



REPORT



# NSW WOOL INDUSTRY & FUTURE OPPORTUNITIES

A report to the NSW Department of Primary Industries from Miracle Dog, Poimena Analysis, Scott Williams Consulting and DAFWA

## Supporting Papers

**Paper 1: Trends and drivers for the global and Australian wool industry**



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## NSW Wool Industry and Future Opportunities

*A report to the NSW Department of Primary Industries from Miracle Dog, Poimena Analysis, Scott Williams Consulting and DAFWA*

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# Trends and drivers for the global and Australian wool industry

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## Introduction

The New South Wales wool industry is directly and significantly influenced by macro trends and developments in the global textile industry, from the consumer level back through the textile processing chain. These influences are reflected in the auction market both in the short run (that is, over 6-12 months), the medium term (2-4 years) and the longer term (10 years). It is in the context of these macro trends and developments that wool and sheep producers make their key business decisions and also how the NSW wool industry responds and plans.

This paper provides an assessment of these trends and developments from both a supply and demand perspective. It considers the major drivers and influences on the NSW wool industry and provides the possible direction of these over the next 10 years, and what this means for the NSW wool industry. The paper draws on existing reports from a variety of sources, including the International Wool Textile Organisation, Australian Wool Innovation, ABARES, the Mecardo website, Rabobank, Landmark, Michells, the Food and Agriculture Organisation of the United Nations and the National Council of Wool Selling Brokers of Australia. All charts referred to in the text are presented at the end of the document.

## Situational Analysis

### World fibre production, consumption and prices

Total world fibre consumption has risen steadily in the past fifty years and more, largely on the back of a massive rise in production of man-made fibres, mainly oil-based synthetics (Chart 1)<sup>1</sup>. Cotton consumption has also expanded over this period, helped by a combination of increased area planted around the world and productivity gains (in part due to the use of genetically modified varieties). In contrast, global wool production has declined, notably in the past 20 years.

The man-made fibres have replaced a large variety of materials, not only natural fibres, in a range of consumer, industrial and technical applications and industries, as well as fuelling an increase in the total use of textiles. Chart 2 shows the approximate breakdown of the major end-uses of wool, cotton and man-made fibres. As can be seen, 21% of total fibre use is for industrial purposes, a sector in which wool has virtually no presence and Australian wool effectively none. A further 31% of fibre use goes to interior textiles, a segment which uses a relatively small proportion of Australian wool. A total of 49% is used in apparel, which is the major end-use of Australian wool. Therefore, the oft-quoted 1.3% share that wool has of total world fibre volume consumption is misleading and irrelevant.

A more appropriate comparison, at least for Australian (and NSW) wool, is with production of other fibres that are used in apparel – synthetic staple fibres (polyester staple and acrylic), cotton and cellulose (also known as viscose). As Chart 3 shows, production of these other fibres has increased substantially in the past 20 years, notably synthetic staple fibres and, more recently, viscose. Cotton production has also increased, although at a slower and more variable rate.<sup>1</sup> In contrast, world wool production has slid over the past 20 years.

In the past decade wool prices have in general performed relatively better than prices for synthetic fibres and cotton (Chart 4)<sup>2</sup>, even 18 micron wool prices. Cotton prices have declined sharply in the past ten months under the weight of a large stockpile, mainly held in China. Synthetic fibre prices have followed suit in recent months.

Chart 4, however, only shows the trends in prices, not the relativities between these fibres. This is shown in Chart 5<sup>3</sup>. As is well known, wool is considerably more expensive than

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<sup>1</sup> International Wool Textile Organisation (2014)

<sup>2</sup> National Council of Wool Selling Brokers (2014c)

<sup>3</sup> National Council of Wool Selling Brokers (2014a)

cotton or synthetic fibres. In general, the price ratio for 21 micron wool has increased in the current decade, compared with the level prevailing in the 2000s, which was in turn higher than in the 1990s. In contrast, there is no such discernible trend for either finer (19 micron) or broader (28 micron). This probably reflects the relative decline in production of wool between 21 and 23 micron, while production of 19 micron (and finer wool) has increased, as has production of broader wool.

### World wool production

World wool production has fallen significantly in the past 20 years or more, as a result of a fall in and then low wool prices during the 1990s, as well as competition from other agricultural enterprises. The lower wool prices were brought about by a significant decline in demand in the early 1990s and, subsequently, the build-up then disposal of wool stockpiles in Australia and, to a smaller extent, New Zealand and South Africa. Competition from other agricultural enterprises has been a major factor in the decline in wool production, with the main competing enterprise varying from country to country. For example, cropping and, more recently, lamb production has been the major influence on sheep numbers (and hence wool production) in Australia, together with seasonal conditions<sup>4</sup>. In New Zealand, the use of land for dairying or dairy support has been the major competing enterprise in recent years<sup>5</sup>.

As Chart 6 shows, world wool production fell steadily from the peak in 1989/90 until around 2009/10, where it has since stabilised<sup>6</sup>. The level in 2009/10 was the lowest in around 70 years. Stocks of wool held in wool-growing countries have also declined to low levels. At the same time, after an initial decline, world sheep numbers have recovered in the past decade from the lows seen in the early 2000s. The recovery in sheep numbers on the one hand and the flat level of wool production at 70 year lows on the other suggest that there has been a change in production type towards meat for sheep and away from wool sheep.

This is further indicated by the trends in production of wool that can be used for apparel compared with wool that is destined for interior textiles. In the past 14 years, apparel wool production has declined steadily while wool for interior textiles has increased slightly (Chart 7)<sup>6</sup>.

By country, Australia is the world's largest producing country, with a share of 23%, followed by China and New Zealand (Chart 8)<sup>6</sup>. In terms of wool for apparel, Australia accounts for 46%, with China accounting for 12%. For merino wool, Australia share is even higher. For example, Andrew Woods estimates that Australia accounts for around 80% of world wool production of 20 micron and finer<sup>7</sup>.

This high share for Australia of apparel wool and, in particular, of merino wool has some important implications. First and foremost, world merino wool prices are in essence determined in A\$ terms, which is unlike any other agricultural commodity. Prices in other countries reference Australian merino wool prices. This means that increases in Australian wool production will have a dampening effect on prices, while falls in Australian wool production will support prices. By implication, efforts to boost wool production and productivity in Australia will dampen prices. On the other side of the supply-demand equation, lifting demand for merino wool at the consumer stage will mainly benefit Australian wool growers because of Australia's dominant position.

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<sup>4</sup> Woods (2014a)

<sup>5</sup> Beef + Lamb NZ (2014)

<sup>6</sup> IWTO (2014)

<sup>7</sup> Woods (2014b)

## Australian wool production

As is well known and documented, Australian wool production has fallen substantially in the past two decades since the collapse of the Reserve Price Scheme (Chart 9)<sup>8</sup>. The decline in production in Australia has been driven by a combination of production declining in the mixed cropping-livestock regions of Australia (due to better returns from cropping)<sup>9,10</sup>, a shift to a greater emphasis on lamb production in other regions, drought or dry seasonal conditions in several years since 2000, and a retreat from sheep and wool production in other regions due to wild dog predation.

The impact of these various influences are reflected in the change in wool production by state since 1989/90 (Chart 10)<sup>11</sup>. All states have seen a large decline since the peak year in 1989/90, which is to be expected. The decline has been significant even since 1999/00 in all states, except for South Australia where production has increased. The largest and continuing decline has been seen in Queensland, with the predicted production volume in 2014/15 set to be the lowest on record (with records going back to 1900/01).

New South Wales is currently Australia's largest wool producing state, which it has been since 1990/91 (before that, Victoria was the largest producing state through most of the 1970s and the 1980s). Like other states, NSW has experienced a major decline in production since the peak production in 1989/90. The forecast production level in 2014/15 for NSW is higher than recent lows as production levels have stabilised to some extent in recent years. NSW produces 9% of world wool production. If it were a country on its own, NSW would be the world's fourth largest wool producing country, after China, the rest of Australia and New Zealand.

One well-known feature of production trends in Australia has been the rise in production of superfine wool (18.5 micron and finer) in the past decade, even while total production in Australia has declined. Australian production of superfine wool reached a peak in 2013/14 at 90 mkg greasy (59 mkg clean). This compares with production of 40 mkg greasy in 2000/01 and 32 mkg greasy in 1991/92. Superfine wool also reached a record share of the total clip at 26.8%. Chart 11 shows the trends in production of superfine wool both for Australia and globally<sup>12</sup>. The increase in production has been due to a combination of breeding decisions taken by stud breeders and producers in the past two decades plus, more recently, drought and dry conditions in 2012 and 2013.

The breeding decisions by growers was in response to both the 'get fine' message promoted by industry organisations in the 1980s and 1990s and the large price premiums for superfine wool that were prevalent through the 1990s and the first half of the 2000s. The 'get fine' message came out of the observation by the International Wool Secretariat that fabric weights had declined steadily for more than a decade beginning in the mid-1970s. Significant price premiums for finer microns emerged in the 1980s<sup>13</sup>. As Chart 12 shows, these premiums hit a peak in 2001, around the time when the last of the stockpile (which was mainly 21 to 24 micron wool) was sold off. The higher production of superfine wool combined with the large decline in 21 to 24 micron wool has, inevitably, led to much lower premiums for fine and superfine wool (Table 1).

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<sup>8</sup> National Council of Wool Selling Brokers (2014b)

<sup>9</sup> Woods (2014a)

<sup>10</sup> Woods (2014e)

<sup>11</sup> Michell (2013). Updated with data from the Australian Wool Production Forecasting Committee and others.

<sup>12</sup> Michel (2012). Updated with data from the Australian Wool Production Forecasting Committee and others.

<sup>13</sup> Woods (2014d)

Table 1 Micron price differentials (% relative to 21 micron wool)<sup>14</sup>

Month and year	18 micron	19 micron	23 micron	26 micron	28 micron
July 1999	+125%	+88%	-22%	-29%	-29%
July 2001	+194%	+85%	-3%	-19%	-19%
July 2005	+30%	+18%	-3%	-25%	-38%
July 2009	+39%	+22%	-3%	-19%	-38%
July 2014	+4%	+1%	+0.2%	-28%	-41%
January 2015	+11%	+5%	-2%	-27%	-33%
10 year average	+30%	+16%	-5%	-32%	-46%

In addition to the long-term downward trend in average fibre diameter brought about by the breeding decisions by producers, seasonal conditions also influence fibre diameter. Drought and dry conditions cause an increase in fine and superfine wool volumes and then return to more normal seasonal conditions result in a move back to broader wool. Analysis by Andrew Woods illustrates the influence, of seasonal conditions and the change in average fibre diameter<sup>15</sup>. Chart 13 shows the changes in rainfall and the change in average fibre diameter, with the long-term trend to finer wool being removed. This chart is for the whole of Australia, although it is relevant to NSW. The drop in rainfall beginning in late 2011 through to 2013 led to a decline in the average micron over these years. Rainfall improved in the first half of 2014, which suggests that the average micron would increase in 2014/15. This has been realised in the first half of the current 2014/15 season. Wool test data from the Australian Wool Testing Authority for the 2014/15 season between July and December shows the production of superfine wool (18.5 micron and finer) for Australia fell by 3.6% after increases of 11.0% and 21.7% over the same six months in 2012/13 and 2013/14.

Andrew Woods concludes that the logic to 'get fine' was and is sound. He also considers that the current low level of premiums are a cyclical response to the sharp increase in superfine production volumes in the past two years, which has been caused by drought and dry seasonal conditions<sup>16</sup>.

The other, lesser covered, feature of production trends of the past 25 years has been that producers drastically cut back production of wool in the 21 to 24 micron categories (see Chart 10). In some cases producers, mainly in the wheat-sheep zone, left the industry or dramatically reduced sheep numbers, shifting either to increased cropping or to beef cattle (in Queensland). As well, stud breeders of 21-24 micron blood lines have moved to fine up the wool from their stud stock over the past 20 years. While there was a large drop in the 1990s, the most significant decline occurred in the 2000s, probably when the impact of breeding decisions started to come through. In addition to this drop in production, a large proportion of the stockpile (which was over 700 mkg greasy, more than double current Australian wool production) was wool in the 21 to 24 micron range. As a result, the supply of wool in the 21 to 24 micron category is now a fraction of what it was in the 1990s.

The higher production of fine and superfine wool combined with the large decline in 21 to 24 micron wool has, inevitably, led to much lower premiums for fine and superfine wool.

<sup>14</sup> AWEX.

<sup>15</sup> Woods (2014c)

<sup>16</sup> Woods (2014e)

The lower price premiums for superfine wool does not indicate, however, that demand for superfine wool has declined or that demand for 21 to 24 micron wool has increased.

Analysis by Paul Swan of Australian Wool Innovation<sup>17</sup> concludes that since 2001/02 there has actually been an increase in demand for wool in the 15 to 18 micron range, even though there has been a substantial loss in premiums for traditional 'spinners' style fleece wool in these diameters. This decline in premiums for 'spinners' style fleeces reflects a move of processing away from Italy, Japan and Korea and towards China. In addition, there is a structural change affecting demand for specialty weaving yarns based on the 'spinners'-style fleeces, with a move away from traditional Australian Superfine wool for weaving and weaving yarns.

In terms of wool price trend in general, Australian wool prices in nominal terms have been on a rising trend in since 2000 but have been have fallen slightly in real terms over the same period (Chart 14)<sup>18</sup>.

### **Australian wool exports**

The trends in the value of Australian wool exports by micron category supports the conclusion that demand for superfine wool has increased. As Chart 15 shows, the value of Australia's exports of 19 micron and finer wool has increased over time. While this has no doubt been helped by the increased production of this wool, if demand had not increased, the value of exports would have been flat (that is, the higher volumes would have been offset by lower unit prices). By the same token, demand for 21 to 24 micron wool appears to have declined over this period. That is, the higher absolute (and relative) price for this wool seen over the past few years has not been enough to offset the large decline in available supply.

In terms of export destination, it is well known that exports to China have increased, while exports to other destinations have declined, over the past two decades. As Chart 16 shows, 73% of Australia's wool exports went to China in 2013/14, compared with 12% in 1991/92. The second largest country destination was India, with a share of 8%. Exports to Western Europe accounted for 10% of Australia's exports, down from 39% in 1991/92<sup>19</sup>.

An additional change in Australia's wool exports has been the large decline in the share of semi-processed wool that is exported. In 2013/14, 91% of Australia's wool was exported in greasy form and just 9% exported in a semi-processed form (scoured or carbonised. There was no top exported). In the 1990s and early 2000s, around a quarter of Australian wool was exported in scoured, carbonised or wool top form. However, the rise to dominance of China and its preference for greasy wool rather than semi-processed wool resulted a decline in demand for semi-processed wool from Australia, caused the closure and relocation of much of Australia's scouring and carbonising capacity, and all of its wool combing plants.

### **World wool textile industry – location, trade, products, shifts and drivers**

Over the past two decades China has risen to be 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 and access to a huge pool of cheap labour. China's labour cost in 1998 was less than 50 UScents/hour (Chart 17), and the labour force seemed to be unlimited<sup>20</sup>.

China now dominates the world wool textile industry, particularly for wool clothing. In 2013/14, China accounted for 48% of world imports of raw wool and 28% of world scoured wool imports. In total, China imports 43% of the world's imports of raw and scoured wool<sup>21</sup>.

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<sup>17</sup> Swan (2014)

<sup>18</sup> AWEX and Reserve Bank of Australia

<sup>19</sup> Australian Bureau of Statistics, Australian Wool Industries Secretariat (2014) and NCWSBA (2014c)

<sup>20</sup> Wang (2014)

<sup>21</sup> International Wool Textile Organisation (2014)

This is an increase from 2001 when China's share of world raw wool imports was 26%, its share of scoured wool imports was 10% and its share of raw plus scoured wool imports was 22%. China is also the largest exporting destination for each of the five major wool producing and exporting countries (Australia, New Zealand, Uruguay, Argentina and South Africa).

China is the world's leading exporter of finished wool garments. In 2013, it exported 38% of the world's wool menswear and the same share of the world's wool womenswear. It accounted for 34% of world exports of wool knitwear. In total, China accounted for 37% of the world's exports of wool garments. In addition to this, China is a major producer and exporter of wool carpets, being the second largest exporter (after India) with a 15% share.

In addition to its position as the world's major exporter of finished wool products, China is also the leading exporter of wool top, yarn and fabric, accounting for 27%, 18% and 32% of world exports respectively<sup>17</sup>. Other major wool processing and exporting countries in 2013<sup>17</sup> were:

- Italy (second largest exporter of wool yarn, fabric, men's and women's woven wear and knitwear);
- India (largest exporter of carpets and rugs);
- Hong Kong (yarn and knitwear);
- the United Kingdom (fabric, knitwear, women's wear and carpets);
- Germany (fabric and men's wear);
- Bangladesh (knitwear);
- Turkey (men's wear, carpets)
- Romania (men's and women's wear); and
- Spain (women's wear);
- USA (carpets); and
- Belgium (carpets).

The US was the major wool clothing import country in 2013, as it has been for several years. It accounted for 18% of world imports of wool clothing, being the major importer of men's wool woven wear (25%) and women's wool woven clothing (18%)<sup>22</sup>. However, it was only the 4<sup>th</sup> largest importer of wool knitwear, behind the UK, Japan and Italy. The US was also the world's largest importer of wool carpets and rugs in 2013. Other major importing countries of semi-processed and finished wool products were:

- Japan (men's wovenwear, women's wovenwear, knitwear);
- UK (men's wovenwear, women's wovenwear, knitwear, yarn, carpets);
- China (yarn and fabric);
- Australia (carpets);
- Germany (men's wovenwear, women's wovenwear, knitwear, yarn, carpets); and
- Italy (yarn, fabric, knitwear).

One feature of the world wool processing industry is the complex trade flows which are determined by manufacturing and retailing demands. For example, raw wool may go to Malaysia for early stage processing, to be shipped to China via Hong Kong for spinning and weaving/knitting, then to Vietnam for garment manufacture before export to the US for retail sale.

The location of processing and manufacturing also changes, with labour intensive and simple products tending to be most mobile. However, decisions are not purely based on labour cost. The decisions could be based on a range of issues including labour costs,

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<sup>22</sup> International Wool Textile Organisation (2014)

labour productivity, environmental and trade policies, infrastructure, political stability, skilled labour availability and ease of doing business<sup>23</sup>.

The major wool clothing products traded in 2013 are shown in Chart 18. Knitwear and men's woven wear products dominate the global trade, although women's wool overcoats features as one of the major products<sup>24</sup>.

Men's suits remain a solid foundation of global wool use in apparel, as do men's jackets and trousers. Global trade in men's wool suits fell in 2007, but appears to have stabilised since then. Trade in the other major woven wool products have remained relatively stable (Chart 19)<sup>20</sup>.

As Chart 19 shows, women's wovenwear products, other than coats, have declined in importance over the past 20 years due to intense competition from products made of other fibres, powerful price competition at retail and a trend to higher turnover of women's wardrobes. The latter point has been fed by 'fast fashion' retail chains (Zara, H&M, Uniqlo, Primark), which feature high changeover of fashion lines and very competitive price points. The quality of products in some (but not all) of these retailers is not high, leading commentators to term the products the retailers sell as 'disposable fashion'.

One trend that has been identified and discussed within the wool industry is casualisation of clothing. This trend was identified by the wool industry over a decade ago and casualisation remains a key determinant of AWI's strategy, informing their product development and marketing efforts<sup>25</sup>. In theory, it means that demand for more formal wear (such as men's suits) could diminish, replaced by greater emphasis on separates, such as trousers and jackets (with jackets likely to be less "structured" than in the past). It is thought that casualisation is also likely to bring increased demand for knitwear, both traditional flat-bed knitwear and circular knits used in the active leisurewear market.

However, the statistical evidence of the impact of casualisation on wool products and, in particular, the decline of the suit is mixed. Rabobank, in a recent report on the fine wool industry<sup>26</sup>, presents data showing that global trade in wovenwear of all fibres has slipped in value terms in the past two years, while knitwear (all fibres) has been rising since 2009. While global data for wool products (presented earlier) may suggest some slippage in the volume of trade in men's wool suits, more detailed data from the US Department of Commerce's Office of Textiles and Apparel<sup>27</sup> is less clear-cut. This data suggests that while US imports of men's suits fell from a recent peak in 2005, it has been very steady since 2008. Imports of knitwear (which includes sweaters and knitted shirts) and men's separates (jackets and trousers) have been relatively stable after recovering from a dip in 2009. In contrast, the most significant decline in recent times has been in woven wool womenswear. This highlights the competitive pressure facing wool in womenswear, which has been present for the past two decades. Chart 20 shows the trends.

In terms of the location of consumer demand, the major wool consuming markets at retail in 2011<sup>28</sup> were (in descending order) China/Hong Kong, the US/Americas, Japan, Italy, India, Russia/ Belarus/Ukraine, Germany, the UK, South Korea and France<sup>29</sup>. This has changed somewhat since the mid-2000s<sup>30</sup>. The three leading countries are the same now as then, but Japan's consumption has dropped by around 40%. In contrast, consumption by China and the US/Americas is similar to mid-2000 levels. Consumption by Italy, at least in 2011, was

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<sup>23</sup> Wang (2014)

<sup>24</sup> International Wool Textile Organisation (2014)

<sup>25</sup> Swan (2013b)

<sup>26</sup> Rabobank International (2014)

<sup>27</sup> Office of Textiles and Apparel, US Department of Commerce (2014)

<sup>28</sup> The latest data available from Australia Wool Innovation.

<sup>29</sup> Australian Wool Innovation (2013)

<sup>30</sup> International Wool Textile Organisation (2007)

steady, but there has been a significant decline for the UK, and lower consumption by Germany. At the same time, there has been a substantial increase in consumption by Russia and by India (a significant proportion of India's consumption is likely to be carpets).

## Likely trends

Global demand for textile fibres to 2025 and beyond will, in the first instance, be driven by population and incomes. As shown in Chart 21<sup>31</sup>, world fibre consumption has tracked the rise in world Gross Domestic Product (as a proxy for incomes) and of population. Given the projections for GDP and population (and particularly GDP) out to 2019, further strong growth in consumption of textile fibres can be expected. While the forecasts from the International Monetary Fund are only available to 2019, it can be assumed that further growth in GDP, at least, will be seen out to 2025.

While world textile fibre consumption will grow, this increased volume of demand will be met mainly by man-made fibres (see Chart 22).<sup>32</sup> Cotton consumption is also expected to grow. For wool, future volume consumption will be constrained by slow or no growth in wool production. As indicated by the chart, there is a potential growth of gap of 6% between the long term growth in total fibre consumption and the long term decline in wool consumption. This is an opportunity if the gap can be translated into increased value demand (as wool production is not expected to increase and certainly cannot match the growth rate in production of other fibres).

The increase in textile fibre consumption will, in part, be driven by increased demand for clothing. Australian Wool Innovation has identified the countries which are expected to experience the major growth in expenditure on clothing to 2021: China, India, Brazil and, to a lesser extent, Russia (Chart 23)<sup>33</sup>. All of these are lower income countries. Meanwhile the advanced, wealthier countries in Europe, Japan and the US, are projected to experience slower growth of clothing expenditure.

It should be noted in this context that research by Dr Elisabeth Nolan of the University of Sydney, looking at auction price for the five years to 2012/13, found that economic growth and consumer confidence indicators only account for less than 1% of variation in wool prices, while the change in the price for substitute fibres accounts for 13%-14% of variation in auction prices<sup>34</sup>. The research reports that the major influence on variation in prices is micron (accounting for 64% of variation for fleece wool and 49% for all wool). This analysis was conducted using hedonic price modelling and contradicts earlier econometric analyses which suggest that economic growth has the major influence on wool demand at retail and, ultimately, at raw wool<sup>35</sup>.

There is a strong relationship between per capita income and apparel wool consumption per head, as shown in Chart 24<sup>36</sup>. For the countries that AWI have identified as the strongest potential growth countries for clothing, per capita wool consumption is low. It is hoped that as incomes increase in these countries, per capita wool consumption follows the expansion path indicated by the per capita consumption in Europe, Japan and Australia, and not the path indicated by the US.

In many of these countries (both the growth and advanced countries) the population is ageing and the 60+ years age group will become a larger proportion of the population. This will influence demand and consumption trends for all products, including apparel<sup>37</sup>. In

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<sup>31</sup> Wilcox (2012a)

<sup>32</sup> Morris (2012)

<sup>33</sup> Swan (2013a)

<sup>34</sup> Nolan (2014)

<sup>35</sup> See for example, Bureau of Agricultural Economics (1987)

<sup>36</sup> Wilcox (2012b)

<sup>37</sup> Swan (2013b)

addition to the ageing of the consumer population, consumers are increasingly concerned with the environment and sustainability. Wool has a marked advantage over man-made fibres for being a naturally, sustainably grown fibre<sup>38</sup>. The International Wool Textile Organisation sees this as a significant opportunity and, together with Australian Wool Innovation, has developed a strategy and is conducting research and development to support marketing of this feature.

Increased urbanisation in countries such as China and India will provide opportunities for wool, both in the traditional suiting market and in active leisurewear<sup>39</sup>.

The casualisation trend and the trend to active leisure wear will no doubt continue. This provides opportunities for wool in knitwear, next to skin wear and fabrics suited to casual wear. Fine and superfine wool is well suited to next-to-skin wear, which is typically used in active wear, and this is a growing market segment. Rabobank reports that the active wear market in the US accounts for around 16% of the total US clothing market, at US\$33.7 billion, and it grew by 7% in 2013/14<sup>40</sup>. AWI has also identified the lightweight knitwear market as a key growth opportunity<sup>41</sup>.

Some argue that the trend to casualisation will be at the expense of worsted suiting fabric and, in particular, men's wool suits. While casualisation combined with the intense retail and fibre competition, has had a significant impact on wool consumption in women's wear in the past two decades, the statistical evidence is much less clear-cut that there is an observable effect on demand for men's suits, as well as men's jackets and trousers, particularly since 2008. This may occur in the future, but seems more likely to affect the low and mid-price point suits, rather than the upper and luxury price points. Note that low and mid-price point men's suits tend to use wool 20 microns and broader (or even 19 micron) often in blends with polyester and/or viscose (or use not wool and are typically polyester-viscose blends), while the upper and luxury price point suits favour fine and superfine wool.

There is likely to be some shift in processing location in the next decade, although this will tend to be more focused at the garment making stage, which is much more labour intensive, rather than early stage processing. This means that it is likely that knitting and garment making may shift, to some extent, away from China towards countries in South-East Asia and South Asia<sup>42</sup>. However, other factors such as concerns about political and economic stability in some regions (notably the Middle East and Africa) or Government regulation and poor infrastructure (such as in India) may constrain such shifts.

Environmental regulations were introduced in China in 2013 and even tougher regulations will come into force in January 2015. These regulations are likely to induce the closure of older, less efficient scourers and combers, which will reduce excess capacity in early stage processing in China. This is not to say, however, that there will not be some relocation from China over the next decade. In the past 2-3 years, there have been new combing mills established in Malaysia and Egypt, for example. Nevertheless, it seems very likely that China will remain the major wool processor (from scouring to end garment) and the major export destination for Australia's raw wool over the next ten years, unless there is a significant political or economic event to disrupt this scenario. This sovereign risk is the major issue with China's dominance of Australia's exports of raw wool.

The importance of China will be sustained by the recent signing of the China-Australia Free Trade Agreement (ChAFTA). Under the Agreement, Australia will be granted a Country Specific Quota of 30 mkg clean which will be free of import duties (above the 30 mkg the import duty is 1%). This compares with China's wool imports of around 180 mkg clean in

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<sup>38</sup> Wilcox (2009)

<sup>39</sup> The Woolmark Company (2005)

<sup>40</sup> Rabobank International (2014)

<sup>41</sup> Swan (2013a)

<sup>42</sup> Wang (2014)

2013 from Australia. This quota will increase by 5% per year for eight years to 46 mkg<sup>43</sup>. This access is considerably better than for wool exported to India, for example, which has higher import and other duties. While ChAFTA will help sustain the importance of China, its immediate impact and long term benefit will be very modest. The Australian Council of Wool Exporters and Processors estimate that there will be a saving of \$3 million each year on import duties that will not need to be paid. This compares with a total value of Australian exports to China in 2013/14 of \$1.72 billion<sup>44</sup>.

On the production side, it is difficult to envisage a solid increase in sheep numbers or, in particular, wool production over the next decade. One of the key factors that will constrain a sizeable increase in sheep numbers and wool production is the rising demand for food. The Food and Agriculture Organisation (FAO) has projected that per person food consumption will rise sharply in South Asia, Africa and Latin America in the next decade. This, combined with steady growth in demand in East Asia, the Middle East and in advanced economies, will mean that total food demand will rise sharply (see Chart 25)<sup>45</sup>.

As a result global food production will need to rise. The FAO predicts that global food production will rise by around 50% over the next 40 years, and a significant part of that growth will be in developing countries. However, this growth is much smaller than the growth seen in the previous 40 years (Chart 26)<sup>38</sup> and may not match the increased demand. This will mean that there is likely to be long-term upward pressure on food prices, which will encourage increased grain production but would be a disincentive for fibre production, such as wool.

This competition for land-use will probably hold back wool production. Meat and Livestock Australia, in its latest projections released in mid-2014, projects that sheep numbers in Australia will increase very slowly to 77 million head by 2020 (from 75.5 million head in 2013). This very slow rise in sheep numbers, if correct, will also mean only slow growth in Australian wool production, particularly as there will continue to be competition from sheep and lamb meat to wool production.

One likely trend is that production of superfine wool will pull back from the recent highs. This will be achieved assuming that seasonal conditions return to normal (as opposed to the dry conditions seen in 2012 and 2013). As well, the recent relatively low prices for superfine wool may result in fewer superfine sheep and subsequently lower superfine wool production.

## **Potential implications for producers, industry and the NSW Government**

There are a number of key implications from this analysis for NSW wool producers, the NSW wool industry and the NSW Government:

- Long term prospects for Australian and NSW wool will hinge most on global economic conditions and income growth, not on the relative volume of wool production compared with the production of other textile fibres or on the relative price of wool compared with these other fibres. At best these provide the environment within which wool operates, but otherwise are not a driver for decision making.
- Therefore, on the demand side, the focus should be on consumer requirements, notably in the established wool consuming market in China, Europe, the US and, to a lesser degree, Japan, as well as in the potential growth markets in India, Russia and Brazil. These requirements include quality garments and luxury garments at appropriate price points as well as products seen as being environmentally sustainable

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<sup>43</sup> National Council of Wool Selling Brokers of Australia (2014e)

<sup>44</sup> Australian Wool Industries Secretariat (2014)

<sup>45</sup> Battaglia (2013)

- There is no clear-cut evidence that demand for worsted fabric for suits and jackets and trousers has waned in recent years (since 2008), at least for men, in spite of the casualisation trend. This means that demand for business wear (suits and separates for men) will continue to be a mainstay for wool demand from Australia. Worsted weaving yarn spinners require raw wool that has high tensile strength, low mid-point break and a Hauteur of 68 mm (85 mm length in the greasy wool)<sup>46</sup>. As a result, there will still be solid demand for merino fleece wool of around 85 mm length with good tensile strength. Increased urbanisation in China and India may bring growth for men's business wear (including suiting fabrics used in suits, jackets and trousers) but this is no certainty.
- There will be increased demand for active leisurewear (next to skin wear) and casual garments (knitwear and unstructured trousers). Wool that is best placed to capitalise on the growth in active leisurewear is fine wool of 19 microns and finer, and preferably 18 micron or even less. Recent research by the Sheep CRC suggests that consumers are most comfortable wearing next-to-skin products made from 17 micron or even as low as 14-15 micron<sup>47</sup>. These wools require good strength and length, so the preference is mainly for fleece wools. Fine wool is also favoured for lightweight knitwear. Worsted knitwear yarn spinners targeted at the flat-bedding knitting market require raw wool that has, on average, a tensile strength of 30 to 32 Nkt, with an average Hauteur in the top of 58-60 mm (Europe) or 65mm (Asia). This means the raw wool purchased can be a blend of fleece and pieces/bellies and prem shorn<sup>48</sup>.
- In womenswear, the best performing product is overcoats for colder weather. Broader wool is used in these products.
- There appears to be a shift away from traditional Australian superfine wool (with its emphasis on crimp) towards a style (defined as topmaking type) due to increased casualisation and a growth in woven-spun knitwear (i.e. for circular knitting).
- China will remain the major processor of wool and manufacturer of wool products over the next 10 years. There may be some shifting of garment production to lower cost countries, but China will remain the dominant force. As a result, it will still be the largest destination for Australian and NSW wool (other than in the event of an unforeseeable economic, political or social event in China) in 2025. The rise of China as a processor of Australian wool in the past 20 years has been a major benefit to the Australian wool industry. Contrary to some views<sup>49</sup>, the wool processing industry in China is decentralised and highly competitive. It will face some challenges in the near term, notably from new environmental controls and tighter credit availability. In the longer term, the transition of China's economy to a more mature one based more on consumer demand, branded and higher quality products and services industry will potentially be a major benefit for wool with growth in purchasing of wool products by Chinese consumers.
- Australia is the largest wool producing country in the world and dominates world wool production below 20 microns. NSW is the Australia's largest producing state and on its own produces 9% of world wool production (if it were a country on its own, NSW would be the world's fourth largest wool producing country, after China, the rest of Australia and New Zealand). Developments in Australia and NSW therefore have a major influence on world supply of wool. Increases in wool production in NSW, for example, could affect world prices for merino wool.
- Superfine wool premiums have been low largely due to a sharp increase in production of superfine wool, not because of a collapse in demand. Demand for most categories of

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<sup>46</sup> Read (2014)

<sup>47</sup> Rowe (2014)

<sup>48</sup> Read (2014)

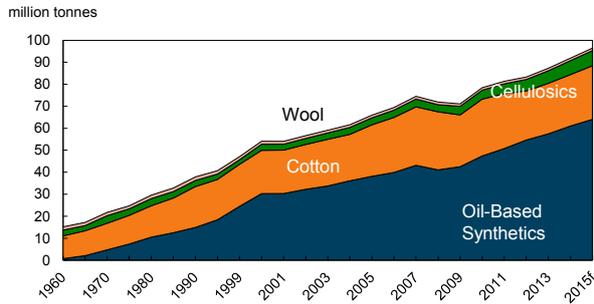
<sup>49</sup> Rabobank International (2014)

superfine wool have actually increased. The premium for superfine wool may return towards the long-term average once the drought-induced aspect of the increased production wanes. The increased demand for superfine wool and the potential growth in demand for garments which use superfine wool justifies a continued emphasis on producing sound superfine wool, although perhaps not the traditional Australian Superfine wool (notably 'spinner's' style fleece wool). The recent low price premiums for superfine wool will naturally slow the emphasis on further fining the clip.

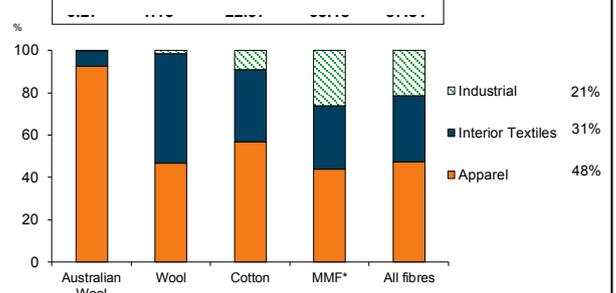
- In contrast, the very low levels of production of wool in of 21 to 24 microns has been the reason for the good prices for these wools. Demand for this wool does not appear to have increased. As well, this wool faces the most competition from man-made fibres (as they can be substituted in place of this wool in blends). A significant increase in production of this wool is likely to result in markedly lower prices.
- It is highly unlikely that early stage processing will return to Australia in any significant way. China's early stage processing industry is well established and has significant overcapacity. New early stage processing plants have been established in the past 2-3 years in Egypt and Malaysia, and in the event of any unexpected change in China.

# Charts

**Chart 1:**  
**World Consumption of Major Textile Fibres**  
(mill consumption – all end products)

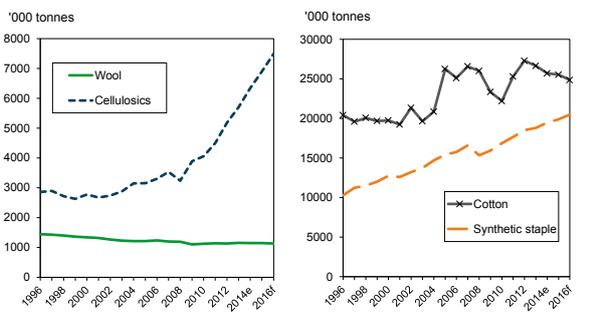


Source: International Wool Textile Organisation Market Information Report 2014, CIRFS, The Woolmark Company, ICAC, Fibre Organon.  
Updated 30<sup>th</sup> September 2014



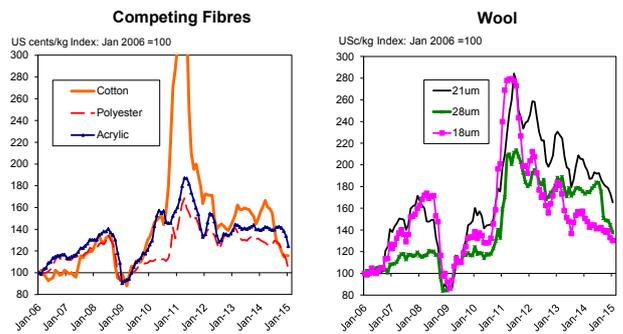
Source: IWTO Market Information Report 2014, AWIPFC, Poimena Analysis, USDA and CIRFS.  
\* Man-made fibre (MMF) includes oil based and cellulosic fibres

**Chart 3:**  
**World Production of Wool and Competing Fibres**



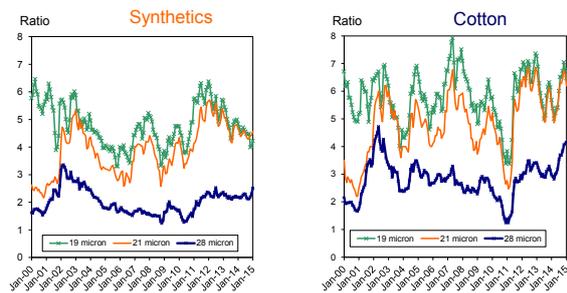
Source: CIRFS, USDA, Poimena Analysis, IWTO Market Information Report 2014  
Note: For wool and cotton the years are seasonal years i.e. 2011 = 2010/11 season

**Chart 4:**  
**Trends in Textile Fibre Prices**



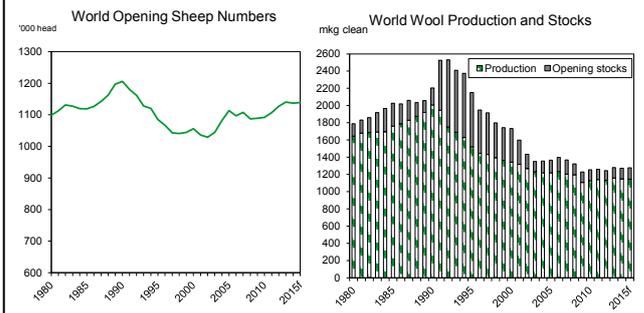
Source: NCWSBA Weekly Newsletter, AWEX, Cotton Outlook, PCI Fibres and Raw Materials, Poimena Analysis.  
Monthly average to January 2015

**Chart 5:**  
**Wool Price Competitiveness**  
US\$ terms



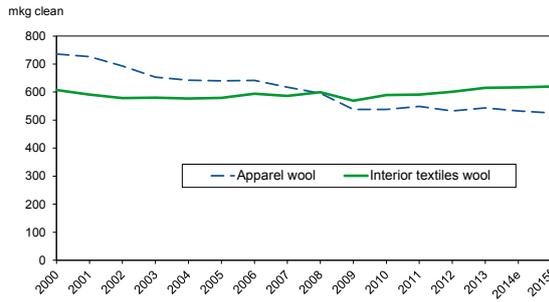
Source: NCWSBA Weekly Newsletter, AWEX, Cotton Outlook, PCI Fibres, CIRFS, Woolmark, Poimena Analysis  
Data to end January 2015  
Note: for 28 micron wool, the ratio is against acrylic fibre

**Chart 6:**  
**World Sheep Numbers, Wool Production and Stocks**



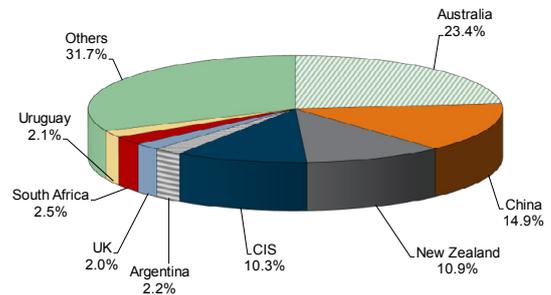
Source: Poimena Analysis and International Wool Textile Organisation Market Information Report 2014  
Note: The year refers to the season ending e.g. 2000 = 1999/2000  
Data in 2014 is an estimate and in 2015 is a forecast

**Chart 7:  
World Wool Production:  
Apparel Wool versus Interior Textile Wool**



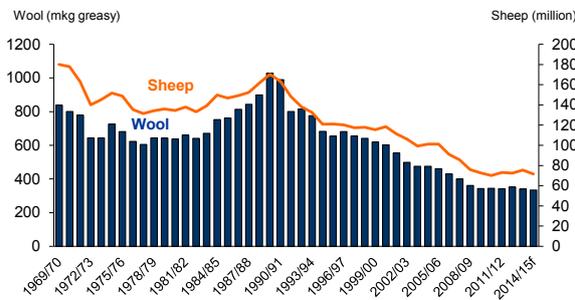
Source: International Wool Textile Organisation Market Information Report 2014, country statistics, Poimena Analysis Updated 30<sup>th</sup> September 2014

**FIG 1**



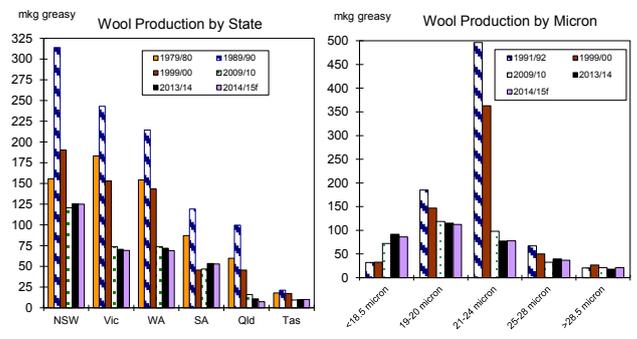
Source: International Wool Textile Organisation Market Information Report 2014, FAO of the United Nations, Poimena Analysis, Delta Consultants

**Chart 9:  
Australian Sheep Numbers and Wool Production  
1969/70 to 2014/15f**



Source: NCWSBA Weekly Newsletter, Australian Wool Production Forecasting Committee, ABS, ABARES  
Wool production is shorn wool; sheep numbers are as at 1<sup>st</sup> July.  
Updated for forecast December 2014

**Chart 10:  
Australian Wool Production**



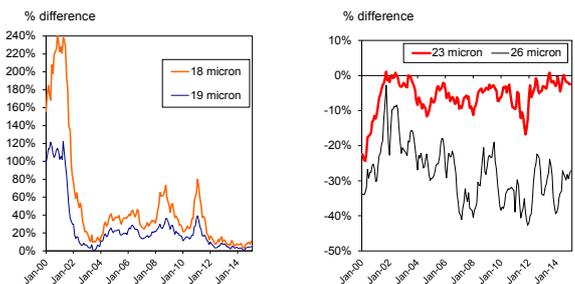
Source: Michell Wool Whispers, AWTA, Australian Wool Production Forecasting Committee and Poimena Analysis

**Chart 11:  
World and Australian Superfine Wool Production**



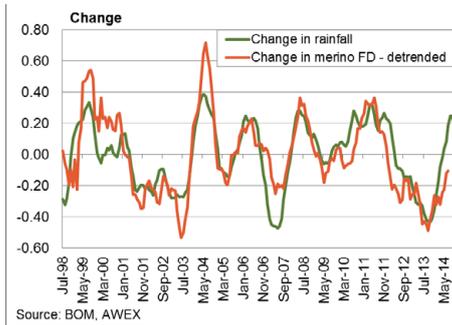
Source: Michell Wool Whispers, Poimena Analysis, AWTA, NZWTA, Cape Wools, FLA, Delta, American Sheep Industries, China Wool Textile Association.  
Updated for December 2014

**Chart 12:  
Micron Price Differentials  
% relative to 21 micron wool**



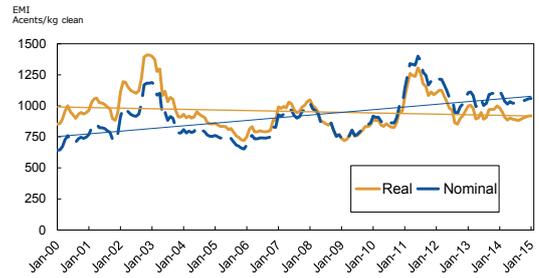
Source: AWEX  
Data to January 2015

**Chart 13:**  
Seasonal Effects in Merino Micron

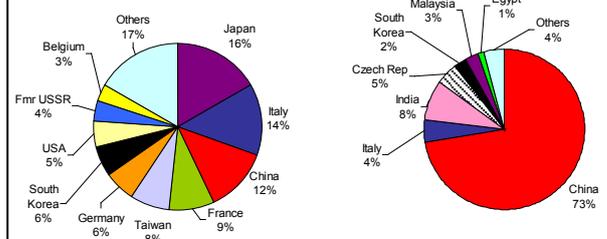
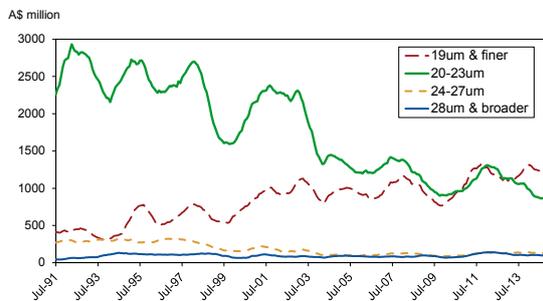


Source: Andrew Woods. Presentation to the Mecardo Wool Industry Webinar, September 2014

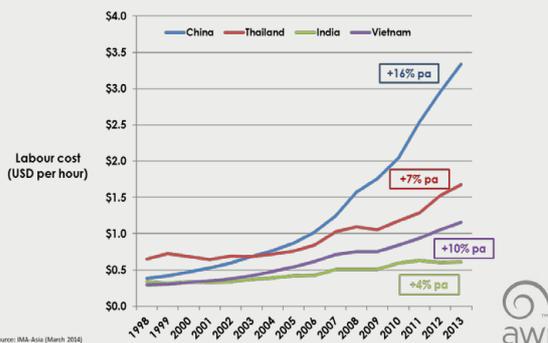
**Chart 14:**  
Australian Wool Prices in Real and Nominal Terms



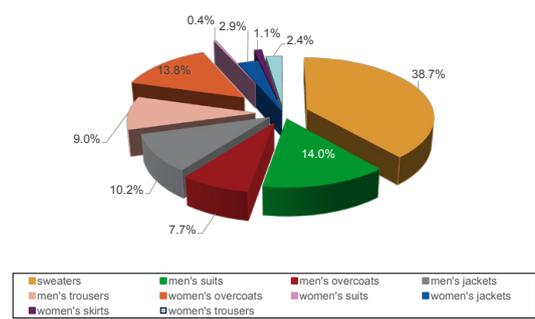
**Chart 15:**  
Australian Wool Exports by Micron Category  
12 month rolling aggregate



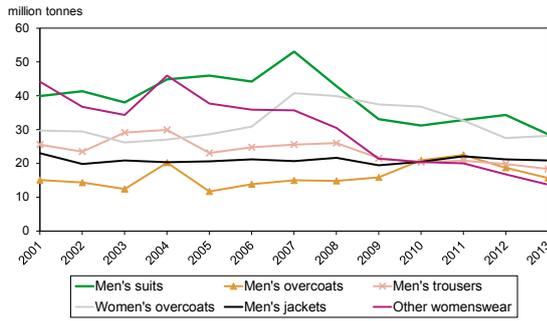
**Chart 17:**  
Manufacturing wages are rising fast in Greater Asia



**Chart 18:**  
World Trade\* in Wool Clothing in 2013  
(% share)

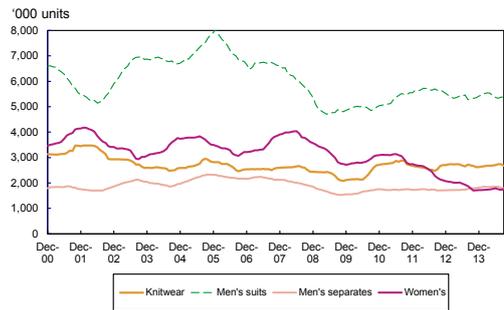


**Chart 19:  
World Trade of Main Woven Wool Products**



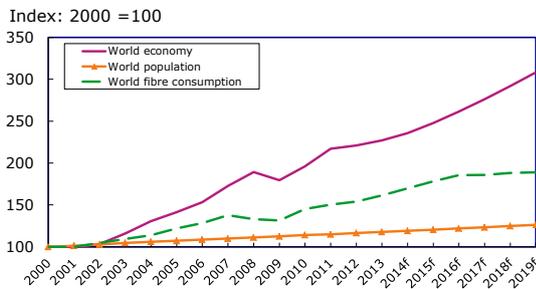
Source: IWTO Market Information 2014 report, Country statistics, Trademap.org, Poimena Analysis  
Based on total imports

**Chart 20:  
US Wool Garment Imports  
(12 month moving aggregate)**

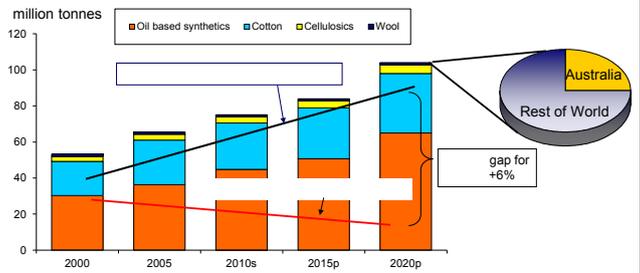


Source: OTEXA  
Data to September 2014

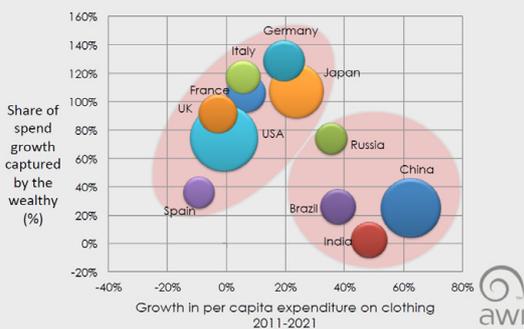
**Chart 21:  
Growth in World Economy, Population and Fibre Consumption**



Source: Chris Wilcox, Presentation to the 2012 Nanjing wool Market Conference, International Monetary Fund, CIRFS, IWTO, USDA

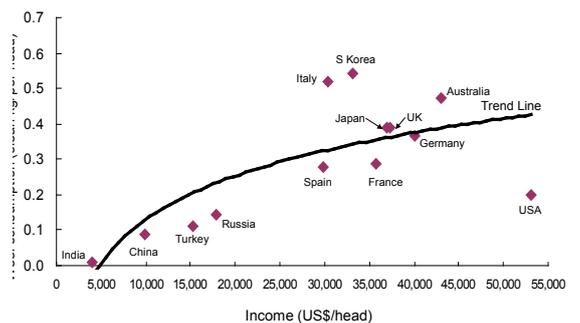


**Chart 23:  
Clothing spend growth: old vs new world**



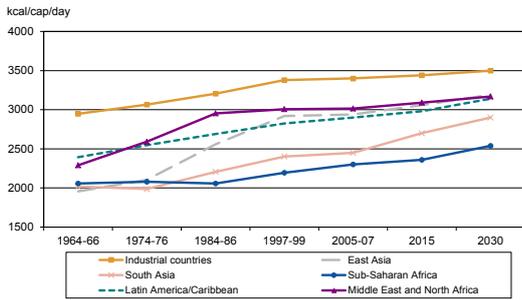
Symbol size represents 2011 market size (relative)  
Data source: Global Demographics Limited 2011

**Chart 24:  
Per capita Apparel Wool Consumption vs Income**



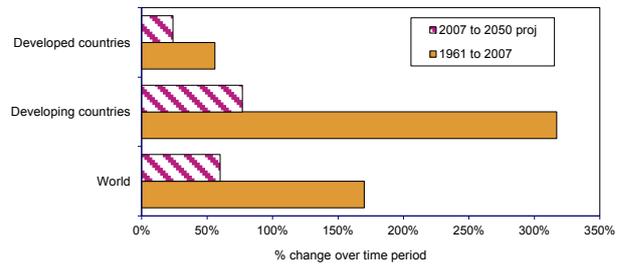
Chris Wilcox presentation to the WA Sheep Industry Leaders Forum, October 2012. Updated  
International Monetary Fund and The Woolmark Company  
Wool consumption is apparel NDA at retail average 2011-2013 as estimated by Poimena Analysis. Income is US\$ GDP  
id in 2013 on a purchasing power parity basis.

**Chart 25:**  
**Food Consumption: Actual and Projected**  
**kcal per capita per day**



Source: Daniela Battaglia FAO. Presentation to the 82<sup>nd</sup> IWTO Congress, Biella, 2013

**Chart 26:**  
**Increases in Global Food Production**  
**% change**



Source: Daniela Battaglia FAO. Presentation to the 82<sup>nd</sup> IWTO Congress, Biella, 2013

## References

AWEX *Weekly Market Report*. Various.

Australian Wool Industries Secretariat (2014), *Exports of Australian Wool* monthly reports (August 2014).

Australian Wool Innovation (2013), *Strategic Plan: 2013/14 to 2015/16*.

Battaglia, D (2013). *Outlook and Issues for Global Agriculture*. Presentation to the 82<sup>nd</sup> IWTO Congress, Biella. FAO

Beef + Lamb NZ (2014), *New Season Outlook 2014/15*, September 2014.

Bureau of Agricultural Economics (1987), *Returns from wool promotion in the United States*. An AWC-BAE Analysis.

International Wool Textile Organisation (2007), *Market Information Report 2007*.

International Wool Textile Organisation (2014), *Market Information Report 2014*. (Published December 2014)

Michell (2012), *Wool Whispers*, October 2012. Updated with data from the Australian Wool Production Forecasting Committee and others.

Michell (2013), *Wool Whispers*, October 2013. Updated with data from the Australian Wool Production Forecasting Committee and others.

Morris, D (2012), European Synthetic Fibre Association (CIRFS), reported by Chris Wilcox in a presentation to the WA Sheep Leaders Forum, October 2012.

National Council of Wool Selling Brokers (2014a), *Weekly Newsletter*, 2014/19, 23<sup>rd</sup> May 2014

National Council of Wool Selling Brokers (2014b), *Weekly Newsletter*, 2014/33, 29<sup>th</sup> August 2014

National Council of Wool Selling Brokers (2014c), 2013/14 Season Wall Chart.

National Council of Wool Selling Brokers (2014d), *Weekly Newsletter*, 2014/36, 26<sup>th</sup> September 2014

National Council of Wool Selling Brokers of Australia (2014e), *Weekly Newsletter*, 2014/44, 21<sup>st</sup> November 2014

Nolan, E (2014), *The economic value of wool attributes phase 2*. A report prepared for Australian Wool Innovation. University of Sydney. November 2014.

Office of Textiles and Apparel, US Department of Commerce (2014), <http://otexa.ita.doc.gov/>. Data downloaded on 26<sup>th</sup> November 2014

Rabobank International (2014), *Walking a Fine Line: Strategic Blunder or Just Bad timing? The Fine Wool Dilemma*. Rabobank Industry Note #461. November 2014.

Read, R (2014), Michells. Pers comm. November 2014

Rowe, J (2014), *Australian ultrafine wool at the crossroads*. Internal Sheep CRC discussion paper, June 2014. And presentation to the Annual General Meeting of the Federation of Australian Wool Organisations, August 2014.

Swan, S (2013a), *Challenges and Opportunities: Strategic Market Outlook*. Presentation to the IWTO 2013 Congress, Biella.

Swan, P (2013b), *Opportunities to grow demand for wool*. Presentation to the Nanjing Wool Market Conference. September 2013.

Swan, S (2014), *Factors affecting the value of Australian superfine wool*. Unpublished briefing paper. Australian Wool Innovation.

The Woolmark Company (2005), *The China Consumer Market: The Challenging Frontier for Australian Wool*. Report to Australian Wool Innovation. April 2005.

Wang, A (2014) *The effect of increasing labour cost on the wool processing industry*. Presentation to the IWTO 2014 Congress, Cape Town.

Wilcox, C (2009), *Implications of decreasing Merino wool production for the supply and demand of apparel wool*. Report prepared for the CRC for Sheep Industry Innovation. September 2009.

Wilcox, C (2012a), *The Global Wool Market: Short Term Pain, Long Term Gain*, presentation to the 2012 Nanjing Wool Market Conference, September 2012. Updated data.

Wilcox, C (2012b), *Wool Market Drivers to 2025*. Presentation to the WA Sheep Industry Leaders Forum, October 2012. Updated.

Woods, A (2014a), *Season and price relativities the key drivers of Aussie flock size*, Mecardo website ([www.mecardo.com.au](http://www.mecardo.com.au)), 16<sup>th</sup> January 2014.

Woods, A (2014b) *Where does merino wool come from?* Mecardo website ([www.mecardo.com.au](http://www.mecardo.com.au)), 20<sup>th</sup> August 2014.

Woods, A (2014c) Presentation to the Mecardo Wool Market Webinar, September 2014.

Woods, A (2014d), *What drove the 'get fine' message?* Mecardo website ([www.mecardo.com.au](http://www.mecardo.com.au)), 18<sup>th</sup> November 2014.

Woods, A (2014e), *The battle of the spare paddock*, Mecardo website ([www.mecardo.com.au](http://www.mecardo.com.au)), 27<sup>th</sup> November 2014.