

Voluntary Report – Voluntary - Public Distribution

Date: December 06, 2023

Report Number: AS2023-0023

Report Name: Australia's Rise to Wool and Sheep Meat Dominance

Country: Australia

Post: Canberra

Report Category: Livestock and Products

Prepared By: Zeljko Biki

Approved By: Gerald Smith

Report Highlights:

Australia has been a world powerhouse of high-quality wool production and exports for over 150 years. The industry now exports around 323,000 metric tons (MT) of wool valued at about US\$2.3 billion - more than any other wool exporter. After the collapse of the wool reserve price scheme in 1991 the industry turned its attention to sheep meat production, and Australia is now the largest sheep meat exporter in the world. Australia exports 730,000 MT carcass weight equivalent (CWE) meat valued at US\$3.2 billion. With continued efforts in breeding specifically for sheep meat production, experts anticipate further productivity improvements in the coming years and, with this, a further strengthening of Australia's dominant sheep meat export position.

EXECUTIVE SUMMARY

From the humble beginnings of importing around a dozen Spanish merino sheep from South Africa in 1797, nine years after Great Britain colonized Australia, the country has become a world powerhouse wool and sheep meat producer and exporter. Australia now produces around 323,000 metric tons (MT) of wool and 730,000 MT carcass weight equivalent (CWE) meat. Annually, the country exports all the wool produced, and about 70 percent of sheep meat, and around 525,000 head of live sheep. The overall value of Australian sheep industry exports is US\$5.5 billion. The wool sector was by far the most important since the sheep industry was established in Australia until 2019 when it was surpassed by the value of sheep meat production. In 2022, sheep meat exports were US\$3.2 billion and US\$2.3 billion for wool. In addition, the value of live sheep exports was far less at US\$57 million.

Australia's early and sustained focus on breeding sheep to produce high-quality wool helped the country become the world's largest wool producer by 1870. Up to that point, all wool exports were to Great Britain, and soon after, Australia began to export wool to Asian markets. The growth of the wool industry in Australia during the 19th century was crucial to the development of the Australian economy. In the second half of the 19th century, the wool industry was Australia's most important export industry. After the challenges of the world wars, in the 1950s, the wool industry began to boom, which still accounted for over half of Australia's agricultural production. The nation's economy was 'riding on the sheep's back'.

A major disruptor to the wool industry was the innovation of a range of synthetic fibers in the early to mid-20th century. In the 1960s and 1970s, there was huge growth in synthetic fiber production used to produce clothing. With Australia's dominant world wool trading position, the industry established a Wool Reserve Price Scheme (WRPS) in 1970 to smooth out price fluctuations to producers. The scheme worked very well for almost two decades, encouraging substantial growth in the domestic industry. However, the control of the scheme moved towards producers who shifted focus towards influencing a higher market price, which became unsustainable, and the scheme spectacularly failed in 1991.

After the demise of the WRPS, the national sheep flock declined from 170 million head to stabilize at around 70 million head over the last decade. Despite the flock size falling to 40 percent of its peak, not only has Australia maintained its dominance as the biggest (50 percent) and the highest value (70 percent) wool exporter in the world, it is now also the biggest sheep meat (46 percent) exporter and the highest value exporter (44 percent) in the world. The industry only turned its attention towards sheep meat production over the last two decades, and with continued efforts towards improving productivity from existing sheep meat breeds and establishing new breeds, there is ample scope for substantial sheep meat production gains in the coming years.

Table of Contents

ORIGINS AND GROWTH OF THE SHEEP INDUSTRY IN AUSTRALIA.....	2
1788 to 1800: The Origins of Sheep in Australia.....	2
1801 to 1900: The Early Development of the Sheep Industry.....	2
1901 to 1990: The Continued Sheep Industry Development	4
1991 to 2022: The Big Production Switch.....	5
THE SHEEP INDUSTRY - POST THE WOOL RESERVE PRICE SCHEME	9
Production.....	9
<i>Sheep Meat</i>	9
<i>Wool</i>	10
Consumption.....	15
<i>Sheep Meat</i>	15
Trade	17
<i>Live Sheep Exports</i>	17
<i>Sheep Meat</i>	20
<i>Wool</i>	26
THE SHEEP INDUSTRY VALUE IN AUSTRALIAN AGRICULTURE	30
CONCLUSION.....	32
REFERENCES.....	34

ORIGINS AND GROWTH OF THE SHEEP INDUSTRY IN AUSTRALIA

1788 to 1800: The Origins of Sheep in Australia

As part of the First Fleet that landed in Australia in 1788 when the British colonized Australia, there were 29 fat-tailed sheep on the fleet's manifest collected from the Cape of Good Hope in South Africa ⁽¹⁾. It is unclear how many sheep arrived safely in Australia. Their purpose was to produce meat for food, and like the Indian sheep that were later imported, they did not produce good quality wool.

Captain John Macarthur and Reverend Samuel Marsden are often credited with importing Spanish merino sheep to Australia in 1797. However, according to the National Museum of Australia, Captain Henry Waterhouse and Lieutenant William Kent brought the first flock of 26 merinos from the Cape of Good Hope to Australia in 1797 ⁽¹⁾. The sheep genetics originated from King Carlos III of Spain, who initially gave some of his sheep to Prince William of Orange in the Netherlands, who in 1789 sent two rams and four ewes to be cared for by Colonel Robert Jacob Gordon at the Cape of Good Hope. His widow in 1797 sold 26 progeny to Waterhouse and Kent ⁽¹⁾. Over half of the sheep are said to have perished before arriving in Australia.

Macarthur offered to buy all the surviving sheep from Waterhouse, but instead, he grazed the sheep on his 140-acre property in the Paramatta area near Sydney. As the flock multiplied, Waterhouse distributed some sheep between John Macarthur, Reverend Samuel Marsden, Lieutenant Kent, and Captain Thomas Rowley. In 1800, when Waterhouse returned to England, William Cox bought most of the flock from him, and the remainder went to Macarthur ⁽¹⁾.

Macarthur was a senior official within the colonial ranks and was granted 100 acres in 1793. He also received land in the Paramatta area near Sydney and had unrestricted access to convict labor which were used to clear land. After clearing 50 acres, he received an additional 100 acres. By 1803, he had expanded his pure merino flock to over 4,000 head. Along with his wife Elizabeth, and nephew they continued to expand their merino flock and wool production. The family established Australia's merino wool industry ⁽¹⁾.

1801 to 1900: The Early Development of the Sheep Industry

Macarthur and Marsden recognized that exports were essential for the wool industry's success. The first bale of wool was exported by Macarthur in 1807 and auctioned at Garraway's Coffee House in London. However, it was not until 1813 that the first commercial shipment of wool was exported to England ⁽¹⁾.

Governor George King also recognized the potential of the wool industry, and he established the first textile mill in Paramatta, where the core of wool production in Australia began.

In 1815, Britain was sourcing most of its wool for its mills from Spain (over 3,000 MT) and Germany (1,400 MT), and Australia supplied merely 33 MT ⁽²⁾. A key disadvantage for Australian wool at the time was that the Australian landscape was much drier and dustier than Europe, which resulted in the wool being discolored by the dust and infested with grass seeds.

The British government encouraged the development of the wool industry in Australia by imposing import duties on wool of one-fifth the rate for Australian wool compared to other foreign wools. However, Australia's import duty advantage ceased in 1825, consequently, the Australian wool industry focused its attention on producing very fine wool ⁽³⁾. As part of this focus, in the 1820s, the Australian wool industry imported around 5,000 merino sheep from Europe and South Africa ⁽¹⁾.

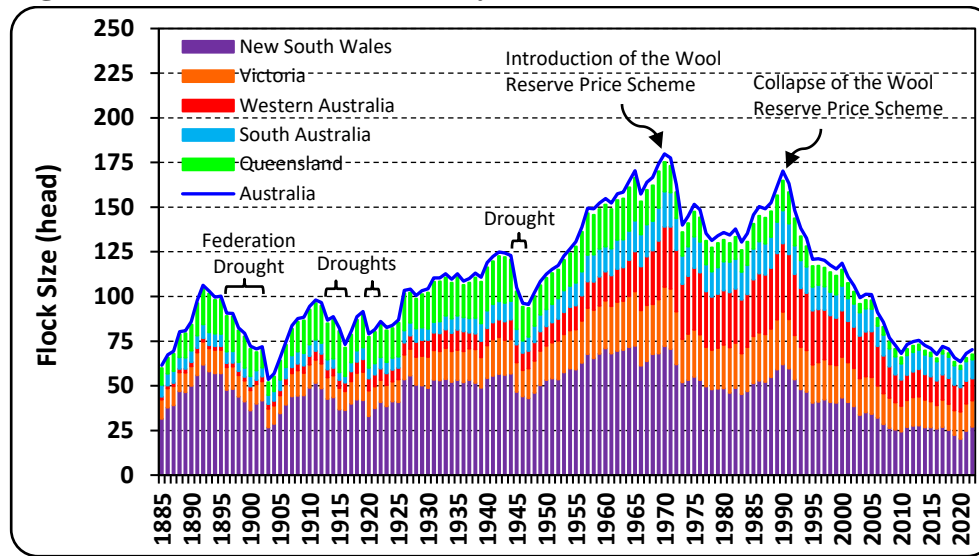
By 1849, Australia had become a dominant wool supplier to England, exporting around 16,300 MT which was more than Europe's combined production ⁽²⁾. The sheep flock and wool production continued to expand in the second half of the 19th century and was Australia's most important export industry.

In 1870, Australia became the world's largest wool producer ⁽³⁾. In 1874, Australia exported wool to Japan for the first time, and the following year to Shanghai ⁽⁴⁾. During the second half of the 19th century, Australian merino breeders crossbred their sheep with other international merino bloodlines, establishing a larger more robust sheep that could yield 10 times more fleece than the original Spanish-bred sheep imported in 1797 ⁽¹⁾. The wool was also more densely crimped, more elastic, and stronger and sought after by the expanding woolen textile industry in Europe ⁽¹⁾.

Less than 100 years after importing the first 10-15 Spanish merino sheep from South Africa in 1797, the Australian sheep flock had exceeded 100 million head by 1892 (see Figure 1). Almost 60 percent of the national flock was in the state of New South Wales (where the wool industry originated) and well supported by Victoria and Queensland in the eastern states of Australia. But the national flock almost halved by 1903 due to the devastating Federation Drought from 1895 to 1902. Subsequent droughts have impacted the national flock size, but none have come close to the extent of the impact of the Federation Drought.

Such was the dominance of the wool industry in the Australian economy that the Shearers Union was formed in 1885. Lower wool prices in the late 1890s combined with the Federation Drought severely impacted the wool industry. With much lower sheep numbers impacting shearers' livelihoods, they sought better wages and conditions, which created substantial conflicts between shearers and pastoralists. These combined impacts took a major toll on the industry. Interestingly, in 1894, the Shearers Union became the Australian Workers Union, the precursor to the Australian Labor Party ⁽⁶⁾, which currently holds power at Federal government level and six of the seven state and territory governments.

Figure 1 – Australian Flock Size by State



Source: Australian Bureau of Statistics

1901 to 1990: The Continued Sheep Industry Development

The first half of the 20th century was impacted by the two world wars and a depression, negatively impacting the demand and price of wool and of course available labor. But despite these challenges, the national flock more than doubled, with growth coming from all the major producing states, including South Australia and Western Australia, which had low numbers at the turn of the century. This growth was supported by the British Government committing to buy Australian wool at favorable fixed rates during the First World War ⁽¹⁾. The price of wool also improved substantially during World War II as demand increased for blankets and uniforms.

In the 1950s, the wool industry began to boom, and at that point, still accounted for over half of Australia’s agricultural production. A famous phrase then was that, ‘Australia was riding on the sheep’s back’.

The early to mid-20th century saw a range of synthetic material developments including:

- 1913 – Poly Vinyl Chloride (PVC)
- Early 1930’s – Nylon
- 1941 – Polyester
- 1950’s – Acrylic
- 1959 – Spandex

These new synthetic fibers were able to be produced at a far lower cost than wool, which led to some industry analysts predicting the demise of the wool industry. In the 1960s and 1970s, there was a huge

growth in the synthetic fiber production and the manufacture of clothing from synthetic materials. Despite these challenges the sheep flock continued to increase at a rapid rate over a twenty-year period from 1950 to 1970, climbing from 113 million head to 180 million head.

A major industry development was the establishment of the Wool Reserve Price Scheme (WRPS) in 1970. The initial purpose of the scheme was to achieve a modest price stabilization for producers. The scheme was administered by the Australian Wool Corporation (AWC). The mechanism was designed to collect a wool tax on production, with the proceeds accumulating in a market support fund that was used to fund the purchase of wool that was not sold at above the minimum reserve price set by the AWC. When the support fund was exhausted, further stock was purchased via raising loan funds against existing stocks in the stockpile. The scheme worked in that there were multiple times when finance was raised, and subsequently, the loans were extinguished as the stockpile was sold down (at a price above the minimum reserve price). During this period, the federal government Minister had veto powers over the reserve price setting. However, the federal government powers were weakened under the Wool Marketing Act 1987 – regarding corporatizing AWC’s operations. The minister no longer had veto powers over the reserve price settings, and the schemes debts continued to be guaranteed by the government. With the loss of the veto powers by the government and greater control of the AWC by wool growers, the purpose of the scheme morphed into a mechanism to artificially raise the market price of wool to growers. In 1989, there was virtually no wool in stock, and the support fund sat at a very healthy US\$1.5 billion. In addition, the industry did not foresee the global recession of 1990 to 1992, and the price of wool plummeted to well below the wool floor price. This situation led to the growth of a huge stockpile of wool reaching 4.6 million bales and net debt reaching US\$1.9 billion ⁽⁵⁾. At this point, the scheme was abandoned in February 1991. The federal government would not guarantee the debt, so it took ownership of the stockpile and removed the floor price at the time set at US550 cents per kilogram, and the market price fell to US360 cents per kilogram. The federal government gradually sold off the stockpile of wool, selling the last bale in 2001 at a financial loss to the Australian taxpayer of around US\$0.7 billion (AU\$1.0 billion) ⁽⁵⁾.

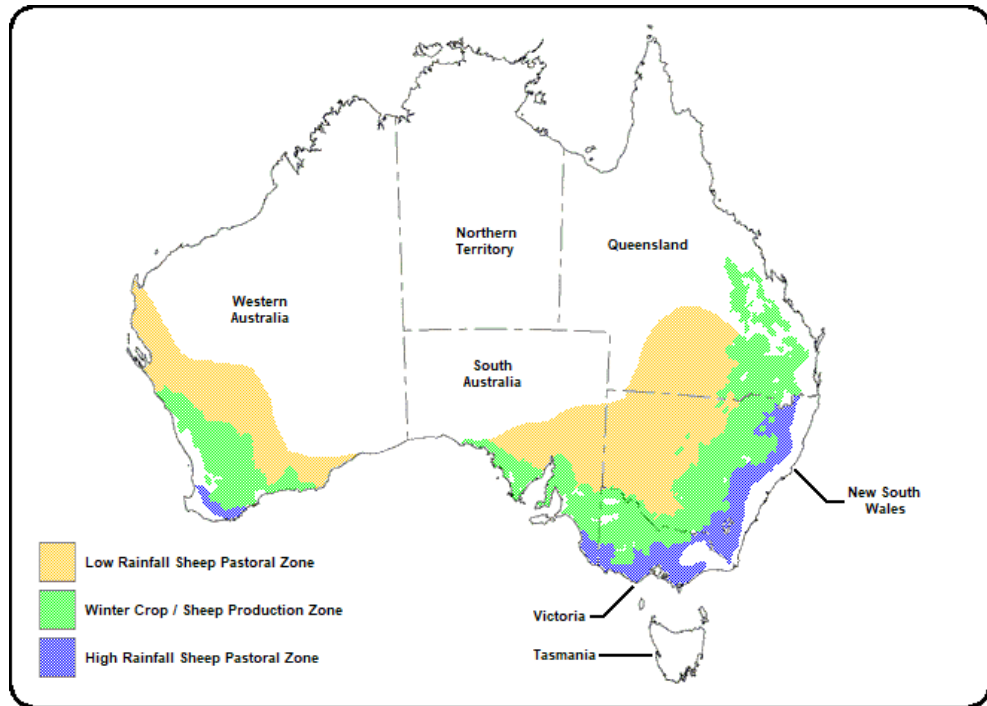
1991 to 2022: The Big Production Switch

The abolition of the WRPS in 1991 and the exposure of growers to far lower market wool prices has resulted in a rapid fall in the Australian sheep flock from 170 million head in 1990 to around 70 million head in 2010, after which it has remained relatively stable. The much lower wool prices for producers prompted not only the scaling back of the size of industry, but also a major change in production emphasis.

Although there are grazing regions in Australia that are not suited to other agricultural production pursuits, winter cropping regions are suited to sheep production (see Figure 2). In the past, winter cropping farmers also farmed sheep often using winter legume pastures as a disease-break crop for

cereal crops and to build up nitrogen reserves. These winter legume pastures, along with crop stubble, and grain that fell to the ground at harvest, were primary feed sources for sheep. This system integrated well and provided a diversity of income streams. The wool produced in these winter cropping regions was generally coarser and of lower value than wool produced in cooler higher rainfall areas.

Figure 2 – Sheep Production Zones in Australia



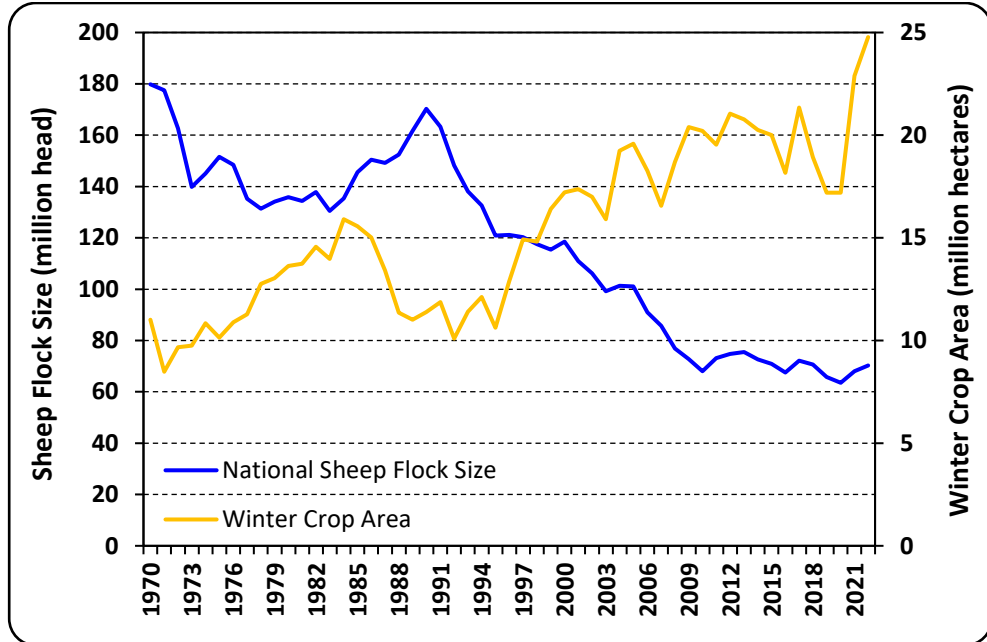
Source: *Australia Bureau of Statistics / FAS/Canberra*

In the 1970s, during the early period of the WRPS, when the national sheep flock numbers were declining there was a shift towards increasing the winter cropping area. The WRPS was more focused on smoothing out wool price fluctuations during this period. Meanwhile, winter grain crop returns had strengthened. In the 1980s, after wool growers gained greater control over WRPS and were more intent on pushing up wool prices, there was a shift back to wool production and a decline in winter cropping area (see Figure 3). However, since abandoning the WRPS in February 1991, the sheep flock size has decreased by more than half over thirty years while the winter cropping area has more than doubled (around 110 percent).

Prior to the collapse of the WRPS, the emphasis for the sheep industry was on wool production, although there were some producers focused on lamb production for meat. Since the collapse of the WRPS, the national sheep flock has fallen and stabilized over the last decade to less than half. Wool production has also fallen but at a slightly greater rate than the decline in the sheep population (see Figure 4). However, the major change since the mid-1990s over almost three decades has been the shift towards lamb production for meat. Over this period, lamb meat production has increased from around 291,000 MT CWE to 535,000 MT CWE, a rise of 84 percent despite a decline in the national sheep

flock of around 60 percent from its peak. Those producers located in cooler, higher rainfall regions, more suited to wool production, have focused on producing a finer higher-value wool.

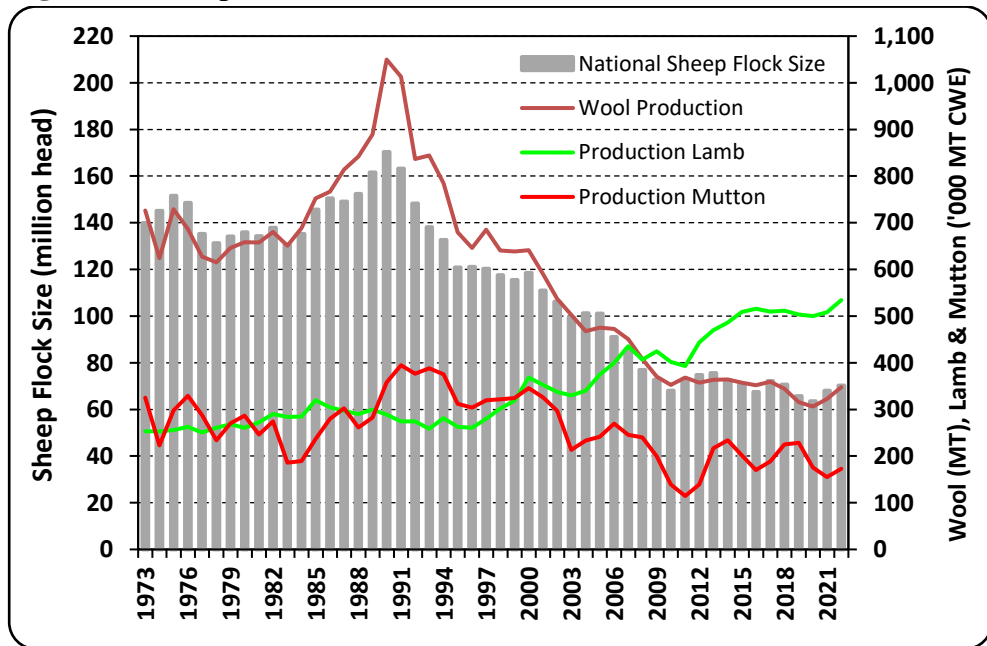
Figure 3 – Sheep Flock Size and Winter Crop Area 1970 to 2022



Source: Australia Bureau of Statistics

Note: Winter Crop Area data is the combination of wheat, barley and canola areas

Figure 4 – Sheep Flock and Wool Trend v's Lamb and Mutton Meat Production



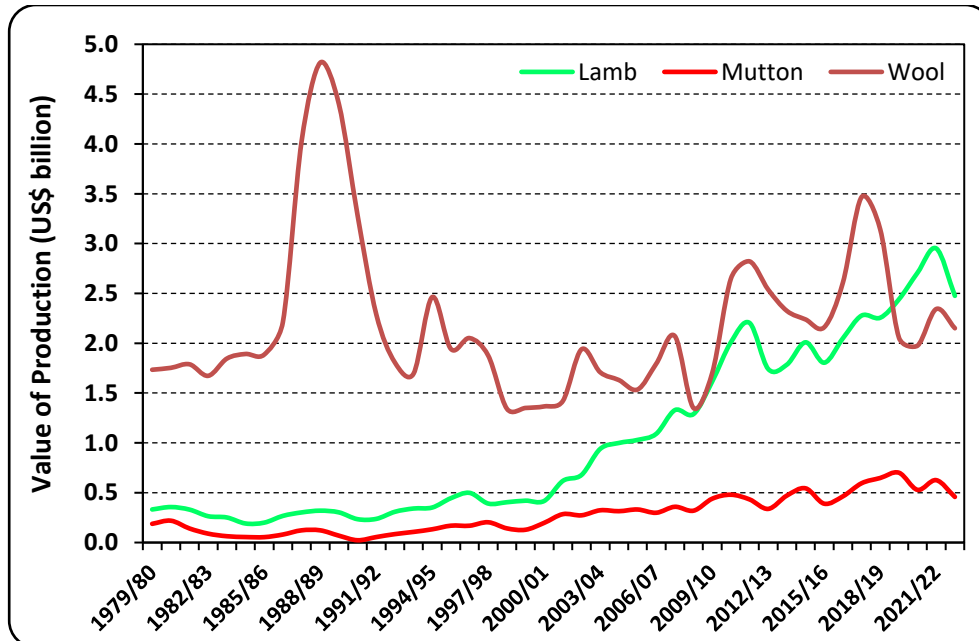
Source: Australia Bureau of Statistics

The value of wool production peaked at US\$4.82 billion in the leadup to the demise of the WRPS, and with the sheep flock subsequently plummeting, so too did the value of wool production. The average value of wool production over the next 25 years was around US\$1.97 billion, less than half the peak value. Over the last seven years, the value of wool production has increased but this is mainly due to the increase in the world price of wool, and to some extent, improvements in the quality of wool production.

The big shift towards lamb production for meat has been very evident over the last three decades starting in the mid-1990s, around five years after the WRPS was dismantled (February 1991). Over this period, lamb production value has risen around eightfold from around US\$0.23 billion to US\$2.95 billion (see Figure 5). At the same time, mutton production value has increased from less than US\$0.10 billion to around US\$0.63 billion (peaking at US\$0.70 billion during a recent drought), despite a significant decline in mutton production due to the drop in the national sheep flock over the same period.

When wool production reached its peak value, the value of sheep meat (lamb and mutton) was less than 10 percent of that of wool. The focus on wool was so strong that meat production was merely a by-product of wool production. But as mentioned, from the mid-1990s, the focus started to turn towards sheep meat production and in particular lamb production. Some two decades later, the combined value of lamb and mutton production first exceeded that of wool. Other than a short period when the world price of wool surged in 2017 and 2018, the value of sheep meat production has continued to surge past that of wool. Over recent years, the value of lamb production alone has exceeded that of wool, and there are no signs that this trend will change soon.

Figure 5 – Changing Value of Sheep Production – Wool, Lamb & Mutton



Source: Australia Bureau of Statistics

THE SHEEP INDUSTRY - POST THE WOOL RESERVE PRICE SCHEME

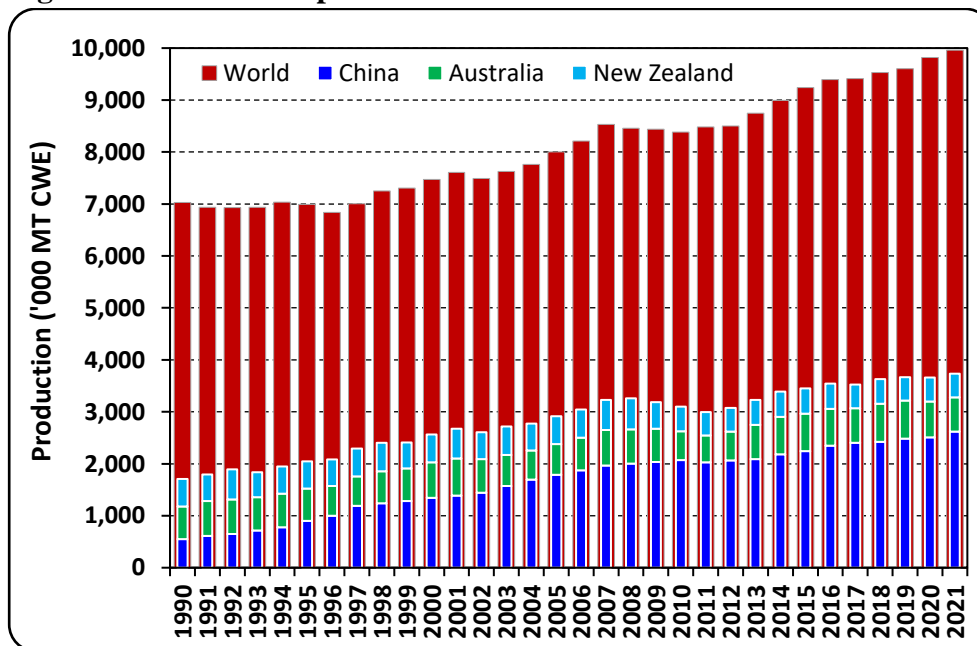
Production

Sheep Meat

The total world production of sheep meat has gradually grown to almost 10 MMT CWE, and there are over 75 nations that produce over 10,000 MT CWE of sheep meat each year. China is by far the largest producer at around 2.62 MMT CWE (26 percent), and the growth in production by China reflects the growth in world production (see Figure 6).

In 1990, when Australia was at its peak sheep flock numbers, sheep meat production in Australia was around 648,000 MT CWE and was the largest producer at almost nine percent of world production. At the time, China produced around 550,000 MT CWE, and New Zealand around 530,000 MT CWE, both at a little under eight percent of world production. Over the last three decades, Australia's overall production of sheep meat peaked in recent years at around 733,000 MT CWE, merely a 13 percent increase. However, as mentioned previously, there has been a big shift towards far higher-value lamb meat and less mutton during this period. Over the past three decades, New Zealand's sheep meat production has decreased by around 14 percent to about 450,000 MT CWE per year. This situation has broadly been due to competition from the dairy and forestry industries.

Figure 6 – World Sheep Meat Production – 1990 to 2022



Source: Food and Agriculture Organization of the United Nations

The Merino sheep breed, known for its high-quality wool was by far the dominant breed in Australia in the lead up to reaching the peak national flock size in 1990. However, after the demise of the WRPS and

the subsequent rapid reduction of the national flock, the industry shifted its focus towards sheep meat production with the associated wool production being of lower importance.

Merino sheep are not the ideal breed for lamb meat production, and over time, a common approach was to produce a first cross ewe more suited to the purpose. Typically, Merino ewes were crossed with a British breed ram. The most popular choice became the Border Leicester. The Merino x Border Leicester first cross ewe is a good milk producer that has a propensity for a high rate of twins. These first cross ewes were then typically joined to a Poll Dorset ram which are renowned as prime lamb sires. This breed combination produces large lambs that mature quickly to reach market weight for meat. These lambs are typically weaned and then sent to market at around six to ten months of age.

Over time, producers have sought alternate breeds to improve the productivity of lamb meat production further. The South African Dorper breed, specifically bred for meat production has gained interest in Australia. In part, this is because it does not produce wool, obviating the need for shearing. The Dorper breed also has a high propensity for producing twin lambs and is able to produce three sets of lambs every two years and they are reported to reach slaughter weight at a younger age. In the correct environments and management, the Dorper breed provides a further productivity gain over the more traditional first cross ewe mated with a Poll Dorset ram.

A relatively new 'Australian White' breed was also developed and established in 2011. This breed has been developed from a combination of four sheep breeds (Poll Dorset, Texel, White Dorper, and Van Rooy) and is known to have high rates of twins like the Dorper shed hair rather than produce wool and the lambs have high carcass weights. This breed is gaining in popularity.

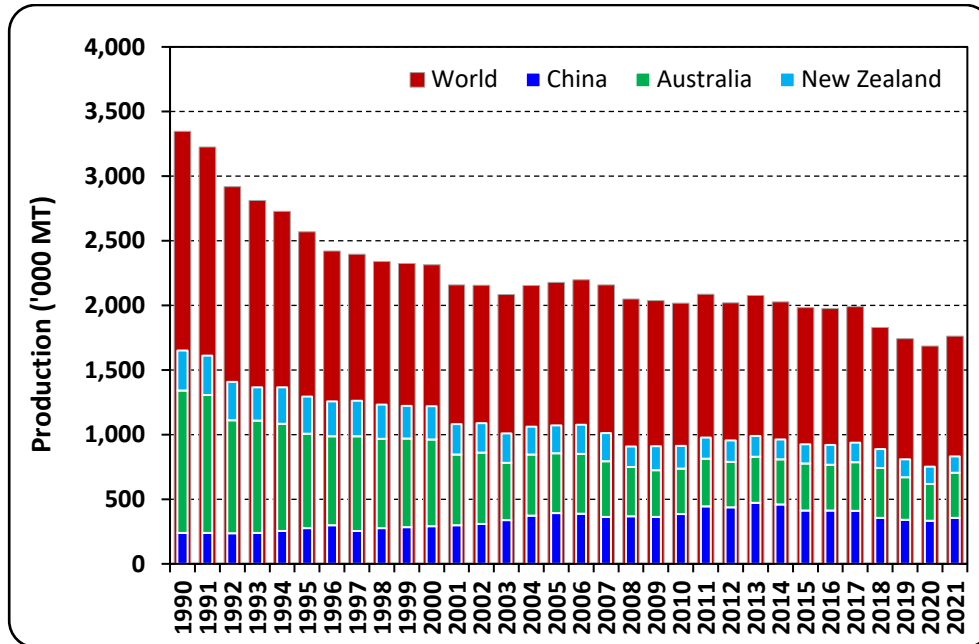
Over the last two decades, there has been a shift towards establishing breeds that do not produce wool and are solely focused on improving lamb meat production performance. With the focus on lamb meat production essentially being relatively new, there is ample scope for developing more new breeds and genetic gains from existing breeds to further improve lamb meat productivity well into the future.

Wool

World wool production peaked in 1990 at almost 3.35 MMT, and Australia was a dominant producer at 1.10 MMT, contributing 33 percent of the overall world production (see Figure 7). The other two significant producers were New Zealand at nine percent and China at seven percent of overall world production. After the demise of the WRPS and the period when the industry was competing against lower-cost synthetic fibers, the Australian sheep flock rapidly diminished and with it, wool production dropped markedly. The sheep flock size has stabilized over the last decade, and with it, so too has wool production, which is around 350,000 MT, a 70 percent decline from Australia's peak wool production. China and Australia, over recent years, have produced similar volumes of wool and each producing

around 20 percent of world production. Over the last three decades, New Zealand has reduced its wool production by around 60 percent but remains at around seven percent of world wool production.

Figure 7 – World Wool Production – 1990 to 2022



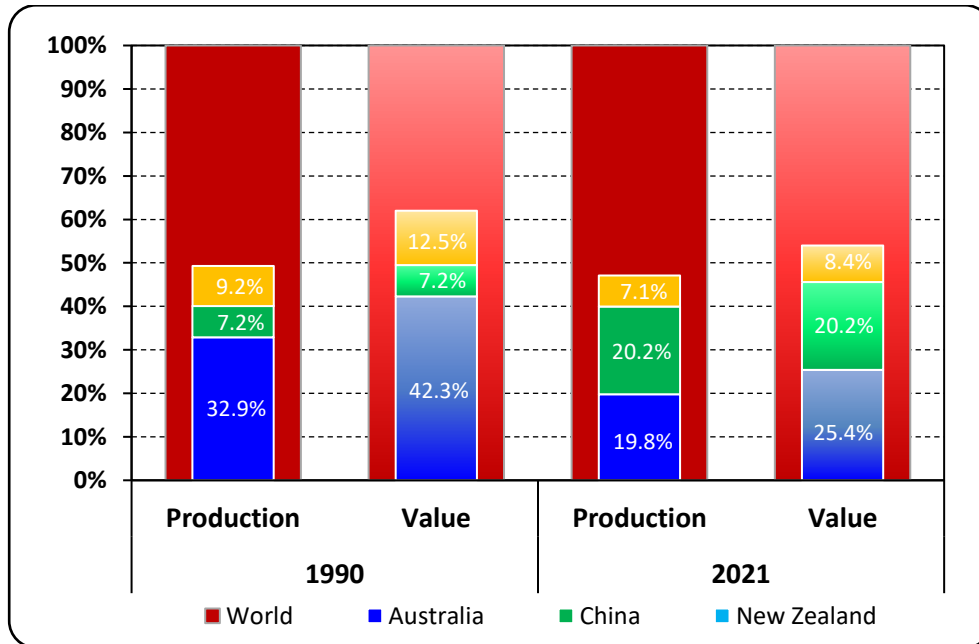
Source: Food and Agriculture Organization of the United Nations

Wool quality varies greatly based mainly on breed, nutritional management, and environment. As far back as 1825, when the British government removed the import tariff advantage to Australia that it provided over that of other key wool-producing nations – mainly Spain and Germany, whereby the tariff for Australia was one-fifth that of others – Australia had shifted its focus to breeding Merino sheep to produce higher quality wool. The tyranny of distance to market necessitated that the Australian industry establish some form of competitive advantage. This early focus continued into the 20th century, and in 1990, during Australia’s peak wool production, the average value of Australian wool was very strong. In that year, Australia produced 32.9 percent of the world’s production, but it is estimated by the Food and Agriculture Organization (FAO) of the United Nations that this production equated to 42.3 percent of the value of the world’s wool production. China, in that year, produced wool at the world average value, while New Zealand like, Australia, had a price advantage (see Figure 8).

Despite Australia, over the last three decades, shifting its focus towards lamb meat production (from breeds that produce far lower quality wool) it is estimated by FAO to have maintained a strong price advantage over other key wool-producing nations. In 2021, Australia’s wool production was 19.8 percent of world production, but this was estimated by FAO to be 25.4 percent of the value of world wool production. This situation indicates that those producers located in areas well suited to high quality wool production have maintained their focus on wool and continued to make gains in the quality of wool produced. China has vastly increased its production of wool over the last three decades, which is now in

line with Australia’s production, but its value of 20.2 percent of world wool production is in line with its share of world wool production. New Zealand wool in 2021 held a premium over the average value of world wool produced but this has been eroded over the last three decades.

Figure 8 – World Wool Production and Value – 1990 and 2021



Source: Food and Agriculture Organization of the United Nations

There are a large range of factors that influence the quality of wool which in turn impacts on what can be produced from that wool. Some of the wool quality considerations are:

- Fiber length
- Crimp uniformity
- Weak spots in the wool fibre – can be caused by short term disease or nutritional stress
- Fiber color – wool produced in dry dusty conditions can stain the fiber
- Vegetable matter – wool grown in drier harsher environments can have elevated levels of vegetable matter, typically weed seeds that can be difficult to remove during processing

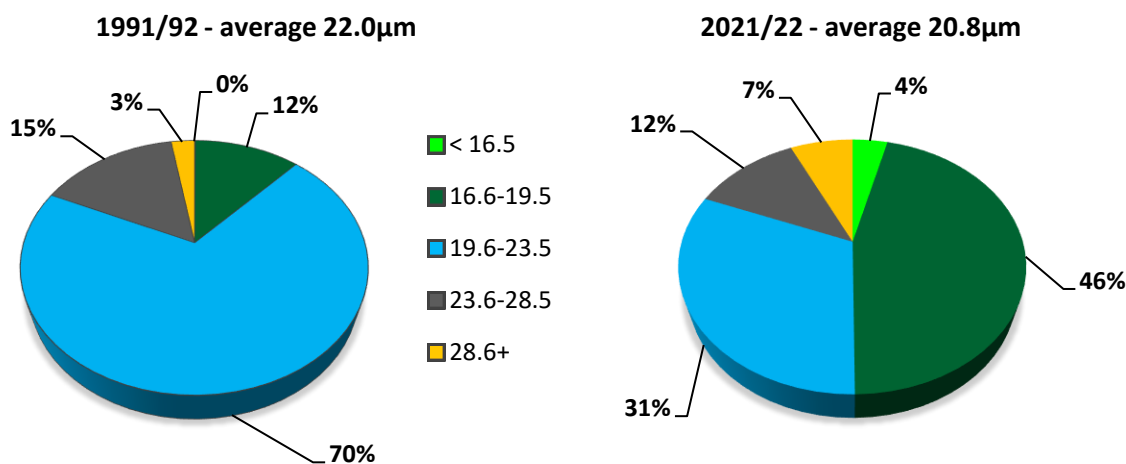
The above are all important quality considerations that influence the value of the wool, but the fiber diameter is the primary determinant of wool quality. The Merino breed in Australia has multiple strains bred over many years to suit different wool production conditions. The Saxon strain is a small frame sheep that yields the lowest fleece weight but produces the finest diameter wool at 20 micrometer (µm) or less and is best suited to high rainfall areas ⁽⁷⁾. The Peppin strain along with some non-Peppin types are a medium framed sheep with average fleece weight and a typical fiber diameter of 21-22µm and are suited to the winter cropping regions ⁽⁷⁾. The South Australian Strongwool strain is a large-framed sheep producing the highest fleece weight with a fiber diameter of 23-26µm and is suited to pastoral zones ⁽⁷⁾

(typically low rainfall regions where no other agricultural pursuits are viable other than grazing animals).

Over the last three decades, there has broadly been a significant reduction in sheep numbers in the pastoral areas of Australia, in part due to those regions not being suited to lamb meat production and the lower value of the broader fiber wool, but also due to the proliferation of wild dogs and dingoes causing excessive lamb losses. During the same period, mixed farmers in the cropping regions specialized in crop production and moved away from sheep wool and lamb production. This situation is in part due to improved crop production technologies and also to reduce soil compaction impacts from sheep. With the proportionally larger reduction in wool production from the pastoral and cropping areas that produce the coarser wool fiber, the wool fiber profile produced in Australia has changed substantially over the last three decades.

Around the time Australia reached its peak sheep flock number, only 17 percent of wool was in the superfine and fine fiber diameter of 19.5µm or less, and 66 percent of wool was in the typical merino range of 19.6-23.5µm. Over the last two decades, this has transitioned to 50 percent of wool now being 19.5µm or less, and 31 percent of wool was in the typical merino range of 19.6-23.5µm (see Figure 9). This situation is a very large improvement in the wool fiber diameter now being produced, and a larger proportion of the wool clip can now be used for higher-value purposes. This is a substantial improvement for a nation that was even three decades ago known to produce the best quality wool in the world.

Figure 9 – Change in Australian Wool Fibre Diameter Profile 1991/92 to 2021/22



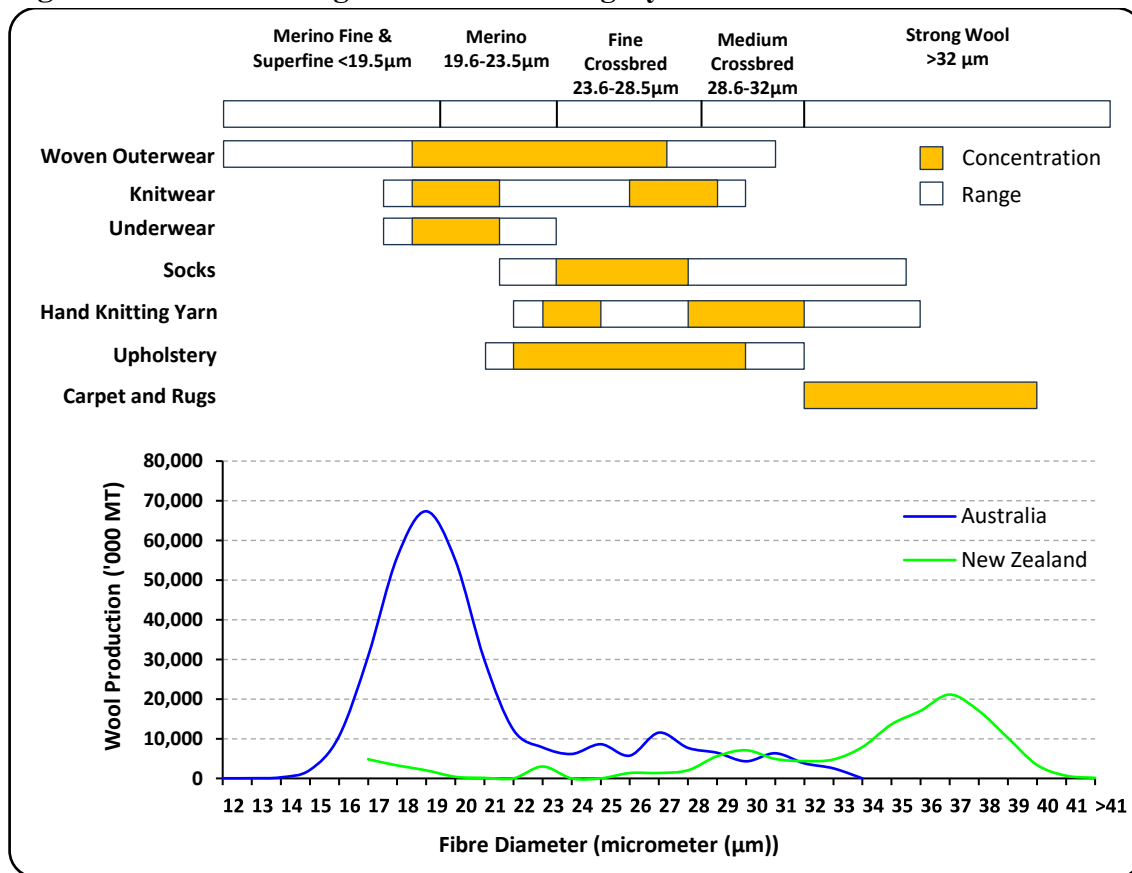
Source: Australian Wool Testing Authority

The importance of the wool fiber diameter relates to the type of products that can be produced. Broadly, the finer the wool fiber diameter the higher the quality of product that can be produced. Superfine wool

which can have a fiber diameter as low as 12µm is used to make the likes of the highest quality suits that may cost many thousands of dollars for each suit. Other fine wool is used to produce high quality clothing and as the wool fiber becomes coarser it is used to produce underwear and socks and knitting yarn through to very coarse wool of around 32µm and higher being used to produce carpets and rugs (see Figure 10).

Of the main nations that export wool, Australia has by far the finest wool fiber diameter profile (see Figure 10), which highlights the reason that Australia’s share of the value of the world’s wool production is substantially higher than its share of the worlds volume of wool production (see Figure 10). Interestingly, New Zealand, the third largest producer of wool (behind South Africa) and is known for its high-quality agriculture, produces most of its wool in the very coarse low-quality range that is used to produce carpets and rugs.

Figure 10 – Micron Usage v’s Product Category



Sources: Australian Wool Testing Authority for 2021/22, New Zealand micron profile estimated from NZ Wool Data Book 2019 and actual total production for 2021/22. Product category data from Errol Wood 2012 (originally from Wood 2007)

Note: For Australia wool production is estimated from actual volume data for micron ranges: 24.6-26.5, 26.6-28.5, 28.6-30.5 and 30.6+

Consumption

Sheep Meat

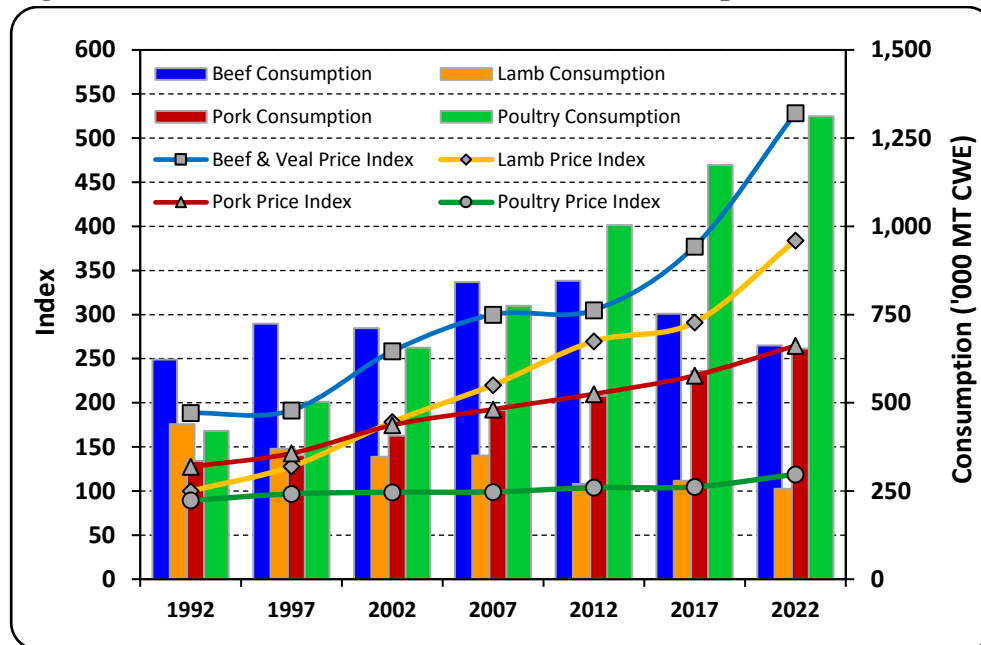
Almost all of the sheep meat consumed in Australia is lamb. Virtually all the mutton produced is processed and exported or sold via the live sheep trade. Despite a 11 percent growth in sheep meat production over the last three decades, domestic consumption has declined by 45 percent from 396,000 MT CWE in 1992 to 218,000 MT CWE in 2022. The change in lamb consumption in Australia can in part be attributed to changes in its price competitiveness and changes in consumer preferences relative to the other major meats produced in Australia.

Along with lamb, Australia is a major producer and exporter of beef. Australia is also a big producer of poultry and to a lesser extent pork, but exports relatively little of these meats. Around three decades ago, the volume of lamb and poultry consumed in Australia was relatively similar and pork was not too far behind, but beef consumption was around one third higher than lamb (see Figure 13). Over the last thirty years, pork consumption in Australia has almost doubled, but poultry has tripled. Lamb is now the least consumed of the major meats in Australia at around 40 percent of the volume for beef and pork and merely 20 percent of the volume of poultry.

The price index of meats, with lamb set as the starting point of 100 in 1992 and the other meats index in the same year based on their relative pricing to lamb, reflects price relativities over the last three decades (see Figure 11). In 1992, the prices of lamb, pork, and poultry were all similar, as was their consumption volume, but beef consumption was significantly higher even though its price was also much more costly. Lamb prices are now far higher than for pork and especially poultry, and with this, lamb consumption has declined at the expense of pork and poultry.

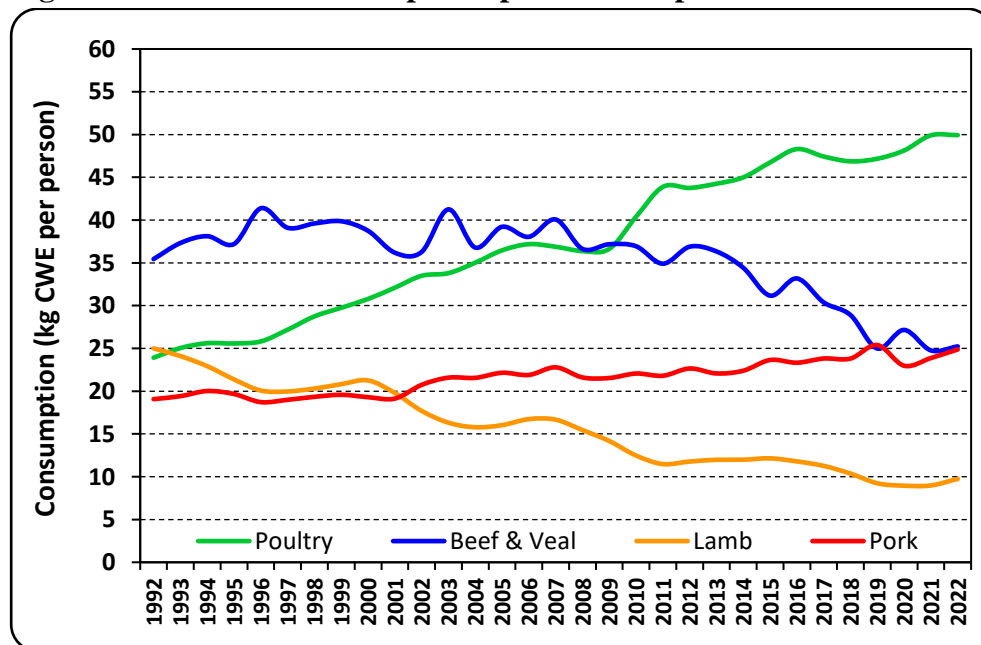
Consumer preferences for the differing meats along with their respective prices, play their part in shifting consumer demands. A key factor has been the growing consumer health consciousness over time. Consumers view chicken and pork as low-fat meat options. With the price of chicken remaining relatively flat over three decades its popularity with consumers in Australia has grown rapidly (see Figure 12). Although pork prices have increased, it has been to a far lesser extent than lamb and beef, and per capita consumption of pork has also grown. With lamb prices rising at a far faster rate, and its per unit weight price being far higher than poultry and pork, its per capita consumption has fallen to merely around 10 kg CWE per person. Lamb consumption per capita in Australia is two and half times lower than for pork and beef and five times lower than for poultry.

Figure 11 – Australian Meat Price Index & Consumption Trends – 1992 to 2022



Source: Australian Bureau of Statistics

Figure 12 – Australian Meat per Capita Consumption Trend – 1992 to 2022



Source: Australian Bureau of Statistics

Trade

Live Sheep Exports

Not only is Australia a big producer of wool and sheep meat the nation is also a significant live sheep exporter. Live sheep were first exported from Western Australia in 1845 in small volumes to Singapore⁽⁸⁾. The trade reached around 1,000 head by 1895. A significant trade expansion occurred around 1945 when 24,000 head of sheep were exported to Singapore on ships that were temporarily converted for the purpose⁽⁸⁾. Trade to the Middle East commenced in the early 1960's after introducing two 6,000 head capacity purpose-built ships⁽⁸⁾. Around a decade later ships of 50,000 head capacity came into service⁽⁸⁾. Also, the 1973 oil crisis resulted in some tankers being converted to carry up to 125,000 sheep⁽⁸⁾.

Many Middle Eastern countries import live sheep for their Eid al-Adha festival at the end of the annual Hajj pilgrimage. Also known as the 'feast of sacrifice' the day is marked with the sacrifice of an animal, usually a goat, sheep or cow, and the distribution of the meat among neighbors, family members and the poor. It is also reported that these nations have growing populations and placing greater pressure on water resources and are increasingly leaning on live imports to meet their needs.

The rapid expansion of the live sheep trade in the 1970s resulted in the closure of meat processing facilities, which led to union actions including preventing sheep from being loaded onto ships. During the same period, animal welfare activists argued that the live sheep trade should be abolished on animal welfare grounds⁽⁸⁾. A further major event occurred in 1980 when a cargo of over 40,000 sheep destined for the Middle East caught fire and sank, losing the entire cargo of sheep⁽⁸⁾. Despite these troubling issues, by 1983, the trade had expanded to around 7.3 million head of sheep. These concerns and rapid trade growth resulted in multiple reviews by the government and industry in the early 1980s, including conducting research to improve knowledge deficiencies from which regulation could be established to improve welfare standards.

The federal government first introduced trade regulations in 1926, which remained largely unchanged through until 1983. A major federal government review of the industry in 1985 concluded that on welfare ground alone, there was enough evidence to stop the trade but in conjunction with economic and dislocation considerations domestically and in the Middle East, "the trade should continue provided that the welfare of the sheep is given the proper high priority it requires"⁽⁹⁾. This decision included considerations of the treatment of the sheep at their destination. There have since been many reviews and regulatory improvements introduced including veterinary presence on all shipments, ventilation, maximum density standards and the banning of shipment to the Middle East in their summer period (June 1 to August 31) due to the risk of unacceptable mortality rates in this period. Currently, Australia is considered to have the highest standards of live sheep exports of any nation in the world. Despite this, the current federal government in Australia has committed to phase out the live sheep export trade from Australia, with the end date yet to be determined. According to the federal government, this decision is on the basis that the industry has "lost its social license" for the trade. However, the Australian Livestock

Exporters Council (ALEC) is challenging this claim and has threatened a class (legal) action against the federal government and challenges through the World Trade Organization (WTO) (Note: the basis of this is unclear at this point. End Note.)

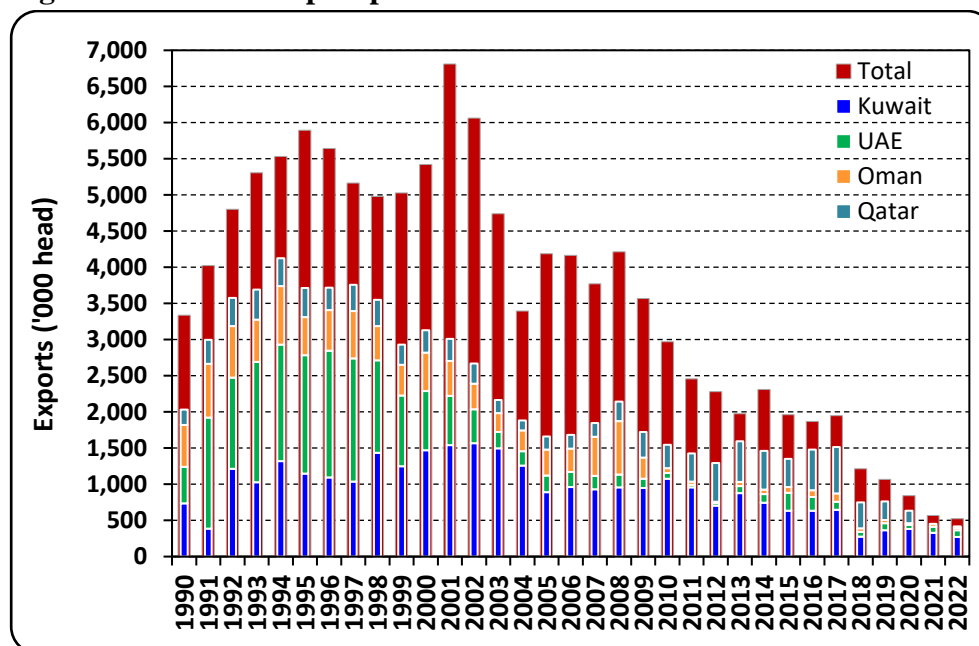
In the 1980s, as Australia was rapidly building its national flock and continuing its focus on wool production, the WRPS was active, and the live sheep export trade was also at its peak. By the tail end of the WRPS in 1990, the live export trade had fallen to around 3.3 million head at a value of around US\$52 million. This situation was in large part due to the suspension of trade with Saudi Arabia after their authorities claimed to have found sheep with scabby mouth disease despite Australian veterinarians reporting no signs of the disease. But this big drop in trade was also due to the industry retaining as many progenies and breeders as possible in the late 1980s to take advantage of high wool prices supported by the WRPS. This big drop in live exports at the tail end of the WRPS in 1990 is from shipments of around 7 million head per annum during the early to mid-1980's valued at around US\$150 million per annum.

After the fall of the WRPS in 1991, the industry began adjusting to the open market environment over the next decade, with many mixed farmers exiting the sheep industry to focus on winter crop production. The other key adjustment was that the industry transitioned from focusing on wool production to wool and sheep meat production. This policy included a change in focus on sheep breeding to improve meat production. The combined effects resulted in a spike in live sheep trade in 2001 to 6.8 million head (see Figure 13) valued at US\$187 million. Over the last two decades since this spike, the volume of live sheep exported by Australia has gradually dwindled to 525,000 head valued at US\$57 million in 2022.

Over the last six decades, the primary destination for live sheep exports has been to the Middle East. Since 1990, the main trading partners in the Middle East have been the United Arab Emirates and Kuwait, with Oman and Qatar being significant in differing periods (see Figure 13). In recent years, as live sheep export volumes have diminished, Kuwait has become the dominant destination - at well over half of overall exports.

Most sheep traded on the live export market are wethers and ewes that reach the end of their productive lives. In dry, Mediterranean climate areas, there is limited reliable improved pastures suited to the production of lambs for meat. Consequently, these areas are more suited to producing merino wethers for wool and the live export trade. With the live export trade, sheep farmers in these low rainfall regions with highly variable conditions from season to season can use wethers to manage their stocking rates and optimize their productivity and profitability. In years of ample pasture, sheep farmers may keep their wethers beyond two years of age to produce additional wool before selling them on the live export trade. In years of lower feed availability, wethers can be shorn and sold for export or for processing as mutton, depending on market prices at around one year of age.

Figure 13 – Live Sheep Export Destinations – 1990 to 2022

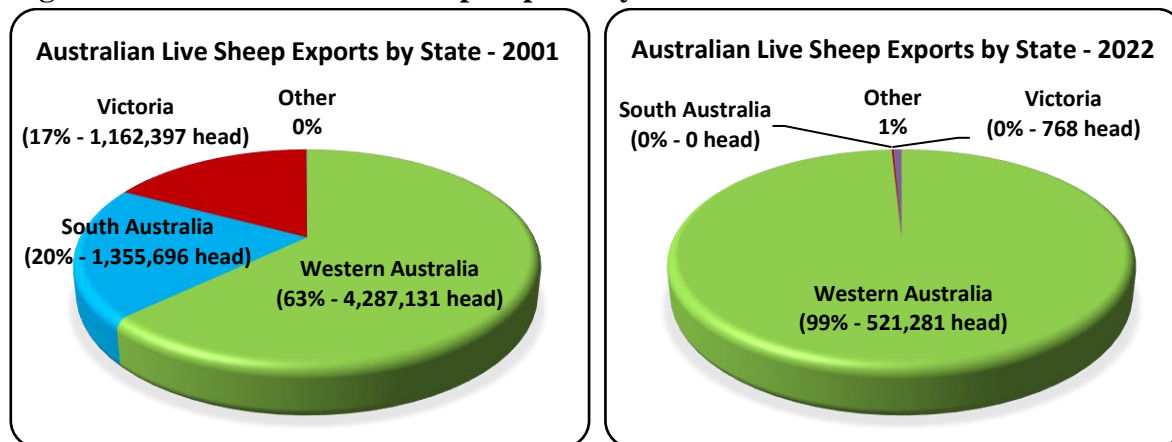


Source: Australian Bureau of Statistics

Western Australia was the primary driver in establishing the live sheep export trade from Australia, which, as mentioned, first started in a small way in 1845. In 2001 when the most recent peak number of 6.8 million head was exported, 17 percent was from Victoria, 20 percent from South Australia, and 63 percent from Western Australia. Australia’s live sheep exports have dramatically declined over the last two decades. South Australia and Victoria now export virtually no sheep, while Western Australia now accounts for 99 percent of overall exports (see Figure 14).

FAS/Canberra Note: *The national sheep flock size has stabilized over the last decade, but the live export trade has declined over the same period. From this and the fact that Victoria and South Australia, have without government intervention, progressed to a point of no live sheep exports, it is evident that the industry is continuing to adjust through normal market forces. There is a strong likelihood that the volume of live sheep exported from Western Australia will continue to decline. In this situation, there is little to be gained from the current federal government’s intent to phase out the trade; the industry appears to be on the path of naturally phasing out the live export trade. This development may simply take a little longer compared to government intervention.*

Figure 14 – Australian Live Sheep Exports by State – 2001 and 2022

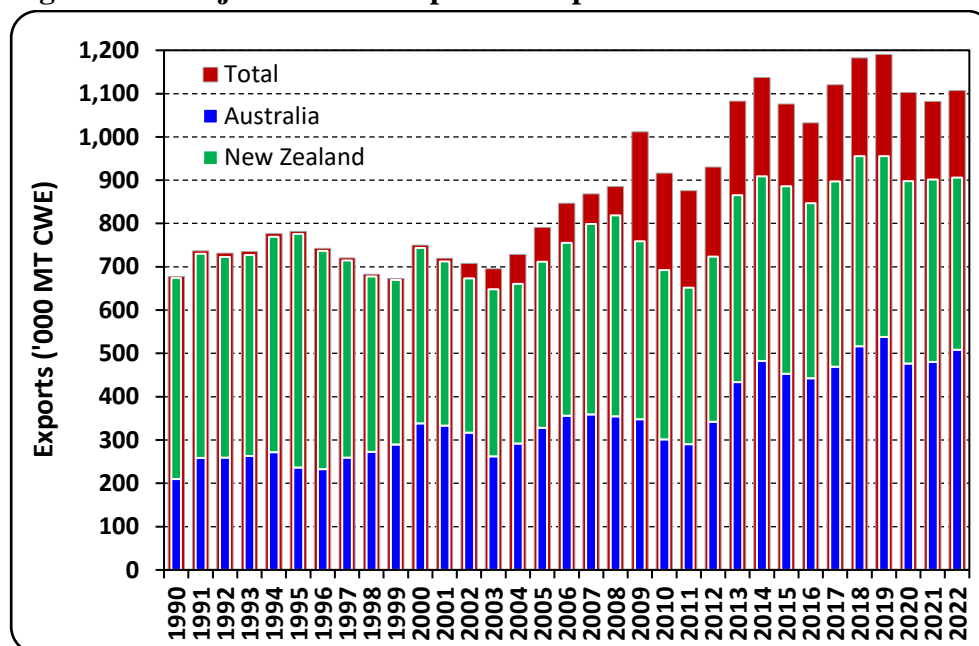


Source: Australian Bureau of Statistics

Sheep Meat

Australia, along with New Zealand, have by far been the two largest exporters of sheep meat over the last three decades. The broad trend over the last 15 years has been a growth in world sheep meat exports of around 30 percent. Over this period, Australia and New Zealand on average accounted for 80 percent of overall world exports. New Zealand was the biggest exporter until 2013. Over the last decade, Australia has continued to grow its export volume (other than year-to-year variations) and has been the biggest exporter of sheep meat, rising to 510,000 MT CWE in 2022 from 210,000 MT CWE in 1990 (143 percent growth). Over the last decade, sheep meat exports from New Zealand have remained flat. Australia now supplies around 45 percent of world sheep meat exports and New Zealand 37 percent compared to the rest of the world at 18 percent (see Figure 15).

Figure 15 – Major World Sheep Meat Export Nations – 1990 to 2022



Source: Trade Data Monitor

Note: New Zealand export data from 1990 to 2006 is estimated from NZ Ministry data

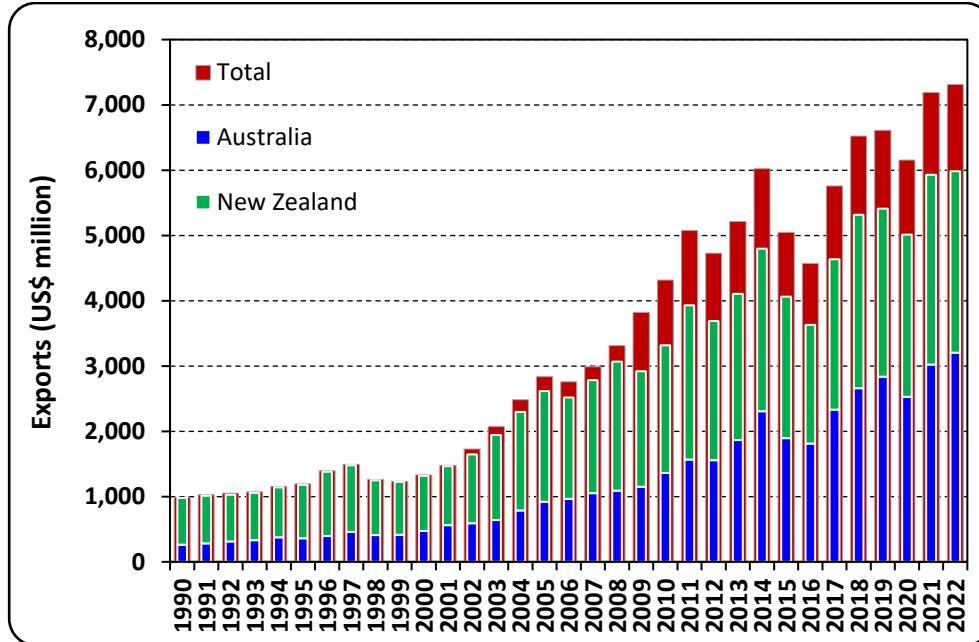
The growth in the value of exports has been much faster than the volume of exports. Around three decades ago, the unit value of sheep meat exports from Australia was almost US\$1,250 per MT CWE, which has grown by 400 percent to US\$6,300 per MT CWE in 2022. The overall value of sheep meat exports in 1990, the year prior to the WRPS being terminated, was US\$0.26 billion and has since grown to US\$3.20 billion in 2022. This situation is a growth in value of over 1,100 percent compared to a volume growth of 143 percent over the same period. The value of sheep meat exports from New Zealand in 2022 was US\$2.78 billion (see Figure 16). Australia and New Zealand combined accounted for 82 percent of the value of world sheep meat exports in 2022.

Despite the rapid decline in the national sheep flock size over the last three decades, there has been a 13 percent growth in sheep meat production, and the export volume has doubled for Australia. Three decades ago, when the sole focus of the Australian sheep industry was on wool production, sheep meat production was essentially a by-product. At that point, most of the sheep meat produced and exported was mutton and relatively little lamb meat (see Figure 17).

Over the last three decades, the sheep industry in Australia has placed much greater emphasis on sheep meat production and away from wool. With this shift, the volume of lamb exported has increased by around 660 percent from merely 45,000 MT (CWE) in 1990 to 334,000 MT (CWE) in 2022 (see Figure 17). However, the volume of mutton exports has only decreased slightly over the last three decades despite the national flock size falling to less than half. This situation directly relates to the huge decline

in live sheep exports over this period (see Figure 13). Instead, an increasing number of sheep have been processed domestically before being exported as mutton.

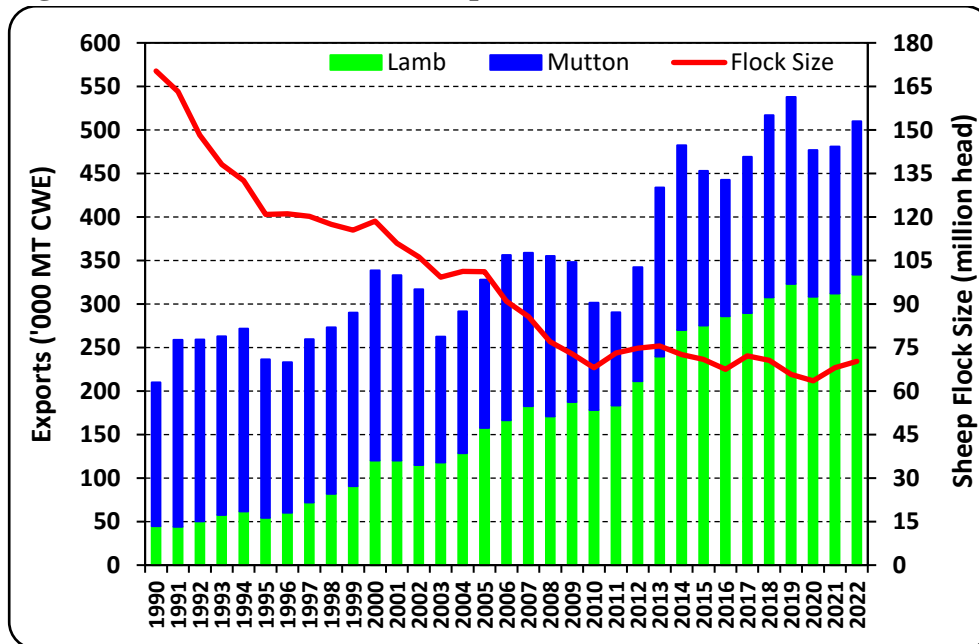
Figure 16 – Value of Sheep Meat World Exports – 1990 to 2022



Source: Trade Data Monitor

Note: New Zealand data from 1993 to 2006 is from NZ Ministry, 1990 to 1993 is estimated

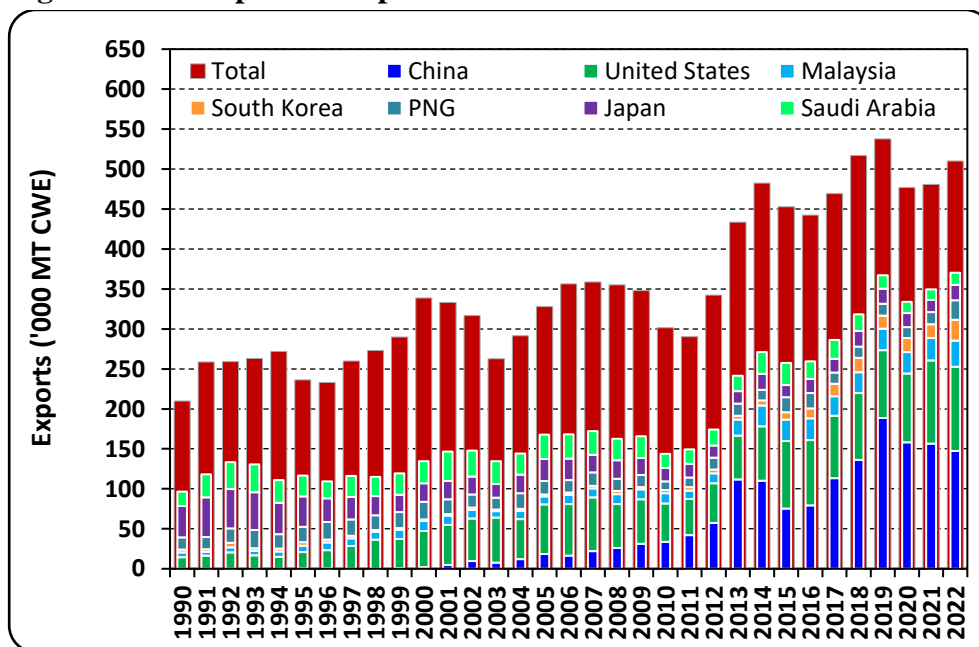
Figure 17 – Lamb and Mutton Exports v Flock Size – 1990 to 2022



Source: Australian Bureau of Statistics

Over the last three decades, Australia has consistently had over 70 sheep meat export destinations around the world. Southeast Asian nations, along with Saudi Arabia, and the United States have been consistently strong destinations over this period. Key to Australia’s growth of sheep meat exports has been the increasing demand from the United States and more importantly from China over the last two decades (see Figure 18). These two destinations now account for half of Australia’s overall sheep meat exports. But including the nations of Malaysia, South Korea, Papua New Guinea, Japan, and Saudi Arabia, who have all been consistently significant destinations over the last three decades, this group accounts for over three-quarters of Australia’s overall sheep meat exports.

Figure 18 – Sheep Meat Export Destinations – 1990 to 2022



Source: Australian Bureau of Statistics

Note: ABS figures are in CWE whereas FAO volume is MT

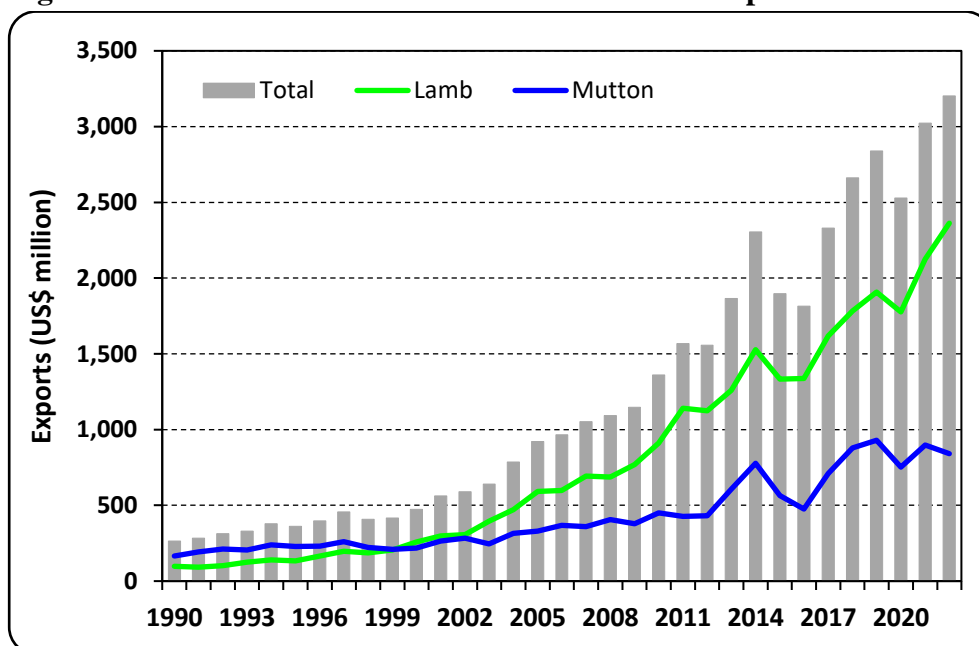
As mentioned, the overall value of sheep meat exports has grown by over 1,100 percent over the last three decades. This situation in part is due to the 45 percent growth in overall export volume but more strongly influenced by the five-fold increase in the unit value of sheep meat exports from around US\$1.25 per kilogram CWE to US\$6.29 per kilogram CWE. However, a further influencing factor has been the big rise in lamb meat exported relative to the relatively static volume of mutton exported.

In the early 1990s, the export unit value of lamb was more than double that of mutton and has risen by 225 percent to 2022. Over the same period, the export unit value of mutton has risen by an even greater rate of around 375 percent but still remains at about 75 percent of the value of lamb. In the 1990s, despite the volume of lamb meat exports being small compared to that of mutton, the big difference in the value of the meats in favor of lamb meant that the value of lamb exports wasn't that far behind the value of mutton exports. But the sheer growth in lamb meat production, which has flowed through to

lamb meat exports, along with the substantial price premium for lamb over mutton, has strongly contributed to the 1,100 percent growth in the value of sheep meat exports.

Of the overall US\$3.20 billion of Australian sheep meat exports in 2022, US\$2.36 billion was for lamb and only US\$0.84 billion for mutton. Lamb meat exports are now three times the value of mutton exports. Whereas in 1990, lamb exports valued at US\$0.10 billion were worth around 60 percent that of mutton exports at US\$0.17 billion (see Figure 19).

Figure 19 – Value of Australian Lamb and Mutton Exports – 1990 to 2022

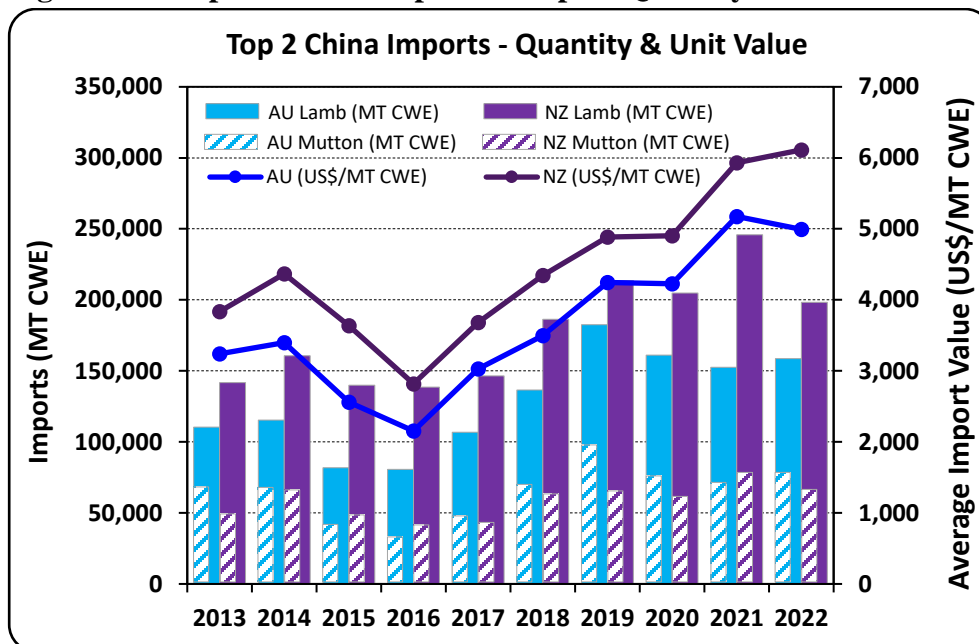


Source: Australian Bureau of Statistics

The top two sources of sheep meat imports for China over the last decade have been Australia and New Zealand. China is also the largest sheep meat export destination for both Australia and New Zealand. A key point of interest is that for China, the unit price of sheep meat imports from New Zealand has been consistently substantially higher than that for Australia (see Figure 20). However, comparing the proportion of the higher value lamb compared to mutton imported by China from Australia and New Zealand highlights a stark difference. On average, over the last 10 years, around half of the meat imported by China from Australia is lamb, whereas for New Zealand it is two-thirds.

The second largest importer of sheep meat is the United States. It is also the second-largest sheep meat export market for Australia and the third largest for New Zealand (by a small margin to the United Kingdom, which sits second). Similar to the situation for China, the unit value of sheep meat imports for the United States is consistently far higher for New Zealand than for Australia (see Figure 21). The main reason for this price disparity is that three-quarters of Australia's sheep meat exports to the United States is lamb, but it is an even larger 88 percent for New Zealand.

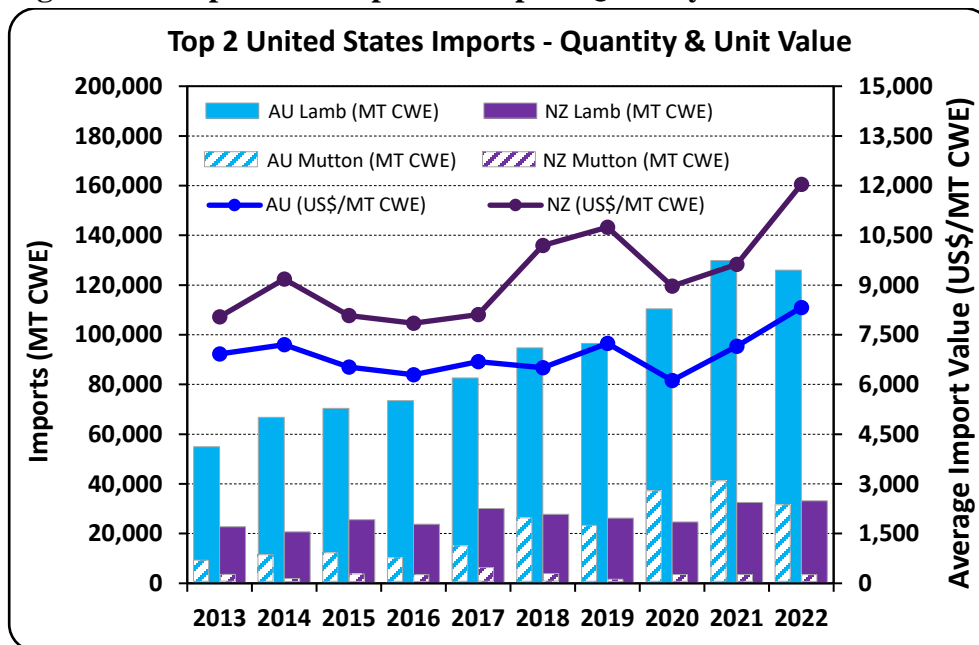
Figure 20 – Top 2 China Sheep Meat Import Quantity and Unit Value



Source: Trade Data Monitor

Note: AU = Australia, NZ = New Zealand, US = United States
CWE = Carcass Weight Equivalent

Figure 21 – Top 2 US Sheep Meat Import Quantity and Unit Value



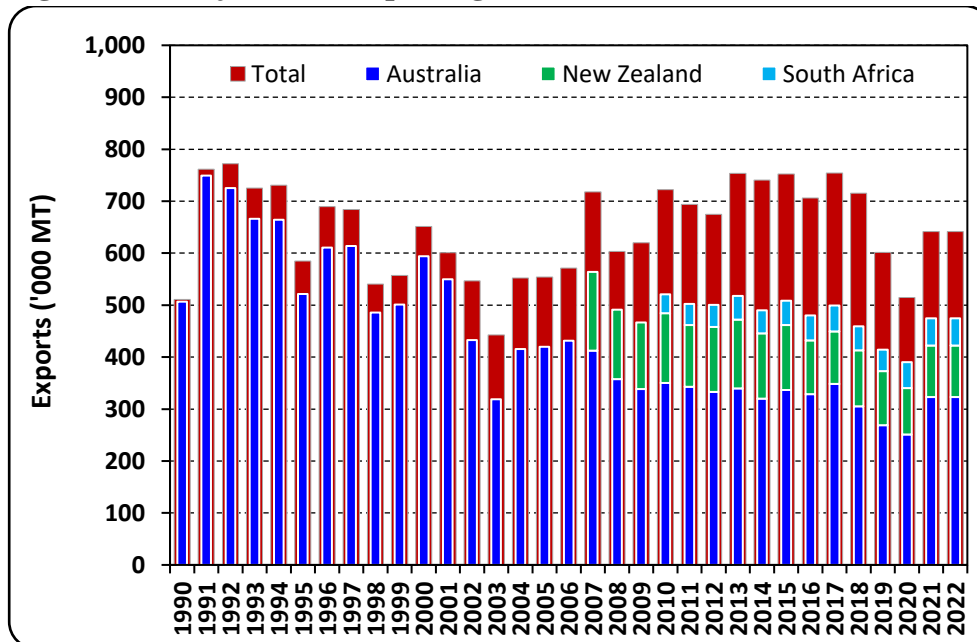
Source: Trade Data Monitor

Note: AU = Australia, NZ = New Zealand, US = United States
CWE = Carcass Weight Equivalent

Wool

In the early 1990s, Australian wool exports were for all intents and purposes world wool exports. Leading up to and including the early 1990s, Australia was such a big producer of wool and processed very little of the wool that it produced, that it had an extremely dominant position in the world export market. Since the demise of the WRPS in 1991, Australia's decline in the national sheep flock numbers is reflected in the decline in wool export volumes from a peak of 749,000 MT in 1991, down 57 percent to 323,000 MT in 2022. Australia now accounts for half of the volume of the world wool trade, with New Zealand (16 percent) and South Africa (eight percent) as the only other significant exporters (see Figure 22). These three nations over recent years have accounted for three-quarters of world wool export volume.

Figure 22 – Major Wool Exporting Nations – 1990 to 2022

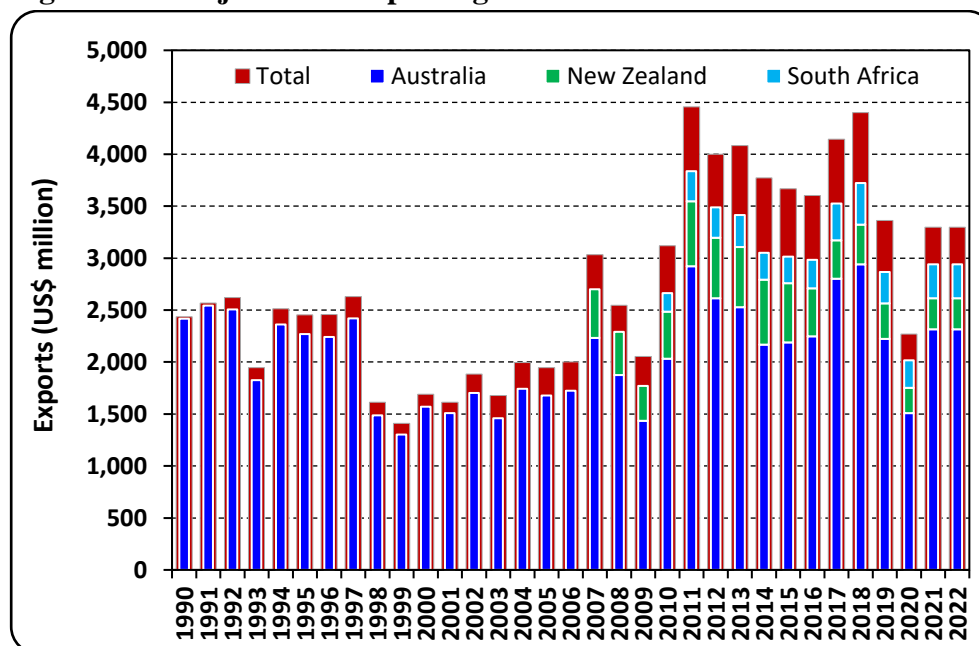


Source: Trade Data Monitor

Note: New Zealand export data from 1990 to 2006 is unavailable

Interestingly, although in 2022 Australia represented 50 percent of the volume of world wool exports, it accounted for 70 percent of the value of world wool exports (see Figure 23). Despite the big fall in wool production in Australia over the last three decades, Australia remains by far the dominant world wool exporter. In 2022, New Zealand accounted for nine percent of the value of world wool exports, while South Africa, over the last three years, has edged past New Zealand and has become the second largest wool exporter by value at 10 percent.

Figure 23 – Major Wool Exporting Nations – 1990 to 2022



Source: Trade Data Monitor

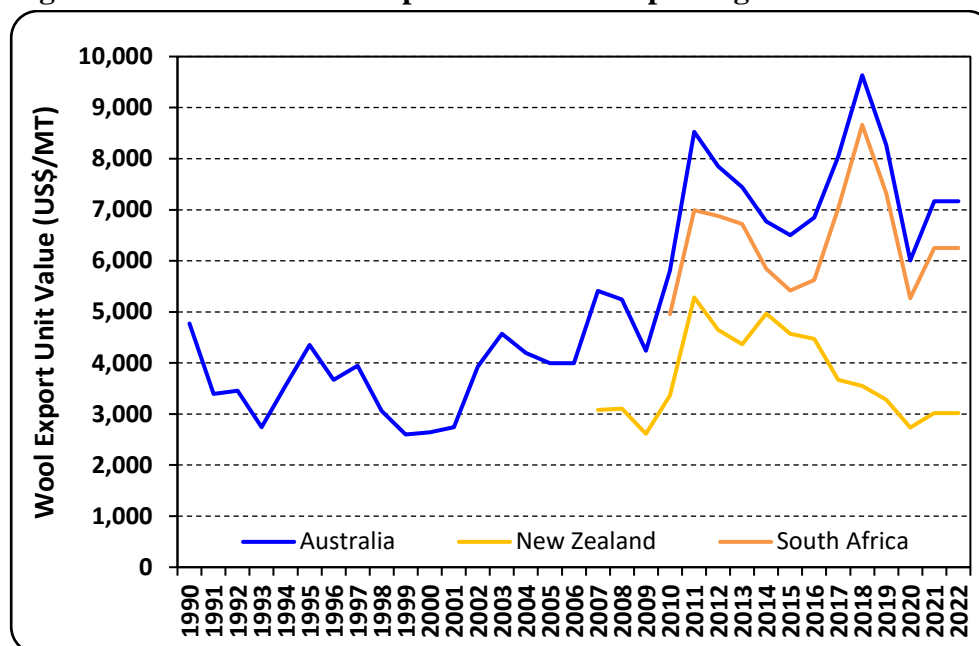
Note: New Zealand export data from 1990 to 2006 is unavailable

The primary factor for Australia’s greater dominance of the world value of wool exports at 70 percent compared to the volume of exports at 50 percent relates to the superior quality of wool it produces compared to other wool exporters. As early as 1825, when the British government removed Australia’s wool import tariff advantage due to the disadvantage in proximity to major wool markets, the Australian wool industry began focusing on breeding merino sheep to produce high-quality wool. This strong focus on producing high-quality wool has endured to this day in the Australian wool industry, and it reflects the premium average price it receives for the very large volume of wool that it produces compared to its key competing wool exporting nations.

The export price of Australian wool, particularly over the last five years, has been around double that New Zealand wool (see Figure 24). The New Zealand wool industry has focused relatively little on sheep breeding to produce low-micron wool (the main measure of wool quality).

Australia also maintains a significant average price advantage for its wool over South Africa, the third largest wool exporter. This situation is despite Australia’s volume of exports being around six times higher, and it is also important to recognize that the original merino sheep imported to Australia in 1797 were from South Africa. Also of significance is that in the 1820s, when Australia turned its focus towards producing high-quality wool as part of this strategy, the industry imported around 5,000 merino ewes from South Africa and Europe.

Figure 24 – Unit Value of Exports for Wool Exporting Nations



Source: Australian Bureau of Statistics

The production and processing of wool and wool cloth and clothing products was of huge importance to Great Britain across the 18th and 19th centuries. In the early 19th century, the British government encouraged the development of the Australian wool industry by establishing lower import tariffs on Australian wool compared to other sources (mainly Spain and Germany). In 1813, Australia made its first commercial export shipment of wool, and England was the sole destination for Australian wool. This trade grew, and by 1849, Australia became the dominant supplier of wool to England. The sole destination of Australian wool to England continued until 1874, when Australia made its first shipment of wool to Japan and in the following year commenced trade to China. Around this time, Australia became the largest producer and exporter of wool in the world.

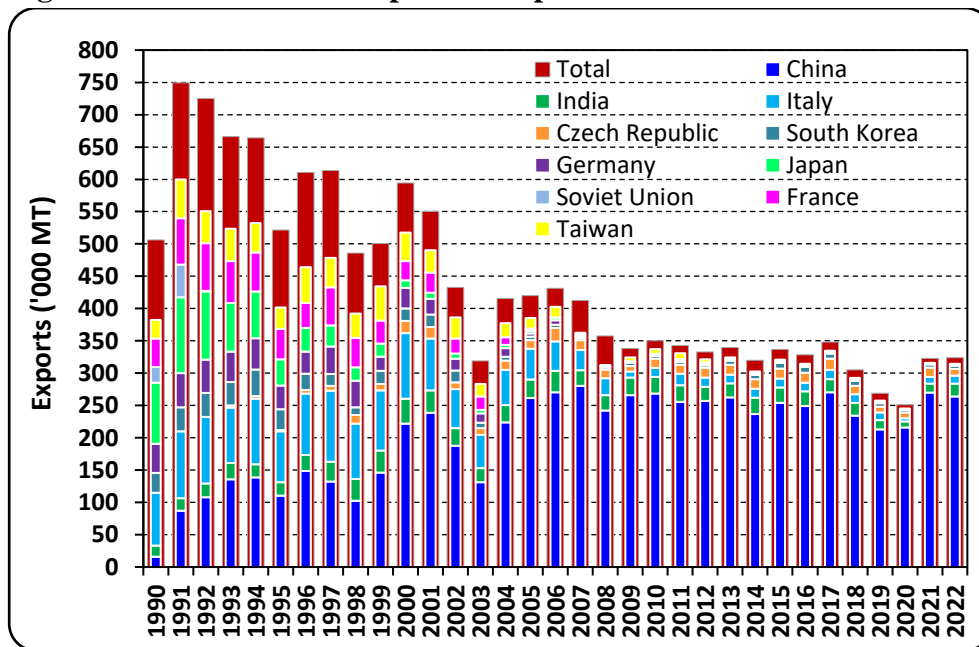
Prior to 1880, less than 30 percent of wool exports were sold in Australia ⁽¹⁰⁾. Most wool was exported to England (recognized as the major international wool market) by merchants and large pastoralists to auction houses for sale. With the Australian wool industry reaching a point of world dominance in terms of production and exports, the marketing power began to evolve and become more sophisticated including the establishment of a national system of wool auctions. A shift started, and the main point of sale changed from England to Australia. In the 1890s, over half of the wool was sold in Australia ⁽¹⁰⁾, mostly to buyers from England. This trend continued and, by the 1920s, over 90 percent of wool was sold in Australia ⁽¹⁰⁾.

In the early part of the 20th century, England remained the dominant destination of around half of Australian wool, with Japan and the United States also becoming significant export markets along with France, Germany, Italy, and Belgium evolving as smaller markets. After WWII cheaper cloths and

clothing imports began flooding into Great Britain. By the early 1960s, the processing mills in England all but ceased operating, and with this, exports of Australian wool to England plummeted. In the second half of the 20th century the focus of Australian wool exports mainly transitioned towards Southeast Asia and other European nations.

In the 1990s, and early 2000s, Australia had a diverse set of significant export destinations, mainly in Europe and Southeast Asia, with Italy and Japan being the most important, at around 15 percent of overall exports. As wool production in Australia started to decline in the early 1990s, China, at the same time emerged as the major export destination for Australian wool. Over the last decade, almost 80 percent of Australian wool has been exported to China (see Figure 25). Wool exports to India over the last decade have fallen to six percent, with Italy and the Czech Republic each at around four percent of overall exports from much higher levels in the preceding decades.

Figure 25 – Australian Sheep Wool Export Destinations – 1990 to 2022



Source: Australian Bureau of Statistics

THE SHEEP INDUSTRY VALUE IN AUSTRALIAN AGRICULTURE

Australian agriculture has diminished in economic importance over time and now accounts for around 2.4 percent of gross domestic product (GDP). Over time, as agriculture diversified and expanded, the importance of the sheep industry to the value of Australian agricultural production has also declined.

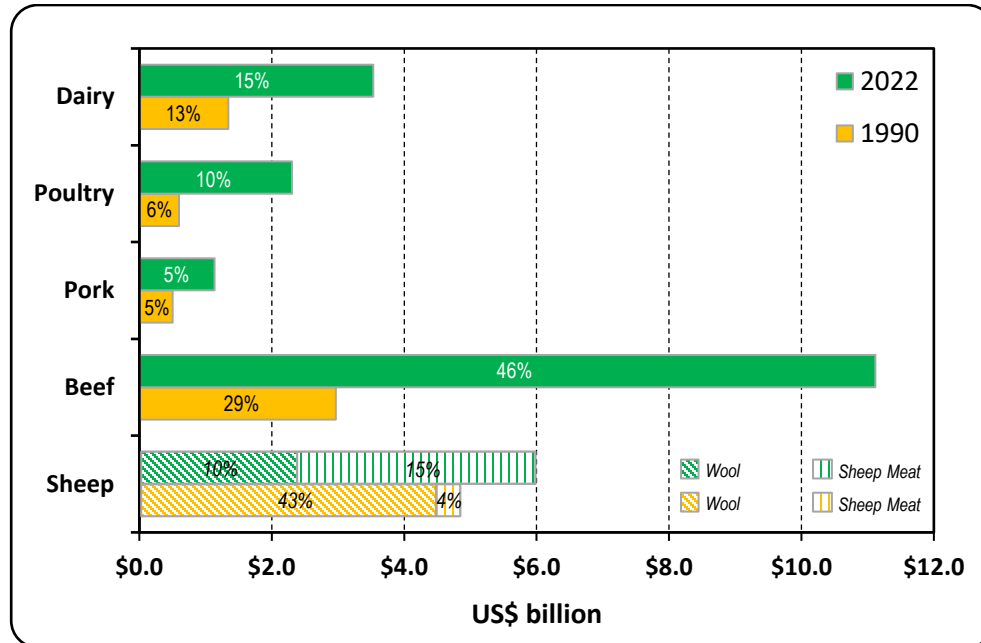
The sheep industry (meat, wool and live exports) contribution to the value of agricultural production in Australia during the 19th century was by far the most dominant. During the 19th century, the Australia economy was built on the sheep industry. Wool was the first major commodity export product for Australia with the first shipment in 1813. As mentioned, by 1849 Australia became the largest supplier of wool to Great Britain and in 1870 became the world's largest producer of wool. From 1874 Australia began exporting to Asia, and in the second half of the 19th century wool was Australia's most important export industry.

After a challenging period during the world wars the wool industry still accounted for over half of Australia's agricultural production. The industry then began to surge in the 1950s and grew rapidly over two decades and Australia was said to be 'riding on the sheep's back'. During the early 1950s agriculture contributed around one fifth of Australia's GDP, but by the turn of the century had declined to less than five percent. The value of agriculture continued to grow in this period, but the diminished importance of agriculture was far more related to the rapid growth of Australia's mining sector - which commenced the 1960's.

In recent years livestock has accounted for around 45 percent of the value of overall agricultural production. The sheep industry contribution over recent years remains significant at around 12 percent of overall agricultural production.

The value of production by the sheep industry (inclusive of wool and live sheep exports) a little over three decades ago, when the WRPS was dismantled was almost half (47 percent, US\$4.85 billion) of the overall livestock industries (US\$10.26 billion). The majority of the sheep industry contribution was from wool and little from sheep meat and less than one percent from live exports. Although the value of production of the sheep industry has grown over the last three decades, it has fallen from almost half to one quarter of the overall value of the livestock industries (US\$24.08) in Australia (see Figure 26), mainly due to the rapid growth of the beef industry. However, not unlike the beef industry, the value of the sheep meat industry has grown rapidly (863 percent, US\$0.37 billion to US\$3.58 billion) over the last three decades while the value of the wool industry has declined considerably (47 percent, US\$4.40 billion to US\$2.34 billion).

Figure 26 – Change in Livestock Value of Production – 1990 and 2022



Source: Australian Bureau of Agricultural Resource Economics and Sciences

Note: The value of live sheep for exports in 1990 and 2020 is less than 1%

CONCLUSION

After colonization of Australia in 1788, the sheep industry, particularly the wool industry, was paramount to the growth and development of the Australian economy in the 19th century and well into the 20th century. Australia had a very early focus on breeding sheep to produce high-quality wool, which has continued to the current day. This early focus set Australia on the path to becoming the world's largest producer and exporter of wool. At its peak in 1990, Australia produced 1.1 million metric tons (MMT) of wool, but production has fallen dramatically and it now produces around 350,000 metric tons (MT). However, this situation is still equivalent to 20 percent of world production. All of Australia's wool is exported, accounting for 50 percent by volume of the world's trade. Australia had a very early focus on breeding for high-quality wool and has for many decades produced the highest quality wool in the world. In 2022, exports by value reached 70 percent of the world's trade at US\$2.34 billion.

Australia's dominant world wool trading position enabled the industry to establish a Wool Reserve Price Scheme (WRPS) in 1970 to smooth out price fluctuations to producers. The scheme worked well for two decades and encouraged substantial domestic industry growth. However, control of the scheme moved towards producers and the focus of the scheme shifted towards influencing a higher market price. The scheme then spectacularly failed and was disbanded in 1991.

The shock failure of the WRPS resulted in a substantial industry rationalization over the next decade, and for some, this triggered an even greater focus on wool quality and, for others, a shift in emphasis to sheep meat production. The national sheep flock declined over 20 years from 170 million head to stabilize at around 70 million head over the last decade. After two centuries of industry focus on wool production, the transition towards sheep meat production has required a major shift in mindset and commitment from producers.

In 1990, when Australia was at its peak sheep flock size and entirely focused on wool, it produced around 648,000 MT carcass weight equivalent (CWE) of sheep meat, over half of which was mutton (Note: mutton is mainly from the meat of wethers (castrated males) and from mature sheep that have passed their useful productive life) and the balance lamb (which is of much higher value) with a combined value of US\$0.37 billion. Despite the reducing the sheep flock to around 40 percent of the 1990 level, sheep meat production has grown by 13 percent to peak at 733,000 MT CWE. This is anticipated to continue to grow in the coming years. The growth in the value of lamb meat production, particularly over the last two decades, has been far greater than the volume growth. The lamb meat production value alone is now estimated to have reached US\$2.95 billion in addition to mutton production at US\$0.63 billion, far exceeding that of wool at US\$2.34 billion.

Not only has Australia maintained its dominance as the biggest wool exporter in the world (now at 50 percent of the world's volume of overall exports), but the shift in focus of the Australian industry towards sheep meat production has resulted in the nation becoming the largest volume exporter over the last decade, now at almost 45 percent of world exports. Over recent years, Australia has also become the

biggest sheep meat exporter by value due to an increasing proportion of higher-value lamb meat production relative to mutton. New Zealand is the world's second-largest sheep meat exporter. However, New Zealand production is anticipated to stagnate or slowly decline in the coming years. This situation will likely result in Australia increasing its dominance as a world sheep meat exporter as its industry continues to grow and evolve.

The sheep industry has undergone a major transformation over the last three decades, from its sole focus on wool production two centuries ago to a more robust and growing focus on sheep meat production. The industry has only turned its attention towards sheep meat production over the last two decades, and with continued efforts towards improving productivity from existing sheep meat breeds and establishing new breeds, there is ample scope for substantial sheep meat production gains in the coming years.

The Australian sheep industry remains a significant contributor to Australian agriculture and is anticipated to remain the world's largest exporter of wool and sheep meat in the foreseeable future.

REFERENCES

- (1) Merino Sheep Introduced – National Museum of Australia
- (2) Margaret Simpson, Industrial Revolution in Australia – Impact on the Wool Industry, Powerhouse Museum, March 2016
- (3) Barry White, History of the Australian Wool Industry, International Fibre Centre
- (4) The History of the Australian Wool Industry, Entegra Signature Structures, April 2022
- (5) Malcolm Abbott and David Merrett, Counting the cost: the reserve price scheme for wool 1970-2001, The Australian Journal of Agricultural and Resource Economics, 2019
- (6) Australian Wool: Australian Agriculture and Rural Life, State Library of New South Wales
- (7) David Cottle, Brian Daly, Rachele Hergenhan, WOOL300 Fundamentals of Sheep and Wool Production, University of New England 2014
- (8) Select Senate Committee on Animal Welfare, Export of Live Sheep from Australia, The Parliament of the Commonwealth of Australia, 1985
- (9) Claire Petrie, Live Export-a Chronology, Parliament Library Research Paper Series, 2019-20, September 2019
- (10) Simon Vile, The Relocation of the Market for Australian Wool 1880-1939, Department of Economics - University of Wollongong 2002

Attachments:

No Attachments.