

## Industry trends

- 4.1 In addition to the more general data discussed above on value-adding activity in Australia, the Committee received substantial industry-level data. This was of considerable benefit to the Committee in understanding the nature and trends in raw materials processing currently being undertaken.
- 4.2 Much of the information provided in these submissions is too detailed to reproduce for the purposes of this report; however, a summary of the data is presented in this chapter to provide an overview of some of the more important findings. This discussion is in two parts - the metals industries and the agricultural, fishery and forestry industries.
- 4.3 While this discussion does not canvass all of the industries for which evidence was provided to the inquiry, further information is available in the submissions from ISR, ABARE and AFFA.<sup>1</sup> The Committee did not receive substantial evidence concerning a number of other industries but these may be covered in the case studies.

## Value-adding in Australia's metal industries

- 4.4 The information the Committee received on industries in the mining sector was largely confined to the major metals industries. Although this may not provide a representative sample of the trends in the sector more generally, it does provide useful detail on developments in a major area of the sector.
- 4.5 The metals industries contain a large number of raw materials based activities in which Australia has an apparent competitive advantage and which appear to offer substantial value-adding potential. Indeed, as

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<sup>1</sup> ISR, submission no. 28, ABARE, submission no. 42 and AFFA submissions nos. 34 and 34.1.

suggested by the Australian Bureau of Agricultural and Resource Economics (ABARE),<sup>2</sup> it is likely that these industries have significantly greater potential for additional basic processing before export than is available from many other parts of the sector.

**Table 10** Australia's world ranking in metals, 1998

Commodity	Production rank	Share of world production (per cent)	Export rank
Alumina	1	33	1
Aluminium	5	8	3
Bauxite	1	35	
Copper, mined	5	5	4
Copper, refined	15	2	11
Diamonds <sup>c</sup>	1	37	1
Gold	3	13	2 <sup>b</sup>
Iron Ore (Fe content basis)	2	18 <sup>a</sup>	2
Steel	20	1	>20
Lead, mined	2	20	1
Lead, refined	10	3	1
Manganese, mined	5 <sup>a</sup>	9 <sup>a</sup>	
Nickel, mined	3	12	
Nickel, refined	4	8	
Silver, mined	5 <sup>a</sup>	7 <sup>a</sup>	
Tin, mined	4	9	
Tin, refined		0.3	
Titanium minerals	1	~22	
Titanium dioxide	6 <sup>b</sup>	~4	
Uranium	2 <sup>a</sup>	18 <sup>a</sup>	
Zinc, mined	3	13	1
Zinc, metal	9	4	6
Zircon	1 <sup>a</sup>	42 <sup>a</sup>	1 <sup>a</sup>

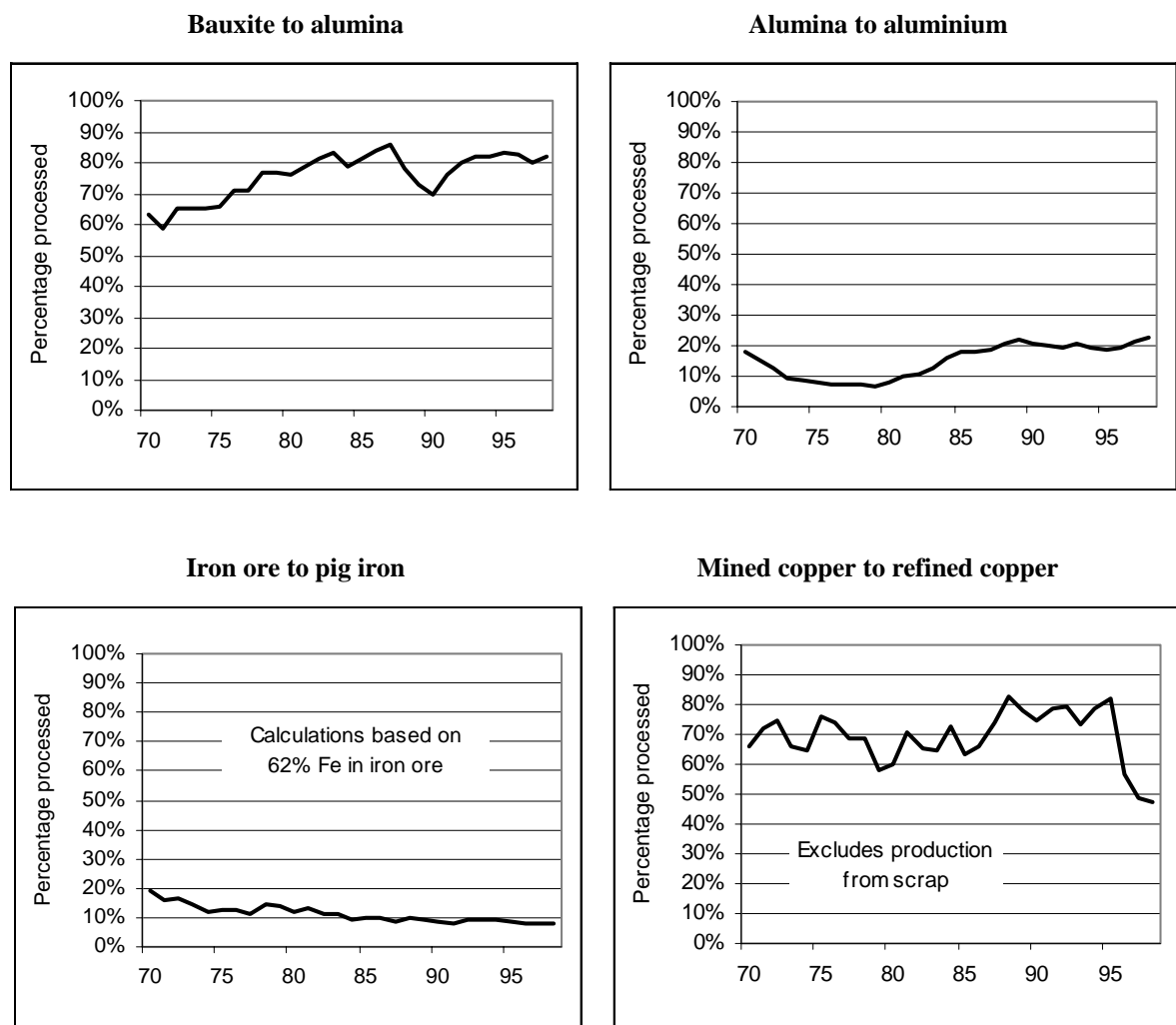
Note: **a** 1997. **b** Estimated. **c** While not metal, diamonds are included for interest.

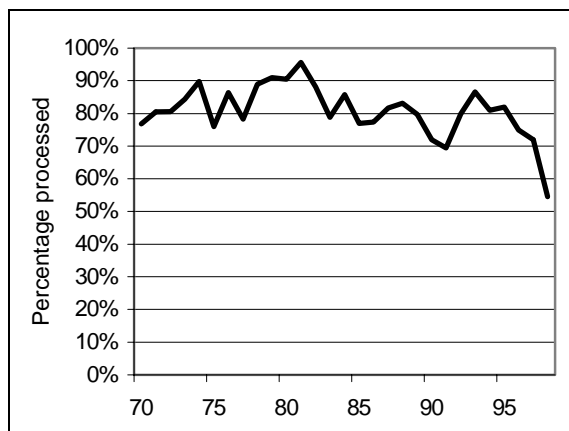
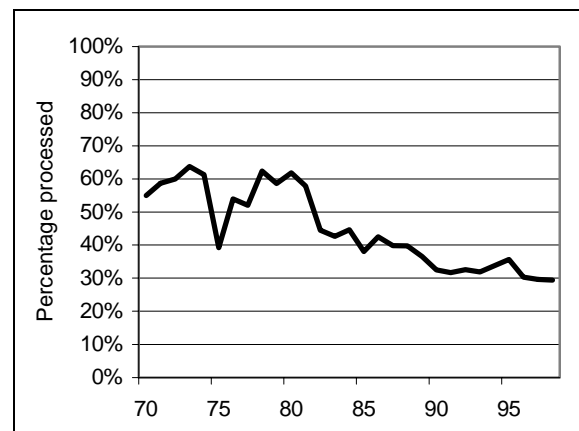
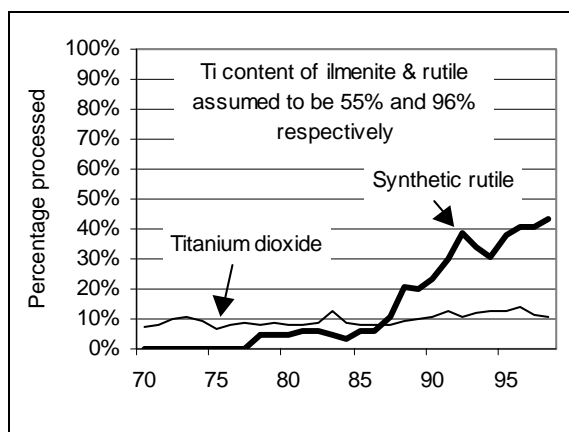
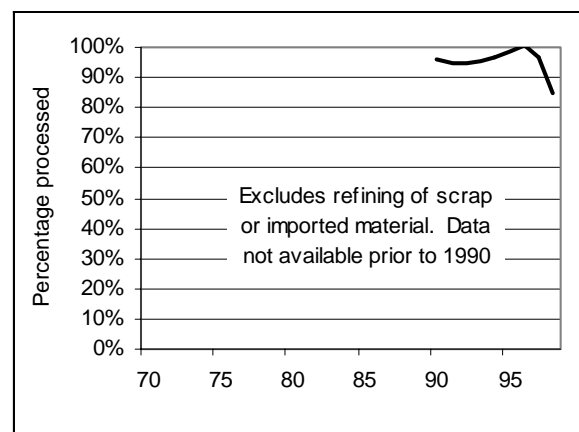
Source *ISR, submission no. 28, p. 30.*

2 ABARE, submission no. 42, p. 2.

- 4.6 As indicated in Table 10, Australia is a major player in the metals area, both in terms of the mining of raw metals and in the processing of some of these materials.
- 4.7 In terms of world production, Australia is the major producer of alumina, bauxite, diamonds, titanium minerals and zircon and ranks second in iron ore, mined lead and uranium. It is also a significant producer of gold, mined zinc, mined nickel, refined nickel and mined tin.
- 4.8 In many cases, this output also represents a substantial part of world production, with, for example, 42 per cent of world output of zircon produced in Australia together with 37 per cent of diamonds, 35 per cent of bauxite and 33 per cent of alumina.
- 4.9 The level of local processing of Australian raw materials varies considerably from commodity to commodity. The Department of Industry, Science and Resources provided the information in Figure 4 to illustrate the trend in the processing of a number of selected ores and intermediate products.

**Figure 4 Percentage of domestic commodities processed in Australia, 1960 to 1998**



**Mined lead to bullion or refined****Mined zinc to metal****Titanium minerals processing****Mined gold to refined gold**

Source ISR, submission no. 28, p. 38.

4.10 As indicated in Figure 4, the percentage of bauxite, copper, mined lead and gold processed in Australia has been historically relatively high while the level of processing of alumina, iron ore and titanium has been less significant.

4.11 The trend in these commodities also shows different traits with, for example, the level of processing of synthetic rutile increasing dramatically in recent years, the level of alumina processing remaining relatively static and the proportion of copper that is refined declining significantly. ISR provided the following explanation for these trends:<sup>3</sup>

- For **bauxite to alumina**, the percentage processed is high and has been steady over the last few years with expansions of refinery capacity matching increased production of bauxite.

- In the case of **alumina to aluminium** the level of processing is relatively low but has increased in the last few years with the expansion of Boyne Island smelter and smaller expansions at Bell Bay and Tomago. The cessation of production cutbacks resulting from the former MOU between major aluminium producing nations has also helped.
- For **iron ore** processing, the level of processing is low and is trending down. The closure of the Newcastle steelworks in September 1999 will see the proportion of iron ore processed to pig iron fall but this will be compensated by the processing of iron ore to hot briquetted iron (HBI) following the commissioning of BHP's plant in early 1999.
- For **copper**, the level of processing has traditionally been moderately high but has fallen sharply in recent years following a dramatic increase in mine production and the closure of the Southern Copper smelter in the mid 1990s.
- In the case of **lead**, brownfield (or existing mine) expansions have not kept pace with new mine production. When the Century mine comes on stream the percentage processed is expected to fall further.
- **Zinc** mine expansions have outpaced brownfield smelter and refinery expansions which has caused the percentage processed to fall below 30 per cent.
- In recent years, Australia has been refining significant amounts of **gold** from other nations. If this material and secondary<sup>4</sup> gold production is included, the ratio of refined production to mined production was 131 per cent in 1998.

4.12 The Department of Industry, Science and Resources also provided significant data comparing Australia's performance in the processing of a number of selected ores and intermediate products with that of the other major producers of these products.<sup>5</sup> While this information is too detailed to reproduce for the purposes of this report, ABARE provided a useful summary of these comparisons and this is outlined in Table 11.

4.13 It is clear from this table that Australia's performance in producing raw metals is not matched by its processing performance. Australia is a major producer of both bauxite and its processed product, alumina. The country's ranking in processing most of the other commodities listed, however, falls well behind its ranking for the initial production of these commodities.

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4 Secondary gold is gold produced by recycling of scrap. Primary gold is that produced from ore.

5 ISR, submission no. 28, pp. 39-43.

Table 11 International comparison of selected ores and intermediate products processing<sup>a</sup>

	Mine/ intermediate production	Production world rank	Processed production	Percentage processed	Processed world rank
	('000 tonnes)		('000 tonnes)	(per cent)	
Iron ore to steel	165 700	2	8 900	9	8
Bauxite to alumina	44 700	1	13 500	82	1
Alumina to aluminium	13 500	1	1 600	23	7
Mined copper to refined	600	5	290	47	8
Miner lead to refined	617	2	206	45	6
Mined nickel to refined	136	3	79	58	4
Mined zinc to refined	1 005	3	300	30	11

Note: <sup>a</sup> Based on 1997 or 1998 data.

Source: ABARE, submission no. 42, p. 14. Derived from information from ISR, submission no. 28, pp. 39-42.

- 4.14 For example, although Australia ranks first in producing alumina, it ranks seventh in processing this commodity into aluminium. In addition, its ranking as the second largest producer of iron ore compares to a ranking of eight for steel.
- 4.15 This outcome, however, is not totally unexpected. It is unlikely that Australia's comparative advantage in the production of raw materials will always be matched by a similar advantage in the processing of these materials.
- 4.16 It also needs to be recognised that the result does not indicate that value-adding of Australia's minerals is declining. As indicated in Chapter 2, the overall output of the raw materials processing industries has been increasing by 1.2 per cent a year in real terms over the last decade. This growth, however, has not matched the growth in the agriculture (3.5 per cent a year) or mining (4.8 per cent) sectors and this has impacted on the overall proportion of raw materials processed in Australia.
- 4.17 To demonstrate this further, Table 12 has been compiled to illustrate the solid growth that has been occurring in the processing of a number of the metals discussed above.
- 4.18 As indicated in this table, the growth in refined gold production increased by a very healthy 10.5 per cent a year over the decade to 1998, steel increased by 4.5 per cent a year, refined nickel by 4.4 per cent and refined copper by 3.8 per cent. Commodities such as refined lead and zinc, however, have not achieved this growth rate, with, for example, the

output of refined lead declining by an average 1.1 per cent a year over the period.

Table 12 Industry production of selected metal products ('000 tonnes)

	1988	1998	Average growth 1988-89
Alumina	10 518	13 559	2.6
Aluminium	1 150	1 618	3.5
Copper, refined	196	285	3.8
Gold, refined	0.2	0.4	10.5
Steel	5 730	8 941	4.5
Lead, refined	193	173	-1.1
Nickel, refined	5 923	9 114	4.4
Zinc metal	302	312	0.3

Source Compiled from data provided by ISR. Charts of the growth in these commodities can be found in ISR, submission no. 28, p. 52.

4.19 These growth rates should not be seen as being fixed and will continue to fluctuate, depending on the level of investment in both extraction and processing facilities. The growth in some of the lesser performing products in Table 12, for example, is likely to receive a significant boost from the substantial investment that has occurred in new processing capacity over the past few years.

4.20 As indicated by ABARE, these developments, for the most part, are yet to reach full capacity and the full effect of the new and expanded capacity will not be reflected in the statistics until around 2000-01. Examples of this investment include<sup>6</sup>:

- Three major **copper** processing developments were completed in the past twelve months – WMC's Olympic Dam expansion; MIM's smelter and refinery expansions at Mount Isa and Townsville; and Western Metals' expansion of its facilities at its Mount Gordon mine site. In addition, the reconstructed Port Kembla copper smelter-refinery is expected to be commissioned in early 2000. Collectively, these developments will add over 300,000 tonnes of new copper capacity a year.

6 See ABARE, submission no. 42, pp. 105-106 for further detail and Appendixes E and F of this report for a list of minerals processing projects recently commissioned and of projects that are committed or planned.

- The new Sun Metals' **zinc** refinery in Townsville, with a capacity of 170,000 tonnes a year, will raise zinc smelting capacity in Australia by over 50 per cent. (This, however, is only expected to have a small impact on the proportion of zinc exported in processed form, because of the impending development of the new Century zinc mine.) It is also possible that a commitment to double the capacity of the Sun Metals facility could be made in the next few years.
- Currently there are several proposals to expand both **alumina** and **aluminium** capacity over the medium term. The two at the advanced planning stage are both proposals to increase alumina refining capacity – at Worsley and Pinjarra in Western Australia.

4.21 While there are many factors that determine the extent of minerals processing in a country,<sup>7</sup> ABARE suggests that aggregate domestic consumption (that is, the size of the domestic market) is likely to play a significant part. The Bureau claimed:

Large local markets, which tend to be naturally protected by transport costs and other business advantages, represent relatively secure operating platforms through the business cycle. Compared with major diversified mining countries such as Canada, the United States and China, Australia's domestic consumption of metals is relatively low, reflecting the relative size and diversity of domestic economies.<sup>8</sup>

4.22 ABARE went on to demonstrate that the degree of minerals processing in Australia more than satisfies domestic requirements, even for those commodities where the extent of processing in Australia is low by international standards.<sup>9</sup>

4.23 The Bureau also provided substantial evidence on how minerals value-adding has impacted on Australia's export performance. Its submission provides relatively detailed assessments of eight major non-energy minerals, covering historical data as well as a discussion of likely future developments.<sup>10</sup>

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7 The full range of factors that impact on the extent of raw materials processing are discussed in more detail in Chapter 5.

8 ABARE, submission no. 42, p. 14.

9 *ibid*, pp. 14-15.

10 *ibid*, pp. 25-103.

## Agricultural, fishery and forestry industry value-adding

4.24 There was also a range of evidence provided on the level of value-adding in various agricultural, fishery and forestry industries. A broad cross-section of this material is outlined below.<sup>11</sup>

### Dairy

4.25 All dairy products that are sold to consumers or are exported have been value-added to some degree because of the highly perishable nature of milk. Apart from milk, a significant range of other milk based, value-added products are also produced. Table 13 provides an indication of the relative amounts of the main outputs from this industry.

Table 13 Production of selected milk products ('000 tonnes)<sup>a</sup>

	1992	1993	1994	1995	1996	1997
Cows milk	7 550	8 320	8 451	8 977	9 307	9 723
Butter	124.3 (1.65%)	132.9 (1.60%)	141.1 (1.71%)	131 (1.46%)	153.8 (1.65%)	153.5 (1.58%)
Cheese	206.3 (2.73%)	213.7 (2.57%)	226.8 (2.68%)	259.6 (2.89%)	274.6 (2.95%)	301.6 (3.10%)
Whole milk powder	75.4 (1.00%)	90.2 (1.08%)	113.7 (1.35%)	102.7 (1.14%)	127.2 (1.37%)	123.5 (1.27%)
Skim milk powder	169.9 (2.25%)	202.1 (2.43%)	228.2 (2.70%)	208.6 (2.32%)	226.7 (2.44%)	234.0 (2.41%)
<b>Total of selected categories</b>	<b>575.9 (7.63%)</b>	<b>638.9 (7.68%)</b>	<b>712.8 (8.43%)</b>	<b>701.0 (7.89%)</b>	<b>782.3 (8.41%)</b>	<b>812.6 (8.395)</b>

Note: a the percentage figures reflect the proportion of milk (measured by weight) processed into these products.

Source AFFA, submission no. 34, p. 12. Data from ADC 1998

4.26 While milk production in Australia has grown by a relatively healthy 5.2 per cent a year on average over the five years to 1997, most of the higher value-added products have grown at an even faster rate. For example, the production of whole milk powder has increased by an average 10.4 per cent a year over the period and cheese has increased by an average 7.9 per cent a year.

4.27 The only value-added product that has not kept up with milk production is butter, which has grown at a more modest 4.3 per cent a year.

11 A broader discussion on these products and a number of others is provided in AFFA, submission no. 34, pp. 11-34.

4.28 A significant reason for the growth in the production of these products appears to have been the rationalisation that has been occurring in this industry. As indicated by AFFA:

The process of rationalisation has been facilitated by improvements in transport, storage and handling processes, which have reduced the need for the production and processing of milk close to markets and has led to some factory closures, investment in new plant and equipment and a greater concentration of ownership. As a consequence, manufacturers have been better able to take advantage of opportunities in domestic and international markets.<sup>12</sup>

4.29 The value of Australia's exports of dairy products has almost doubled over the past seven years and is expected to have grown to around \$2 billion in 1998-99. Australia currently exports around 65 per cent of its manufactured dairy products. The principal export products are skim milk powder and cheese, with butter and wholemilk powder also major contributors.<sup>13</sup>

4.30 In 1997, Australia ranked as the third largest exporter of dairy products, with 12 per cent of world trade.

## Meat

4.31 Australia is traditionally a major producer and exporter of meat. The industry is predominantly based on red meat (beef and sheepmeat); however, there are also small but expanding white meat (pork and chicken) and game industries.

4.32 While most meat is processed to some degree, it is mostly processed into raw meat. For beef and sheepmeat, for example, it is estimated that only 100,000 to 200,000 tonnes per annum (or less than one per cent of total industry production) are processed into higher value-added products.

4.33 AFFA suggests this should not be taken as an indication that the industry is ignoring the potential of value-adding:

This should not be seen as an indication that value-adding is not seriously pursued in the beef and sheepmeat industries. While opportunities to increase value-adding in these industries do exist, it should be remembered that Australia has comparative

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12 *ibid*, p. 13.

13 *ibid*, p. 12.

advantages in the production and export of red meat and has successfully met customer demand.<sup>14</sup>

- 4.34 Value-adding in pork is more extensive. Apart from basic processing at the abattoir, pigmeat is processed into ham, smallgoods and other products. The Australian Pork Corporation estimates that approximately 60-65 per cent of Australian pork is processed.<sup>15</sup> Most of Australia's production is consumed domestically.
- 4.35 The chicken meat industry has also undertaken significant value-adding activity in recent years with the growth of highly processed products, prepared meals and new products utilising offal and previously discarded pieces. In the domestic market, the fast food and pre-cooked sector is responsible for 20 per cent of all chicken sales and is growing at an annual rate of 25 per cent.
- 4.36 ABARE estimates the production of chicken meat in 1999-00 will be 630,000 tonnes (603,000 tonnes in 1998-99). The estimated value of the industry, including takeaways, is \$2.25 billion. Exports are estimated at 18,500 tonnes and are forecast to rise to 21,900 tonnes by 1999-00, valued at around \$27 million.<sup>16</sup>

## Wheat

- 4.37 Around 80 per cent of Australia's wheat crop is exported in bulk form, however, as indicated by AFFA, there have been significant advances in adding value to Australia's wheat crop in recent years:

As well as processing, value has been added to Australian wheat through a range of services and other activities. In recent years the Australian Wheat Board (AWB) and its successor AWB Ltd, have added value to bulk wheat through better quality assurance (protein, moisture, residue levels etc), development and segregation of varieties suited to particular end products, especially noodles, training in milling and baking programs for buyers of Australian wheat, and joint ventures with research bodies to develop wheats suited to customer requirements.<sup>17</sup>

- 4.38 There has also been some export of value-added products in the form of flour and gluten. Exports of flour have risen from 107,000 tonnes in 1996-97 to around 180,000 tonnes in 1998-99, valued at \$65 million.

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14 *ibid*, p. 13.

15 *ibid*, p. 14, taken from Australian Pork Corporation 1999, *Pig Stats 1998*.

16 *ibid*, p. 15, taken from ABARE 1999, *Australian Commodities Forecasts and Issues June Quarter 1999*.

17 *ibid*, p. 18.

Exports of gluten have remained steady at around 40,000 tonnes (worth \$60-\$80m) or 50 per cent of output.<sup>18</sup>

## Wool

- 4.39 Australia is the world's largest producer and exporter of apparel wool. Although the product has substantial value-adding potential (up to 40 times the value of greasy wool), only limited processing is undertaken in Australia.
- 4.40 The wool processing options range from early-stage processing (such as scouring which adds about 10 per cent to the value), and top-making (which adds about 50 per cent) through to high-quality fabric and clothing production.
- 4.41 Table 14 provides an indication of the extent of activity undertaken in these areas in Australia in recent years.

**Table 14** Production of processed wool ('000 tonnes)

	1980	1985	1990	1995	1996	1997
Shorn wool	642.4	752.7	1 033.0	682.5	645.9	661.0
Clean wool equivalent	404.3	483.3	679.6	440.9	425.0	425.2
Scoured wool	70.1	83.5	85.7	142.3	138.9	144.8
Carbonised wool	12.4	14.7	19.3	23.0	19.4	20.5
Total early stage prod'n	82.5	98.2	105.0	165.3	158.3	165.3
Wooltop production	19.9	22.6	19.5	44.9	54.0	57.4
Woollen yarn	4.0	3.1	2.0	2.5	1.8	1.7
Worsted yarn	5.3	5.0	3.7	3.5	2.9	3.1

*Source* AFFA, submission no. 34, p. 24. Derived from ABS and Woolmark statistics.

- 4.42 While the quantity of shorn wool production fluctuated during the period 1980 to 1997, the output at the end of the period (661,000 tonnes) is at much the same level as it was in 1980. At the same time, however, early stage production has grown at an average four per cent a year, increasing from around 20.4 per cent of wool production to about 38.9 per cent in 1997.

- 4.43 Despite this growth, there appears to have been only limited processing beyond this early stage. There has been growing activity in topmaking (which has grown over the period by an average 6.4 per cent a year) due in part to a government assistance program but very little processing beyond that point. Most of the processing beyond topmaking is for domestic consumption.
- 4.44 A large proportion of Australian production of wool and wool products is exported. In 1997 exports of greasy wool (clean equivalent) amounted to 322,300 tonnes, scoured and carbonised exports totalled 112,900 tonnes and top exports 57,300 tonnes.
- 4.45 AFFA suggests Australia is competitive in early stage wool processing but this advantage is not enjoyed in the higher value-added areas:
- Australia is competitive in early stage wool processing, which is capital intensive, but is generally uncompetitive at the more labour intensive middle and later stages other than for small niche markets. This is due to the high wage structure and the labour-intensive nature of the operations, particularly at the making-up final stage where the value of the product is typically doubled.<sup>19</sup>
- 4.46 Most of the other leading producers (New Zealand, Uruguay, Argentina and South Africa) have similar value-adding profiles. While New Zealand scours a higher proportion of its product and Uruguay (which enjoys preferential access to MERCOSUR countries) largely exports at the tops stage, later stage production in these countries is generally for domestic consumption.

## Fish

- 4.47 Australian fisheries production in Australia had a gross value of some \$1.86 billion in 1997-98. The major products included prawns (\$378 million), rock lobster (\$373 million), abalone (\$176 million), tuna (\$111 million), and other finfish. The value of aquaculture was \$491 million in that year.<sup>20</sup>
- 4.48 A large proportion of Australia's fish and seafood products are exported, with exports in 1997-98 totalling \$1.49 billion.<sup>21</sup> Exports comprise mainly high value, low volume perishable products such as rock lobster, prawns, pearls, abalone, finfish and scallops.

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19 *ibid*, p. 25.

20 *ibid*, p. 26.

21 *ibid*, p. 27.

4.49 By far the majority of fisheries catch (90 per cent) is sold in a fresh or frozen form. There is little value-adding through the processing of fisheries product in Australia, although the knowledge and technologies are available. In this regard, AFFA suggests:

There is a widespread feeling in the industry that processing is more closely related to 'cost adding' than to 'value adding'. With few exceptions the motivation for investment and innovation in processing activity is lacking. The reasons for this include the:

- Difficulty in guaranteeing volume and continuity of supply of raw material,
- Perceived market preference for whole or minimally processed fish, and
- Comparatively high cost of Australian product and labour, making processing uneconomic.<sup>22</sup>

4.50 The Department considers that to encourage significant interest in further processing, it is necessary to demonstrate that profitable market opportunities exist and for the necessary technical backup to be available.

4.51 Opportunities are also available for enhancing Australia's prospects in exporting live and fresh fish through the adoption of innovative marketing techniques and quality management systems.

## Forestry

4.52 Australia's forest and wood industries (forestry, sawmilling, wood and paper processing) had an annual turnover greater than \$11 billion in 1996-97. In the same year, Australia exported around \$97 million of round and sawn wood products, \$516 million of woodchips, \$370 million of paper and paper products and \$64 million of other forest products.<sup>23</sup>

4.53 AFFA suggests that much of Australia's exports of forestry products are of relatively low value-added products:

Australia's lack of manufacturing capacity has seen us exporting relatively low value unprocessed wood while importing high value processed paper products. It is expected Australia's trade deficit will continue to increase unless there is substantial new investment in pulp and paper manufacturing capacity. Over recent years, uncertainty about access to forest resources and the high environmental standards expected in pulp mills have

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22 *ibid*, p. 27.

23 *ibid*, p. 28.

discouraged investment in value-adding operations such as pulp mills.<sup>24</sup>

- 4.54 The Department indicated, however, that an emerging shortfall in the world's supply of wood and a number of recent initiatives offers hope for the future of this industry:

Through Regional Forest Agreements (RFAs), Governments will provide secure access to wood resources and create an environment which encourages investment in value-adding manufacturing. A Wood and Paper Industry Strategy (WAPIS) commenced in 1996. The strategy comprises a four year Commonwealth initiative to encourage investment and value-adding in the forest industries. The strategy details Government actions to promote development in industry skills and resources with a focus on regional development.<sup>25</sup>

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24 *ibid*, p. 29.

25 *ibid*, p. 29.