Appendix E SECTORAL AGGREGATES

Table E1 Beef – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	138 005	883	138 888	1 738	79.4	0.5	79.9	61	84 486	541	85 027
1995	100 135	981	101 116	1 719	58.3	0.6	58.8	64	64 426	631	65 058
1999	101 606	1 282	102 888	1 991	51.0	0.6	51.7	65	65 832	831	66 663

Table E2 Sheep meat – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	9 118	329	9 446	647	14.1	0.5	14.6	40	3 633	131	3 764
1995	8 331	329	8 660	576	14.5	0.6	15.0	46	3 817	151	3 968
1999	8 542	399	8 941	620	13.8	0.6	14.4	50	4 297	201	4 497

Table E3 Pig meat – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	1 076	162	1 238	319	3.4	0.5	3.9	59	630	95	725
1995	1 077	203	1 280	356	3.0	0.6	3.6	62	664	125	790
1999	1 068	233	1 301	362	2.9	0.6	3.6	63	669	146	815

Table E4 Wheat – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	9 164	428	9 592	14 447	0.6	0.0	0.7	80	7 340	343	7 683
1995	5 827	457	6 285	14 119	0.4	0.0	0.4	74	4 336	340	4 677
1999	7 208	567	7 775	22 115	0.3	0.0	0.4	76	5 465	430	5 895

Table E5 Other grains – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	4 171	486	4 657	6 835	0.6	0.1	0.7	43	1 797	209	2 006
1995	3 547	535	4 082	8 591	0.4	0.1	0.5	41	1 461	220	1 682
1999	3 236	677	3 913	10 002	0.3	0.1	0.4	45	1 461	305	1 766

Table E6 Sugar – total emissions, emissions-intensity and export emissions.

	Total			Intensity				Export			
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	658	21	680	3 587	0.18	0.006	0.19	76	501	16	517
1995	699	22	721	4 667	0.15	0.005	0.15	82	577	18	595
1999	818	21	839	5 349	0.15	0.004	0.16	79	645	16	661

Table E7 Wool – total emissions, emissions-intensity and export emissions.

	Total				Intensity				Export		
	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Production (kt)	Biosphere (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)	Export share (%)	Biosphere (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	19 034	225	19 259	1 031	18.5	0.2	18.7	94.2	17 932	212	18 144
1995	12 761	231	12 992	683	18.7	0.3	19.0	90.0	11 480	208	11 688
1999	11 323	257	11 580	641	17.7	0.4	18.1	90.6	10 263	233	10 496

Table E8 Emissions from ANZSIC 21 Food, beverages, tobacco manufacturing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	4 421	3 569	–	808	2 266	11 064
1995	4 770	3 866	–	856	2 495	11 988
1999	5 228	3 759	–	897	3 156	13 041

Table E9 Emissions from ANZSIC 22 Textile, clothing, footwear and leather manufacturing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	2 175	649	–	55	–	2 879
1995	2 103	676	–	59	–	2 838
1999	2 340	588	–	61	–	2 990

Table E10 Emissions from ANZSIC 23-24 Wood, paper and printing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	3 886	2 546	–	94	–	6 526
1995	4 178	2 416	–	100	–	6 693
1999	4 947	2 514	–	104	–	7 566

Table E11 Emissions from ANZSIC 252-256 Chemical industry.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	4 238	6 656	1 170	–	317	12 380
1995	4 718	5 817	1 292	–	339	12 165
1999	4 495	6 538	1 418	–	363	12 814

Table E12 Emissions from ANZSIC 263 Cement, lime, plaster and concrete product manufacturing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	1 462	3 256	3 930	–	471	9 118
1995	1 378	3 048	3 972	–	851	9 249
1999	1 638	3 025	4 330	–	1 014	10 006

Table E13 Emissions from ANZSIC 261, 262, 264 Other non-metallic mineral product manufacturing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	1 707	3 386	95	–	327	5 514
1995	1 795	3 007	62	–	590	5 453
1999	1 920	2 850	57	–	703	5 530

Table E14 Emissions from ANZSIC 271 Iron and steel (excluding coke oven operation).

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	4 565	18 065	895	–	684	24 209
1995	6 019	16 281	1 109	–	1 094	24 503
1999	6 425	14 860	1 097	–	1 310	23 693

Table E15 Emissions from ANZSIC 272-273 Basic non-ferrous metals.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	24 170	14 606	5 920	–	212	44 907
1995	25 961	15 971	3 263	–	513	45 708
1999	31 571	16 965	3 506	–	588	52 631

Table E16 Emissions from ANZSIC 28 Machinery and equipment manufacturing.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	3 236	616	–	–	1 261	5 113
1995	3 441	630	–	–	1 373	5 444
1999	3 944	678	–	–	1 421	6 043

Table E17 Emissions from ANZSIC Division E Construction.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Wastewater (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)
1990	27	3 189	–	–	1 938	5 154
1995	21	3 414	–	–	1 992	5 428
1999	44	3 801	–	–	2 214	6 059

Table E18 Energy use and emissions by aluminium and balance of non-ferrous metals (ANZSIC 272–273).

Energy	1990 (PJ)	1990 (Gg CO_2-e)	1990 Gg/PJ	1995 (PJ)	1995 (Gg CO_2-e)	1995 Gg/PJ	1999 (PJ)	1999 (Gg CO_2-e)	1999 Gg/PJ
All of 272–273									
Black coal	49.8	4 698	94.4	55.8	5 241	94.0	54.7	5 240	95.8
Coke	5.0	661	131.7	5.0	655	130.5	5.5	718	129.6
Petroleum coke use (PJ)	9.1	701	77.4	8.6	656	76.3	10.1	765	75.4
Natural gas use (PJ)	81.1	5 199	64.1	112.1	6 760	60.3	118.8	7 519	63.3
Other fuels used	44.0	3 347	76.1	35.6	2 659	74.8	35.9	2 724	75.8
Electricity use (PJ)	85.7	24 170	282.1	88.7	25 961	292.7	112.4	31 571	281.0
Total energy	274.6	38 775	141.2	305.7	41 932	137.2	337.5	48 536	143.8
Electricity (GWh)	23 800	–	–	24 642	–	–	31 208	–	–
Electricity coefficient (kg CO_2-e/kWh)	282	–	–	293	–	–	281	–	–
Aluminium									
Production ('000 tonne)	–	1 235	–	–	1 285	–	–	1 686	–
Electricity (GWh)	–	19 985	–	–	20 282	–	–	26 086	–
Intensity (t CO_2-e/t)	–	18.5	–	–	18.6	–	–	17.7	–
	(PJ)	(Gg CO_2-e)	Gg/PJ	(PJ)	(Gg CO_2-e)	Gg/PJ	(PJ)	(Gg CO_2-e)	Gg/PJ
Electricity for smelting	67.2	18 948	54.4	68.2	19 949	53.0	87.7	24 636	52.0
Other electricity	4.8	1 348	3.9	4.9	1 419	3.8	6.2	1 753	3.7
Anode carbon	24.0	2 267	19.5	24.4	2 291	19.0	31.4	3 004	18.6
Natural gas	4.9	315	4.0	5.0	301	3.9	6.4	405	3.8
All energy	100.9	22 878	81.7	102.4	23 960	79.7	131.7	29 799	78.1
Balance of 272–273									
Electricity	13.7	3 873.8	–	15.7	4 592.7	–	18.4	5 181.6	–
Coal, coke	30.8	3 092.1	–	36.4	3 604.4	–	28.9	2 953.8	–
Gas	76.2	4 884.5	–	107.1	6 459.3	–	112.4	7 113.2	–
Other fuels	53.0	4 047.4	–	44.2	3 315.5	–	46.1	3 488.4	–
All energy	173.7	15 898	–	203.3	17 972	–	205.8	18 737	–

Source:

a Turton 2002.

b Derived from (1999) value on assumption that GJ/tonne has been declining at 0.5% per annum.

Table E19 Emissions from iron and steel production and exports.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Produced (kt)	Share exported (%)
Emissions							
1990	4 565	18 065	895	684	24 209	6 681	26
1995	6 019	16 281	1 109	1 094	24 503	7 837	38
1999	6 425	14 860	1 097	1 310	23 693	7 674	42
	Electricity (t CO_2-e/t)	Fuels (t CO_2-e/t)	Process (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)		
Intensity							
1990	0.68	2.70	0.13	0.10	3.62		
1995	0.77	2.08	0.14	0.14	3.13		
1999	0.84	1.94	0.14	0.17	3.09		
	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)		
Exports							
1990	1 189	4 705	233	178	6 305		
1995	2 266	6 129	417	412	9 223		
1999	2 724	6 299	465	556	10 043		

Table E20 Emissions from aluminium production and exports.

	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)	Produced (kt)	Share exported
Emissions							
1990	20 296	2 582	5 920	126	28 924	1 235	76
1995	21 369	2 592	3 263	305	27 528	1 285	81
1999	26 389	3 410	3 503	359	33 660	1 686	81
	Electricity (t CO_2-e/t)	Fuels (t CO_2-e/t)	Process (t CO_2-e/t)	Transport (t CO_2-e/t)	Total (t CO_2-e/t)		
Intensity							
1990	16.4	2.1	4.8	0.1	23.4		
1995	16.6	2.0	2.5	0.2	21.4		
1999	15.7	2.0	2.1	0.2	20.0		
	Electricity (Gg CO_2-e)	Fuels (Gg CO_2-e)	Process (Gg CO_2-e)	Transport (Gg CO_2-e)	Total (Gg CO_2-e)		
Exports							
1990	15 448	1 965	4 506	96	22 015		
1995	17 328	2 102	2 646	247	22 322		
1999	21 365	2 761	2 836	290	27 252		