Australian Wool Innovation Limited

WOOL 2030 – A STRATEGIC PLAN FOR AUSTRALIAN WOOLGROWERS

DISCUSSION PAPER 1: WOOL SUPPLY AND DEMAND

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AUTHORS:

Chris Wilcox, Poimena Analysis

Laura Armstrong, General Manager Marketing Communications, AWI

Scott Williams, Forest Hill Consulting

Russell Pattinson, Miracle Dog

1. INTRODUCTION

This is the first in a series of papers created to stimulate discussion among Australian woolgrowers in preparation for their input to the development of Wool 2030 – A strategic plan for Australian woolgrowers.

This paper summarises the key dimensions and drivers of global wool supply and demand. Most of the paper presents a longer-term view (20-30 years) of the industry. The section on consumer preferences, though, is shorter-term in outlook, reflecting the nature of fashion trends. A series of questions is provided at the end of the paper. The questions are designed to prompt the reader to consider some of the more important 'unknowns' about future directions for the industry. The list of questions is not definitive by any means, and the reader is encouraged to develop their own questions about where the global supply and demand for wool is headed over the next decade, and what might be the implications for Wool 2030.

2. GLOBAL WOOL PRODUCTION

Global wool production peaked at 2,006 mkg clean in the late 1980s then fell sharply after the collapse of the Reserve Price Schemes in Australia and New Zealand when demand fell heavily. Production fell steadily over two decades. After plateauing at around 1,150 mkg for a decade, production fell further in 2018 and 2019. A further 2.4% decline to 1,070 mkg clean is expected in 2020 due to drought in key producing countries, notably Australia and South Africa (Figure 1).





Source: International Wool Textile Organisation, Market Information Edition 15 (2020)

The decline in global wool production has been felt mainly in the production of wool for apparel enduses, rather than for interior textiles (Figure 2). The decline was due initially to a stronger fall in the prices for apparel wool, notably for Merino wool, in the 1990s and early 2000s. This was followed by the change in focus among sheep producers away from wool-only breeds towards dual-purpose and meat breeds in response to rising and record prices for lamb and sheepmeat. After stabilising from 2012, global production of apparel wool has declined again in the past two years due to the drought in Australia.



Figure 2: World production of wool used in apparel and interior textiles – 1980 to 2021f Source: International Wool Textile Organisation, Market Information Edition 15 (2020). Poimena Analysis estimates

A decline in the global production of Merino wool is the main driver in the decline in apparel wool production. Merino wool production has fallen by more than 60% since the early 1990s (Figure 3). After starting the 1990s at 740 mkg, global Merino wool production has fallen to around 300 mkg. While all of the major producing countries of Merino wool have recorded a similar percentage decline, the volume decline in Australia has driven the drop in total production over the past two decades. Global Merino wool production is expected to fall to around 270 mkg in 2021.



Figure 3: World production of Merino wool - 1992 to 2021f

Source: International Wool Textile Organisation, Market Information Edition 15 (2020). Poimena Analysis estimates

Australian wool production and sheep numbers have followed and also driven global trends, given Australia's importance as a producer of wool and in particular for Merino wool used in apparel. Shorn wool production in Australia fell from a record level of 1,029 mkg greasy in the 1989/90 season to 343 mkg greasy in 2009/10 (Figure 4). It remained at around that level until 2018/19 when a prolonged and extensive drought, centred on New South Wales (the largest wool-producing state) saw production fall by 12%. The current forecast is for shorn wool production to fall a further 9% in 2019/20 to 272 mkg. Australian sheep numbers have also fallen from high levels in 1989/90 to under 70 million head in 2019/20¹ (see Paper 2).

In aggregate, IWTO estimates that Australia accounted for 22% of world wool production in 2018/19, down from a share of 36% in 1989/90. Australia's share of apparel wool is higher, at 45% in 2018/19. Australia's share of global Merino wool production is 70%.



Figure 4: Trends in Australian shorn wool production and sheep numbers 1969/70 to 2020/21f

Source: Australian Wool Production Forecasting Committee, Australian Bureau of Statistics, ABARES (for wool production forecast 2020/21). Sheep number estimate based on original ABS definitions and ABARES forecasts.

¹ The Australian Bureau of Statistics changed its method of collecting broadacre statistical data in December 2016 which resulted in a downward revision in sheep numbers in Australia. The estimate presented in this paper provides a like-for-like comparison over the years

3. PROFILE OF THE AUSTRALIAN CLIP

Over the past two decades, there has been a significant shift in Australia towards production of superfine wool (18.5 micron and finer), away from medium Merino wool (21 to 23 micron), and also a relative increase in production of crossbred and broader wool (Figure 5). Australia's production of

superfine wool reached a peak of 107.7 mkg greasy in 2018/19. The share of total Australian wool production by superfine wool also reached a record in 2018/19 at 35.9%. Australia dominates the world production of superfine wool, with an estimated share of 84%.



Figure 5: Changes in the Australian micron profile 1991/92; 2001/02; 2014/15 and 2018/19 Source: AWTA Ltd.

The shift in the Australian micron profile is reflected in strong growth in the export value of fine and superfine wool (19 micron & finer). There was a significant spike in the value of exports of this wool in mid-2019, but this has fallen back in the past 12 months, reflecting the decline in wool prices following the peaking of the Merino supercycle price (Figure 6). After seeing a steady decline throughout the 1990s and 2000s, the value of exports of 20-23 micron wool reversed the trend and rose from 2016 reaching a recent peak in July 2019, although this has eased back in recent months. Exports of broader wool have been on a declining trend throughout the past three decades.



Figure 6: Trends in the value of Australian wool exports by micron category Source: Australian Bureau of Statistics, Poimena Analysis

With the significant increase in the production and supply of superfine Merino wool, prices for this wool have not performed as well as prices for medium Merino (20-23 micron) wool (Table 1) but there are still solid premiums paid for superfine wool. The current price differential for 18 micron wool relative to 21 micron wool at 8% is below the 10-year average, but is higher than the low point seen in July 2014. It is well below the levels seen in the late 1990s and first half of the 2000s. The same is true for 16.5 micron wool. This low price differential is interpreted by some people as evidence that demand for superfine wool has not increased, or has even declined. In fact, this low differential is the result of the strong increase in superfine wool production combined with the strong decline in production (and supply given the sale of the stockpile in 2001) of medium Merino wool (20-23 micron).

MONTH AND YEAR	16.5 MICRON	18 MICRON	19 MICRON	23 MICRON	26 MICRON	28 MICRON
July 1999	N/A	+125%	+88%	-22%	-29%	-29%
July 2001	N/A	+194%	+85%	-3%	-19%	-19%
July 2005	+78%	+30%	+18%	-3%	-25%	-38%
July 2009	+75%	+39%	+22%	-3%	-19%	-38%
July 2014	+12%	+4%	+1%	+0.2%	-28%	-41%
August 2018	+36%	+14%	+5%	-1%	-32%	-57%
March 2020	+20%	+8%	+2%	+1%	-42%	-48%
10-year average	+34%	+18%	+9%	-4%	-32%	-47%

Table 1: Micron price differentials (% relative to 21 micron wool)

Source: AWEX and Poimena Analysis Note: N/A – Not Available

Demand is growing for wool from sheep that have not been mulesed ('non-mulesed' wool). While the issue mainly affects Merino sheep, there is some evidence of demand for 'non-mulesed' wool from Crossbred and other broad wool sheep. Australia has operated a voluntary National Wool Declaration (NWD) system since August 2008 which allows producers to declare, among other things, whether wool they supply is from sheep that have not been mulesed (NM), have been mulesed with the use of pain relief (PR) or whether they have ceased mulesing on their property (CM). This data shows considerable growth in the volume of wool produced and offered in Australia with each of the three statuses of PR, NM and CM (Figure 7). In 2018/19, the total volume of wool offered as NM, PR or CM was 670,000 bales, over 51% of all offered at auction in Australia. Non-mulesed wool accounted for 14.4% of all wool offered at auction, up from 11.5% in the 2016/17 season. The amount of wool offered without an NWD has fallen sharply in recent years.



Source: AWEX. * National Wool Declaration

There are significant premiums paid for non-mulesed wool in Australia, reflecting the strong demand and limited supply of this wool. AWEX data show that average premiums for non-mulesed Merino wool in the July 2019 to January 2020 period remained high. The highest premium was paid for 16 micron wool at 99 cents/kg, but the premiums for wool from 20 micron and finer were all above 40 c/kg. These are average price differences – higher premiums have been achieved for good quality, fine non-mulesed Merino wool at auction and for wool sold directly from producers to processors.

The data also shows premiums of up to 35 c/kg for fine Merino wool from properties that have ceased mulesing, and average premiums of 16 c/kg for 16 micron wool from sheep mulesed with pain relief.

4. PRODUCTION OF COMPETING FIBRES

While world wool production has fallen further in recent years, world production of other fibres continues to grow. As Figure 8 shows, world production of synthetic staple fibres (such as polyester staple and acrylic) and of cellulosic fibres has increased strongly in the past two decades. These are the fibres that compete most directly in blends with wool, notably in poly-viscose for suiting fabrics and in acrylic knitwear². The growth in cellulosic fibres since 2008 has been particularly noticeable and continues apace. World production of cotton has also increased since the mid-1990s and, after dropping sharply in the mid-2010s, has recovered to near peak levels, helped by increased productivity.



Figure 8: World production of main competing fibres to wool, 1996 to 2021f Source: International Wool Textile Organisation, Market Information Edition 15 (2020). CIRFS, USDA

² The chart does not show the production of synthetic filament, which has tripled in production since the mid-1990s and is the largest fibre category at over 50,000 mkg a year

5. DRIVERS OF PRICE

Demand for wool is at the mercy of macro-forces which are largely outside the control and influence of wool producers. Consumer demand for wool products is influenced by local economic conditions, fashion trends, retail prices and competition from products of other fibres, as well as marketing. Wool textile industry demand for wool is influenced by a range of factors including retail orders, labour costs, environmental regulation, relative prices for competing fibres, exchange rates and stocking and destocking cycles. While no data is available on the level of demand by consumers for products by fibre type, the influence of the macro-economic factors and events can be seen in the trends in wool prices over the past 3 decades (Figure 9).

Major global economic events, such as the Global Financial Crisis, the subsequent recovery in the US,

Europe and Japan, the US-China trade war in 2019 and the 2020 Covid-19 pandemic have had an enormous influence on the direction of wool prices since the collapse of the Reserve Price Scheme in 1991. The longer-term influence of the significant decline in world wool production can also be seen in terms of the upward trend in nominal wool prices.

As can be seen from this figure, wool prices reached record levels in August 2018 as a result of a Merino wool supercycle, which was due to a combination of synchronised world economic growth, growing demand for Merino wool in activewear and low Merino wool supply. This came to an inevitable end, triggered by the US-China trade war and, more recently, the health and economic crisis caused by the Covid-19 pandemic.



Figure 9: Trends in Australian wool prices (Eastern Market Indicator) 1991 to 2020 and major macro events

Source: AWEX, adjusted for 2017/18 EMI basis

Economic growth and consumer incomes in the major wool consuming countries are now the key drivers of the demand for wool. There is a strong relationship between the per capita consumption of wool and the per capita income levels in each of the major wool consuming countries (Figure 10). The eight major wool consuming countries at retail are: China, USA, Japan, Italy, Germany, South Korea, UK and France. Collectively these countries account for 65% of world consumption of apparel wool (source: International Wool Textile Organisation). Economic growth in these countries, and the impact this has on consumer confidence and willingness to spend, as well as actual retail sales, has a major influence on the underlying demand for wool from year-toyear, which combines with other factors to push the short- and medium-term trends in wool prices. Figure 10 suggests that there are growth opportunities in China, India, Turkey and Russia.





Source: International Monetary Fund, International Wool Textile Organisation, Poimena Analysis estimates

A factor which has had an influence on the demand for wool and on wool prices in the past is the relative prices for competing fibres, notably cotton and synthetic fibres. However, the impact of the relative price of these competing fibres appears to have waned, with the average level of the price ratio in the past decade being well above the average level during the period 2000-2010 which in turn was higher than the average level in 1995-1999 (Figure 11). Historically, the wool to cotton and wool to synthetic fibre price ratio was considered to be around 3 (1990s) while more recently (2010s) it sits at over 5:1 (for synthetics) and almost 6:1 (for cotton). This steady rise in the average level of wool's price ratio against other fibres is due to the decline in wool production combined with the steady increase in production of other fibres. Wool cannot compete in volumes but must compete in product quality and fibre attributes.



Figure 11: Wool's price competitiveness with the major competing fibres

Source: AWEX, Cotton Outlook, PCI Fibres, Poimena Analysis. Note: Wool price is the Eastern Market Indicator

6. WOOL'S CUSTOMERS

Over the past three decades, China has risen to become the world's leading producer of man-made fibres, processor of textile fibres and manufacturer and exporter of textiles, clothing and interior textiles. This rise was the result of the market liberalisation of China's economy, access to a huge pool of cheap labour and the granting of membership to the World Trade Organisation.³

China now dominates the world wool textile industry, particularly for wool clothing, accounting for 37% of world exports of woven wool clothing and wool knitwear.

In addition to its position as the world's major exporter of finished wool products. China is also the leading exporter of wool top and wool yarn, accounting for 25% and 17% of world exports respectively.⁴ Other major exporting countries of wool top are the Czech Republic, Uruguay, Argentina and Italy, while Italy, Lithuania, Poland, Hong Kong and the United Kingdom are other major exporters of wool yarn.

China is the second largest exporter of pure wool and wool blend fabric with a 22% share, after the largest exporter, Italy, with a 32% share. The United Kingdom, Japan and Germany are other leading exporters of wool fabric.

China is also the world's leading importer of raw wool, accounting for almost half of the world's raw wool imports. The other top six major raw wool importers are India (11%), the United Kingdom (6%), the Czech Republic (5%), Turkey (5%) and Italy (4%).⁵

The US was the major wool clothing import country in 2018 with 18% of world imports of woven wool clothing, ahead of Japan (10%), Germany (8%) and the United Kingdom (7%).⁶ However, it was only the fourth largest importer of wool knitwear, behind Japan (10%), Italy (9%) and Hong Kong (9%).7

Turning to the main end-uses of wool, there is no global collection of data showing the volume of wool purchased by consumers by product type. However, global trade data provides the best way to judge the relative size of and trends in the products in which wool is used. Data on the trade in wool clothing is of most importance, rather than interior textiles, given that most of Australia's wool is used for clothing.

Knitwear and men's wovenwear are the two major uses of wool in clothing, although both have seen significant declines in the volumes traded over the past two decades (Figure 12). Trade in women's woven wear has also trended lower. This decline in the volume of wool clothing traded over the past two decades has tracked the decline in the volume of apparel wool production, both the global total and from Australia, over this period.



Figure 12: World trade of wool clothing

Source: IWTO Market Information Report Edition 15, Trademap.org and country statistical bureau

³ Allan Wang, The effect of increasing labour cost on the wool processing industry. Presentation to the IWTO 2014 Congress, Cape Town

⁴ International Wool Textile Organisation, Market Information Report Edition 15. (Published in April 2020)

⁵ International Wool Textile Organisation, Market Information Report Edition 15. (Published in April 2020)

⁶ International Wool Textile Organisation, Market Information Report Edition 15. (Published in April 2020) 7 Hong Kong is typically a transhipment location for product from and to China

Men's suits have traditionally been the major product in which wool is used in men's wear, although the trade in wool men's suits has declined significantly since 2001 (Figure 13). Trade in men's wool trousers has also fallen, while trade in men's wool jackets and men's wool overcoats has remained relatively steady.



Figure 13: World trade of men's woven wool clothing

Source: IWTO Market Information Report Edition 15, Trademap.org and country statistical bureaus

Overcoats are by far the largest product segment for wool in women's wear (Figure 14). While trade in women's wool overcoats has been volatile over the past two decades, the volume traded has trended slightly higher. In contrast, trade in other wool women's wovenwear (which includes suits, jackets, skirts, trousers and dresses) has dropped significantly since 2001, although the decline appears to have stabilised in the past few years.



Figure 14: World trade of women's woven wool clothing

Source: IWTO Market Information Report Edition 15, Trademap.org and country statistical bureaus

Global trade in wool interior textiles (carpets and blankets) has also declined since 2001, but the decline has been smaller than for wool clothing. This can be explained by the smaller decline in the production of wool suitable for use in interior textiles, as noted previously. All the decline in the trade in wool interior textiles has been in knotted carpets (Figure 15). Trade in woven wool carpets and in blankets has increased since 2001, while trade in tufted wool carpets in 2018 was similar to 2001 levels, although there has been some significant volatility in trade over the past two decades.



Figure 15: World trade of wool interior textiles

Source: IWTO Market Information Report Edition 15, Trademap.org and country statistical bureaus

7. CONSUMER TRENDS

FASHION AND SPORTS: MACRO TRENDS

Pre COVID-19, the McKinsey Global Fashion Index (MGFI) forecast that global fashion industry growth would slow down to 3-4% due to consumers being increasingly cautious amid broader macroeconomic uncertainty. Post COVID-19 forecasts estimate revenues for the global fashion industry (apparel and footwear sectors) will contract by 27 to 30% in 2020 year-on-year.8

Eashion brands and retailers are now under even greater pressure to differentiate themselves and address a growing demand for sustainable and long-lasting value-for-money apparel solutions from consumers. Fundamentally, consumers are continuing to demand more from purpose-driven companies that champion values such as climate change and ethical practices. This is likely to have an accelerated uptake following new legislation within the EU and post-crisis reaction to COVID-19. This shift in consumer values will impact every facet of the apparel industry: from fibre production (raw materials sourcing) including product carbon footprinting and ethics; through to supply chain processes - a combination which could lead to higher engagement within provenance messaging and on-farm practices.

The apparel industry is responding to this pressure by innovating within supply chain models and placing increasing value on the circular economy, by

repurposing consumer waste and moving away from virgin materials where possible. Noble fibres such as wool are an obvious choice for blending with recycled synthetics for improved strength, softness and inherent moisture wicking.

Across society, there is an ongoing trend of casualisation and prioritisation of comfort for work and home dressing. Social media data shows a year-on-year increase in conversation around comfort and loungewear (Figure 16). While intent to purchase has been decreasing across all categories during the past few weeks due to coronavirus, the smallest decrease is across sleepwear, jumpers and activewear - showing these are indeed the most protected categories.

WOMENSWEAR

Within womenswear, AWI sees the continuing increase of casualisation will result in a growth of knitwear and athleisure, opening up a greater opportunity for finer wool microns and next-toskin products.

A desire for easy, comfortable dressing will spur on demand for fine-gauge worsted Merino yarns and soft lambswool qualities particularly with easycare applications.

A likely repercussion of economic recession is a more minimalist approach to apparel consumption, which will promote high-tech and performance-



Source: WGSN The Evolution of Loungewear, 2020 Report

focused fabrics in everyday wear and tailoring, offering greater durability and versatility. A 'less but better' approach to fashion will increase consideration for luxury and long-lasting fabrics such as wool. According to McKinsey,⁹ 67% of fashion industry executives think using innovative sustainable materials is important for their company.

A more seasonless approach to fashion collections is also anticipated in response to the need to slow down fashion's current schedule. Cross-seasonappropriate fabrics including lightweight Merino wool and midweight layering pieces will drive demand for natural tailored and woven fabrics.

MENSWEAR

In menswear, tailoring and smarter attire has evolved to fit the demands of a more flexible lifestyle, with greater comfort, shape recovery and freedom of movement being built into fabric. The main way to achieve this is via mechanical stretch, however there is knitted suiting and shirting available on the market as relaxed alternatives to traditional rigid structure woven.

Within the menswear category, the casualisation trend will drive a growth in knitwear, more flexible tailored textiles and technical textiles. Once again, a desire for easy-care, versatile garments will open opportunities in superfine Merino wools as fastdrying, thermoregulating everyday wear.

SPORTS & OUTDOOR

Within the sports category, a growing focus on health and wellness has emerged as a driving force for sustainable applications, antibacterial fabrics and comfort.

Subcategories such as skin health will provide an opportunity for superfine Merino yarn as a therapeutic skin treatment. Sleep-health is likely to drive greater consideration for natural bedding and sleepwear such as wool.

Biodegradability, recycling and chemical-free innovations continue to set the guidelines for sustainable developments within this category, making Merino wool blends an attractive option for brands. AWI expects to see sports brands embrace Merino's properties of moisture wicking, breathability, odour resistance and biodegradability to update styles with a natural performance marketing angle. Merino wool is a resilient fibre that works across lightweight performance styles and sturdier layering pieces, making it ideal for base-layers and mid-layers within running, cycling, yoga and skiwear as well as new categories such as sailing and perhaps even surfing.

Leading Sports and Outdoor Exhibition ISPO has evidenced this growth in Merino sportwear across the past 15 years: what started with about five exhibiting brands showing wool has risen to around 50-60 leading brands at today's show. During the same period the standard micron for next-to-skin product has gone from 19-20 down to 18.5, further supporting a trend for finer wool.

INTERIORS

Like fashion, the interior design sector has actively migrated towards ethical, sustainable and natural fibres in recent years. A 2019 Houzz & Home study¹⁰ found that integrating 'green' materials was a high priority for around one-quarter of renovating of homeowners, a 3% increase from 2016, while a 2018 British design convention found that 'natural materials are increasingly specified within the [interior design] contract sector due to a primal need to be connected to our origins'. While wool's inherent eco-credentials - natural, renewable, biodegradable - perfectly position the fibre as a more sustainable choice for interior spaces, its many benefits are its commercial selling point. These include its fire resistance, resilience, easycare, and wellness attributes, such as temperature regulation during sleep and air purification ability with science showing wool carpets can in fact improve indoor air quality.

Trend Design Book recently reported that 'the trend for furniture that can improve your health, whether at the home or at the office, looks likely to continue'. More temporal design trends, such as upholstered walls and headboards, and large-scale wall tapestries and tactile fibre art, point to a widespread consumer appreciation of natural fibres as a premium object of beauty.

⁹ McKinsey 2020, The State of Fashion 2020 10 Houzz & Home 2019, AU Houzz & Home Renovation Trends Study

8. QUESTIONS FOR CONSIDERATION

- Over the next decade, how is the global demand for wool likely to change? Do global conditions generally suggest a favourable outlook for wool?
- What strategies to positively influence demand should be included in the 10-year plan?
- Would you expect Australian sheep numbers or wool production to change significantly over the coming decade? Increase or decrease? What can be done to influence that?
- Is the micron profile of Australia's wool clip likely to shift any further towards the superfine end, or back towards the middle?
- What will happen to the supply of non-mulesed wool over the next decade?
- Is the rising demand for ethically-produced fibre a permanent trend, or will it slow or even decline in future?



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