-500)
Pasture system	517 (160-851)[7]	205 (130-450)	442 (267-666)	467 (243-702)	238 (86-390)
Silage system	344 (120-617)	238 (45-550)	622 (315-735)	1,166 (614-1540)	381 (150-647)
Australian farms	**Number of days to finish (days)**	**Weight at the start (kg lwt)**	**Finished weight (kg lwt)**	**Daily weight gain (g/head per day)**	**Weight gained (kg lwt)**
NT_6500_1700	565	165	300	262	135
QLD_2300_750	160	220	379	991	159
QLD_2700_930	450	239	565	725	326
VIC_350_150	475	220	406	398	186
QLD_520_310	452	195	406	470	211
NSW_200_80	356	225	450	646	225
AU_0_27K	90	412	588	1,976	176

Source: *agri benchmark* typical farm data

Besides Argentina, (one Argentinian farm finishing at 87 days), this is the lowest number of days for any finishing system in the data set. The average finishing time is 246 days and the highest number of days recorded was 851 for one of the farms in Brazil – finishing cattle on pasture. The highest number of days in a feedlot is 345 days for a Spanish farm, where starting weights are very low (75 kg lwt). Figure 35 represents the data in Table 3.

Figure 35: Start-weight, weight gain, and finishing period (days) for different production systems[8]



Source: *agri benchmark* typical farm data

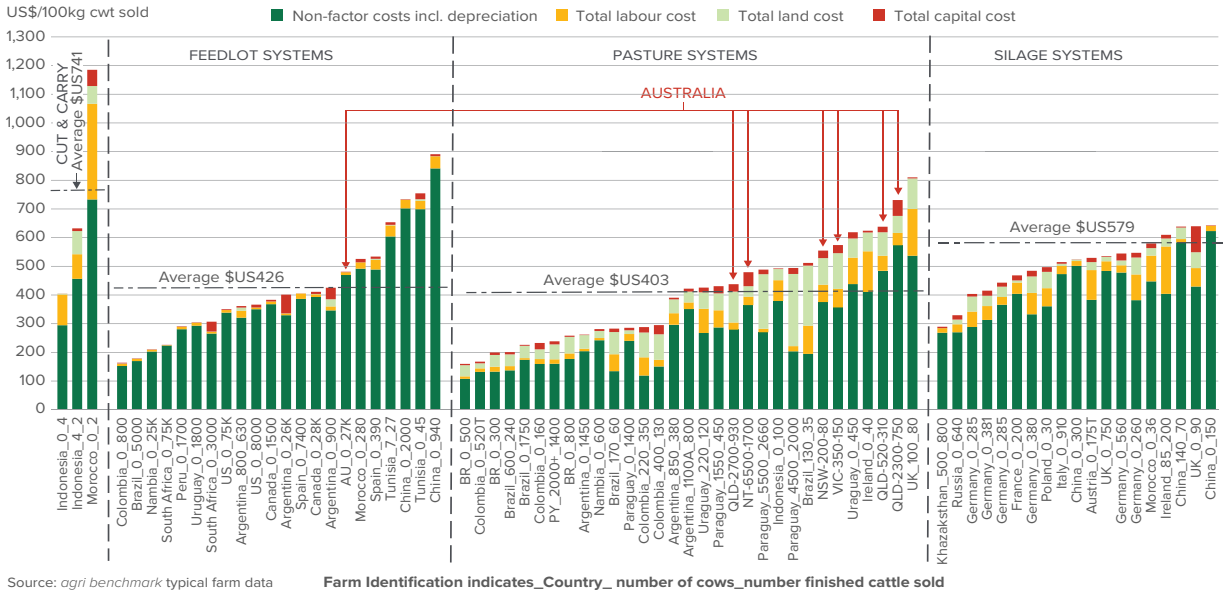
Farm Identification indicates_Country_ number of cows_number finished cattle sold

[6] AU_0_27K daily weight gain is the highest of any grain-finishing farm in the database, at 1976 g/hd/day.
[7] QLD_2300_750 has the lowest number of days to finish at 160 due to selling at lower weights than normal.
[8] The difference between grain finishing and feedlot is that the animals are not confined in the grain finishing system.

Six out of the seven Australian AB finishing farms have pasture-finishing systems, which is typical of most Australian farms. Overall, the pasture-finishing systems have the lowest average cost of production at US$403 per 100 kg cwt sold, Figure 36. Cut and carry systems have the highest cost of production at US$741, and silage is the next most costly system with an average cost of US$579. Silage systems also have the largest variation in cost between farms for finishing. Grain-fed finishing systems have a cost of production of US$426 per kg cwt sold.

Finishing costs in South America are the lowest, between US$200 and US$300 per 100 kg cwt sold using pasture-finishing systems. However, this system has the lowest daily weight gains. US/Canada feedlots with a cost of US$350 per 100 kg cwt sold, with high weight gains, are the second cheapest methods to finish cattle. The silage-finishing systems in Europe have some of the highest weight gains but also the highest costs, at more than US$500 per 100 kg cwt sold. Australia would normally have a similar cost of production to US/Canada or even slightly lower. However, due to our higher-than-normal weaner cattle prices in 2020, our average cost was above the average of US$403 at US$557.

Figure 36: Total cost of production for different finishing systems US$ per kg cwt sold



Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished cattle sold

Brazil

In summary: cattle finishing enterprises

Fifty-two percent of the global finishing farms made a medium-term profit in 2020.

Figure 37: Medium-term profit for different finishing systems

Source: *agri benchmark* typical farm data

Farm Identification indicates_Country_ number of cows_number finished weaners

The profit results for the Australian beef finishing farms were mixed. The historically high weaner prices which supported a high level of profitability in the breeding enterprises, caused losses for four out of the seven farms in regard to the finishing component of their enterprise. Noting that two farms sold weaners to manage drought conditions and are not included in the finishing data.

Australian farms remain relatively low-cost producers for the cow-calf enterprise, although costs have increased. In contrast, Australia is a high-cost producer in the finishing sector when compared to other countries.

The one Australian-specialised feedlot finishing facility in the dataset has been profitable in three out of the last four years, but in 2020 the high weaner prices impacted their profitability levels. These high weaner prices also impacted their short-term profitability. They responded by buying in heavier animals and shortening their finishing period by ten days.

The feedlot's competitive advantage compared to other beef finishing farms in Australia is the minimal opportunity cost for land and labour, with a low requirement for land area.

In 2020, three of the Australian beef finishing farms improved their performance in comparison to 2019 (Figure 24), but unfortunately four of the farms worsened their position and did not even achieve short-term profitability despite historically high finished cattle prices.

Spain

Appendix

What is *agri benchmark*?

agri benchmark is a global, non-profit and non-political network of agricultural economists, advisors, producers and specialists in key sectors of agricultural value chains. It is operated as an international network of research partners coordinated by the Thünen Institute – the German government rural research body. The cattle network has over 28 member countries, covering 75% of world beef production and has been producing the results of comparative analysis over the last 17 years.

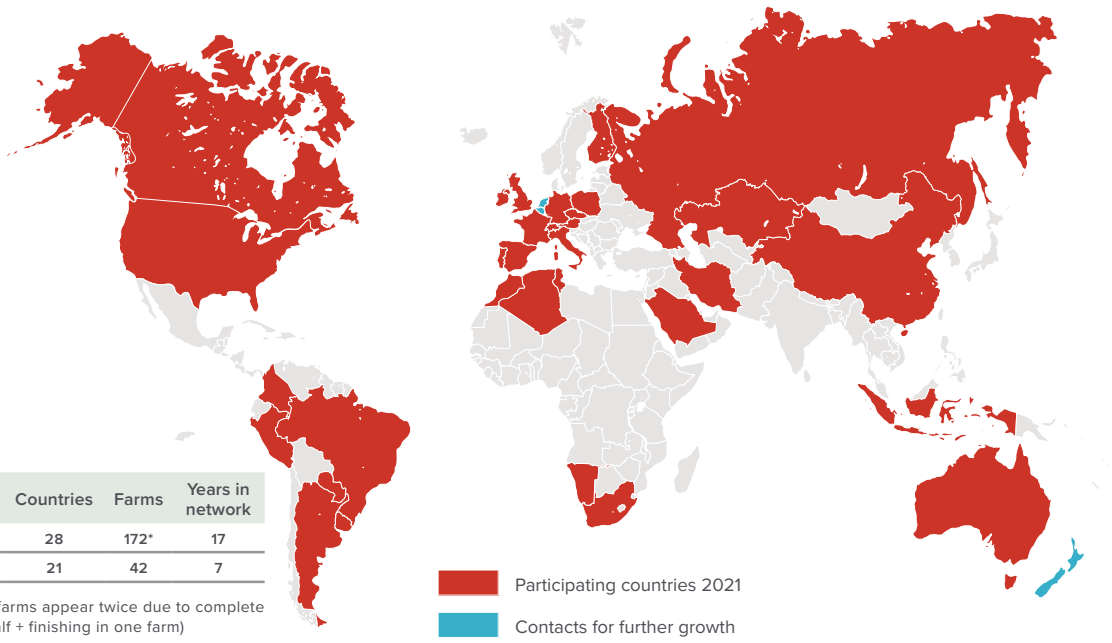
The core competence of the network is in analysing production systems, their economics, drivers and perspectives.

agri benchmark aims to assist:

- producers to better align future production through analysis of comparative performance and positioning;
- non-profit organisations (NGOs, international organisations) to monitor global agricultural challenges;
- public and industry institutions to better plan research, farm policy and programs and make their case; and
- agri-businesses to operate successfully through in-depth understanding of markets and customers.

agri benchmark has branches covering beef cattle, sheep, dairy, pigs, cash crops, horticulture, organic farming and fish.

Figure A1: Countries in the *agri benchmark* beef and sheep network



2020	Countries	Farms	Years in network
Beef	28	172*	17
Sheep	21	42	7

*38 of these farms appear twice due to complete cycle (cow-calf + finishing in one farm)

Source: *agri benchmark*

Within cattle, it covers both breeding and finishing enterprises (cow-calf and cattle finishing). It is also unique in being able to separately measure the performance of breeding and finishing operations, even on joint breeding/finishing enterprises. Furthermore, it measures beef enterprise performance separately from (and together with) other outputs where the enterprise is diversified (in southern Australia typically with cropping and/or sheep).

The farm-level results in this report are drawn from the collection of 'typical farm' data in each country, and subsequent analysis and research efforts of all member countries, culminating in the 18th annual *agri benchmark* Conference (on-line), 14–18 June 2020.

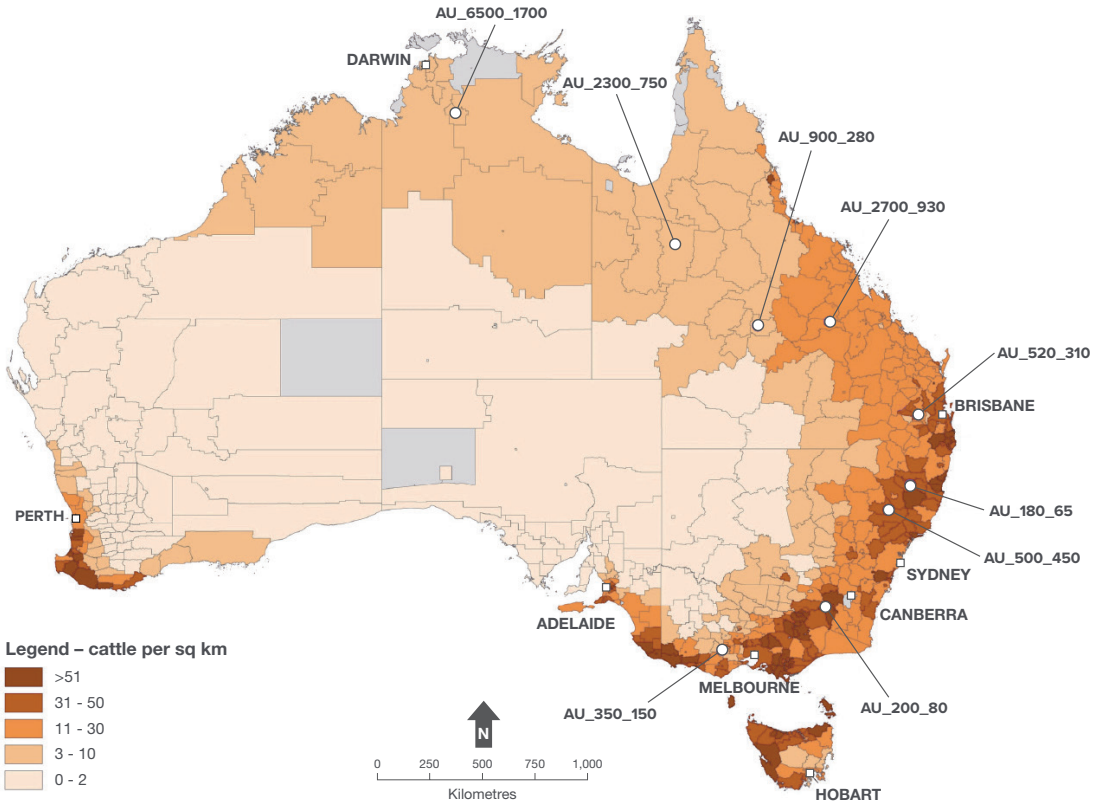
A 'Typical farm' can be based on data for an actual farm judged to be typical of a key production system in a key region[9], or 'engineered' by local producers and experts to be typical (using annual data drawn from farms in the key production regions). In Australia, data was collected for nine typical beef farms in Queensland, the Northern Territory, NSW and Victoria (see Figure A2, Table A1 and Table A2).

[9] Such individual farm data is further 'typified' where necessary by replacing farm individual particularities by prevailing characteristics, figures, technologies and procedures.

Table A1: Australian *agri benchmark* typical beef cattle farms

Held_Sold (Cows_Steers)	Farm make-up
AU_180_65	(180 Cows held_65 steers sold) – northern tablelands NSW; Angus + sheep + wool; pasture feed base
AU_200_80	southern tablelands NSW; British breed; pasture feed base
AU_350_150	western districts Vic.; Angus; pasture, hay, oaten grain feed based
AU_900_280	central Qld; Bos Indicus; pasture, mineral supplements feed base
AU_520_310	south east Qld; Simmental X Droughtmaster; cattle + crops; pasture feed base
AU_6500_1700	Northern Territory, Bos indicus; live export; pasture, mineral supplements feed base
AU_500_450	northern slopes NSW; Charolais X Angus; pasture, hay, sorghum feed base
AU_2700_930	central Qld, Bos indicus; cattle + crops; pasture, oats grazing feed base
AU_2300_750	Qld Gulf, Bos indicus; pasture, mineral supplements feed base

Figure A2: Location of Australian *agri benchmark* typical beef farms and cattle density



Source: ABS and *agri benchmark*

Table A2: Physical and environmental characteristics of the Australian *agri benchmark* finishing farms

	NSW_ 180_65	NSW_ 200_80	VIC_ 350_150	QLD_ 900_280	QLD_ 520_310	QLD_ 2300_750	QLD_ 2700_930	NT_ 6500_1700	AU_ 0_27K
Region	New South Wales	New South Wales Southern Tablelands	Victorian Western Districts	Burdekin Queensland	South East Queensland	Northern Gulf, Queensland	Fitzroy	Sturt Plateau, Northern Territory	NSW
Natural region	Tablelands	Tablelands	Tablelands	Brigalow	Darling Downs	Rangelands/ open woodlands	NW of Rockhampton	Rangelands/ open woodlands	Slopes
Relief	Hills	Hills and river flats	Hills and Flats	Plains	Undulating	Flood plains	Flat to undulating	Plains	Plains
Prevailing soils	Silty clay loam	Clay loam	Silty clay loam	Medium loam	Medium loam	Clay	Silty clay	Sandy clay loam	Medium loam
Climate	Wet all season	Me diterranean	Mediterranean	Tropical wet and dry (savanna)	Moist subtropical mid-latitude climates	Tropical wet and dry (savanna)	Dry winters	Tropical wet	Dry summers
Main growing season	September to February	Spring	May to October	December to March	September to March	November to April	Summer to Autumn	November to April	May-November
Av. annual precipitaction (mm)	790	930	650	500	650	513	600	700	555
Precipitation distribution	All year with summer dominance	Slight winter pre-dominance	May to August	December to March peak	November to March	Pre-summer drought, main period Nov-Mar	Summer to Autumn	Pre-summer drought, main period Nov-Mar	Uniform
Elevation (metre's)	990	850	420	267	340	123	230	100	500
Av. annual temperature (°C)	20.1	5.6–19.7	6.6–17.9	13.2–28.7	18	18.2–31.7	22	19.5–34.5	14.5–30.9
Production system	Pasture	Pasture	Pasture	Pasture	Pasture	Pasture	Pasture	Pasture	Feedlot
No. and type of beef cattle in finishing	No finishing in 2020	83 male weaners	157 male weaners	No finishing in 2020	214 male weaners & 93 female weaners	809 male weaners	1007 male weaners	1677 male weaners	23,410 mixed
Breeds	British	British	British	Bos indicus	Simmental * Drought-master	Red Brahman	Brahman	Brahman	British
Other activities	Cow-calf	Cow-calf	Cow-calf	Cow-calf	Cow-calf	Cow-calf	Cow-calf	Cow-calf	No other activities
Origin finishing cattle (Own or purchase)	Own	Own	Own	Own	Own	Own	Own	Own	Purchase
Category of animals (FIN)	Weaners	Weaners	Steers	Weaners	Weaners	Weaners	Weaners	Weaners	Back-grounders
Main feed sources	Pasture + hay	Pasture	Pasture, hay + oaten grain	Pasture, minerals, supplements	Pasture, silage + grains	Pasture, hay, cottonseed	Pasture + concentrates + minerals	Native pasture, hay	Grains + cottonseed + pasture silage + hay

Source: *agri benchmark* typical farm data