

## Australian Paper Industry Council

### Production Statistics

### 2002-03

Unless otherwise stated, all data presented is derived from information provided by Australia's six major paper manufacturing companies, Amcor Australasia, Carter Holt Harvey Tissue, Kimberly-Clark, PaperlinX, Norske Skog Australasia and Visy Industries.

The data is collected on the basis of the Australian financial year 1 July 2002 to 30 June 2003.

#### 1. Apparent Consumption of Paper ('000 tonnes)

Product	Production	Exports	Imports <sup>1</sup>	Consumption
<i>Newsprint</i>	412	0	275	687
<i>Printing &amp; Writing Tissue *</i>	564	100	892	1,356
<i>Packaging &amp; Industrial</i>	1,892	416	233	1,709
<b>TOTAL</b>	<b>3,061</b>	<b>516</b>	<b>1,467</b>	<b>4,011</b>

<sup>1</sup> Source: Australian Bureau of Agricultural and Resource Economics (ABARE)

\* Includes an estimate for non-member companies

Overall production volumes increased by 5.7% over the previous year. There was a 12.7% increase in packaging and industrial paper production and a 4.3% increase in newsprint. Printing and writing and tissue recorded small reductions in production.

The apparent consumption of paper was up 10.2% from 3,639 kilotonnes (kt) in 2001-02. Export volumes rose by 3.4% from 499 kt in 2001-02 and import volumes increased from 1,315 kt in 2001-02, an increase of 11.6%.

#### 2. Consumption of Pulp ('000 tonnes)

Product	Production	Imports <sup>1</sup>	Consumption
<i>Mechanical</i>	485	6.5	491.5
<i>Chemical</i>	660	328.5	988.5
<i>Semi-chemical</i>	110	24.4	134.4
<b>TOTAL<sup>2</sup></b>	<b>1,255</b>	<b>359.4</b>	<b>1,614.4</b>

<sup>1</sup> Source: Australian Bureau of Agricultural and Resource Economics (ABARE)

<sup>2</sup> Total does not include recycled fibre, does include some pulp which is used for non-paper making purposes

Pulp production increased by 14.7% from 1,094 kt in 2002-03. Pulp imports increased by 14.1%.

**3. Sales Revenue (\$ millions)**

Product	Domestic	Export	Total
<i>Pulp</i>	46	0	46
<i>Wastepaper</i>	10	13	23
<i>Newsprint</i> <sup>1</sup>	434	0	434
<i>Printing &amp; Writing</i> <sup>2</sup>	690	183	873
<i>Tissue</i> <sup>3 4</sup>	822	27	849
<i>Packaging &amp; Industrial</i>	1,086	337	1,423
<b>TOTAL</b> <sup>3</sup>	<b>3,087</b>	<b>560</b>	<b>3,647</b>

*1 Excluding directory paper and mechanical printing paper*

*2 Including directory paper and mechanical printing paper*

*3 Excluding non-wovens, nappies and other non-paper health & sanitary products*

*4 Includes an estimate for non-member companies*

Sales revenue was virtually unchanged from 2001-02 (\$3,617 million). Domestic sales were up by \$24 million, while exports increased by \$6 million. Exports constituted 15% of total sales.

**4. Fixed Capital Investment (\$ millions @ 30 June 2003)**

State	
<i>New South Wales</i>	1,395
<i>Queensland</i>	298
<i>South Australia</i>	264
<i>Tasmania</i>	678
<i>Victoria</i>	1,515
<i>Western Australia</i>	14
<b>TOTAL</b>	<b>4,165</b>

Fixed capital investment increased by \$176 million (4.4%) over 2001-02.

The six paper making companies indicated an intention to invest an additional \$340 million in capital expenditure during 2003-04 and approximately \$1.4 billion over the next five years.

Companies invested more than \$12 million in pulp and paper related research and development during 2002-03.

**5. Employment (individuals @ 30 June 2003)**

State	
<i>New South Wales</i>	1,395
<i>Queensland</i>	419
<i>South Australia</i>	742
<i>Tasmania</i>	1,302
<i>Victoria</i>	2,450
<i>Western Australia</i>	115
<b>TOTAL</b>	<b>6,423</b>

This total employment figure is approximately 10% higher than the 2001-02 figure of 5,844. Some of this change may be due to variations in boundaries of reporting resulting from the variability in upstream (e.g. plantations management) and downstream (e.g. remanufacturing and transport) activities of paper manufacturing companies.

**6. Balance of Paper Trade (\$ millions)**

Product	Exports <sup>1</sup>	Imports <sup>1</sup>	Trade Balance
<i>Paper and Board</i>	718.2	2,000.8	-1,282.6
<i>Wastepaper</i>	49.6	8.0	41.6
<i>Pulp</i>	2.1	253.7	-251.6
<i>Paper Manufactures</i>	120.2	405.5	-285.3
<b>TOTAL</b>	<b>890.1</b>	<b>2668.0</b>	<b>-1,777.9</b>

<sup>1</sup> Source: ABARE

The trade deficit in pulp and paper products increased slightly (2.7%) from -\$1,731 million\* in 2001-02.

\* This 2001-02 figure is based on revised numbers published by ABARE and may differ slightly from the figure quoted in APIC's statistics for 2001-02.

**7. Energy Consumption (Terajoules TJ)**

<b>Energy Source</b>	<b>01-02</b>	<b>02-03</b>
<b>Primary Energy Purchased</b>		
<i>Black coal</i>	4,831	4,808
<i>Brown coal</i>	2,011	2,014
<i>Natural Gas</i>	19,552	19,147
<i>Fuel Oil</i>	785	785
<i>Steam</i>	1,370	1,370
<b>SUB TOTAL</b>	<b>28,549</b>	<b>28,124</b>
<b>Energy Recovered on Site</b>		
<i>Black liquor</i>	9,472	9,644
<i>Biomass (primarily wood)</i>	3,633	2,332
<b>SUB TOTAL</b>	<b>13,105</b>	<b>11,976</b>
<b>Electricity Purchased</b>		
<i>Hydro</i>	3,185	3,223
<i>Other</i>	6,884	8,068
<b>SUB TOTAL</b>	<b>10,069</b>	<b>11,291</b>
<b>TOTAL</b>	<b>51,724</b>	<b>51,391</b>

Total energy consumption was virtually unchanged on 2001-02 despite small increases in both pulp and paper production (see above).

30% of energy consumed was obtained from renewable sources (black liquor, biomass and hydro-electricity).

**8. Wood Fibre Inputs ('000 green tonnes)**

<b>Fibre Inputs</b>	<b>Softwood</b>	<b>Hardwood</b>	<b>Total</b>
<i>Pulp Logs</i>			
<i>Plantation</i>			
<i>Regrowth native forest</i>			
<i>Sawmill Residue</i>			
<b>TOTAL</b>			

Data on wood fibre inputs is not currently available. No major changes from previous years are expected except modest increase in line with the pulp production increase identified above.

## 9. Wastepaper Collections ('000 tonnes)

	Packaging & Industrial	Newsprint	Printing & Writing	Magazines	Liquid C'board	Total
<b>Collections</b>	1,160	503	199	60	2	<b>1,924</b>
<b>Imports</b>	10	-	8	-	-	<b>18</b>
<b>Exports</b>	73	136	1	1	-	<b>211</b>
<b>Sales to non-APIC</b>	-	15	-	-	-	<b>15</b>
<b>NET FIBRE</b>	<b>1,097</b>	<b>352</b>	<b>206</b>	<b>59</b>	<b>2</b>	<b>1,716</b>

This data is for the six major paper manufacturers only. Other companies may be involved in collection of wastepaper for reuse or recycling in Australia or for export.

Wastepaper collections increased by 5.5% on 2001-02.

## 10. Recovered Paper Usage ('000 tonnes)

Type of Paper Produced	Packaging & Industrial	Newsprint	Printing & Writing <sup>1</sup>	Tissue	Total
<b>Type of Wastepaper Used</b>					
<b>Packaging &amp; Industrial</b>	1,084	-	-	-	1,084
<b>Newsprint</b>	256	87	-	-	343
<b>Printing &amp; Writing<sup>1</sup></b>	129	-	25	15	169
<b>Magazines</b>	9	49	-	-	58
<b>Liquid Cartonboard</b>	-	-	-	-	-
<b>TOTAL PRODTN FROM WASTEPAPER</b>	<b>1,478</b>	<b>136</b>	<b>25</b>	<b>15</b>	<b>1,654</b>
<b>Yield (%)<sup>2</sup></b>	90	85	70	70	
<b>Recycled Fibre Content</b>	1,330	116	18	10	1,474
<b>Virgin Fibre &amp; Additives</b>	561	296	546	183	1,587
<b>Paper Production</b>	1,892	412	564	194	3,061
<b>Utilisation Rate (%)<sup>3</sup></b>	70.3	28.1	3.1	5.2	48.1
<b>Recovery Rate (%)<sup>4</sup></b>	67.9	73.2	14.7	-	48.0

1 Includes wood free and other

2 Yield is the percentage of fibres used from recovered paper once ink and other waste products have been extracted.

3 Utilisation Rate is a measure of the amount of recovered paper used as a proportion of the total production of paper.

4 Recovery Rate is a measure of the total waste paper collected as a proportion of the total consumption of paper.

Differences between waste paper collections (Table 9) and recovered paper usage (Table 10) could be accounted for by changes in inventories.

The amount of wastepaper used in domestic production increased from 1,554 kt in 2001-02 to 1,654 kt in 2002-03 (6.4%).

**11. Historical Recovered Paper Usage Data ('000 tonnes)**

	02-03	01-02	00-01	99-00	98-99	97-98	96-97	95-96	94-95	93-94
<b>Total Waste Collected</b>	1,924	1,823	1,797	1,615	1,762	1,557	1,526	1,448	1,406	1,194
<b>Exports</b>	226	266	79	301	272	137	85	133	233	141
<b>Imports</b>	18	11	41	49	46	43	47	26	24	20
<b>Wastepaper Used in Prod</b>	1654	1,554	1,634	1,542	1,536	1,463	1,488	1,341	1,197	1,073
<b>Total Paper Production</b>	3,061	2,881	2,656	2,649	2,540	2,542	2,420	2,404	2,294	2,237
<b>Total Paper Consumption</b>	4,011	3,639	3,661	3,654	3,461	3,259	3,137	3,274	3,371	2,996
<b>Recovery Rate (%)</b>	48.0	50.1	49.1	44.2	50.9	47.8	48.6	44.2	41.7	39.9
<b>Utilisation Rate (%)</b>	48.1	53.9	61.5	58.2	60.5	57.6	61.5	55.8	52.2	48.0

Despite the absolute increases in both wastepaper collections and the amount of wastepaper used in domestic paper production, both the Recovery and Utilisation Rates fell on the previous year.

The Recovery Rate was impacted by the significant increase in total paper consumption. It is also possible that APIC's Recovery Rate figure is underestimating the true Australia-wide recovery rate because of increased volumes of waste paper being recovered by other users and exporters.

The fall in the APIC Utilisation Rate may also have been impacted by collection, usage and export of recovered paper by other parties. Demand for wastepaper internationally is increasing, particularly in China and other parts of Asia. As Australian paper manufacturers continue to increase paper production economically accessible recovered paper supplies are becoming limited.

## 12. Greenhouse Gas Emissions

In 2002-03 the six major Australian paper manufacturers were responsible for the emission of 4.3 million tonnes of CO<sub>2</sub>-e in paper production or 1.41 tonnes of CO<sub>2</sub>-e per tonne of production. The major sources of emissions are shown below:

Emission Source	Emissions ('000 tonnes CO <sub>2</sub> -e)	
	2001-02	2002-03
<i>Indirect</i>		
<i>Purchased Electricity</i>	2,020	2,273
<i>Waste to Landfill Methane*</i>	317	196
<i>Direct</i>		
<i>Natural Gas Combustion</i>	1,289	1,265
<i>Coal Combustion</i>	695	570
<b>TOTAL</b>	<b>4,321</b>	<b>4,304</b>

\* Some landfill methane emissions may be direct (i.e. where company has on-site landfill)

In 1990, 1995 and 1997 APIC collected data for CO<sub>2</sub> emissions only (methane from waste to landfill not included). These figures are presented below along with comparable figures for 2001/02 and 2002/03.

	1990	1995	1997	2002	2003
<b><i>CO<sub>2</sub> emissions per tonne of production</i></b>	1.73	1.56	1.52	1.39	1.37

## 13. Water Use

Australian paper manufacturers used an average of 27.7 kilolitres of water per tonne of production in 2002-03. This represents a 63% reduction in water use since 1990.

	1990	1995	1997	2002	2003
<b><i>Water Use (kL per tonne of production)</i></b>	75.7	61.7	54.5	28.7	27.7

## 14. Water Quality

The quality of water discharged by Australian paper manufacturers has also improved significantly. Total Suspended Solids (TSS) discharged to surface waters per tonne of production has been reduced by 93% since 1990. Biochemical Oxygen Demand (BOD) discharge to surface waters per tonne of production has been reduced by 84% since 1990.

<b>Discharges to Surface Water (kg/tonne of production)</b>	<b>1990</b>	<b>1995</b>	<b>1997</b>	<b>2002</b>	<b>2003</b>
<b><i>Total Suspended Solids (TSS)</i></b>	16.5	5.6	4.2	1.3	1.2
<b><i>Biochemical Oxygen Demand (BOD)</i></b>	28.4	13.5	10.5	4.9	4.6
<b><i>Chemical Oxygen Demand (COD)</i></b>				13.6	10.4

**TSS** is a measure of the amount of solid material in the water discharged.

**BOD** is a measure of amount of oxygen required by micro-organisms to break down the organic compounds in a sample of discharge water.

**COD** is a measure of the amount of oxygen equivalent required to chemically break down the compounds in a sample of discharge water.

Only two production sites reported Adsorbable Organic Halide (AOX) emissions to surface water and these equate to less than 0.66 grams per tonne of production. AOX are organic compounds containing halides (elements of the halogen family).

No production sites reported Dioxin/Furan (PCDD/PCDF) emissions to water. (This data was obtained from the 2003 National Pollutant Inventory Database).

## 15. Air Quality

Thirteen out of eighteen papermaking sites reported PCDD/PCDF emissions to air in 2002-03. These emissions totalled 3.2 grams for the entire year or approximately 1 microgram per tonne of production (data obtained from the 2002 National Pollutant Inventory Database).

Paper manufacturer's NOX (oxides of nitrogen) discharge equates to 0.94 kg per tonne of production. NOX play a role in the formation of photochemical smog.

## 16. Solid Waste

In 2002-03 Australian paper manufacturers generated some 589,000 tonnes of waste or 193 kg per tonne of production. Of this more than half, or 298,000 tonnes, was reused, recycled or reprocessed. Approximately 290,000 tonnes or 95 kg per tonne of production was disposed of to landfill.

It is notable that the volume of waste disposed of to landfill (290,000 tonnes) is significantly less than the volume of paper which is recovered from the waste stream by the paper industry (1.9 million tonnes).

## **17. Environmental Management**

All six Australian paper manufacturing companies operate an ISO14001 based Environmental Management System (EMS) covering all of their papermaking operations. Thirteen of Australia's eighteen papermaking sites are covered by an ISO14001 based EMS that has been certified by an independent third party certification body.