



Australian Government



APPENDIX D

# Analysis of the emissions intensity of Australian industries

CARBON POLLUTION REDUCTION SCHEME **GREEN PAPER** JULY 2008

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## D. Analysis of the emissions intensity of Australian industries

The following table is based on analysis conducted by the Centre for Integrated Sustainability Analysis (CISA), University of Sydney using the Australian Bureau of Statistics' (ABS) Australian National Accounts Input-Output Tables 2001–02, the National Greenhouse Gas Inventory 2002 and various industry-specific sources. The data includes all national emissions, other than those from deforestation.

The analysis illustrates the emissions attributed to 115 industry sectors. The emissions per unit of revenue for each industry is calculated as the direct and indirect electricity emissions associated with each industry per million dollars of revenue.

The classification of industry sectors is based on the 109 sectors in the National Accounts Input-Output tables. Four of these industry sectors have been further disaggregated. These sectors were gauged to be likely to show considerable variation in emissions intensity and some economic and emissions information on these sub-sectors was available. The Government recognises that amongst the other input-output sectors there are sub-sectors which will have higher emissions intensity than the sector average. Further disaggregation of other sectors was compromised due to the limitations on available data.

As outlined in Chapter 9, a key objective of stakeholder consultations following the release of the green paper will be to further the Government's understanding of the relative emissions intensities of different activities.

The further disaggregated sectors are:

- Basic non-ferrous metals and products (industry code 2702) disaggregated into three sub-sectors:
  - Aluminium
  - Alumina
  - Other non-ferrous metals and products.
- Cement, lime and concrete slurry (industry code 2603) disaggregated into two sub-sectors:
  - Cement and lime
  - Ready-mix concrete.
- Coal (industry code 1101) disaggregated into two sub-sectors:
  - Black coal
  - Brown coal.

- Other agriculture (industry code 0107) disaggregated into three sub-sectors:
  - Other agriculture not elsewhere classified (nec)
  - Sugar cane
  - Cotton.

The data in this table provide a ‘snapshot’ of the economy and emissions in 2001–02. Change in emissions, production and commodity price data since 2001–02 may have significantly affected some of these data and the relative emissions-intensity ranking of the industry sectors. These data do not show projected changes in economic behaviour or emissions if a carbon cost is introduced.

These intensities are calculated under a basic prices valuation in terms of final demand and are provided for the comparison of sectoral performance. They are not applicable to carbon footprinting of companies, projects, investment funds and portfolios, households or consumers. This analysis was conducted prior to the release (in June 2008) of 2004–05 input-output tables.

The total emissions listed in the table do not tally to 100 per cent of national emissions as the table does not include emissions attributed to the residential sector.

	<b>Industry code</b>	<b>Industry Sector (As classified in the ABS Australian National Accounts Input-Output Tables)</b>	<b>Emissions per unit of revenue (t CO<sub>2</sub>-e/\$m revenue)</b>	<b>Proportion of National Emissions (excluding deforestation)</b>
1	3601	Electricity supply	9,945	5.0%
2	2702*	Aluminium	7,357	6.1%
3	0103	Beef cattle	6,687	11.2%
4	2603*	Cement and lime	4,720	1.4%
5	0101	Sheep	3,513	3.4%
6	0104	Dairy cattle	3,240	2.7%
7	0105	Pigs	1,958	0.4%
8	1101*	Black Coal	1,722	5.0%
9	2602	Ceramic products	1,675	0.4%
10	2702*	Alumina	1,649	2.8%
11	3602	Gas supply	1,578	0.8%
12	2701	Iron and steel	1,568	3.9%
13	2502	Basic chemicals	1,288	2.0%
14	2605	Other non-metallic mineral products	1,260	0.3%
15	1201	Oil and gas	1,186	3.7%
16	2303	Pulp, paper and paperboard	1,133	0.5%
17	1400	Other mining	1,123	0.5%
18	9601	Other services (includes sanitary and garbage disposal)	1,101	3.3%

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19	0107*	Sugar Cane	1,054	0.2%
20	6101	Road transport	1,026	5.3%
21	1101*	Brown Coal	962	0.1%
22	2603*	Ready-mixed concrete	818	0.4%
23	0106	Poultry	792	0.3%
24	2601	Glass and glass products	645	0.2%
25	2702*	Other non-ferrous metals and products	628	1.6%
26	6301	Water transport	624	0.4%
27	3701	Water supply, sewerage and drainage services	573	0.9%
28	1302	Non-ferrous metal ores	571	1.5%
29	2501	Petroleum and coal products	542	1.5%
30	0102	Grains	523	1.1%
31	0107*	Cotton	494	0.1%
32	6401	Air and space transport	384	1.0%
33	6201	Rail, pipeline and other transport	380	0.7%
34	400	Commercial fishing	348	0.2%
35	0107*	Other agriculture n.e.c	341	0.6%
36	2108	Other food products	284	0.7%
37	2505	Soap and detergents	279	0.1%
38	2301	Sawmill products	254	0.1%
39	1301	Iron ores	249	0.2%
40	2507	Other chemical products	220	0.1%
41	2302	Other wood products	212	0.2%
42	2202	Textile products	209	0.1%
43	2304	Paper containers and products	201	0.2%
44	5103	Other retail repairs	198	0.1%
45	2604	Plaster and other concrete products	197	0.1%
46	2203	Knitting mill products	165	<0.1%
47	2808	Other electrical equipment	163	0.1%
48	5701	Accommodation, cafes and restaurants	142	1.1%
49	2105	Flour mill products and cereal foods	142	0.1%
50	2506	Cosmetics and toiletry preparations	134	<0.1%
51	2101	Meat and meat products	132	0.4%
52	4503	Other wholesale repairs	132	0.2%

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53	8401	Education	130	1.1%
54	2705	Fabricated metal products	128	0.2%
55	4502	Wholesale mechanical repairs	124	<0.1%
56	2110	Beer and malt	124	0.1%
57	2806	Electronic equipment	124	0.1%
58	2201	Textile fibres, yarns and woven fabrics	122	0.1%
59	5102	Retail mechanical repairs	115	0.4%
60	8201	Defence	107	0.3%
61	2104	Oils and fats	105	<0.1%
62	8701	Community services	99	0.2%
63	9301	Sport, gambling and recreational services	99	0.3%
64	2102	Dairy products	93	0.2%
65	2704	Sheet metal products	89	0.1%
66	2401	Printing and services to printing	88	0.2%
67	7803	Other business services	87	0.7%
68	2106	Bakery products	86	0.1%
69	2103	Fruit and vegetable products	86	0.1%
70	2509	Plastic products	80	0.1%
71	2107	Confectionery	79	<0.1%
72	9501	Personal services	78	0.1%
73	2206	Leather and leather products	74	<0.1%
74	7802	Legal, accounting, marketing and business management services	71	0.8%
75	8101	Government administration	70	0.6%
76	2504	Medicinal and pharmaceutical products, pesticides	69	0.1%
77	2810	Other machinery and equipment	69	0.1%
78	9101	Motion picture, radio and television services	66	0.1%
79	7101	Communication services	64	0.5%
80	2809	Agricultural, mining, etc. machinery	64	0.1%
81	1500	Services to mining	57	0.1%
82	2109	Soft drinks, cordials and syrups	56	<0.1%
83	2205	Footwear	56	<0.1%
84	9201	Libraries, museums and the arts	55	0.1%

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85	7801	Scientific research, technical and computer services	54	0.4%
86	2703	Structural metal products	54	0.1%
87	5101	Retail trade	53	0.8%
88	2503	Paints	52	<0.1%
89	2801	Motor vehicles and parts, other transport equipment	51	0.2%
90	2508	Rubber products	45	<0.1%
91	2204	Clothing	42	<0.1%
92	8601	Health services	41	0.4%
93	0200	Services to agriculture, hunting and trapping	39	<0.1%
94	4501	Wholesale trade	38	0.6%
95	7702	Other property services	37	0.4%
96	2807	Household appliances	34	<0.1%
97	2113	Wine, spirits and tobacco products	34	<0.1%
98	4101	Residential building	33	0.2%
99	2803	Railway equipment	31	<0.1%
100	2804	Aircraft	30	<0.1%
101	2402	Publishing, recorded media, etc.	25	0.1%
102	2802	Ships and boats	25	<0.1%
103	2805	Photographic and scientific equipment	22	<0.1%
104	4102	Other construction	21	0.2%
105	6601	Services to transport, storage	17	0.1%
106	2902	Furniture	13	<0.1%
107	7401	Insurance	10	<0.1%
108	2903	Other manufacturing	9	<0.1%
109	2901	Prefabricated buildings	6	<0.1%
110	7701	Ownership of dwellings	3	0.1%
111	7301	Banking	2	<0.1%
112	7302	Non-bank finance	1	<0.1%
113	7501	Services to finance, investment and insurance	1	<0.1%
114	4201	Construction trade services	1	<0.1%
115	0300	Forestry and logging	-1,493#	-0.5%

\* denotes input-output industry sectors which have been disaggregated.

# The emissions intensity for Forestry and logging is negative because it includes carbon sequestration in forests. The precise value of forest carbon will depend on the detailed scheme design rules.

