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# MANUFACTURING, MINING, AND ENERGY

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## MANUFACTURING

### Overview

Manufacturing remains the most significant industry in terms of its contribution to the State's Gross Domestic Product (GDP) at factor cost. However, its share of GDP has been steadily declining, dropping to 21.4 per cent in 1986-87 from 24.0 per cent 1981-82.

Up to 1986-87 a similar pattern occurred at the national level with manufacturing's share of GDP at factor cost dropping from 19.6 per cent to 17.3 per cent. This decline was arrested in 1987-88 when its proportion increased by 0.3 per cent over the previous year.

### Victoria compared with Australia

In 1987-88, Victorian manufacturing industry contributed 50 per cent or more of the Australian manufacturing industry's turnover in the Transport equipment (53 per cent), Clothing and footwear (52 per cent), and Textiles (50 per cent) ASIC subdivisions.

Victorian based establishments accounted for 54.0 per cent of employment within the Australian Textiles, and Clothing and footwear manufacturing industries during 1987-88.

Victorian manufacturing industry invested \$2,595m in private new fixed capital expenditure during 1987-88. This compared with \$2,447m, in 1986-87.

### Number of establishments

Over the period 1981-82 to 1987-88, the number of Victorian manufacturing establishments with four or more persons employed increased from 8,916 to 9,858 (10.6 per cent).

However, the increase applied predominantly to establishments in the employment size range of 4 to 100 persons, where the number of establishments increased by 22.4 per cent. The largest increase in the number of manufacturing establishments occurred between 1986-87 (9,109 establishments operating) and 1987-88 (9,858 operating). However, between 1981-82 and 1982-83, the number of establishments operating fell from 8,916 to 8,392 (a decrease of 6.2 per cent).

### Employment

During May 1988, manufacturing employment comprised 18.6 per cent of the Victorian labour force, compared with 22.4 per cent in May 1981.

Between 1981-82 and 1987-88 employment in the Victorian manufacturing sector decreased from 388,872 persons to 367,603, a fall of 5.8 per cent. The year to year movements have fluctuated considerably, ranging from a decrease of 10.1 per cent in 1982-83 to an increase of 2.9 per cent in 1987-88.

On an industry sub-division basis, the greatest decreases in employment between 1981-82 and 1987-88 occurred in the Transport equipment sub-

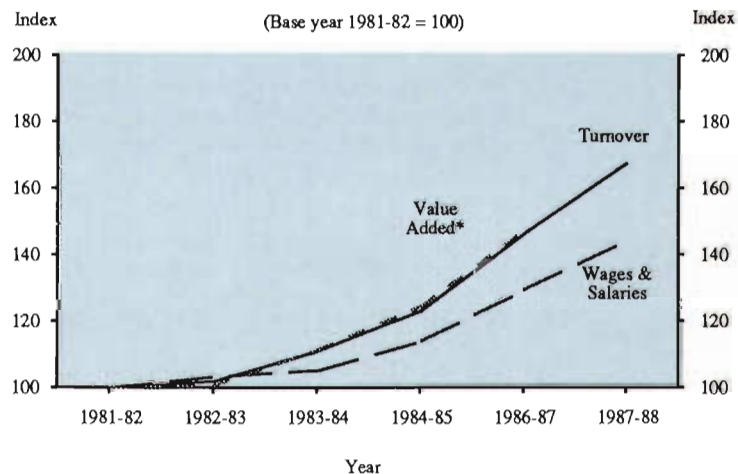
division (down 9,822 or 16.3 per cent), Other machinery and equipment (down 7,074 or 13.5 per cent) and Clothing and footwear (down 3,391 or 7.8 per cent). Conversely the Paper, paper products, printing and publishing sub-division recorded an increase of 3,122 persons (9.4 per cent) employed during the period under review.

### Melbourne Statistical Division (MSD)

The number of manufacturing establishments with four or more employees in the MSD declined from 7,174 in 1981-82 to 6,711 in 1983-84, while manufacturing employment fell from 327,099 persons to 290,624 persons during the same period. These represented declines of 6.2 per cent and 11.2 per cent, respectively. The number of establishments had risen to 7,949 and employment had increased to 297,736 persons by 30 June 1988.

In 1987-88, 81.0 per cent of persons employed by the Victorian manufacturing industry worked for establishments located within the Melbourne Statistical Division.

### MANUFACTURING ESTABLISHMENTS: INDEXES OF SELECTED FINANCIAL VARIABLES, 1981-82 TO 1987-88



\* not collected 1987-88

### Turnover and value added

Turnover of Victorian manufacturing establishments at current prices increased by 67.5 per cent between 1981-82 and 1987-88. Value added increased by 47.4 per cent between 1981-82 and 1986-87 in current price terms. Data for value added by Victorian manufacturing establishments were not collected for 1987-88.

Within individual industry subdivisions, the greatest percentage increase in turnover at current prices was 97.5 per cent in the Paper, paper products, printing and publishing sub-division, followed by the Basic metal products sub-division with an increase of 91.3 per cent. In constant price terms, the



Paper, paper products, printing and publishing sub-division reported the greatest increase in turnover at 27.0 per cent. Other significant increases were 23.1 per cent for the Basic metal products sub-division, and 17.0 per cent for the Wood, wood products and furniture sub-division. At the other end of the scale, the Other machinery and equipment sub-division showed a reduction of 0.1 per cent in turnover at constant prices while the Miscellaneous manufacturing sub-division declined by 0.6 per cent between 1981-82 and 1987-88.

#### **Wages and salaries**

Despite the decline in employment within Victorian manufacturing establishments, wages and salaries paid increased by 12.3 per cent (from \$7,390m to \$8,302m) over the period 1986-87 to 1987-88. On the other hand, turnover at current prices increased by 14.4 per cent over the same period. Between 1981-82 and 1987-88 wages and salaries increased by 44.2 per cent, while turnover at current prices increased by 67.5 per cent.

#### **Major manufacturing industries**

In 1987-88, the Food, beverages, and tobacco and the Transport equipment industries made the greatest contribution to Victorian manufacturing industry in terms of employment and turnover. The Food, beverages, and tobacco industry provided 14.1 per cent of manufacturing employment and 19.5 per cent of turnover. The Transport equipment industry provided 13.7 per cent and 14.8 per cent respectively.

The Wood, wood products, and furniture and Other machinery and equipment industry subdivisions contained the greatest number of manufacturing establishments with 1,363 and 1,317, respectively.

#### **Industry profile - Food, beverages and tobacco, Victoria (ASIC subdivision 21)**

At 30 June 1988, there were 1,242 establishments classified to the Food, beverages and tobacco ASIC subdivision. These establishments contributed 14.1 per cent of Victoria's manufacturing employment. Victorian based establishments accounted for 29.4 per cent of employment within the Australian Food, beverages and tobacco industry.

Between 1982 and 1988, Victorian employment within the subdivision dropped by 3.0 per cent while the number of manufacturing establishments increased by 24.2 per cent.

Wages per person employed rose by 50.3 per cent during this period.

During the six year period under review, employment in the Meat products, beverages and malt, and fruit and vegetable industry groups fell by 11.9, 19.4 and 4.4 per cent, respectively. By contrast, employment in the Bread, cake and biscuits and the Other foods industry groups increased by 28.4 and 2.0 per cent, respectively. The most significant contributor to this movement was the Bread industry class which showed employment growth of 48.8 per cent and a 84.6 per cent increase in the number of establishments, thus reflecting the proliferation of 'hot bread' establishments.

TABLE 7.1 MANUFACTURING ACTIVITY, VICTORIA, 1901 TO 1967-68

<i>Year</i>	<i>Manufacturing establishments</i>	<i>Employment (a)</i>	<i>Wages and salaries paid (b)</i>	<i>Turnover (c)</i>	<i>Materials and fuel used</i>	<i>Value added (d)</i>	<i>Fixed capital expenditure less disposals (e)</i>
	number	number	\$m	\$m	\$m	\$m	\$m
1901	3,249	66,529	n.a.	n.a.	n.a.	n.a.	25
1911	5,126	111,948	18	84	51	32	28
1920-21	6,532	140,743	43	212	135	77	71
1932-33	8,612	144,428	42	204	122	82	136
1946-47	10,949	265,757	156	631	368	263	244
1953-54	15,533	331,277	472	1,971	1,154	817	679
1960-61	17,173	388,050	776	3,332	1,914	1,418	1,642
1965-66	17,980	439,149	1,077	4,625	2,597	2,028	2,386
1967-68	18,030	449,945	1,244	5,351	2,957	2,395	2,685

(a) Average over whole year, including working proprietors.

(b) Excludes drawings of working proprietors.

(c) Output, excluding other revenue.

(d) Value added in process of production (ie. value of output less value of materials and fuel, etc, used).

(e) Comprises land, buildings, plant, and machinery.

TABLE 7.2 MANUFACTURING ACTIVITY, VICTORIA, 1968-69 TO 1987-88

<i>Year</i>	<i>Manufacturing establishments (a)</i>	<i>Employment (b)</i>	<i>Wages and salaries paid (c)</i>	<i>Turnover</i>	<i>Purchases, transfers in and selected expenses</i>	<i>Value added (d)</i>	<i>Fixed capital expenditure less disposals</i>
	number	number	\$m	\$m	\$m	\$m	\$m
1968-69	11,563	440,236	1,342	6,336	3,861	2,542	278
1969-70	11,393	450,352	1,497	6,998	4,307	2,799	300
1980-81	8,726	391,801	5,032	23,856	14,814	9,440	712
1981-82	8,916	388,872	5,757	27,208	17,031	10,578	1,046
1982-83	8,392	349,679	5,950	27,747	17,060	10,649	998
1983-84	8,404	354,409	6,059	30,081	18,405	11,779	779
1984-85	8,499	357,989	6,551	33,436	20,782	13,154	1,035
1986-87	9,107	354,771	7,390	39,829	24,591	15,596	n.a.
1987-88	9,858	367,603	8,302	45,577	n.a.	n.a.	n.a.

(a) All manufacturing establishments in operation at 30 June, owned by multi-establishment enterprises and single establishment enterprises with four or more persons employed. Separately located administrative offices and ancillary units are not included. Note that 1968-69 and 1969-70 figures include establishments with less than four employees.

(b) As at 30 June including working proprietors. Includes persons working at separately located administrative offices and ancillary units.

(c) Excludes drawings of working proprietors.

(d) Value added is calculated by adding to turnover the increase (or deducting the decrease) in value of stock and deducting the value of purchases and selected items of expense.



**TABLE 7.3 MANUFACTURING ESTABLISHMENTS (a) BY INDUSTRY SUBDIVISION, VICTORIA, 1987-88**

ASIC code	Industry subdivision	Establishments operating at 30 June	Employment (b)	Wages and salaries paid (c)	Turnover
		number	'000	\$m	\$m
21	Food, beverages, and tobacco	1,242	51.7	1,195	8,884
23	Textiles	313	19.4	422	1,963
24	Clothing and footwear	1,089	40.1	679	2,444
25	Wood, wood products, and furniture	1,363	22.0	405	1,798
26	Paper, paper products, printing, and publishing	1,023	36.1	904	4,097
27	Chemical, petroleum, and coal products	301	19.6	549	3,837
28	Non-metallic mineral products	439	11.0	277	1,597
29	Basic metal products	202	14.7	408	3,460
31	Fabricated metal products	1,283	32.9	701	3,113
32	Transport equipment	421	50.4	1,162	6,762
33	Other machinery and equipment	1,317	45.2	1,049	4,809
34	Miscellaneous manufacturing	865	24.5	550	2,814
	<b>Total</b>	<b>9,858</b>	<b>367.6</b>	<b>8,302</b>	<b>45,577</b>

(a) All manufacturing establishments owned by multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed. Separately located administrative offices and ancillary units are not included.

(b) At 30 June including working proprietors. Includes persons working at separately located administrative offices and ancillary units.

(c) Excludes drawings of working proprietors.

**TABLE 7.4 MANUFACTURING ESTABLISHMENTS (a) BY INDUSTRY SUBDIVISION, PERCENTAGE OF AUSTRALIAN TOTALS, VICTORIA, 1987-88**  
(per cent)

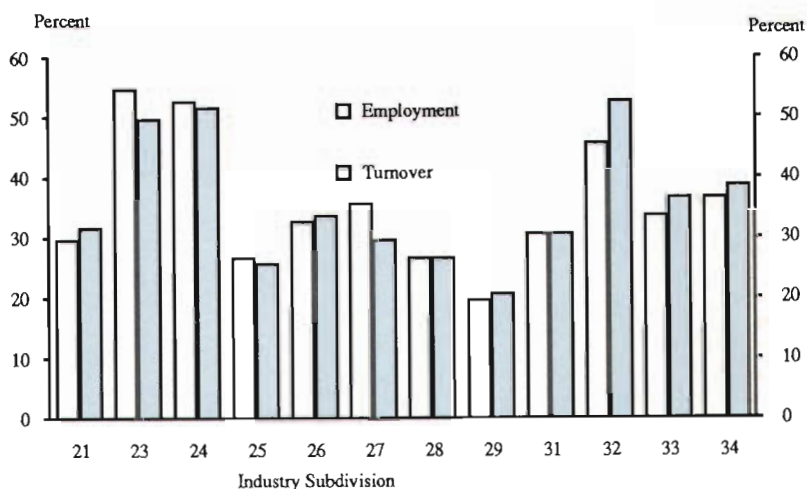
ASIC code	Industry subdivision	Establishments operating at 30 June	Employment (b)	Wages and salaries paid (c)	Turnover
21	Food, beverages, and tobacco	32	30	31	32
23	Textiles	43	55	56	50
24	Clothing and footwear	47	53	56	52
25	Wood, wood products, and furniture	29	27	27	26
26	Paper, paper products, printing, and publishing	31	33	34	34
27	Chemical, petroleum, and coal products	31	36	35	30
28	Non-metallic mineral products	24	27	28	27
29	Basic metal products	35	20	19	21
31	Fabricated metal products	27	31	32	31
32	Transport equipment	28	46	46	53
33	Other machinery and equipment	31	34	35	37
34	Miscellaneous manufacturing	33	37	39	39
	<b>Total manufacturing</b>	<b>31</b>	<b>35</b>	<b>35</b>	<b>34</b>

(a) All manufacturing establishments in operation at 30 June, owned by multi-establishment enterprises and single establishment enterprises with four or more persons employed. Separately located administrative offices and ancillary units are not included. Note that 1968-69 and 1969-70 figures include establishments with less than four employees.

(b) As at 30 June including working proprietors. Includes persons working at separately located administrative offices and ancillary units.

(c) Excludes drawings of working proprietors.

**MANUFACTURING ESTABLISHMENTS: SELECTED VARIABLES  
BY INDUSTRY SUBDIVISION,  
PERCENTAGE OF AUSTRALIAN TOTALS,  
1987-88**



**TABLE 7.5 MANUFACTURING ESTABLISHMENTS (a), 1987-88**

State or Territory	Establishments operating at 30 June	Employment (b)	Wages and salaries paid (c)	Turnover
	number	number	\$m	\$m
New South Wales	10,919	369,300	8,759	46,443
<b>Victoria</b>	<b>9,858</b>	<b>367,603</b>	<b>8,302</b>	<b>45,576</b>
Queensland	4,624	127,600	2,545	17,255
South Australia	2,505	95,100	2,003	11,085
Western Australia	2,675	72,100	1,605	9,417
Tasmania	686	24,800	563	3,243
Northern Territory	172	3,200	82	452
Australian Capital Territory	167	4,100	90	349
<b>Total</b>	<b>31,606</b>	<b>1,063,803</b>	<b>23,949</b>	<b>133,820</b>

(a) All manufacturing establishments in operation at 30 June, owned by multi-establishment enterprises and single establishment enterprises with four or more persons employed. Separately located administrative offices and ancillary units are not included. Note that 1968-69 and 1969-70 figures include establishments with less than four employees.

(b) As at 30 June including working proprietors. Includes persons working at separately located administrative offices and ancillary units.

(c) Excludes drawings of working proprietors.



**TABLE 7.6 NUMBER OF MANUFACTURING ESTABLISHMENTS (a) BY INDUSTRY SUBDIVISION VICTORIA**

ASIC code	Industry sub-division	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
21	Food, beverages, and tobacco	1,000	966	991	1,003	1,102	1,242
23	Textiles	325	307	295	304	300	313
24	Clothing and footwear	1,011	943	932	955	1,030	1,089
25	Wood, wood products, and furniture	1,130	1,074	1,086	1,124	1,261	1,363
26	Paper, paper products, printing, and publishing	916	881	889	899	947	1,023
27	Chemical, petroleum, and coal products	293	289	288	278	284	301
28	Non-metallic mineral products	406	392	390	388	421	439
29	Basic metal products	181	191	177	175	203	202
31	Fabricated metal products	1,197	1,086	1,079	1,074	1,139	1,283
32	Transport equipment	413	374	381	383	403	421
33	Other machinery and equipment	1,259	1,159	1,162	1,173	1,189	1,317
34	Miscellaneous manufacturing	785	730	734	743	828	865
<b>Total</b>		<b>8,916</b>	<b>8,392</b>	<b>8,404</b>	<b>8,499</b>	<b>9,107</b>	<b>9,858</b>

(a) See footnote to Table 7.2.

**TABLE 7.7 MANUFACTURING ESTABLISHMENTS (a) CLASSIFIED ACCORDING TO NUMBER OF PERSONS EMPLOYED (INCLUDING WORKING PROPRIETORS), VICTORIA**

Manufacturing establishments employing persons numbering -	At 30 June 1987		At 30 June 1988	
	Number of establishments	Number of persons employed (b)	Number of establishments	Number of persons employed (b)
Less than 10	4,689	29,543	4,656	56,361
10 to 19	1,824	28,112	2,202	
20 to 49	1,325	45,481	1,568	
50 to 99	625	49,272	680	47,450
100 to 199	373	57,832	428	48,051
200 to 499	196	63,590	243	58,817
500 to 999	59	43,717	55	70,825
1,000 and over	16	27,985	26	37,327
<b>Total</b>	<b>9,107</b>	<b>345,532</b>	<b>9,858</b>	<b>358,254</b>

(a) All manufacturing establishments owned by multi-establishment enterprises and single establishment manufacturing enterprises with four or more persons employed. In addition, there were 3,927 single establishment enterprises employing 8,227 persons in the one to three persons employed group for 1987-88.

(b) Excludes persons employed in separately located administrative offices and ancillary units serving more than one establishment.

**TABLE 7.8 PERSONS EMPLOYED (a) IN MANUFACTURING ESTABLISHMENTS, BY INDUSTRY SUBDIVISION, VICTORIA**

ASIC code	Industry subdivision	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
21	Food, beverages, and tobacco	51,835	48,867	48,604	49,246	48,802	51,700
23	Textiles	18,738	17,150	17,794	18,009	19,129	19,420
24	Clothing and footwear	43,536	40,887	43,189	42,926	41,475	40,145
25	Wood, wood products, and furniture	19,602	17,743	18,520	19,466	21,215	21,952

TABLE 7.8 PERSONS EMPLOYED (a) IN MANUFACTURING ESTABLISHMENTS, VICTORIA - *continued*

ASIC code	Industry subdivision	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
26	Paper, paper products, printing, and publishing	32,956	33,335	34,106	34,201	35,221	36,078
27	Chemical, petroleum, and coal products	20,272	20,160	19,699	19,759	19,329	19,568
28	Non-metallic mineral products	12,296	10,802	10,472	10,280	10,625	11,001
29	Basic metal products	14,675	12,734	12,747	12,579	13,431	14,734
31	Fabricated metal products	35,942	30,612	30,163	29,789	30,445	32,930
32	Transport equipment	60,223	51,368	53,927	55,403	47,959	50,401
33	Other machinery and equipment	52,236	43,512	42,271	43,295	43,773	45,162
34	Miscellaneous manufacturing	26,561	22,509	22,917	23,036	23,367	24,512
<b>Total</b>		<b>388,872</b>	<b>349,679</b>	<b>354,409</b>	<b>357,989</b>	<b>354,771</b>	<b>367,603</b>

(a) Employment at 30 June including working proprietors (Includes persons working at separately located administrative offices and ancillary units).

TABLE 7.9 MANUFACTURING ESTABLISHMENTS (a), TYPE OF EMPLOYMENT, VICTORIA

At 30 June	Working proprietors	Administrative, office, sales, and distribution employees (b)	Production and all other employees (b)	Total
1982	3,475	98,178	287,219	388,872
1983	2,869	89,517	257,293	349,679
1984	2,906	88,879	262,624	354,409
1985	2,630	88,809	266,550	357,989
1987	1,954	98,059	254,758	354,771
1988	2,815		364,788	367,603

(a) See footnote to Table 7.2.

(b) Separate data is not available for 1987-88.

TABLE 7.10 MANUFACTURING ESTABLISHMENTS (a), TYPE OF EMPLOYMENT BY INDUSTRY SUBDIVISION, VICTORIA, AT 30 JUNE 1988

ASIC code	Industry subdivision	Working proprietors	Employees (b)	Total
21	Food, beverages, and tobacco	700	51,000	51,700
23	Textiles	49	19,371	19,420
24	Clothing and footwear	419	39,726	40,145
25	Wood, wood products, and furniture	503	21,449	21,952
26	Paper, paper products, printing, and publishing	242	35,836	36,078
27	Chemical, petroleum, and coal products	22	19,546	19,568
28	Non-metallic mineral products	95	10,906	11,001
29	Basic metal products	28	14,706	14,734
31	Fabricated metal products	288	32,642	32,930
32	Transport equipment	92	50,309	50,401
33	Other machinery and equipment	196	44,966	45,162
34	Miscellaneous manufacturing	181	24,331	24,512
<b>Total</b>		<b>2,815</b>	<b>364,788</b>	<b>367,603</b>

(a) See footnote to Table 7.2.

(b) See footnote to Table 7.9.



**TABLE 7.11 MANUFACTURING ESTABLISHMENTS (a), TURNOVER (b) BY INDUSTRY SUBDIVISION, VICTORIA**  
(\$m)

ASIC code	Industry subdivision	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
21	Food, beverages, and tobacco	5,452	5,959	6,266	6,673	7,734	8,884
23	Textiles	1,107	1,087	1,219	1,370	1,750	1,963
24	Clothing and footwear	1,647	1,717	1,926	2,057	2,392	2,444
25	Wood, wood products, and furniture	1,016	1,014	1,115	1,292	1,587	1,798
26	Paper, paper products, printing, and publishing	2,066	2,262	2,499	2,833	3,612	4,097
27	Chemical, petroleum, and coal products	2,365	2,451	2,668	2,876	3,400	3,837
28	Non-metallic mineral products	902	884	1,001	1,188	1,393	1,597
29	Basic metal products	1,809	1,721	2,116	2,397	3,082	3,460
31	Fabricated metal products	2,043	1,953	2,037	2,186	2,548	3,113
32	Transport equipment	3,825	4,014	4,269	5,159	5,624	6,762
33	Other machinery and equipment	3,196	2,987	3,055	3,325	4,253	4,809
34	Miscellaneous manufacturing	1,780	1,701	1,911	2,080	2,457	2,814
<b>Total</b>		<b>27,208</b>	<b>27,747</b>	<b>30,081</b>	<b>33,436</b>	<b>39,829</b>	<b>45,577</b>

(a) See footnote to Table 7.2.

(b) Turnover includes sales of goods whether produced by an establishment or not, transfers out of goods to other establishments of the same enterprise, bounties and subsidies on production plus all other operating revenue from outside the enterprise.

**TABLE 7.12 MANUFACTURING ESTABLISHMENTS (a), PURCHASES, TRANSFERS IN, AND SELECTED ITEMS OF EXPENSE (b) BY INDUSTRY SUBDIVISION, VICTORIA**  
(\$m)

ASIC code	Industry subdivision	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
21	Food, beverages, and tobacco	3,801	4,145	4,198	4,495	5,112	n.a.
23	Textiles	682	658	741	863	1,040	n.a.
24	Clothing and footwear	878	894	1,030	1,115	1,294	n.a.
25	Wood, wood products, and furniture	584	571	628	744	942	n.a.
26	Paper, paper products, printing, and publishing	1,106	1,213	1,325	1,530	1,841	n.a.
27	Chemical, petroleum, and coal products	1,468	1,518	1,619	1,711	2,061	n.a.
28	Non-metallic mineral products	482	470	515	629	797	n.a.
29	Basic metal products	1,319	1,258	1,592	1,885	2,339	n.a.
31	Fabricated metal products	1,161	1,076	1,137	1,234	1,444	n.a.
32	Transport equipment	2,614	2,601	2,760	3,468	3,828	n.a.
33	Other machinery and equipment	1,824	1,618	1,703	1,856	2,408	n.a.
34	Miscellaneous manufacturing	1,112	1,037	1,156	1,252	1,487	n.a.
<b>Total</b>		<b>17,031</b>	<b>17,060</b>	<b>18,405</b>	<b>20,782</b>	<b>24,591</b>	<b>n.a.</b>

(a) See footnote to Table 7.2.

(b) Includes purchases of materials, fuel, power, containers, etc., and goods for resale, plus transfers in of goods from other establishments of the enterprise, plus charges for commission and sub-contract work, repair and maintenance expenses, outward freight and cartage, motor vehicle running expenses, sales commission payments, rent, leasing, and hiring expenses.

**TABLE 7.13 MANUFACTURING ESTABLISHMENTS (a), STOCKS (b) BY INDUSTRY  
SUBDIVISION, VICTORIA  
(\$m)**

<i>ASIC code</i>	<i>Industry subdivision</i>	<i>1981-82</i>	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>	<i>1986-87</i>	<i>1987-88</i>
<b>OPENING STOCKS</b>							
21	Food, beverages, and tobacco	641	646	741	744	657	n.a.
23	Textiles	186	204	192	212	270	n.a.
24	Clothing and footwear	265	289	280	316	374	n.a.
25	Wood, wood products, and furniture	127	140	136	151	201	n.a.
26	Paper, paper products, printing, and publishing	263	291	285	291	358	n.a.
27	Chemical, petroleum, and coal products	369	404	420	452	610	n.a.
28	Non-metallic mineral products	104	121	132	120	144	n.a.
29	Basic metal products	263	293	258	273	307	n.a.
31	Fabricated metal products	330	364	306	316	343	n.a.
32	Transport equipment	640	674	709	660	885	n.a.
33	Other machinery and equipment	742	781	720	682	979	n.a.
34	Miscellaneous manufacturing	270	274	266	269	290	n.a.
<b>Total</b>		<b>4,200</b>	<b>4,480</b>	<b>4,444</b>	<b>4,486</b>	<b>5,418</b>	<b>n.a.</b>
<b>CLOSING STOCKS</b>							
21	Food, beverages, and tobacco	655	722	764	769	690	n.a.
23	Textiles	206	195	211	242	310	n.a.
24	Clothing and footwear	295	287	320	345	422	n.a.
25	Wood, wood products, and furniture	143	140	155	174	231	n.a.
26	Paper, paper products, printing, and publishing	312	291	286	343	380	n.a.
27	Chemical, petroleum, and coal products	411	425	463	471	652	n.a.
28	Non-metallic mineral products	121	132	119	125	148	n.a.
29	Basic metal products	290	275	268	311	334	n.a.
31	Fabricated metal products	371	320	324	336	378	n.a.
32	Transport equipment	705	665	677	780	960	n.a.
33	Other machinery and equipment	799	737	686	789	944	n.a.
34	Miscellaneous manufacturing	291	253	273	301	328	n.a.
<b>Total</b>		<b>4,601</b>	<b>4,442</b>	<b>4,546</b>	<b>4,986</b>	<b>5,777</b>	<b>n.a.</b>

(a) See footnote to Table 7.2.

(b) Figures include finished goods, work-in-progress and stocks of materials, fuels, etc. Note that due to reporting differences on individual returns and variations in number of establishments from year to year the closing stocks in one year may differ from the opening stocks in the following year.



**TABLE 7.14 MANUFACTURING ESTABLISHMENTS (a), VALUE ADDED (b) BY INDUSTRY SUBDIVISION, VICTORIA (\$m)**

ASIC code	Industry subdivision	1981-82	1982-83	1983-84	1984-85	1986-87	1987-88
21	Food, beverages, and tobacco	1,666	1,890	2,092	2,203	2,654	n.a.
23	Textiles	445	420	497	538	749	n.a.
24	Clothing and footwear	800	821	937	973	1,146	n.a.
25	Wood, wood products, and furniture	447	443	505	572	675	n.a.
26	Paper, paper products, printing, and publishing	1,009	1,049	1,174	1,354	1,792	n.a.
27	Chemical, petroleum, and coal products	940	953	1,093	1,184	1,380	n.a.
28	Non-metallic mineral products	438	425	473	563	600	n.a.
29	Basic metal products	516	445	534	549	769	n.a.
31	Fabricated metal products	924	833	918	973	1,139	n.a.
32	Transport equipment	1,276	1,403	1,476	1,811	1,871	n.a.
33	Other machinery and equipment	1,429	1,324	1,319	1,575	1,811	n.a.
34	Miscellaneous manufacturing	690	643	761	859	1,008	n.a.
<b>Total</b>		<b>10,578</b>	<b>10,649</b>	<b>11,779</b>	<b>13,154</b>	<b>15,596</b>	<b>n.a.</b>

(a) See footnote to Table 7.2.

(b) Value added is calculated by adding to turnover the increase (or deducting the decrease) in value of stock and deducting the value of purchases and selected items of expenditure.

**TABLE 7.15 MANUFACTURING ESTABLISHMENTS (a) BY STATISTICAL DIVISION, VICTORIA, AT 30 JUNE 1988**

Statistical division	Establishments operating at 30 June	Employment at 30 June			Wages and salaries paid	Turnover
		Males	Females	Persons		
	number	number	number	number	\$m	\$m
Melbourne	7,949	203,932	93,804	297,736	6,766	3,593
Barwon	338	14,511	4,226	18,737	459	2,799
South Western	135	4,180	1,313	5,493	123	1,069
Central Highlands	227	6,276	2,240	8,516	180	804
Wimmera	73	924	571	1,495	22	125
Northern Mallee	101	1,159	345	1,504	29	220
Loddon-Campaspe	259	6,531	3,495	10,026	184	947
Goulburn	239	5,102	2,262	7,364	164	1,134
North Eastern	153	5,055	1,811	6,866	162	1,158
East Gippsland	115	1,839	465	2,304	40	234
Central Gippsland	200	4,277	1,517	5,794	137	927
East Central	69	1,227	541	1,768	37	227
<b>Total</b>	<b>9,858</b>	<b>255,013</b>	<b>112,590</b>	<b>367,603</b>	<b>8,302</b>	<b>45,577</b>

(a) See footnote to Table 7.2.



**TABLE 7.16 NUMBER OF MANUFACTURING ESTABLISHMENTS (a) AND PERSONS EMPLOYED IN EACH STATISTICAL DIVISION, CLASSIFIED ACCORDING TO INDUSTRY SUB-DIVISION, VICTORIA, 1987-88**

		Statistical division												
ASIC				South	Central					North	East	Central	East	
code	Industry subdivision	Melbourne	Barwon	Western	Highlands	Wimmera	Mallee	Campaspe	Goulburn	Eastern	Gippsland	Gippsland	Central	Total
NUMBER OF MANUFACTURING ESTABLISHMENTS														
21	Food, beverages, and tobacco	763	51	41	44	20	34	69	81	45	22	54	18	1,242
23	Textiles	254	20	n.p.	n.p.	n.p.	n.p.	8	6	n.p.	n.p.	n.p.	n.p.	313
24	Clothing and footwear	994	29	n.p.	9	n.p.	-	15	13	n.p.	n.p.	10	n.p.	1,089
25	Wood, wood products, and furniture	1,038	57	19	41	10	11	27	38	28	38	35	21	1,363
26	Paper, paper products, printing, and publishing	862	n.p.	12	12	10	14	27	23	n.p.	11	n.p.	5	1,023
27	Chemical, petroleum, and coal products	268	14	n.p.	n.p.	-	n.p.	5	n.p.	n.p.	-	n.p.	n.p.	301
28	Non-metallic mineral products	242	27	16	27	6	11	31	20	17	12	23	7	439
29	Basic metal products	158	13	n.p.	8	n.p.	n.p.	7	n.p.	n.p.	n.p.	4	-	202
31	Fabricated metal products	1,089	44	12	23	7	n.p.	31	19	14	10	26	n.p.	1,283
32	Transport equipment	351	n.p.	7	12	-	n.p.	11	12	n.p.	n.p.	7	n.p.	421
33	Other machinery and equipment	1,137	30	12	31	9	14	19	21	17	9	15	3	1,317
34	Miscellaneous manufacturing	793	23	4	9	n.p.	n.p.	9	2	n.p.	n.p.	3	n.p.	865
Total		7,949	338	135	227	73	101	259	239	153	115	200	69	9,858
NUMBER OF PERSONS EMPLOYED														
21	Food, beverages, and tobacco	32,428	1,494	2,034	2,098	506	724	2,684	3,961	2,774	651	1,589	757	51,700
23	Textiles	14,312	1,794	n.p.	n.p.	n.p.	n.p.	638	297	n.p.	n.p.	n.p.	n.p.	19,420
24	Clothing and footwear	32,630	1,945	n.p.	785	n.p.	-	1,929	612	n.p.	n.p.	535	n.p.	40,145
25	Wood, wood products, and furniture	16,512	725	321	885	116	96	307	503	761	998	493	235	21,952
26	Paper, paper products, printing, and publishing	31,054	n.p.	268	315	113	212	551	531	n.p.	149	n.p.	138	36,078
27	Chemical, petroleum, and coal products	17,469	1,569	n.p.	n.p.	-	n.p.	48	n.p.	n.p.	-	n.p.	n.p.	19,568
28	Non-metallic mineral products	7,975	1,197	60	618	46	46	387	210	164	44	210	44	11,001
29	Basic metal products	10,193	2,508	n.p.	582	n.p.	n.p.	193	n.p.	n.p.	n.p.	80	-	14,734
31	Fabricated metal products	28,679	931	223	483	70	n.p.	1,062	392	290	136	437	n.p.	32,930
32	Transport equipment	42,300	n.p.	47	1340	-	n.p.	1,099	293	n.p.	n.p.	50	n.p.	50,401
33	Other machinery and equipment	40,991	589	404	935	110	180	778	429	339	63	318	26	45,162
34	Miscellaneous manufacturing	23,193	278	28	85	n.p.	n.p.	350	36	n.p.	n.p.	108	n.p.	24,512
Total		297,736	18,737	5,493	8,516	1,495	1,504	10,026	7,364	6,866	2,304	5,794	1,768	367,391

(a) See footnote to Table 7.2.

**TABLE 7.17 SELECTED ARTICLES MANUFACTURED, 1987-88**

<i>Article</i>	<i>Unit</i>	<i>Victoria</i>	<i>Australia</i>	<i>Victoria as a percentage of Australia</i>
<b>Meat (carcass weight) -</b>				
Beef and veal	'000 tonnes	291	1,471	19.8
Mutton	'000 tonnes	56	243	23.0
Lamb	'000 tonnes	111	281	39.5
Pigmeat	'000 tonnes	61	303	20.1
<b>Dairy products -</b>				
Whole milk	ml. litres	3,792	6,291	60.3
Butter	tonnes	83,282	95,853	86.9
Cheese	tonnes	114,871	190,711	60.2
Ice cream	'000 litres	65,309	209,001	31.2
Flour, white	tonnes	259,702	1,203,439	21.6
<b>Yarns -</b>				
Cotton	tonnes	9,604	20,332	47.2
Wool	tonnes	15,967	21,458	74.4
<b>Woven cloth -</b>				
Cotton	'000 sq metres	18,389	36,307	50.6
Wool	'000 sq metres	2,924	9,669	30.2
Cars and station wagons	'000	186	329	56.5
Plastic and synthetic resins	'000 tonnes	472	700	67.4
<b>Building materials -</b>				
Clay bricks	million	439	2,142	20.5
Terracotta and concrete roofing tiles	'000 sq. metres	5,957	24,801	24.0
Ready mixed concrete	'000 cu. metres	4,344	17,102	25.4

## MINING

### Overview

In 1986-87 the Victorian mining industry contributed 21.0 per cent of the Australian mining component of Gross Domestic Product (GDP) at factor cost. The mining industry represented 3.1 per cent of Victoria's GDP at factor cost in 1986-87.

The term 'mining' as used in GDP at factor cost estimates includes the extraction of minerals occurring naturally as solids, such as coals and ores, liquids such as crude petroleum, and gases such as natural gas.

### Oil and gas production

In 1987-88, the Gippsland Basin produced 84 per cent of Australia's crude oil and 39 per cent of its natural gas.

### Brown coal

Australia's measured and indicated resources of brown coal are estimated at 43,300 Megatonnes., the majority of which is located in Victoria's Latrobe Valley (39,700 Mt.). Brown coal is by far Victoria's most valuable solid mineral commodity, with production in 1987-88 valued at \$320.2m.

## Gold

Victoria's production of gold bullion increased rapidly in recent years. Only 41 kilograms were produced during 1979-80, rising to 150 kilograms in 1983-84. Victorian gold production increased dramatically from this low base, largely as a result of the Wonga open cut mine at Stawell coming on stream. By 1987-88, Victorian production was 1,634 kilograms and was valued at \$32.9m.

TABLE 7.18 MINING ACTIVITY (a), VICTORIA

Year	Establish- ments at 30 June	Employ- ment (b)	Wages and salaries (c)	Turnover	Stocks		Purchases, transfers in and selected expenses	Value added (d)
					Opening	Closing		
	number	number	\$m	\$m	\$m	\$m	\$m	\$m
1984-85	221	5,737	160.3	3,104.9	65.9	62.6	281.9	2,819.7
1985-86	207	5,567	171.7	3,384.0	61.1	70.3	323.5	3,069.7
1986-87	208	5,783	182.1	2,525.6	65.9	72.3	293.0	2,239.0
1987-88	208	5,901	204.9	2,923.5	75.2	85.2	327.9	2,605.5

(a) ASIC Subdivisions not available for separate publication.

(b)(c)(d) See footnotes to Table 7.2.

TABLE 7.19 ROYALTIES FROM OIL AND GAS PRODUCTION,  
VICTORIA  
(\$m)

Year	Amount received	Amount paid to Commonwealth	Amount retained by Victoria
1982-83	188.3	62.7	125.6
1983-84	257.9	84.2	173.7
1984-85	293.9	96.5	197.5
1985-86	302.2	99.4	202.8
1986-87	218.7	71.4	147.2
1987-88	213.9	69.8	144.1

Source: Department of Industry, Technology and Resources, Victoria: *Annual Report*.

TABLE 7.20 CRUDE OIL PRODUCTION (a), VICTORIA

Year	Barrels ('000)		Megalitres	
	During year	Average barrels per day	During year	Average megalitres per day
1982	127,070	348	20,203	55.3
1983	137,337	376	21,835	60.0
1984	159,395	436	25,342	69.4
1985	177,776	487	28,264	77.4
1986	145,350	398	23,109	63.3
1987	151,571	415	24,098	66.0
1988	133,194	364	21,176	57.9

(a) After processing.

Source: Australian Institute of Petroleum: *Oil and Australia*



**TABLE 7.21 ESTIMATED HYDROCARBON RESERVES, VICTORIA**  
(million cu. metres)

<i>Item</i>	<i>1985</i>	<i>1986</i>	<i>1987</i>
Crude oil	189	184	161
Natural gas	168	168	159
Condensate	21	21	22
LPG	45	46	46

*Source:* Department of Industry, Technology and Resources: *Annual Report*.

**TABLE 7.22 MINERAL PRODUCTION, VICTORIA**

<i>Mineral</i>	<i>Unit</i>	<i>1982-83</i>	<i>1983-84</i>	<i>1984-85</i>	<i>1985-86</i>	<i>1986-87</i>	<i>1987-88</i>
Brown coal	kilotonnes	34,708	33,199	r38,501	r36,319	r41,799	43,481
Metallic minerals -							
Bauxite	tonnes	8,585	12,829	4,409	4,584	r7,882	7,345
Gold bullion (a)	kilograms	115	150	902	1,272	r1,179	1,634
Non-metallic minerals -							
Diatomite (b)	tonnes	682	538	776	-	r-	1,800
Gypsum	kilotonnes	88	207	247	139	r187	196
Kaolin (b)	kilotonnes	47	84	89	36	r41	45

(a) Gold bullion is not yet refined and may contain small amounts of other metals such as silver.

(b) Refined and unrefined

*Source:* Department of Industry, Technology and Resources, Victoria: *Annual Report*.

**TABLE 7.23 MINERAL PRODUCTION AND VALUE, VICTORIA, 1987-88**

<i>Mineral</i>	<i>Unit</i>	<i>Production</i>	<i>Value</i> ( <i>'000</i> )
Bauxite	tonnes	7,345	198
Brown coal	kilotonnes	43,481	312,031
Gold	kilograms	1,634	32,868
Gypsum	kilotonnes	196	1,306
Kaolin	kilotonnes	45	6,625
<b>Total</b>			<b>353,028</b>

*Source:* Department of Industry, Technology and Resources, Victoria: *Annual Report*.

**TABLE 7.24 STONE PRODUCTION, VICTORIA, 1987-88**

<i>Item</i>	<i>Establishments operating</i>	<i>Total Victorian production</i>	
	<i>Number</i>	<i>Production</i>	<i>Value</i>
		<i>'000 tonnes</i>	<i>\$'000</i>
Clays -			
Brick clay and shale	29	1,535	4,524
Fireclay	2	5	48
White and other clays	9	180	1,136
<b>Total clays</b>	<b>40</b>	<b>1,720</b>	<b>5,708</b>

**TABLE 7.24 STONE PRODUCTION, VICTORIA, 1987-88 - continued**

Item	Establishments operating	Total Victorian production	
	Number	Production	Value
		'000 tonnes	\$'000
Crushed and broken stone -			
Basalt	50	12,056	103,166
Dacite, rhyolite, and rhyodacite	3	1,802	21,887
Granite	9	1,902	18,632
Hornfels	7	1,154	10,767
Limestone	7	907	8,687
Sandstone, quartzite	25	781	3,727
Shale and schist, other	3	84	738
Total crushed and broken stone	104	18,686	167,604
Dimension stone -			
Basalt, granite, sandstone and other	8	31	1,392
Earth and soil	22	581	2,382
Gravel	63	3,559	12,196
Limestone -			
For agriculture	11	117	2,670
For cement	3	2,271	9,981
For other purposes	2	5	106
Total limestone	16	2,393	12,757
Salamander and filling	30	851	1,779
Sand	134	6,838	42,415
Scoria	18	1,131	6,229
Tuff	8	22	40
Other	1	1	4
Grand total	444	35,813	252,506

Source: Department of Industry, Technology and Resources, Victoria: *Annual Report*.

## ENERGY

### Overview

In 1986-87, Victoria contributed 30 per cent of the Electricity, gas, and water component of Australia's Gross Domestic Product (GDP) at factor cost. The Electricity, gas, and water industries represented 3.5 per cent of Victoria's GDP at factor cost in 1986-87.

The Electricity, gas, and water component of GDP includes the transmission and distribution of gas through reticulation systems. It does not include the extraction of crude petroleum or natural gas.

### Electricity generated

Victorian production of electricity in 1988-89 was 36,139 GWh, a rise of 8.4 per cent over the 1987-88 figure.

Victoria's electricity system is based upon the State's extensive brown coal resource in the LaTrobe Valley in Central Gippsland, which is one of the largest single brown coal deposits in the world.

All the major brown coal fired generating plants in the system are located in the LaTrobe Valley. These plants generate three-quarters of the State's electricity requirement.

Other thermal stations include a gas turbine station in the LaTrobe Valley and a gas fired station in Melbourne. There are hydro-electric power stations in north-eastern Victoria, and the State is also entitled to about 30 per cent of the output of the Snowy Mountains hydro-electric scheme and half of the output of the Hume hydro-electric station near Albury.

### Petroleum marketed

Motor spirit (super, standard and unleaded) marketed in Victoria during 1988-89 amounted to 4,773.2 megalitres. This represented a 2 per cent rise over the 1987-88 figure.

**TABLE 7.25 POWER STATIONS: LOCATIONS, RATING, AND PRODUCTION, VICTORIA**

Station	Maximum output achieved (MW)		Electricity generated (GWh)	
	1987-88	1988-89	1987-88	1988-89
Brown coal thermal stations -				
Hazelwood	1,135	1,320	7,285	8,397
Yallourn	226	103	765	27
Yallourn W	1,436	1,485	8,006	8,570
Morwell	137	140	742	835
Loy Yang A	2,057	2,066	12,307	13,616
<b>Total</b>	..	..	<b>29,105</b>	<b>31,445</b>
Other thermal stations -				
Newport D	513	507	1,300	1,606
Jeeralang	488	492	259	559
<b>Total</b>	..	..	<b>1,559</b>	<b>2,165</b>
Hydro stations -				
Kiewa	192	192	272	413
Eildon-Rubicon (incl. Cairn-Curran)	138	136	312	203
Dartmouth	153	150	361	72
<b>Total</b>	..	..	<b>945</b>	<b>688</b>
Stations operated by other bodies	1,418	1,261	1,714	1,841
<b>Total input to system</b>	..	..	<b>33,323</b>	<b>36,139</b>

Source: State Electricity Commission of Victoria: *Annual Report*.

**TABLE 7.26 REFINING CAPACITY, VICTORIA, AT 1 JULY 1989**

Refinery	Location in Victoria and year refinery came on stream	Primary processing capacity (a)
Shell Refining (Australia) Pty Ltd	Corio near Geelong 1954	110,000 to 132,000 BSD (5,000,000 tonnes/year)
Shell Lubricating oil plant	Corio near Geelong 1954	3,000 BSD (145,000 tonnes/year)
Petroleum Refineries (Australia) Pty Ltd	Altona near Melbourne 1949	108,000 BSD (5,000,000 tonnes/year)

(a) BSD: barrels per stream day.

Source: Australian Institute of Petroleum Ltd: *Oil and Australia*.



**TABLE 7.27 PRINCIPAL PETROLEUM PRODUCTS MARKETED, VICTORIA**  
(megalitres)

Item	1986-87	1987-88	1988-89
Aviation gasoline	18.04	18.80	19.40
Motor spirit -			
Super	4,098.74	3,994.29	3,779.38
Standard	0.22	-	-
Unleaded	381.94	668.22	973.85
Total	4,480.90	4,662.51	4,773.23
Power kerosene	0.36	0.18	} 13.39
Lighting kerosene	19.38	15.35	
Aviation turbine fuel	524.72	556.66	549.04
Heating oil	50.39	39.06	35.35
Automotive distillate	1,462.62	1,533.84	1704.86
Industrial diesel fuel	119.19	104.44	106.25
Fuel oil	377.89	358.92	366.68
<b>Grand total (a)</b>	<b>7,053.49</b>	<b>7,289.76</b>	<b>7,568.20</b>

(a) Other petroleum fuels including refinery oil are no longer included as principal petroleum products marketed.

Source: Department of Resources and Energy, Victoria: *Major Energy Statistics*.

## REFERENCES

### Data Sources

The latest year for which ABS estimates are available for gross product at factor cost is 1987-88. However, State details are restricted because G.D.P. by industry excludes the general government gross operating surplus component.

Major sources of manufacturing data are the Censuses of Manufacturing Establishments which have been conducted in Victoria since 1901, and the monthly surveys of selected manufacturing production. No Manufacturing Census was conducted for the year 1985-86.

Manufacturing statistics collected since 1968-69 are classified by industry according to Division C of the Australian Standard Industrial Classification (ASIC). Division C broadly relates to the physical or chemical transformation of materials or components into new products, whether the work is performed by power driven machines or by hand.

### ABS publications

- Census of Manufacturing Establishments: Summary of Operations by Industry Subdivision, Australia, Preliminary* (8201.0)
- Manufacturing Establishments: Summary of Operations by Industry Class, Australia* (8202.0)
- Manufacturing Establishments: Selected Items of Data by Industry and Employment Size, Victoria* (8202.2)
- Manufacturing Establishments: Details of Operations by Industry Class, Australia* (8203.0)
- Manufacturing Establishments: Small Area Statistics, Victoria* (8203.2)
- Manufacturing Establishments: Details of Operations, Victoria* (8291.2)
- Production Bulletins Nos. 1 to 8* (8357.0-8364.0)
- Manufacturing, Victoria* (8207.2)

### Non-ABS publications

- Department of Management and Budget, Victoria, estimates of State Accounts compiled by the Policy Planning Division.*