



Australian Paper Industry Production Statistics 2003-04

Unless otherwise stated, all data is derived from information provided by Australia's six major paper manufacturing companies, Amcor Australasia, Kimberly-Clark, PaperlinX (Australian Paper), Norske Skog Australasia, SCA Hygiene Australasia (previously Carter Holt Harvey Tissue) and Visy Industries. These companies operate 18 pulp and paper making sites in Australia with a total of 34 paper machines.

The data is collected on the basis of the Australian financial year 1 July 2003 to 30 June 2004.

1. Apparent Consumption of Paper ('000 tonnes)

Product	Production	Exports	Imports ¹	Consumption
<i>Newsprint</i>	422	0	304	726
<i>Printing & Writing</i>	585	115	1,015	1,485
<i>Tissue *</i>	200	1	85	285
<i>Packaging & Industrial</i>	1,956	483	154	1,628
TOTAL	3,164	599	1,557	4,122

¹ Source: Australian Bureau of Agricultural and Resource Economics (ABARE)

* Includes an estimate for non-member companies

Overall production increased by 3.4% over the previous year. This production increase was spread evenly across all the paper categories (printing and writing +3.7%, tissue +3.6%, packaging and industrial +3.4% and newsprint +2.4%).

The apparent consumption of paper was up 2.8% from 4,011 kilotonnes (kt) in 2002-03. Exports rose by 16% from 516 kt in 2002-03 and imports increased from 1,467 kt in 2002-03, an increase of 6.1%.

2. Consumption of Pulp ('000 tonnes)

Product	Production	Imports ¹	Consumption
<i>Mechanical</i>	617	3.9	620.9
<i>Chemical</i>	680	343.1	1,023.1
<i>Semi-chemical</i>	101	29.7	130.7
TOTAL²	1,398	376.7	1,774.7

¹ Source: Australian Bureau of Agricultural and Resource Economics (ABARE)

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



Australian Paper Industry Production Statistics 2003-04

Pulp production increased by 11.4% from 1,255 kt in 2002-03. Pulp imports increased by 4.8%. There are no significant exports of pulp from Australia.

3. Sales Revenue (\$ millions)

Product	Domestic	Export	Total
<i>Pulp</i>	38		38
<i>Wastepaper</i>	22	38	60
<i>Newsprint</i> ¹	392		392
<i>Printing & Writing</i> ²	633	163	796
<i>Tissue</i> ^{3,4}	807	25	832
<i>Packaging & Industrial</i>	1,086	312	1,398
TOTAL ³	2,978	538	3,516

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

Despite increases in production sales revenue was down 3.6% from 2002-03 (\$3,647 million). Exports constituted 15.3% of total sales.

4. Fixed Capital Investment (\$ millions @ 30 June 2004)

State	
<i>New South Wales</i>	1,333
<i>Queensland</i>	244
<i>South Australia</i>	465
<i>Tasmania</i>	658
<i>Victoria</i>	1,501
<i>Western Australia</i>	14
TOTAL	4,216

Fixed capital investment was virtually unchanged on 2002-03 (\$4,165 million).

The six paper making companies indicated an intention to invest at least an additional \$188 million in capital expenditure during 2004-05 and approximately \$1.3 billion over the next five years.

Companies invested more than \$15 million in pulp and paper related research and development during 2003-04.



Australian Paper Industry
Production Statistics
2003-04

5. Employment (individuals @ 30 June 2004)

State	
<i>New South Wales</i>	1,391
<i>Queensland</i>	426
<i>South Australia</i>	762
<i>Tasmania</i>	1,059
<i>Victoria</i>	2,169
<i>Western Australia</i>	115
TOTAL	5,922

Total employment fell by 7.8% on 30 June 2003. Some of this change may be due to variations in boundaries of reporting resulting from changes 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 ¹	Imports ¹	Trade Balance
<i>Paper and Board</i>	713.3	2,013.6	-1,300.3
<i>Wastepaper</i>	52.6	4.7	47.9
<i>Pulp</i>	1.4	235.1	-233.7
<i>Paper Manufactures</i>	106.0	369.0	-263.0
TOTAL	873.3	2622.4	-1,749.1

¹ Source: ABARE

The trade deficit in pulp and paper products fell slightly (1.6%) from -\$1,777.9 million in 2002-03.



Australian Paper Industry
Production Statistics
2003-04

7. Energy Consumption (Terajoules TJ)

Energy Source	01-02	02-03	03-04
Primary Energy Purchased			
<i>Black coal</i>	4,831	4,808	4,874
<i>Brown coal</i>	2,011	2,014	2,001
<i>Natural Gas</i>	19,552	19,147	19,619
<i>Fuel Oil</i>	785	785	773
<i>Steam</i>	1,370	1,370	1520
SUB TOTAL	28,549	28,124	28,791
Energy Recovered on Site			
<i>Black liquor</i>	9,472	9,644	9,004
<i>Biomass (primarily wood)</i>	3,633	2,332	3,074
SUB TOTAL	13,105	11,976	12,078
Electricity Purchased			
<i>Hydro</i>	3,185	3,223	3,329
<i>Other</i>	6,884	8,068	6,325
SUB TOTAL	10,069	11,291	9,654
TOTAL	51,724	51,391	50,523

Total energy consumption was slightly down on 2002-03 (1.7%) despite the increases in paper production (see above).

30.5% of energy consumed was obtained from renewable sources (black liquor, biomass and hydro-electricity).

8. Wood Fibre Inputs ('000 green tonnes)

Fibre Inputs	Softwood	Hardwood	Total
Pulp Logs			
<i>Plantation</i>	2,297	271	2,568
<i>Regrowth native forest</i>	-	667	667
Sawmill Residue	534	94	628
TOTAL	2,831	1,032	3,863

Wood fibre input to the paper making process comprised 84% pulp log and 16% sawmill residue. Pulp logs were sourced from public and private plantations (79%) and native forests (21%). Total wood usage increased by 6.9% on 2002-03.



Australian Paper Industry Production Statistics 2003-04

9. Wastepaper Collections ('000 tonnes)

	Packaging & Industrial	Newsprint	Printing & Writing	Magazines	Liquid C'board	Total
Collections	1,571	404	136	70	3	2,184.2
Imports	0	0	2	0	0	2.0
Exports	302	38	11	2	0	353.1
Sales to non-APIC	14	0	0	0	0	14.0
NET FIBRE	1,255	366	127	68	3	1,819.1

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 11.9% on 2002-03.

10. Recovered Paper Usage ('000 tonnes)

Type of Paper Produced	Packaging & Industrial	Newsprint	Printing & Writing ¹	Tissue	Total
Type of Wastepaper Used					
Packaging & Industrial					
Newsprint					
Printing & Writing¹					
Magazines					
Liquid Cartonboard					
TOTAL PRODTN FROM WASTEPAPER	1,494	166	36	10	1,707
Yield (%)²	90	85	70	70	
Recycled Fibre Content	1,345	141	26	7	1,518
Virgin Fibre & Additives	612	281	559	155	1,608
Paper Production	1,957	422	585	162	3,126
Utilisation Rate (%)³	68.7	33.4	4.4	4.3	48.6
Recovery Rate (%)⁴	96.5	65.3	9.2	-	53.0

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.

The amount of wastepaper used in domestic production increased from 1,654 kt in 2002-03 to 1,707 kt in 2003-04 (3.2%).

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



Australian Paper Industry Production Statistics 2003-04

It is highly likely that the recovery rate for packaging and industrial is an overestimate and the recovery rates for newsprint and printing and writing papers are underestimates because of the mixing of paper types in the collection process. This mixing has also resulted in the inability to report the type of waste paper used by product being produced as reported previously (top section of Table 10).

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

	94-95	95-96	96-97	97-98	98-99	99-00	00-01	01-02	02-03	03-04
Total Waste Collected	1,406	1,448	1,526	1,557	1,762	1,615	1,797	1,823	1,924	2,184
Exports	233	133	85	137	272	301	79	266	226	353
Imports	24	26	47	43	46	49	41	11	18	2
Wastepaper Used in Prod	1,197	1,341	1,488	1,463	1,536	1,542	1,634	1,554	1,587	1,518
Total Paper Production	2,294	2,404	2,420	2,542	2,540	2,649	2,656	2,881	3,061	3,126
Total Paper Consumption	3,371	3,274	3,137	3,259	3,461	3,654	3,661	3,639	4,011	4,122
Recovery Rate (%)	41.7	44.2	48.6	47.8	50.9	44.2	49.1	50.1	48.0	53.0
Utilisation Rate (%)	52.2	55.8	61.5	57.6	60.5	58.2	61.5	53.9	48.1	48.6

The recovery rate increase significantly to the highest level recorded (53%). It is likely that this 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 Utilisation Rate increased slightly but is still well below the levels seen previously. This decline has been caused by increased virgin fibre based pulp production in Australia (Visy Tumut Mill) and may also have resulted from increased export of recovered paper and its use for other purposes. 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.



Australian Paper Industry Production Statistics 2003-04

12. Greenhouse Gas Emissions

In 2003-04 the six major Australian paper manufacturers were responsible for the emission of 4.6 million tonnes of CO₂-e in paper production or 1.46 tonnes of CO₂-e per tonne of production. The major sources of emissions are shown below:

Emission Source	Emissions ('000 tonnes CO ₂ -e)	
	2002-03	2003-04
Indirect		
<i>Purchased Electricity</i>	2,273	2,344
<i>Waste to Landfill Methane*</i>	196	288
Direct		
<i>Natural Gas Combustion</i>	1,265	1,262
<i>Coal Combustion</i>	570	662
TOTAL	4,304	4,554

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

The industry collected data on CO₂ emissions in 1990, 1995 and 1997. These figures, which **do not** include emissions of methane from waste to landfill, are presented below along with comparable figures for the past three years.

	1990	1995	1997	2002	2003	2004
<i>CO₂ emissions per tonne of production</i>	1.73	1.56	1.52	1.39	1.37	1.36

13. Water Use

Australian paper manufacturers used an average of 26.7 kilolitres of water per tonne of production in 2003-04. This represents continued improved performance on previous years and a 65% improvement in water use efficiency since 1990.

	1990	1995	1997	2002	2003	2004
<i>Water Use (kL per tonne of production)</i>	75.7	61.7	54.5	28.7	27.7	26.7



Australian Paper Industry Production Statistics 2003-04

14. Water Quality

The quality of water discharged by Australian paper manufacturers also continues to improve. 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 85% since 1990. Chemical Oxygen Demand (COD) has only been reported for the past three years and has shown significant continued improvement over that period.

Discharges to Surface Water (kg/tonne of production)	1990	1995	1997	2002	2003	2004
<i>Total Suspended Solids (TSS)</i>	16.5	5.6	4.2	1.3	1.2	1.2
<i>Biochemical Oxygen Demand (BOD)</i>	28.4	13.5	10.5	4.9	4.6	4.3
<i>Chemical Oxygen Demand (COD)</i>				13.6	10.4	9.2

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 three companies reported Absorbable Organic Halide (AOX) emissions to surface water and these equate to less than 10 grams per tonne of production. AOX are organic compounds containing halides (elements of the halogen family including chlorine).

The National Pollutant Inventory Database (2003-04) records 0.00021 kg/year of Dioxin/Furan (PCDD/PCDF) emissions to water from paper and paper product manufacturing facilities.

15. Air Quality

Paper manufacturer's NOX (oxides of nitrogen) discharge equates to 1.02 kg per tonne of production. NOX play a role in the formation of photochemical smog.

The National Pollutant Inventory Database (2003-04) records 0.0015 kg/year of Dioxin/Furan (PCDD/PCDF) emissions to air from paper and paper product manufacturing facilities.



Australian Paper Industry Production Statistics 2003-04

16. Solid Waste

In 2003-04 Australian paper manufacturers generated some 752,000 tonnes of waste or 240 kg per tonne of production. Of this more nearly half, or 343,000 tonnes, was reused, recycled or reprocessed. Approximately 408,000 tonnes or 131 kg per tonne of production was disposed of to landfill.

It is notable that the volume of waste disposed of to landfill (408,000 tonnes) is significantly less than the volume of paper which is recovered from the waste stream by the paper industry (2.1 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. Fourteen of Australia's eighteen papermaking sites have been certified by an independent third party certification body as meeting the requirements of ISO14001.